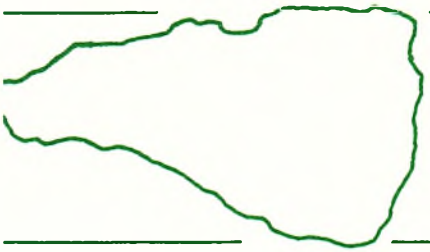
THE GREENLAND
MILNE ISLAND
EXPEDITION 1989

The Greenland



Milne Island

expedition 1989

14 Langar Road, Bingham, Nottinghamshire, NG13 8EY

July 1990

Dear Reader,

Please find the enclosed report of our 1989 expedition to Milne Island in Greenland. Copies of this report are being sent to those organisations or individuals who:

requested a copy of the report as condition of sponsorship or grant aid, or

offered significant help to the expedition as a whole or to one of its members, or

as a repository of information, should be kept advised of the activities and accomplishments of expeditions to the Arctic.

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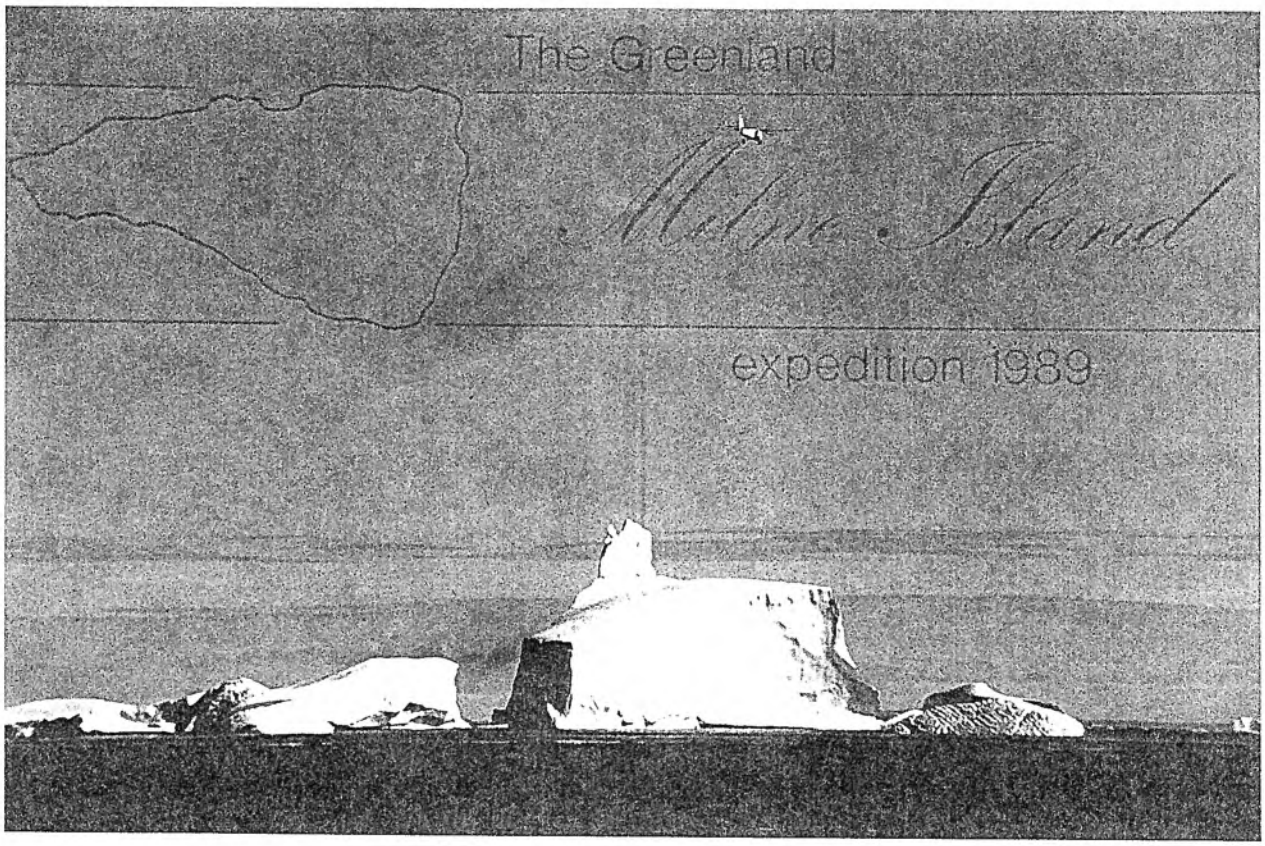
Further copies of this report are available from the above address. We trust you will enjoy reading this account of our adventure. Any comments or queries will be welcomed.

Malcolm Sales
Expedition leader


The Greenland
Melon • Strand
expedition 1989

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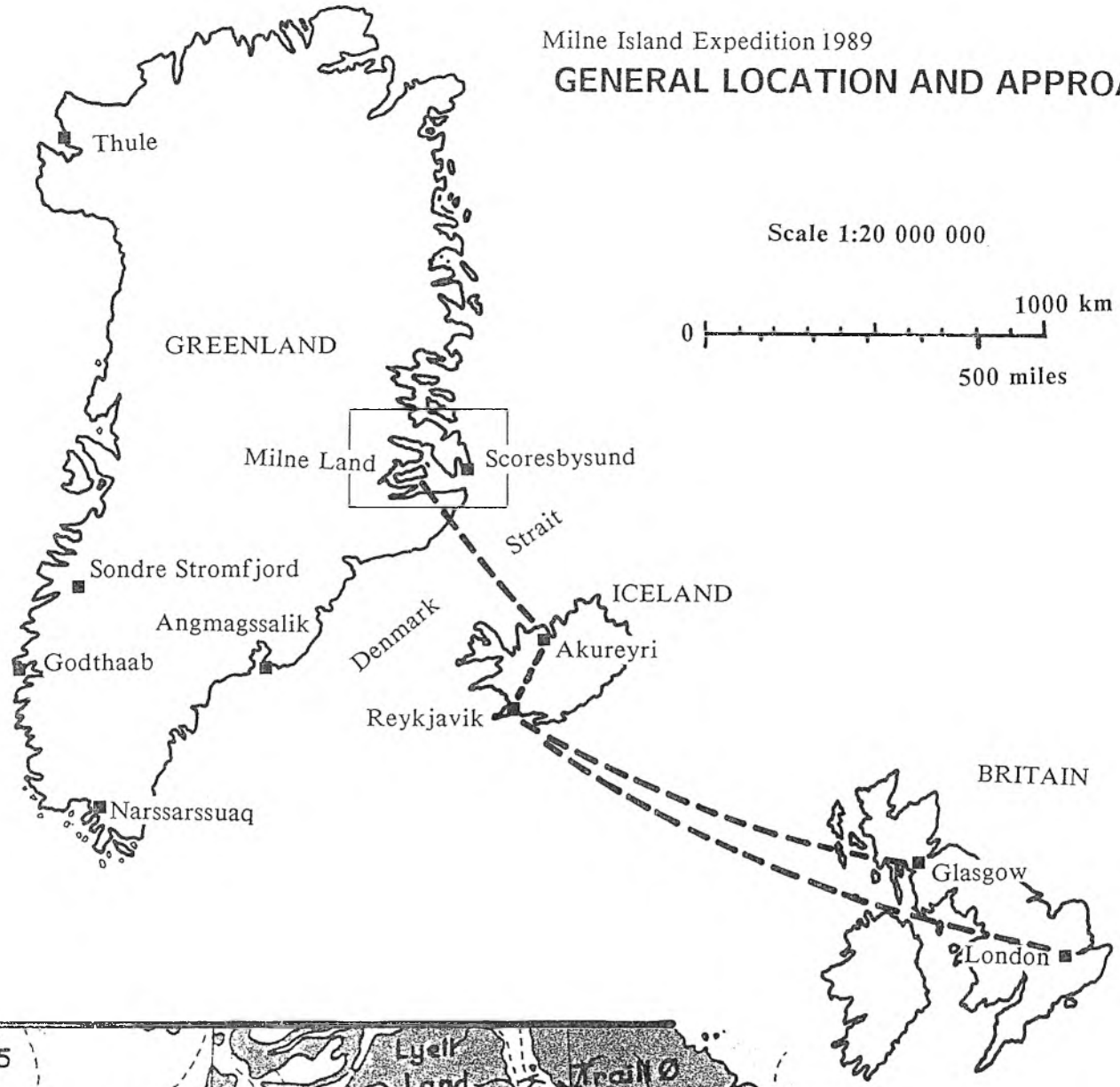
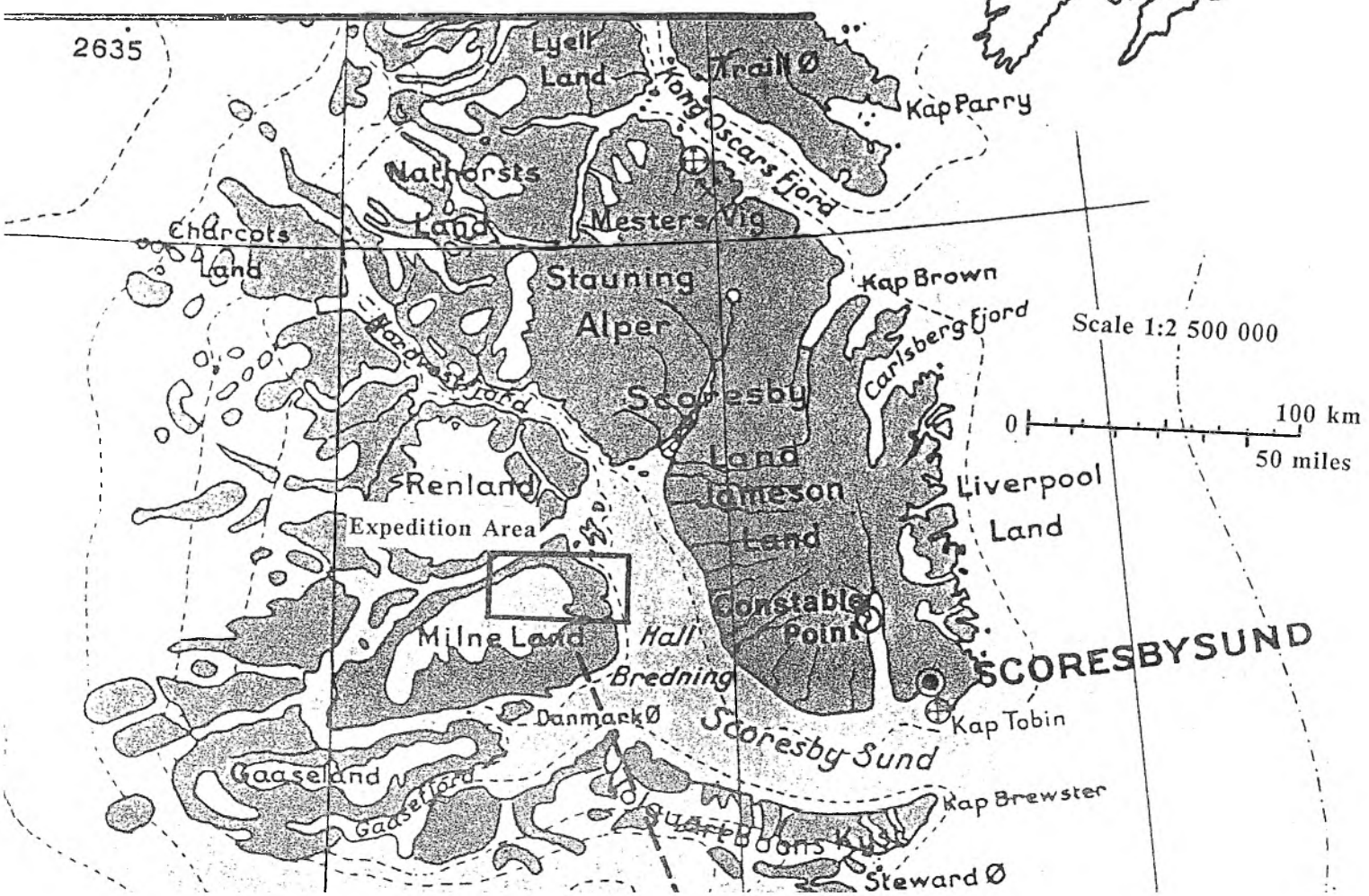
Milne Island Expedition 1989

GENERAL LOCATION AND APPROACH





MILNE LAND HISTORICAL NOTE

Pamela Glanville

On July 25th 1822 William Scoresby Jnr, in the whaling ship Baffin, entered "a capacious inlet" on the East Coast of Greenland. His father, William Snr had sailed into this inlet two days earlier in the Fame. Interestingly the son observed the father's ship in an inverted image, caused by freak atmospheric conditions, while the Fame was 17 miles beyond the horizon sailing up this "apparently interminable arm of sea". A fine engraving of this phenomenon exists in Scoresby's account of his 1822 voyage to the Arctic.

Scoresby Jnr named the inlet "Scoresby's Sound" in honour of his father. Two whales were sighted in the sound, providing an opportunity for further exploration. Scoresby Jnr charted and named various headlands, bays and islands visible on either side of the sound. Typically, Scoresby also recorded with a scientist's accuracy the natural history of the area, making several visits on land and climbing small coastal peaks to check the accuracy of his charts. On July 28th he started his temperature recordings of the Arctic seas, using a specially designed "marine diver"; he was the first person to establish that in the Arctic seas the bottom temperatures are higher than the surface (he also made detailed recordings of the structure of snow crystals, and established a classification system of these which lasted one hundred years).

On the western side of "Scoresby's Sound", Scoresby named "a large and very distant track of land" Milne Land, "in compliment to Sir David Milne". Milne was a Royal Navy officer with a glorious career in the Napoleonic wars. In 1795, when Scoresby would have been six, Milne took part in a celebrated exploit against the French in the West Indies. After severe action against the Pique, neither French nor English had a boat which would float. The Pique was taken possession by Milne and ten seamen swimming to her. In 1800, when Scoresby had already made his first voyage to the Arctic as a lad of ten, Milne fought a successful one-to-one battle against the Vengeance, "as pretty a frigate match as any fought during the war".

Milne was a fine sailor and no doubt a youthful hero of Scoresby's. Milne Land is one of the few areas named by Scoresby after someone not a direct personal acquaintance. Sir David Milne was painted by Raeburn and a copy of his portrait hangs in the Painted Hall at Greenwich.

Whilst scientists have over the years visited Milne Land, in particular the area between Mudderbugt and Charcot Havn, it seems that the first mountaineering expedition to go there was the American East Greenland Expedition, in 1971. They spent three days towards the end of their expedition on the island in "foggy, rainy weather", and so did not achieve much.

In 1986 the Austrian Alpine Club (UK Branch) went to the northern part of the island for a three week trip. Landing by Twin Otter on the braided river system north of Charcot Havn, they achieved four previously unclimbed summits and saw a vast potential for future exploration. This was followed in 1988 by a party from the Pinnacle Club, who also climbed some virgin summits in their three week stay, and a visit from the British army in their sea bound "Exercise Icy Mountains VIII" lead by John Muston.

SUMMARY

Malcolm Sales.

A mountaineering expedition of eight members who travelled by air to Milne Island in Scoresby Sund on the east coast of Greenland. In three weeks during July/August 1989 seven new peaks of between 1400m and 2000m were ascended by simple snow routes.

DATES IN GREENLAND: 30.7.89 to 18.8.89 inclusive.

LOCATION
Milne Land is a remote island, deep within Scoresby Sund on the east coast of Greenland (25 55 W, 70 53 N). About 300 miles north of the Arctic circle.

OBJECTIVES
To explore the area surrounding the Korridoren glacier and to climb as many unclimbed mountains (principally pt 1867m) as time and prudence would allow. No technically difficult or severe climbing would be attempted; the rock is loose and we expected the glaciers and snowfields to offer the easiest routes.

The secondary objectives of the expedition, in order of preference, were to explore and make easy ascents of the mountains around;
The northern snowcap,
The Korridoren glacier,
The eastern end of Milne Land.

MEMBERS

Michael Garrett.	Malcolm Sales.
Pamela Glanville.	John Shrewsbury.
Margaret Graham.	Belinda Swift.
Philip Nixon.	Christopher Whitford.

ACHIEVEMENTS
Seven previously unclimbed mountains (including pt 1867m) were climbed. The Korridoren glacier was traversed from its eastern snout to a point on the 800m contour west of its high point and watershed.

WEATHER
We experienced four consecutive days of rain and light wind during our stay. Otherwise we were treated to an equal mixture of sunshine and overcast skies.

ACCIDENTS
There were no accidents or serious injuries.

COSTS
The cost of the expedition was £10,220

Grants:	Mount Everest Foundation	£ 400
	Scott Polar Research Institute	£ 450
	British Mountaineering Council	£ 200
	Austrian Alpine Club (UK branch)	£ 300
	Members contribution (8x£1,108.75)	£8,870

INTRODUCTION

Malcolm Sales.

AREA

Milne Land is a remote island, about 110kmx65km, which lies deep within Scoresby Sund on the east coast of Greenland (25 55 W, 70 53 N). It is about 300 miles north of the Arctic circle.

The area was visited by five members of this expedition in 1986. There is a good airstrip of 300m and more on a delta, with good camping nearby. The advantages of the area are;

- Reconnoitred by our previous expedition.
- Good landing strip.
- Inland and therefore better weather.
- Little explored as access from the Mestersvig airstrip was difficult. Mestersvig used to be the normal entry point for east coast expeditions north of the Staunings, but is now closed.
- Relatively close to Constable Pynt airfield (60 miles). Since the closure of Mestersvig this airstrip, which is owned and run by the American company ARCO, is now the normal entry point for expeditions to this region.
- Outside the National Park and therefore easier to gain permission.

RESEARCH

Five of the members of this expedition were part of the earlier expedition to explore Milne Island in 1986. Most of the research for that expedition, and this, was done by John Shrewsbury. From our 1986 trip we had a set of maps, oblique aerial photos and slides taken during the expedition.

MAPS

Our primary maps were the 1:250 000 series published by the Danish Geodaetisk Institut. These have a contour interval of 100m, and within the limitations imposed by scale were found to be remarkably accurate. Where large areas of ice cap occur the maps tend to omit contour detail, possibly because the mapmakers had nothing onto which to focus their stereoscopic viewers.

It is easy to be misled by the scale of the 1:250 000 maps, especially if one is used to working with UK 1:50 000 Ordnance Survey maps. A useful technique is to examine the Greenland 1:250 000 maps in parallel with a UK 1:250 000 road map. This will quickly indicate the true distances involved.

SCHEDULE AND ACCESS

We spent three weeks in Milne Island at the end of July and beginning of August. We travelled by scheduled Icelandair flights to Akureyri and thence by Twin Otter chartered from Flugfelag Nordurlands.

SAFETY

We took an emergency radio beacon such as is carried by small ships and light aircraft. If a mishap arose we would turn on the beacon and then it would transmit a distress signal on the international distress frequency. This signal would be picked up by a satellite or passing aircraft which will then in turn alert the Danes to our predicament, and hence a rescue might be launched. The Danish authorities required us to carry this beacon.

EXPEDITION MEMBERS

Michael D. Garrett, BSc(Eng),ACGI.
Date of Birth: 13.4.46.
Occupation: Principal Consultant (computer software).
Experience: 25 years mountaineering including Norway, Iceland (twice), America (Wind Rivers), Mount Kenya (Diamond Couloir), Greenland (Milne Island 1986), and 11 trips to the Alps.

Pamela Glanville, MA, PGCE, FRGS.
Date of Birth: 24.12.42.
Occupation: Education Lecturer.
Experience: 20 years mountaineering including Peru and the Alps.

Margaret A. Graham, F.Inst.MLSO.
Date of Birth: 15.5.44.
Occupation: Chief Medical Laboratory Scientific Officer.
Experience: 15 years mountaineering including the Alps, Pyrenees, Norway, Iceland, Canadian Rockies, Peruvian Andes, Julian Alps, Atlas and Greenland (Milne Island 1986).

Philip Nixon, BSc, ARPS.
Date of Birth: 4.4.47.
Occupation: Mathematics Teacher.
Experience: 20 years mountaineering including the Alps, America (Sierra), Pyrenees, Iceland, Greece and trekking in India.

Malcolm J. Sales, LCG,FInstSMM,FRGS,ARPS.
Date of Birth: 26.2.48.
Occupation: Sales Manager.
Experience: 25 years mountaineering including Norway (twice), Pyrenees, America (Wind Rivers), 11 trips to the Alps, and Greenland (Milne Island 1986).

John S. Shrewsbury, MA,MICE,MCIT.
Date of Birth: 20.2.53.
Occupation: Chartered Engineer.
Experience: 20 years mountaineering including Norway (twice), five trips to the Alps, Greenland (Milne Island 1986), New Zealand, Australia and America (Sierra).

Belinda Swift, GRSM,LRAM,ARCM.
Date of Birth: 7.4.43.
Occupation: Music Teacher.
Experience: 20 years mountaineering including Peru (four times), India (Ladakh), three month overland Teheran to Kathmandu and 14 trips to the Alps.

Christopher H. Whitford. BSc.
Date of Birth: 22.10.48.
Occupation: Research Engineer.
Experience: 25 years mountaineering including Norway, America (Wind Rivers and Sierra), eight trips to the Alps, and Greenland (Milne Island 1986).

Margaret, Pamela and Belinda resting on the Korridoren.

PERMISSION

Malcolm Sales

Organising an expedition to any part of the world is not easy. Greenland is no exception to this rule. Denmark administers Greenland in a similar fashion to Britain's control over the Falklands. Permission to run an expedition in Greenland is required from the Danish Polar Centre, and is dependent upon three criteria;

1 PLANS. Your plans need to be seen as responsible and the proposed party members should be considered competent to achieve the objectives. Completed application forms, obtainable from the Danish Polar Centre, should be submitted about nine months prior to your intended departure. Permission can be obtained in less time but it's nerve racking.

2 INSURANCE. You must take out adequate (as perceived by the Danes) insurance to indemnify anybody who may be involved in a rescue on your behalf.

3 RADIO. You are required to take some form of radio communication with the outside world.

The plans and list of members with their relevant mountaineering experience will form your basic submission for approval to go to Greenland. If acceptable, provisional permission will be granted. Full permission comes once proof of insurance and radios have been supplied. The expedition reference number which comes with the final permission needs to be quoted when the flight plans for your expedition are filed.

How we set about these tasks can be seen from the following report.

REFERENCES:

Danish Polar Center.
Hausergade 3,
DK-1128 Copenhagen K,
Denmark.

Mr D G Lambert.
British Embassy.
Kastelsvej 38-40,
DK-2100 Copenhagen,
Denmark.

INSURANCE

Mike Garrett

INTRODUCTION

Any mountaineering expedition is well advised to obtain suitable insurance prior to departure. In the case of Greenland, insurance is essential, since approval of the expedition by the Danish authorities is conditional on specific insurance requirements being met.

Having surmounted this hurdle in 1986, we felt confident of obtaining suitable insurance in 1989 without exerting ourselves unduly. In practice it proved rather less easy.

REQUIREMENTS

There were two basic requirements to be met:

1 Insurance requirements of expedition members, viz cover for rescue costs and medical costs arising from any problems in Greenland, cover of personal/group equipment, cover against cancellation (in particular to safeguard the UK/Iceland air tickets).

2 Specific insurance requirements of the Danish authorities. Not unreasonably, these ensure that the Danish Government is refunded for search and rescue costs, and repatriation costs, in the event of a problem. Central to this is a "Declaration" by the expedition's insurers in favour of the Danish State, the specifics of which are discussed later below.

In addition we had a third requirement:

3 Insurance cover whilst in Iceland as tourists - and if engaging in mountaineering in Iceland. There was always the chance that bad weather would prevent our reaching Greenland, necessitating a mountaineering holiday in Iceland.

GENERAL APPROACH

The combination of mountaineering risks, Greenland as a location, and the Danish authorities' Declaration demand use of specialist insurers, preferably ones with a track record of satisfying the Danish authorities in previous years.

We had suitable insurers in 1986 ("Company A"), and were expecting to use them again in 1989. Nevertheless, we had two other potential insurers in reserve- British Mountaineering Council Services Ltd and "Company C".

Early in 1989 we re-established contact with Company A.

THE DANISH DECLARATION

Before giving final approval for the expedition, the Danish authorities required a copy of our insurance policy at least three weeks prior to our departure. This policy had to include the following Declaration:

To The Danish State

re: expedition no. 1400-18-00/89(26)
"Greenland Milne Island Expedition 1989"

It is hereby acknowledged that the Danish State as represented by the Greenland Department of the Prime Minister's Office is entitled to payment from the undersigned insurance company/bank for any expenses paid by Danish authorities and incurred by implementing search and rescue operations for the amount of DKK 300,000 for the expedition as a whole, or/and providing ambulance transport for the amount of DKK 150,000 for each and any individual participant in the expedition, irrespective of any limitation in policy or guarantee clauses.

(signature of insurers)

The numbers in this declaration appear to vary from expedition to expedition, depending on such factors as the size of the party, and the stated intentions of the party (ie perceived risk). In our case the sterling amounts were equivalent to about £26,000 and £13,000 respectively.

The Danish Government quite reasonably wants to be sure that it will be repaid for the costs of a search etc, and needs to cover itself against such eventualities as a search launched in good faith but on the basis of incorrect information. On the other hand, insurance companies base their premiums on stated risks, the definition of which includes various small print in the policy. Hence the final words in the Declaration "irrespective of any limitation in policy or guarantee clauses" created a problem. To what extent, if any, was the wording of the Declaration negotiable?

In 1986 the situation had been different; we had had to provide a declaration "in favour of the Danish State", but the wording was up to us - as long as it satisfied the Danes. So we had employed Company A's own wording for the declaration - such wording having been accepted for previous expeditions. Could we use this wording again in 1989?

In May we wrote to the Danish authorities explaining that we intended to use the same approach to insurance as we had used in 1986, and attaching a copy of the 1986 declaration (which obviously, omitted the "irrespective of any limitation..." exclusion). Would this, we asked, be acceptable?

The Danes replied, unfortunately without answering this question, merely reminding us that they required "the declaration" to be signed. To which declaration were they referring? We felt reluctant to press the point directly with the Danes.

We made various enquiries of insurance companies, and of expeditions that were soon to depart to Greenland ahead of us. What Declaration wording were they using this year? The majority verdict was to use the standard Declaration, but modified so as to remove the "irrespective..." clause. However, we were unable to identify any case where this modified wording had actually been accepted (or refused) as yet. Further, one insurance company was actually using the Declaration wording without modification. Under these circumstances we were unsure how best to proceed - to arrange an unacceptable policy would be careless.

Meanwhile, an additional complication relating to health intruded itself.

HEALTH PROBLEMS

In summer 1988, a prospective member of our expedition - Belinda Swift- visited Peru on another expedition. Subsequently she felt unwell on various occasions, although she remained her normal very active self. The doctors were perhaps a little reluctant to take her problems seriously, and successive tests failed to reveal anything. After some months another expedition member, Margaret Graham, used her professional contacts to get extra tests done, and this revealed the problem as amoebic dysentery. Having identified the cause, could Belinda recover in time to be fit for Greenland?

Belinda was in the process of recovery when we needed to put a 10% insurance deposit down with Company A (this gave cancellation cover, thus protecting our UK/Iceland non-refundable air tickets). At this point we had to sign a fitness declaration, which we could not reasonably do in Belinda's case, and indeed we made Company A aware of this.

Belinda's recovery proceeded until tests showed that she was clear. However we were now very short of time, given the need for the signed policies to reach Copenhagen three weeks ahead of our departure. Would Company A now insure Belinda? The answer was yes, but they felt unable to sign the Declaration in Belinda's case, which we were sure would disbar Belinda from the expedition. We applied considerable persuasion to Company A, to no effect. Unfortunately the doctor's letter which positively stated Belinda to be clear became available only after this point, by which time we had become obliged to find an alternative insurance company. Personally, I was sorry that we parted with Company A, having built up a working relationship, but the timing seemed to be against us.

FINAL OUTCOME

We now urgently contacted BMC Services and Company C. In each case we had to examine their policy wording carefully, to ensure that it met the requirements as stated earlier above, and then to resolve any differences with the insurers.

Company C were willing to provide cover, and to sign an amended Declaration, but their quoted price was very expensive (approximately £250 per head). No fitness declaration was required.

BMC Services were also willing to provide cover, and to sign an amended Declaration, at £90 per head. This price was slightly above that quoted by Company A. No fitness declaration was required, but the BMC wanted to know if any other company had declined to insure us. We explained the position regarding Belinda, but were now able to produce the doctor's clearance letter. Further, in dealing with the BMC officers, who are experienced mountaineers and third world travellers, we felt that they understood the nature of dysentery, and were not alarmed by it. Hence there would be no problem in insuring Belinda.

We decided to proceed using BMC Services. The only question now was whether the Danes would accept the amended Declaration.

The BMC duly sent the policy and Declaration to Copenhagen by post and fax, together with a letter of support. We received from the Danish authorities full permission for the expedition to proceed.

The policies from all the companies that we contacted provided only a relatively modest amount of personal equipment cover. Some expedition members needed to cover their cameras etc by other means - eg "all risks" cover associated with existing household insurance policies.

The expedition was accident and incident free. We needed to make no insurance claims.

REFERENCES:

British Mountaineering Council Services Ltd.
Crawford House,
Precinct Centre,
Booth Street East,
Manchester M13 9RZ.
061 273 5163.

Danish Polar Centre.
Hausergade 3,
DK-1128, Copenhagen K.
Telephone +45 33 13 68 25.
Telefax 45 33 13 49 76.
Telex 27125 MFG DK.

RADIOS

Chris Whitford

The expedition carried a LOCAT LDT26 emergency radio beacon (supplied by EMTRAD Ltd), which is acceptable to the Danish authorities as a means of emergency communication. When switched on, this unit transmits a distinctive 'squawk' at 1 second intervals, on 121.5 & 243 MHz, which are the international aircraft distress frequencies. All commercial aircraft carry receivers permanently tuned to these frequencies and there is also a satellite monitoring network. Had we needed to use this, whoever picked up the signal from our beacon would have relayed the information to the Greenland authorities, who, knowing that our expedition was in the area, and had this beacon, would have instigated a search and rescue. We considered that it might take 48 hours before we could expect any help to arrive.

At 330g, the unit is small enough to be carried at all times, even when away from base camp.

The expedition did consider the use of a short-wave radio, to provide communication with Constable Pynt. This would have given an increased sense of safety, but it would have not have been a panacea. It would have been necessary to have equipment which would run from batteries or a pedal generator, plus a good aerial would have been needed for our signals to reach Constable Pynt. This would have limited its use to base camp. Its main advantage would have been in the marginal situation, where, for example, we may have wished to get through to Flugfelag Nordurlands to say that we wished to cut the expedition short and therefore be picked up early. We were also advised that, for an expedition further away from a permanent station, it would be advisable to have a short-wave radio, so that we could report the weather conditions before the pilot set off to pick us up. For this expedition, Milne Island was sufficiently close to Constable Pynt, that they could rely on the weather report from there. Indeed the pilot took off from Akureyri before we were confident that a landing was possible at Milne Island.

Suitable short-wave equipment is expensive and therefore a small expedition would have to rely on finding a sponsor who is prepared to loan this equipment. It is also necessary for at least one member of the expedition to have a radio operators licence. A radio being used by untrained people could cause more problems than it would solve. The use of aircraft distress beacons seems to be standard practice now on Arctic expeditions, although I have no knowledge of one being used in anger.

A Sony ICF-7600 DS short wave broadcast receiver was taken in the hope of receiving transmissions, in particular weather forecasts, from Constable Pynt. The "SSB CW" mode detected transmissions from the aircraft, but failed to demodulate it into intelligible speech.

REFERENCES:

EMTRAD Ltd.,
William Wright Dock,
Hull HU3 4PG.

TRANSPORT TO AND WITHIN ICELAND

Phil Nixon.

There are only two ways of getting to Iceland: boat or plane. For those with a lot of time available it is possible to take a Smyril Line ferry from Lerwick in the Shetlands via the Faroes to Seydisfjordur on the East coast of Iceland. However for most people, as was the case with our party, time was at a premium and we had no choice but to fly.

In 1989 there were daily return flights London Heathrow-Keflavik and twice weekly return flights Glasgow Abbotsinch-Keflavik. I first obtained flight schedules in December 1988 and many of us had made holiday arrangements with our employers when Icelandair radically revised the schedules in January 1989. So be warned!

The major decision is do you make every booking yourself or do you let an agent handle it on your behalf? The prime advantages of using an agent are:

1 It is a lot easier.

2 Special tour operators charter flight deals become available but you must book a package which includes travel and accommodation within Iceland.

There were eight members in the party but only four had the same travel arrangements throughout the expedition, so the assistance of an agent was very helpful. The following arrangements for our party were made by Dick Phillips:

a London HR-Keflavik, transfer to Reykjavik, overnight in Reykjavik YH, return flight to Akureyri, overnight in Reykjavik YH, transfer to Keflavik, Keflavik to London HR. 1 person.

b Glasgow-Keflavik, transfer to Reykjavik, return flight to Akureyri, transfer to Keflavik, Keflavik to Glasgow. 4 persons.

c Glasgow-Keflavik, transfer to Reykjavik, flight to Akureyri, mountain bus ticket over Sprengisandur from Myvatn to Reykjavik, 2 nights at Reykjavik YH, transfer to Keflavik, Keflavik-Glasgow. 2 persons.

d London HR-Keflavik, transfer to Reykjavik, overnight in Reykjavik YH, flight to Akureyri, mountain bus ticket over Sprengisandur from Myvatn to Reykjavik, 2 nights in Reykjavik YH, transfer to Keflavik, Keflavik-Glasgow. 1 person.

NOTES

The international flight tickets required a return flight within one calendar month. Thus if you travel out on the 16th of any month you have to return at the latest by the 15th of the following month.

The tickets are for pre-arranged flights only.

Breaking the above conditions is expensive.

The transfers are from the International Airport at Keflavik to the Hotel Loftleidir in Reykjavik and vice versa. The journey takes about 45mins by coach. The coaches meet all incoming flights and leave the Hotel Loftleidir 2hrs before outgoing flights.

Hotel Loftleidir is about 25mins walk from the main YH at Laufasvegur. It is also on the opposite side of the domestic airport from the flight terminal, so a taxi might be advisable if you are short of time and/or heavily laden. Icelandic money is required for the taxi etc.

Buses in Iceland are clean and punctual. The bus journey from Reykjavik to Akureyri takes about 8hrs so this is a viable alternative to flying. For anybody spending some time in Iceland the National Bus Timetable (Leidabok) is worth having and costs about £2.

Three of the party who were not pressed for time spent a few days at Myvatn at the end of the expedition and then went South on the Sprengisandur bus over the Central Highlands. This is one of the classic bus tours in Iceland and should not be missed if you have the time. The journey takes about 13 hours and can be broken at the half way stage where there is alpine hut style accommodation.

All Icelanders who have to deal with foreigners speak some English. The majority speak excellent English. Guided tours are in English on the assumption that all non-Icelanders speak English.

Changing money is no problem. It is in fact advisable, due to the changing exchange rate, to change money as you go. Most shops, restaurants etc are quite happy to accept sterling notes, Travellers cheques and the main credit cards.

There is a duty free shop at Keflavik airport for both incoming and outgoing passengers.

Tourists who buy goods of large value may claim 15% duty back at Keflavik airport duty free shop. Therefore keeping receipts is advisable.

REFERENCES:

ICELAND TOURIST BOARD & ICELANDAIR
172 Tottenham Court Road,
London W1P 9LG.
01 388 5599 01 388 5346

DICK PHILLIPS
Whitehall House,
Nenthead,
Alston,
Cumbria CA9 3PS
0434 381440

FREIGHT

Malcolm Sales.

We needed a large quantity of food to feed eight people for three weeks in Greenland, with a reserve in case the plane failed to arrive on time, and we had decided to use a family type frame tent at base camp. It was felt necessary to send as much of this as possible to Akureyri before we left Britain. We had done in 1986, so with the benefit of hindsight we set about repeating the exercise.

In 1986 we had, naively perhaps, believed that our base camp would be set up at wherever the plane landed. In the event we ended up transporting all our gear for about half a mile and across a river to a more suitable camp site. All our food and shipped out gear had been packed into large boxes (40 x 45 x 60cm) which normally contain electric ovens; these boxes had to be unpacked, and their contents tipped into our rucksacks, for transporting the final leg of the journey.

On this occasion each member of the party produced their own 7x2 man/day food parcel for the expedition. This food and that produced by Pamela Glanville for the base and advanced base camps was then packed into A4 size photocopier paper boxes (32 x 22 x 26cm). These boxes are readily available in most offices and conveniently pack into an expedition rucksack without having to be opened; indeed one of our members was able to get three into his Jaguar rucksack. Some of these boxes were taken as far as advanced base camp before being opened, a much more satisfactory way of transporting our food.

We held a packing meet at Thorner near Leeds on Saturday 20th May 1989. All our food and most of our heavy equipment was then packed into 34xA4 boxes and five electric oven boxes. These were then transported in two hatch-back cars to my garage in Nottinghamshire to await collection. In the second week of June an excessively large lorry arrived outside my house. All the boxes, and the poles to the frame tent which were too large to fit into any box, were sealed onto a pallet with shrink-wrap polythene. Our food and gear was now on its way to Felixstowe and then by sea to Iceland.

Flugfelag Nordurlands were advised of our plans and arranged for our pallet of gear to be stored in their hangar at Akureyri airport pending our arrival in late July. Although it should take less than two weeks to ship gear to Iceland we allowed significantly more time so that we could make alternative arrangements if anything went amiss. In the event all went well and our food and gear arrived having suffered only very little external damage.

At the end of the trip we sent back to ourselves a parcel containing the frame tent and some of the heavier camping and climbing gear. This should be avoided in future as it transpired to be much more expensive than the outward passage of the larger, and heaver, pallet. Although the shipment of our gear was a donation one should always be careful not to take too much advantage of a sponsor's generosity.

TRANSPORT BETWEEN ICELAND AND GREENLAND

John Shrewsbury.

A Twin Otter aircraft was chartered from Flugfelag Nordurlands hf to fly from Akureyri in the north of Iceland to Milne Land. A payload of 1200kg was allowed, compared with 1000kg for the 1986 expedition when the landing place was unknown. The price quoted was a fixed charge of £5800.

There is now a weekly scheduled flight by Greenlandair from Reykjavik to Constable pynt. During preparation for the 1986 expedition, Greenlandair offered charters from Constable Pynt of a Twin Otter or of Bell 212 or 206 helicopters. The Bell 212 has a 1250kg payload, the Bell 206 about half that.

One factor in choosing to fly direct from Akureyri is the simplicity of arrangements. Surface freight can be shipped to Akureyri, and Flugfelag Nordurlands' proprietor, Sigi, and administrator, Frederik, are most helpful in clearing goods through customs (charge £50), collecting and despatching surface freight, providing storage, obtaining fuel for stoves, and even changing currency and guiding us to the better eating places in Akureyri. The airport lawn is an established first camp for Greenland expeditions.

A copy of the expedition's permission to enter Greenland had been sent ahead to the airline so that there was no delay in obtaining flight clearance.

Like its ground-borne equivalent, the Land Rover, the Twin Otter's remarkable capabilities on rough ground are achieved by a sacrifice of passenger comfort. It is slow, noisy, draughty, too hot or too cold, the gap under the door is no substitute for a toilet, but it makes better landings on a furlong of Greenland tundra than some airlines make on a mile of concrete.

The pilots agreed to overfly the Korridoren glacier on the way in. As well as a superb spectacle, this was of great value in looking over the ground to be covered. There is very little time to study the ground in such an overflight: to make the most of the opportunity it is advisable:

1 to identify particular points of interest beforehand.

2 to have maps ready to hand, with scrap copies for notes.

3 to make sure there is someone looking on each side.

4 to delegate photography because looking over the ground and composing a scene do not mix well; and

5 to start with plenty of film in the cameras.

No Polaroid camera was taken on this trip although one had been of some use on the previous expedition - it's worth trying.

The aircraft descended as it flew down the glacier. This increased the spectacle, but because of the high wing the area of view was reduced.

The aircraft landed on the strip marked out temporarily for our departure in 1986. Markers of orange plastic sheet about 30cmx60cm were kept vertical at ground level by lengths of marker cane; they were intended to withstand the slipstream without fouling the aircraft or causing damage if overrun by it. They were placed every 100m along each edge of the strip which had been paced out to be 300m x 30m. The pilots measured it as 330m x 27m, and declared it too large to provide good sport. They seemed to be able to make do with 200m, but were appreciative of the large extent of clear ground beyond the end.

For the return, the gear was placed well to one side of the strip; spreading out the brighter tents helps locate the strip from the air.

REFERENCES:

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PO Box 1012,
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Tel (009 299) 2 44 88

FOOD

Pamela Glanville.

Food for the expedition was provided from two sources:

1. COMMUNAL

Provisions for three days at Base Camp and three days at Advanced Base Camp were bought and packed for the whole group of eight. In addition, extra rations were brought out for up to seven days in case bad weather delayed the return flight.

2. PERSONAL

Each person brought out seven days' "hill rations" for two people. These were usually used by prearranged camping 'pairs'; viz: John/Malcolm, Phil/Mike, Margaret/Chris, Pamela/Belinda.

In general, this seemingly complicated system worked well, although the boundaries between Base Camp/Advanced Base Camp, communal/personal, and pair/individual foods inevitably became somewhat blurred.

COMMUNAL

This was the responsibility of Pamela Glanville. The total cost was £275. Bearing in mind the report on the food consumed on the 1986 expedition, and also the useful comments in Col. Muston's report (Icy Mountains V111 1988), the following principles were applied to the selection of Base and Advanced Base Camp food:

a The daily calorific value would be approximately 3,000kcal per person (slightly more at Base Camp). Supper would provide c 1,250kcal, breakfast c 750kcal and lunch c 1,000kcal.

b The food would provide, subject to weight restrictions, as much contrast as possible to the inevitable monotony, blandness and unpalatability of the hill food (most of which was freeze dried).

c The last Base Camp supper would have extra goodies to provide for a small celebration.

BREAKFAST consisted of muesli (porridge oats were also available), biscuits (oatmeal, wholemeal bran or muesli crispbread) plus marmalade, honey or jam; and tea or coffee.

LUNCH was designed to be eaten on the hill, although because of our early starts it tended to be eaten mainly when the parties had got back to camp. Chocolate bars (mainly 'fun'-sized) were eaten as snacks on the hill; biscuits (generally oatmeal) were eaten with 'spreadable' cheeses of various types, pate, tuna, sardines or jam/honey. Nuts and raisins, and also crunchy bars, were preferred by some members to chocolate bars. Birds Apeel (orange flavoured) was also available for adding to water bottles.

SUPPER consisted of:
A soup course, with croutons.
A meat course (a 300g 'longlife' pack; assorted flavours); dried potato (up-market stuff - see list) OR boil-in-the-bag rice; dried peas.
Pudding: Dried fruit at Advanced Base Camp.
Tinned fruit at Base Camp.
Plus custard (ordinary or banana flavoured) or semolina.
Cocoa, tea or coffee; tot of whisky or sherry.

The celebratory meal at the end of the expedition also included a small tin of pate with truffles and a tinned fruit cake ("soaked in rum and brandy"), both from Fortnum and Mason, Piccadilly, W1., and a box of Black Magic chocolates.

EMERGENCY RATIONS

Although the plane from Akureyri was due to pick us up on August 18th, we were aware that it could arrive several days late if there was a prolonged spell of bad weather. A stock of muesli, porridge oats and dried egg was included as iron rations for this situation. In addition, tea, coffee and biscuits were catered for generously on the original plans, so that there would probably be some left over on August 18th; this proved to be the case, as it did with several other items (notably packets of nuts and chocolate bars). We could have survived for many days on Milne Island before resorting to cannibalism.

PERSONAL FOOD

This obviously varied greatly according to individual (and pair) tastes. It was eaten exclusively at the two high camps and at Teardrop Lake, and supplemented communal supplies at the 'Oasis' camp site. A typical 'hill' daily menu for TWO would have been:

2 x 125g Muesli	2 pkts nuts & raisins
8 teabags	8 fun-sized chocolate bars
50g dried milk	2 crunchy bars
2 sachets Chocolate Break	2 pkts Raven (or Springlow)
1 x 300g pkt Oatcakes	1 pkt Smash
1 tube Primula cheese	1 pkt Surprise peas
2 sachets Cup-a-Soup	2 x 200g dried fruit
1 pkt Instant Dessert mix	

The hill food was best packed in labelled meal packs for two. Weight and rubbish were saved by stripping off unnecessary packaging beforehand and adding hand-written labels with basic cooking instructions. The main problem with the hill food was re-hydrating the main course. Springlow foods in particular needed much more cooking than stated. We used sleeping bags and duvets successfully as a form of "hay-box" cookery; otherwise 15mins at boiling point was the minimum cooking time needed. Little of this sort of food is healthy; "boiled E-numbers" was how Mike summed it up.

No	Item	Weight	Pack	Total	Comments
1	Longlife Lasagne	300g	Foil Box	8)	Weighty but enjoyed
2	" Chicken Korma	300g	" "	8)	as a change from
3	" Meat Balls	300g	" "	8)	dried main courses.
4	" Boeuf Bourgignon	300g	" "	8)	All except Lasagne
5	" Sweet & Sour Chicken	300g	" "	8))	could be reheated out of foil boxes. This
6	" Chinese Pork	300g	" "	8)	sometimes was useful.
7	Soup: Austrian Herb	125g	Packet	4)	All were so-called
8	" Soup au Cresson	125g	"	4)	"luxury" varieties.
9	" Minestrone	125g	"	4)	Required slightly
10	" Cream of mushroom	125g	"	4)	longer cooking than
11	" Chicken & Sweet-corn	125g	"	4))	the just-add-boiling water type. Flavour
12	" Tomato	125g	"	4))	probably justified extra fuel & time.
13	Rice: Uncle Ben's Fast Cook	125g	Bags in box	6))	"two person" serving (1 bag) too little.
14	Potato: Pommes Maison				
	Sour Cream & Chives	150g	Packet	4)	More interesting (and
	Country Herbs	150g	"	4)	expensive) than the
	Savoury Onion	150g	"	4)	usual Smash.
15	Surprise Peas	125g	Packet	24))	A large surplus of these at the end.
16	Tinned Fruit: Peaches	822g	Tin	2)	Only used at Base
	Pears	822g	"	2)	Camp. Popular.
	Fruit Cocktail	822g	"	2)	
17	Instant Custard: Ord	75g	Packet	12	
	Banana	75g	"	4	
18	Instant Semolina	75g	"	8	Popular.
19	Oatcakes	300g	Packet	12	
20	Oatmeal Biscuits	125g	"	6	
21	Muesli Crispbread	125g	"	6	
22	Wheat Crackers	125g	"	6	
23	Honey	1lb	Plastic bottles	6)	Easy to manage.
24	Marmalade	1lb		6)	
25	Jam (ass. flavours)	1lb	Plastic box	4))	Would have been better in tubes.
26	Tea Bags (80's)	250g	Packet	2	
27	Coffee Bags (40's)	227g	"	2))	Had gone stale by end of the trip.
28	Dried Milk	283g	Plastic bottles	8	
29	Demerara sugar lumps	500g	Packet	4	Far too many.
30	Chocolate Break	56g	Sachet	10	
31	Low calorie chocolate drinks	23g	"	10))	Less popular than 'real' cocoa.
32	Primula Cheese: Ham	150g	Tube	4)	Popular
	Chives	150g	Tube	4)	
	Original	150g	Tube	4)	

No	Item	Weight	Pack	Total	Comments
33	Longlife Mature Cheddar	150g	Box	4	Popular.
34	Spreadable Pate	160g	Tin	4	
35	Tuna	99g	"	8)	Messy: popular at
36	Sardines	120g		8)	Base camp. Made a
				)	change from cheese.
37	Choc Hazelnut Spread	270g	Tub	1	
38	Chocolate Sauce	250g	Tube	1	Messy!
39	Chocolate Bars	asstd	Bars	48)	'Fun' size more use
	Mars, Marathon,			)	than 'snack' or
	Milky Way, M&M.			)	'original' sizes.
40	Crunchy Bars:			)	Made welcome change
	Apple & Bran	33.3g	Packet	6)	to chocolate. Tended
	Spicy Ginger	33.3g	"	6)	to break up within
	Honey & Almond	33.3g	"	6)	pkt. 'Chewy' muesli
	Orange & Carob	33.3g	"	6)	bars would be better.
41	Nuts:			)	Tended to go slowly
	Honey roasted Peanut	100g	Packet	8)	(unless were sweet in
	Yogurt Nut & Raisin	100g	"	8)	flavour) but worth
	Peanut, Raisin, Choc	100g	"	8)	having as a source of
	Peanuts & Raisins	200g	"	8)	protein.
	Tropical Fruit & Nut	100g	"	8)	
	Dry roast BBQ Peanut	100g	"	8)	
42	Apeel	100g	Packet	16)	Only appealing on hot
				)	days.
43	Muesli;			)	Over generous, would
	Sainsbury's de-luxe.	1Kg	Packet	2)	have been part of
	Jordan's Special.	1Kg	"	2)	starvation rations if
				)	plane had not turned
44	Porridge Oats.	1Kg	"	4)	up on time.
				)	extra fuel & time.
45	Rich fruit cake.	1.5Kg	Tin	1)	For celebration
46	Pate aux Truffes.	300g	"	1)	dinner on last night
				)	of trip.
47	'No Soak' Apricots	250g	Packet	12)	These all improved if
48	" " Prunes	250g	"	2)	they were soaked in
49	" " Figs	250g	"	1)	boiling water for at
				)	least 1/2 hour.
50	Instant egg mix	1Kg	Packet	2)	Not used. Kept for
				)	non arrival of plane.
51	Sweet biscuits (asstd)	300g	Packet	6	
52	Maple syrup	200g	Bottle	1	
53	Small plastic bags	200g	Roll	1	
54	Medium plastic bags	200g	"	1	
55	Bin liner bags	200g	"	1	
56	Washing up liquid	200g	Bottle	1	
57	Salt	250g	Box	1	
58	Pepper	50g	"	1	
59	Croutons	100g	Packet	24	
60	Black Magic Choc's	340g	Box	1	Suffered from melt/ freeze/melt syndrome.

MEDICAL

Margaret Graham

NOTES ON MEDICAL KITS

DRESSINGS. I expected a few problems requiring these. Mainly blisters and the usual cuts, grazes etc. For any blisters that did develop we had alcohol wipes and disposable needles. Bactigras (wax impregnated gauze) was supplied for the larger grazes and burns.

STERISTRIPS. Supplied for use where a stitch needed. Not to be used on fingers as they may then act as a tourniquet.

FRACTURE STRAPS. Webbing straps approx 1m long. These are simply used to immobilise a limb by strapping it to the body (arm) or if a leg to the other leg. They have an adjustable velcro fastening. Inflatable splints are not recommended in the hands of inexperienced people.

TRIANGULAR BANDAGES. Very old fashioned, but useful all the same. Ours were sterilised so could have been used as a dressing if necessary.

LYOFOAM. Sterile foam, non adhesive dressing. Useful for feet.

TUBIFAST. Tubular bandage to hold dressings in place.

SAVLON. Concentrate supplied. Dilute 1:100 when needed.

DRUGS

PAINKILLERS

TEMGESIC (Bupremorphine). This was for 'severe pain'. The next best drug to Morphine which is restricted and so difficult to obtain. This would be used on a patient with a broken leg. Drug must be dissolved under the tongue, USELESS IF SWALLOWED. Recommended dose is two per day. Top up with DF118 if necessary.

DF118 (Dihydrocodeine). For moderate to severe pain. One tablet every 4 to 6 hours after food.

PARACETAMOL. Dose is up to 8 a day.

BENORAL. For muscular pain. Dose is up to 6 a day.

RELIFEX (Nabumetone). A non-steroidal, anti-inflammatory analgesic for strains and sprains. The tablets should be swallowed whole, without chewing. Dose is 2 at bedtime, if severe an additional 1 or 2 in the morning.

ANTIBIOTICS

Neither of these should be taken by people with a known sensitivity to penicillin. It is important to note that if a course of antibiotics is started it must be continued for a full five days, even if the symptoms disappear after the first day. This is to avoid any resistance to the drug developing.

DISTACLOR (Cefaclor). Recommended for general use, especially infected wounds. Course is 1 tablet three times a day. May be doubled in cases of severe infection. As with any drugs there can be some side effects. Although uncommon, diarrhoea, indigestion, nausea and vomiting can occur.

AMOXIL (Amoxycillian Trihydrate). Another penicillin type antibiotic. Recommended for chest and urinary tract infections. Dose is two capsules a day.

MOSQUITO BITES.
Were a problem at base camp. Prevention is better than cure, so everybody dressed up in full waterproof gear and used lots of REPEL 100 etc.

PHENERGAN. Dose of 1 or 2 tablets. Can be repeated 3 times daily.

ANTISAN. Cream for the bites.

DIARRHOEA
This is most unlikely to be a problem when visiting the Arctic. The modern medical practice is not to give antibiotics or even to try to stop the diarrhoea. The advice is to treat the dehydration that will occur.

DIORALITE (Salt/Sugar solution). Dissolve each packet in c 200ml of water.

IMODIUM. Stops diarrhoea. Only to be used when travelling.

CONTENTS OF MEDICAL KITS.

DRESSINGS			DRUGS		
BASE	ADV BASE		BASE	ADV BASE	
1 pkt	1 pkt	Sterile gauze	50	25	Paracetamol
1 pkt		Sterile cotton wool	100	25	DF118
2 pkts	1 pkt	Bactigras	50	10	Temgesic
5 pkts	2 pkts	Melolin/Release	100		Amoxil
5	2	Alcohol wipes	5 (days)	5	Distaclor
1 roll	part	Elastoplast strip	12	6	Benoral
part	part	Elastoplast 1" wide	20	4	Relifex
1 roll		Elastoplast 2" wide	20		Lomatil
1 pkt	10	Elastoplast dressings	3		Stemital
3	3	Steristrips	20		Phenergan tablets
1	1	Lyofoam			
1		Tubifast	1 tube		Antisan cream
2	1	Crepe bandage			
1	1	Kling bandage	5		Dioralite
2	1	Tubigrip	5	1	Polytrim eye drops
2	1	Triangular bandage			
2	1	Fracture straps	25ml	5ml	Savlon
3	1	Sterile scalpel blades			
10	1	Sterile needles			
1	1	Sterile scissors			
5	2	Safety pins			
1 roll	part	Micropore tape			
2	2	Filter paper			

PERSONAL FIRST AID KITS

Everybody was expected to carry their own personal first aid kit to cater for their day to day needs. They would then top up these kits from the larger communal kits at either Base Camp or Advanced Base Camp. As a guide, because people do have their own preferences and prejudices, I have listed below the contents of my own kit.

DRESSINGS

Alcohol wipes	Sterile gauze swabs
Melolin dressings	Bactigras dressings
Elastoplast strip dressing	Elastoplasts
Elastoplast without dressing	Steristrip
Crepe bandage plus safety pin	Scalpel blades
Sterile needles	Tubigrip

DRUGS

6 Temgesic	10 DF118
6 Benoral	3 Distaclor
1 Bocosan	1 Eye drops
Nivea Cream	

Also;

Spare camera batteries	Pen
Boot lace	Needle/cotton/wool

I am pleased to be able to report that there were no serious accidents.

We did suffer one minor accident. I broke one of my front teeth on a frozen Mars bar. As this happened near the top of a virgin summit we thereafter referred to the peak as the "Mars Tooth".

I would like to thank the following two doctors for their help and advice to this expedition:

Dr. Mike Townend
Obtained Temgesic from Rickett & Coleman.
Polytrim eye drops from The Wellcome Foundation.

Dr. Frank Russell
Obtained Amoxil from Bencard/Beechams.
Distaclor from Dista.

EQUIPMENT

Belinda Swift

CAMPING GEAR - INDIVIDUAL

- Expedition Sac
- Sleeping Bag (3/4 season)
- Sleeping Bag Liner
- Water Bottle
- Washing up soap & scrubber
- Bivi Bag
- Day Sac
- Karrimat
- Mug
- Spoon
- Pocket Knife
- Bowl

CAMPING GEAR - COMMUNAL

TENTS

- 1 Family type frame tent for base camp
- 1 Super Nova)
- 1 Trisar) Wild Country
- 2 Quasar)
- 2 Gemini)
- 3mm closed cell foam underlay for each tent

STOVES

- 6 Epigas Alpine Stoves
- 1 1pt Primus
- 1 1/2pt Primus
- 1 MSR

FUEL

- 6x2 litre containers Jet A1
- 54x250g Butane/Propane Epigas

BILLIES

- 2 5pt
- 4 3pt
- 5 2pt

- Spare Sleeping bag
- Spare Goretex Jacket

- Numerous matches & lighters
- Meta Fuel
- Filter funnel
- Washing up bowl
- Super glue
- Ball of twine

CLIMBING GEAR

INDIVIDUAL (x8)

- Full Harness & Karabiner
- Ice Axe
- Crampons & spares
- Prussiks
- Ice Screw & Karabiner
- Sling & Karabiner

COMMUNAL

- 9mm Rope (45m) x3
- Dead Man x3
- Ice Hammer x3
- Shovel x1
- Ski-sticks 1 pair (telescopic)
- Petzl clamp x1
- Ice screw & Karabiner (extra)
- Chocks small selection
- Flags on 150cm or 180cm bamboo poles x20 (flag size 30cmx8cm orange)
- Altimeter x3
- Binoculars x6
- Thermometer max/min x1
- Spring balance (25kg) x1

COMMENTS

SLEEPING BAGS. 3/4 season adequate. Lowest recorded temp -7 deg C.

TENTS. Frame tent was for stores or for the group to gather in prolonged bad weather. Essential for organisation and morale.

Super Nova was used at Advanced Base Camp as a two man tent, but also served as a meeting place on wet evenings. Excellent.

Quasar has the advantage of an extra entrance over the Trisar. Both good tents.

Geminis leaked! Not through the single skin Goretex, but through the ground sheet.

This gave enough tentage to allow for some people at times to have a tent to themselves. Not only did this give us some breathing space but also covered us in case we lost a tent at some time.

STOVES. Epigas Alpine stoves were chosen for their stability and the ability to change cylinders before they have run out. These stoves proved excellent for ease of use. When the cylinder is running low in cold temperatures it needs constant shaking and warming with the hands.

Primus stoves were very useful at base & advanced base camp. Fuel was cheap, but we were using Jet A1 aviation fuel, which these stoves used frugally. Good for cooking communal meals and brews.

The MSR stove was very temperamental. Did not like the Jet A1 we were using instead of paraffin.

FUEL. Epigas. we used 35 cylinders of butane/propane mix in the 250g size. This was much less than we expected. On the snow plateau where we were melting snow for water we used 1 cylinder per 2 man party per 24 hours.

Paraffin (steinollia) was unavailable from the local petrol station as it had been in 1986. Flugfelag Nordurlands supplied us with 12 litres of Jet A1 aviation fuel. We used 9.5 litres.

SHOVEL. Essential on snow plateau for levelling the tent pitches and for cutting out blocks of snow.

SKI-STICKS. Essential for probing crevasses.

FLAGS. Ours were not large enough to be visible at a distance. Suggest at least 30cm square and as bright as possible. The nylon we used for ours faded very quickly.

INDIVIDUAL KIT.
JACKETS. All members had Goretex jackets and these were well used. Six members also took lightweight windproof jackets (Rohan Pampas) and found them useful.

BOOTS. Ideally two pairs of boots needed. I took Scarpa Doms for low down and Dolomite plastic double boots for glacier and snow work. My feet were entirely comfortable and warm at all times. Otherwise a 3/4 shank leather boot with yeti gaiters was the alternative. One member suffered from cold feet when his relatively lightweight leather boots became sodden.

CRAMPONS. Three pairs of Salewa Everest, two in use with 3/4 shank leather boots and one with Dolomite plastics, shed between them six screws despite regular checking and tightening. The problem is the lack of an effective locking device such as a locknut. The terrain where this happened was dry glacier with ice ridges and mainly when we were load carrying.

One pair of Grivels used with Scarpa Comici (1989 model with extended welt for clip-on crampons) also collapsed because lateral restraint of the heel by the clamp down clip is inadequate.

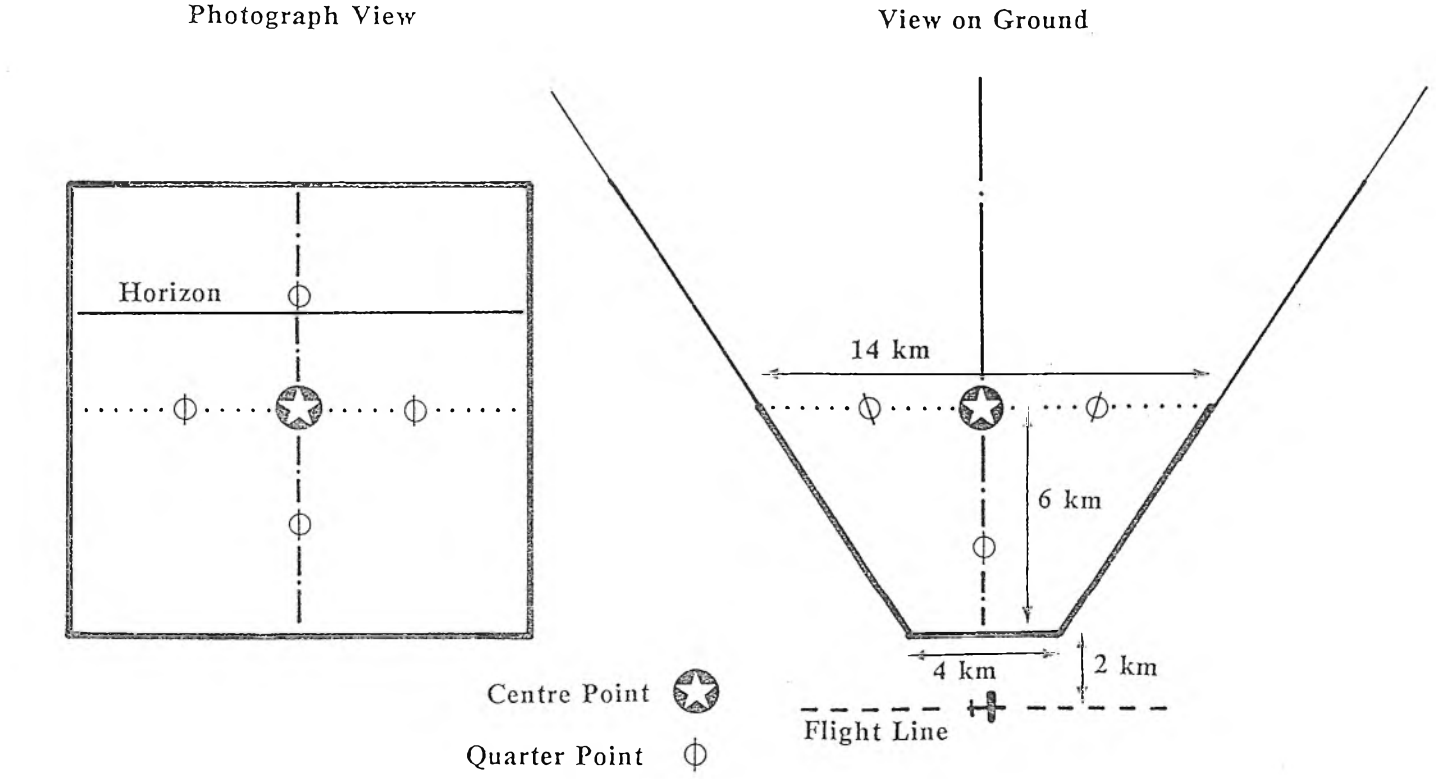
AERIAL PHOTOGRAPHS

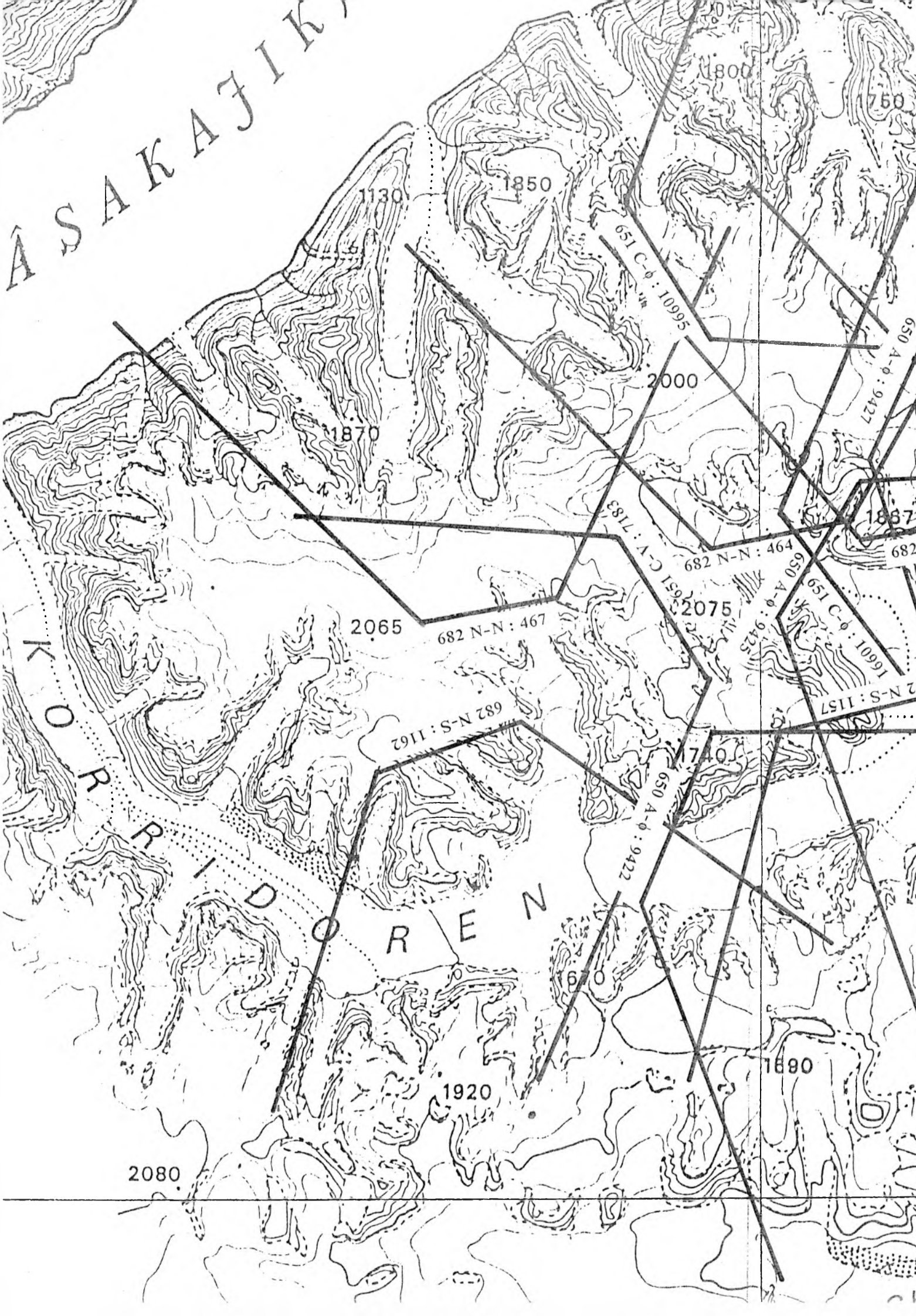
John Shrewsbury.

Nine aerial photographs were bought from the Danish mapping agency to supplement the coverage bought for the 1986 expedition. The agency provides plans showing the flight lines from which photos have been taken, and views can be specified by sketching on a map. Where photos on the same flight line are already held, it is possible to extrapolate the serial numbers to specify a particular frame. There is an element of pot luck in the precise coverage, particularly by the most detailed foreground area of obliques and where the mountains rear up to half the flying height.

We prepared each photo in advance by plotting the coverage onto a map, which was then pasted onto the back. This was a considerable help in orienting and interpreting the photo. Centre and quarter points appear on photos as standard and we plotted these onto the map.

Most of the cover was by oblique photos. These were contact prints from frames 230mm square taken with a 152mm focal length lens (equivalent to 24mm in a 35mm format). The flying height was around 4000m, with the camera axis at right angles to the flight line and 20 degrees below horizontal, taking one frame every 2km. The exact coverage from this perspective varies with the height of the ground, but typical coverage is shown below. The bottom edge of the photo is some 2km horizontally from the flightline, and covers 4km. The centre of the photo is a further 6km horizontally from the flightline and covers 14km from side to side. Foreground shown in the bottom half of the frame is useful, with the bottom quarter best for real detail. General topography is distinguishable out to 20km, but all but the mountain tops tend to be hidden. The detail is good, and is capable of enlargement which can be had at a price. A small magnifying glass was a cheaper and handier alternative.

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750
1850
1130
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2075
2065
682 N-N : 467
650 A-φ : 9425
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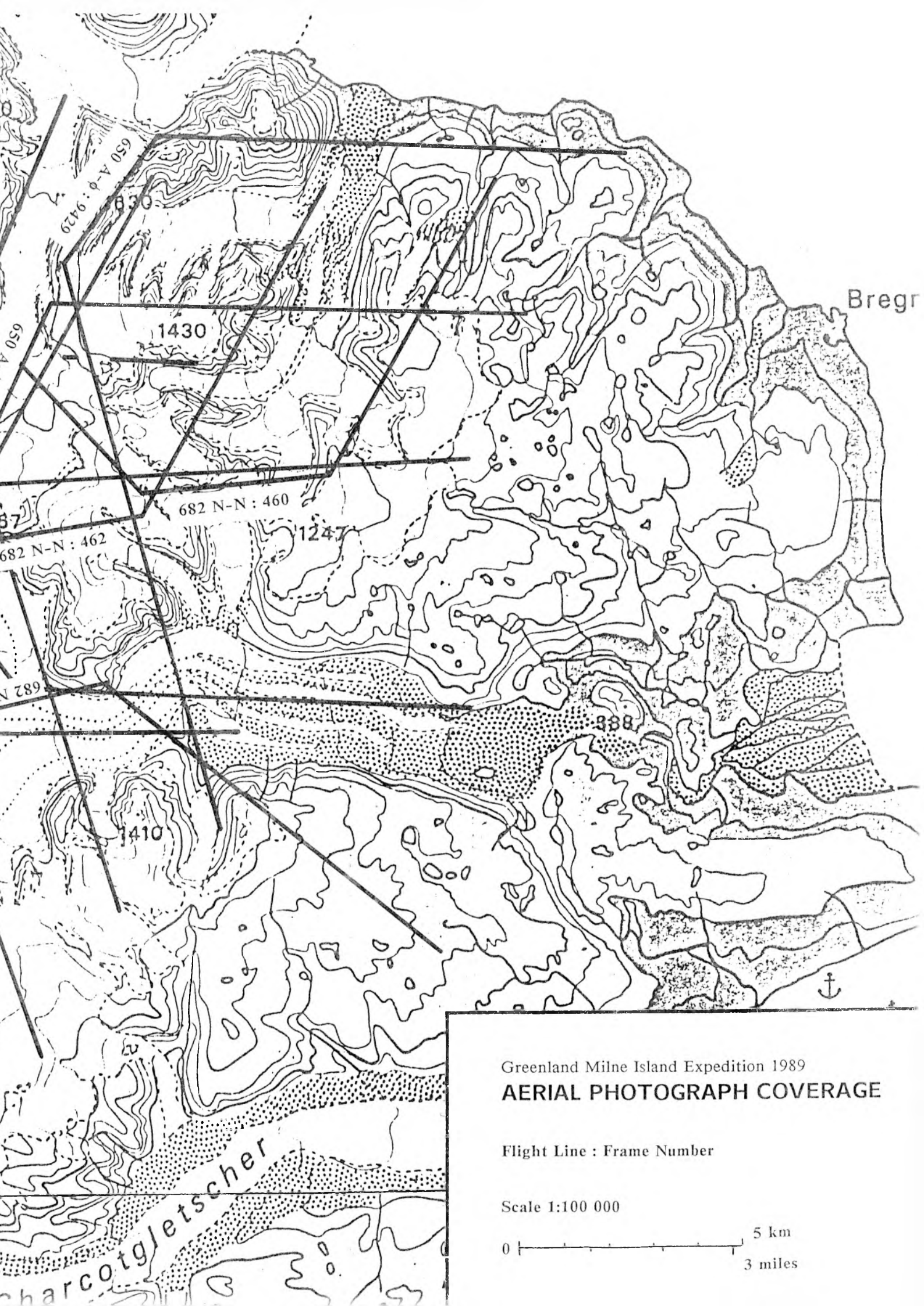
KORRIDOREN
1880
1920
2080


650 A-ϕ : 9429
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Bregr
Greenland Milne Island Expedition 1989
AERIAL PHOTOGRAPH COVERAGE
Flight Line : Frame Number
Scale 1:100 000
0
5 km
3 miles

The photos match up well with the Danish 1:250,000 maps (which were probably produced from them), and provide considerable amplification. They show the possibilities from angles at which it is not possible to approach. Although the cover was flown in August 1950, ageing is no great problem - there are far more similarities than differences because they show up icefalls and crevassed areas which remain relatively constant, rather than individual crevasses that change. Variation in fresh snow cover is the most significant difference.

Three vertical photos were bought as an experiment. They covered an area 11.5km square at a scale of 1:50 000. They were found to be useful, mostly on the flatter ground of the main glacier, but harder to interpret than obliques. It is a mistake to buy successive frames, as their 60% overlap for stereo photogrammetry is of no practical value in the field.

The prints were encapsulated in transparent plastic for protection, and carried in a fitted proofed nylon bag. They have withstood the rigours of expeditions well. A hardboard map board was kept with them as a stiffener when weight was not critical. Weight of each encapsulated print was 45g (2oz).

The charges for prints are made up from an individual charge per print and an administrative charge for each flight line from which they were taken. The charge for our nine prints was £46.54, and encapsulation cost £1.40 per print.

A satellite picture was obtained from Nigel Press Associates in 1986 at a reasonable price. At 1:250 000 scale it made an interesting comparison with the map, and gave a good strategic view as an introduction to the Scoresbysund area. However it showed too little detail for planning and was too big to hang on a tent wall, so it was left behind. The services of the National Remote Sensing Centre (Royal Aerospace Establishment, Farnborough) are extensive, complicated, expensive and unused by us. Satellites' orbits are less discriminating than aerial surveyors in choosing the best time to photograph, and the detail of satellite pictures can be limited by poor sun angles, fresh snow or cloud cover.

Slides taken on the 1986 expedition were enlarged, but the prints were not very useful. In particular, the selective enlargement of the icefall seemed to bear little relation to the icefall in 1989 and offered no improvement over the Mk1 eyeball for finding a route. The difference was probably due more to a partial cover of snow in 1986 that was absent in 1989, than to icefall movement in between.

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Fotogrammetrisk Sektion.
Kort-og Matrikelstyrelsen,
Rigsdagsgarden 7,
DK-1218 Kobenhavn K,
Denmark.
Tel 0732 865023
Tel 01 92 33 30 Fax 0732 866521
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PHOTOGRAPHY

Phil Nixon ARPS
Malcolm Sales ARPS

Arctic light is clear and free from haze. This can make it difficult for the first time visitor to appreciate scale. The light is also very contrasty, something which you may not realise until you look at your pictures after returning home. Although in the land of 24hr daylight towards the end of our expedition the sun briefly dipped below the horizon. This period around sunset/sunrise gave some very interesting lighting conditions such as pink light (alpenglow) on the icebergs and the underside of clouds. As the sun goes around the horizon it is possible to get pictures of views from the same place with the light coming from the opposite direction. If you have the time the light will always move to where you want it to be coming from. Patience and planning will lead to an excellent set of pictures.

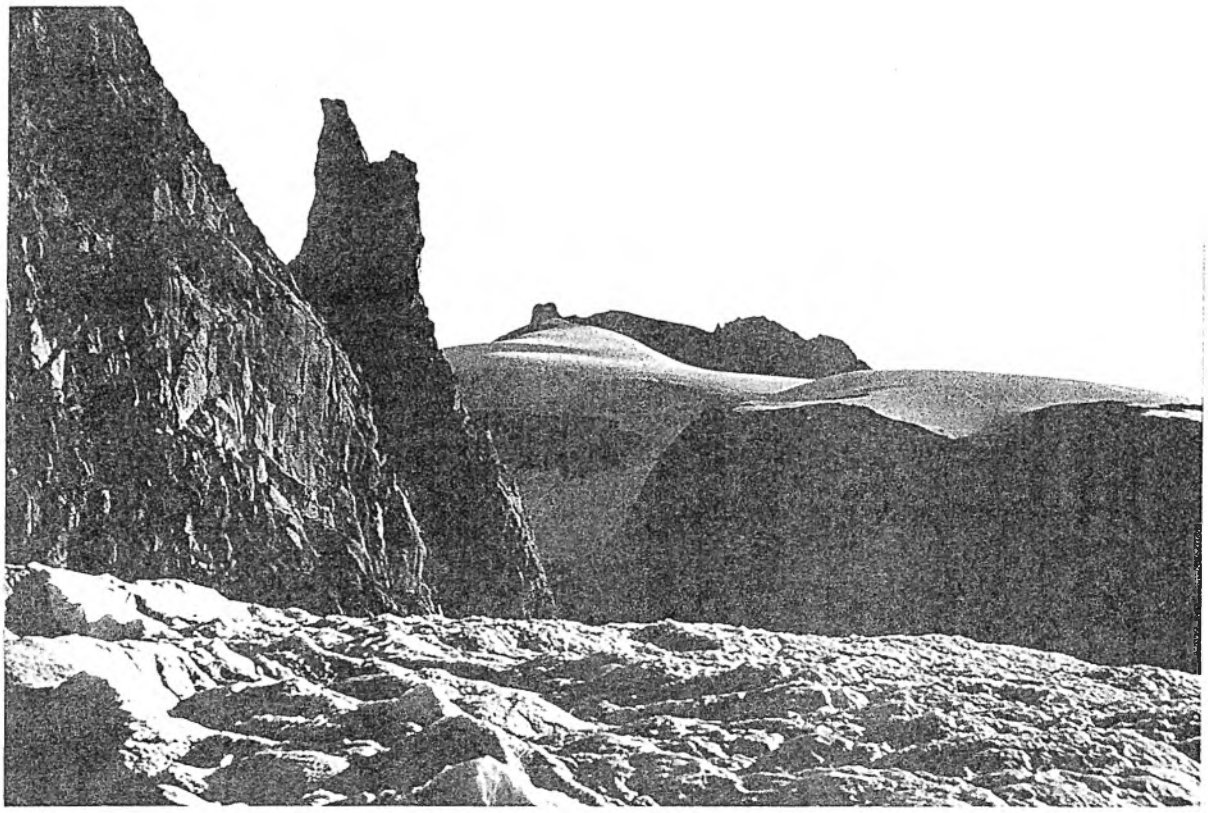
As with all things to do with an expedition to the Arctic it is essential to take all that you might need because once out there the opportunity to purchase anything that you have forgotten will not arise. Therefore it is important to think long and hard about the type of photographer you are and the pictures you wish to take. Make a list of those pictures that you feel are essential for you to bring back, such as; portraits of expedition members, life in camp, pictures of supplier's equipment in use, certain views for future planning and the expedition report, etc. In this way you will not get home and find that a flavour of the expedition is missing from your pictures.

Take plenty of film. Even the most restrained photographer should allow about 1x36 exposure roll of film per day. Keen photographers will need to increase this quantity by 50%. We used Kodachrome 64 ASA slide film. Without a tripod Kodachrome 25 ASA is too slow and Kodachrome 200 ASA will be too fast on the bright days. If you have taken a spare camera with you then the Kodachrome 200 would be a useful film to have on dull days and for wildlife photography, where the extra speed will come in handy.

Equipment should be considered very carefully. It is important that people are familiar with their camera. Do not buy a brand new camera and expect to come back with a cracking set of pictures. Six members of our party used SLR (Single Lens Reflex) cameras. The other two took out compact cameras of which one was a modern auto focus model with a zoom 35-70mm lens. The SLR systems used were OLYMPUS (2 members) and PENTAX (4 members). Two of us also had spare camera bodies whilst the others took along spare compact cameras (OLYMPUS XA being the most popular) to act as a back up should any problems arise. Although we were many hundred miles north of the Arctic Circle, in the summer it is not necessary to take any special precautions regarding cold protection, except to say batteries must be fresh and spares are essential. Some electronic cameras have a mechanical manual speed (usually synchronised for flash). If batteries have become weak due to the cold put the camera in manual mode using the mechanical speed and save the battery power for the TTL exposure meter. This "trick" along with keeping the camera inside your cagoule will allow you to put off the evil moment of changing the batteries with numb fingers until it's convenient for you to do so.

Although cold was not a problem we did experience trouble with dust whilst camping on moraine or at base camp. It is important that cameras and lenses are kept clean and dust free using either a camel hair blower brush or a lens tissue, or both. Most members of the party kept their equipment in protective bags (Camera Care Systems) on a waist belt, in this way one could have the camera readily available whilst leaving the hands free for using the ice axe, or rope management, or just keeping balance.

For most members their principal lens was a 35-70mm zoom. These mini zooms are now very good and allow a great deal of scope without the need to be constantly changing lenses, which increases the risk of allowing dust and grit to enter the camera body. The more photographically minded will want to have a wide angle lens (either 28mm or 24mm) and a telephoto zoom, the most popular being 70-210mm, however a 75-150mm will be lighter to carry. Beyond this basic kit you may wish to take a Macro lens and/or extension tubes for the flowers and insects or a 500mm mirror lens for the wild life. In any case a good tripod at base camp will be most useful whilst a small lightweight table top type is handy to have in the rucksack for dull days and those shots requiring a large depth of field. Each lens should as a matter of course have a UV filter fitted. A polarising filter is almost essential, be sure to check which type of polariser (linear or circular) your camera metering system requires, and a graduated grey (split neutral density) is useful when photographing views with a greater than 3 stop difference within them.



Pt 1247m from Korridoren above Oasis camp.

EXPEDITION DIARY

Belinda Swift.

Saturday 29th July.
The party met in the evening at Akureyri airport. Coming from the hot British summer, it felt cold. We inspected our shipped loads residing in the hangar. All was intact.

Akureyri airport is small and informal and so we were able to camp close to the terminal, using its facilities until sudden closure at 9pm.

Sunday 30th July.
We loaded a mountain of gear into the Twin Otter, some sacks sitting on seats inside, filled our fuel containers with aviation fuel, as we could not purchase any paraffin, and I made haste to try and light my MSR stove. It worked but I noticed an unwelcome amount of carbon deposit.

Take off with two pilots was at 10am, and we rose up through cloud to fly at a height of 3000m at about 200mph. An hour later, through a break in the clouds, we could see pieces of ice in the sea. From then on these increased in density and size until we could make out ice-bergs. All most exciting.

The plane was "cosy" in size but I was becoming cold and had to don my Damart pyjamas and a hat. The pilot then remembered to put the heating on, but this also brought fumes into the plane. The pressure had to be released in our fuel containers as the cabin was unpressurised, and then it was time for Pamela to hand out a "cheesy piece" (blame Margaret for Scottish colloquialism), made with our last bread for three weeks.

We could now concentrate upon the dramatic scenery below us as we flew up the Greenland coast south of Milne Land. Then suddenly the map in our minds became a reality as we identified the deep cut valley of Vinkeldal. John, whose head had been lurking in the cockpit doorway, asked if the pilots would fly over the Korridoren glacier so that we could see the area in which our expedition would be operating. We flew to the watershed and turned south east. One wanted to see the ice-fall approaches to the snow cap out of both sides of the plane simultaneously. A Polaroid camera might be useful another time, as this all happened so quickly. The tiny shadow of the plane fell on the glacier and within moments we were over the landing area - a sandy delta. The markers, which were placed there three years previously, and the wheel tracks from last year's landing by the Pinnacle Club were clearly visible. We landed towards the sea with a cheer from us and a smile from the pilots who had not landed here before. It was 12.30pm.

As we unloaded, the pilots measured the runway and repaired some of the marker flags to show this area, 330m x 27m, before taking off. We hoped to see them in twenty days time. Those that had been to Milne Land before pronounced themselves glad to be there again and this heightened my anticipation of what was to come.

It took a few hours to establish base camp, some 15 minutes walk away with an easy but ice-cold river crossing. John set off immediately with a heavy load to dump at "Tear Drop" lake about 2 1/2 hours away. He was back by 6pm just as we were dishing up the evening meal. A discussion developed about how to get the loads where and by whom. A route had to be reconnoitred through an icefall leading to the snow cap and the party doing this would need to be lightly laden. John felt this should be done straight away. An advanced base camp site would also need to be chosen. By now the mosquitoes, as large as horse flies, were arriving, as Mike said, by bush telegraph, and this sent us to our tents.

Monday 31st July.

BASE CAMP TO THE KORRIDOREN

Malcolm, John and Margaret left with two days load as the reconnaissance party. They passed "Tear Drop" and made their way up the Korridoren glacier as far as the first two side glaciers coming in from the North, where they made a camp on the ice.

BASE CAMP TO GLACIER DUMP & RETURN

Pamela, Mike, Chris, Phil and myself sorted food and carried loads to dump at the tongue of the Korridoren. We were to became familiar with this walk but on this first trip we did not take the best route. The quickest way is to cross the river coming from "Tear Drop" low down (after passing the Glaucous Gull's nest), and follow the true right bank to the lake. After passing this lake one should descend directly to the flood plain of the glacier. We hoped to see Musk Ox sometime and used binoculars to scan the distance but we saw only their hoof marks and bits of fleece caught on the ground. Nothing was growing more than a few inches high and vegetation was sparse. The arctic willow trees grew, not vertically, but prostrate over the rocks, like a clasping hand. On the sandy flood plain arctic willow herb grew to its biggest and most beautiful.

After eight hours we were back at base camp to feed ourselves and, unfortunately, the mosquitoes. To avoid being bitten we wore over-trousers, a jacket and a gauze face mask.

During the night I got out of the tent, it was 2.30am and the sun's rays were catching the ice-bergs, giving them a pink glow. The atmosphere was quite magic causing me literally to take a sharp intake of breath.

Tuesday 1st August.

RECONNAISSANCE OF THE ICE FALL

After a cold night sleeping on the glacier John, Margaret and Malcolm got up at 5am and started up the side glacier leading to the ice fall. We took a circuitous route up the side glacier so as to give us a good view of the icefall through our binoculars. We had our second breakfast (or was it first lunch) spying out a route through the icefall, from a distance it seemed possible to pick a way through. Only one way to find out. We crossed the side glacier, roped up, and then put theory into practice. It worked! With a little weaving and dodging we found ourselves at the top of the icefall and looking onto a new glacier. We pushed on along this upper glacier for some way but by 12.30pm the snow was so soft we turned back down the icefall and back to our camp. On the way down John spotted a good camp site in the moraine at the junction of the Korridoren and our two side glaciers. This was to become our "Oasis" camp.

BASE CAMP TO OASIS

We departed base camp at 10am with loads of between 20 & 28 kg each. Carrying loads over the boulder terrain was tiring so Pamela suggested we should stop for a "snackette". Her use of the diminutive served to convince us we were pausing only for a short time and so salved our consciences.

Lest mist should descend, we left flags on the sandy flood plain to mark the way back to "Tear Drop". We were always conscious that navigation would be a problem in bad weather as the map scale was 4 miles to the inch and the magnetic variation, as indicated by the pilots' map, is between 28 & 32 degrees West. The distances on the Korridoren glacier seemed indeterminate so we set our sights on boulders on the horizon. We were scanning ahead for a sign of the others; a flag or even their tents. At last we spotted the M4 Design flag, the company that so generously donated film for this expedition. Flags need to be at least a foot square to be easily seen; ours were not big

enough. At 5.30pm we reached their camp site and were given a welcome brew by Margaret. We surveyed the icy wet spot somewhat unenthusiastically and then John remarked he thought there was a better spot off the glacier and up the moraine. Soon he was a small figure scrambling up steep, loose moraine and we were following. The descent over debris from the glacier to the side moraine was at the only possible place within sight. Beyond the first hump of moraine was an ideal spot with flat areas for tents, rocks for tables and a small stream feeding some vegetation, in fact a veritable oasis in an otherwise hostile environment. Thus it became "Oasis" camp.

Wednesday 2nd August.

OASIS TO TEAR DROP or GLACIER DUMP RETURN

A load carrying day. John & Malcolm to "Tear Drop" and return and the rest of us to 'Glacier Dump' and return It was necessary to move our schedule so that we could walk on the snow when the temperature was at its coldest. This was not easy since it meant going to bed at 4pm when the sun was shining brightly and the tents were hot inside. The next step was to get everyone onto the snow plateau with supplies for four days.

Thursday 3rd August.

OASIS TO SNOW PLATEAU

John acted as our alarm, the time was 1.30am. We left at 3am and climbed over the moraine behind the camp and onto the dry glacier, cramponing up its steep sides. At the foot of the icefall we roped up into two groups of four, and we were to be so tied everywhere we went for the next four days. The icefall was spectacular and straight forward provided one's crampons remained attached. Margaret's didn't. Pamela had crampon spares to hand and with the aid of my penknife screwdriver we effected a repair whilst perched on a shark's fin of ice. As the reconnaissance party had marked the route we made good time. Above this lay a glacier valley containing many crevasses both small and large. Near to the headwall we watched the other group cross a snow bridge beneath which was an horrendous icy cavern. It was easy to imagine, with only 10m of rope between us, perhaps the entire party disappearing in one go. We climbed the headwall and exited easily onto the snow cap. A dazzling view met our eyes, a large undulating plateau with Scoresby Sund to the east, mountains rising around the edges both near and far and to the north the dramatic rocky spires of Renland. It was 8.15am.

40 minutes further on we made our camp on the plateau between two crevasses marked by an indented curving line in the snow, only visible in certain lights. Deciding how to attach the tents to the snow preoccupied us, as there was absolutely no shelter should a wind blow. Snow blocks were easily cut and we put guylines round these, reinforced at the outer side by defunct food packets. Chris improved upon this by filling 'dead' custard packets with snow and burying these with the guyline wrapped round (memories of Glenmore Lodge courses and demonstrations of snow filled mitts for belays). From then on empty packets became marketable items. A half respectable loo area was made with snow blocks and a safe area within the crevasses cordoned off by marker flags and then we could enjoy our setting. The sun was out and the view incredibly beautiful. Imperceptibly mobile blocks of sculptured ice floated serenely in Scoresby Sund contrasting with the starkness of Renland. Our main attention though was drawn to 1867m, our primary objective. The route was fairly obvious although in changing light one could change ones mind as to the best line to take.

4pm bedtime but Pamela and I didn't sleep until the sun's rays left the tent at 9pm and even then I found it necessary to wear a sock over my eyes.

Friday 4th August.

ASCENT of 1867m

After muesli and tea we were off at 1.30am. A few minutes later my left leg hung in space. I crawled forward a few cautious feet as my companions kept a tight rope. It was overcast and the light was so poor that you could not tell downward from upward slopes. For the photographers, as Phil put it, it was f2.8 at a fortnight! The snow was soft and for heavier members it was hard work. We made a detour to avoid the bergschrund and by 4am we were all on the col between point 1867m and another peak of similar height to the north west. Malcolm's rope turned left and ascended the north ridge of 1867m reaching the summit at 6am. Phil remained on the col taking photographs and John's rope turned right to attempt the south eastern curving ridge of the other peak, later named "Minus 4 C". This route was a ridge of shattered basalt and as Mike remarked it was a case of "could you pass down a hand hold?". Caution prevailed and after two rope lengths the party returned to the col, where Phil had kept himself warm by building a cairn far more stable than the rocks we had been climbing.

The second party then ascended 1867m, a snow ridge of c 35deg with a small rocky prominence part way up. Flakes of falling snow threatened a change in the weather and from the summit grey clouds could be seen gathering over Renland. Bands of orange and pink light lit the eastern sky and south westwards we gazed down on the Korridoren glacier and hundreds of mountains beyond. What a vista. By 9am we were all back at camp ready for a second breakfast.

Saturday 5th August.

ASCENT of "MARS TOOTH" & "KODAK RIDGE"

The barometer was little changed and it was still overcast. We departed at 2am for a peak close by to the north east. Having deterred John from taking the south west ridge because of crevasses running DOWN the slope we needed to cross, we traversed below the peak and ascended the north west ridge. Both parties shared the view from the summit rocks at 3.30am. The height difference from camp was 180m which made this summit 1625m. The only mishap of this expedition had just occurred. On stopping for a calorie intake, Margaret had taken a bite of her frozen Mars bar and was now minus a front tooth. Hence the naming of this mountain, for our purposes, "Mars Tooth". Everyone assured her it was hardly noticeable, but nevertheless would she please remember not to smile for the photographs! We descended, taking care as there was a steep slope to our right, and then continued along a broad ridge that ran north west, then north, rising to a snow summit. A narrow ridge on the far side gave us fantastic views down onto the glacier which runs towards the Sund, north of Bregnepynt. The sky was clearing and we were held spellbound by the continual Kaleidoscopic change of colours over the Sund.

An iceberg had just turned over and we were mesmerised as it created slowly spreading rings in the water. Two snow buntings flew by, the first wildlife we had seen on the plateau. The moment was a snatch of timelessness, brought back to the 20th century by the sound of clicking cameras. Phil took a whole roll of film here - hence the name "Kodak Ridge". On return to camp two crows circled, decided not to dive bomb us and flew away.

Sunday 6th August.

ASCENT of MINUS 4

Both ropes were ready to leave at 1.30am for the mountain that was on a bearing of 275 magnetic from the camp. We made for the north east ridge. In the early morning one treads cautiously, fearing ice caverns beneath every footstep. The snow was still not frozen although the sky was clear and there was a very cold wind. The ridge provided a classic line and the summit was reached at 3.40am. On return the snow was crisper and the pace quicker.

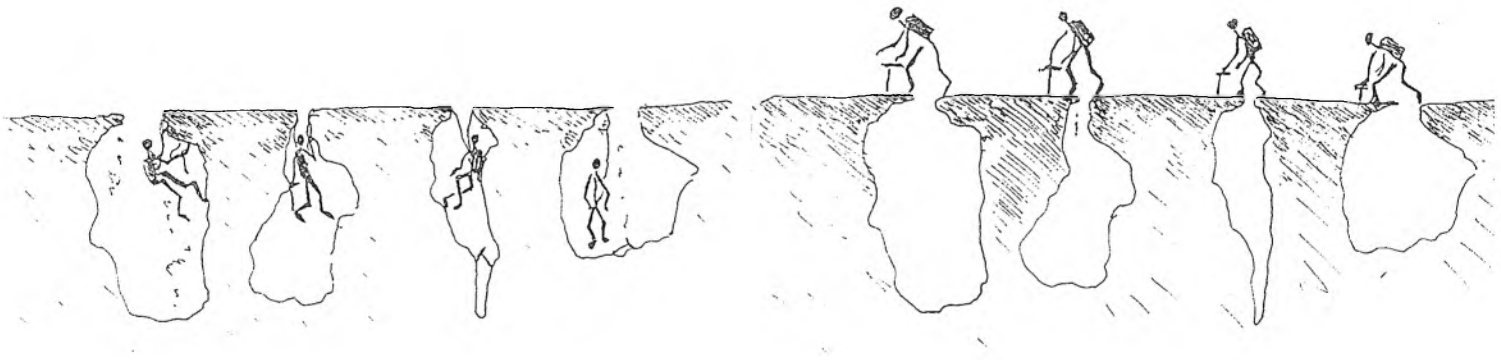
The remainder of the day was spent making brews, melting snow, (Malcolm & John having remembered to bring black plastic for the purpose) sleeping, cooking and sitting on karrimats discussing in the hot sun. Chris had drawn a chart which showed that the sun only dipped 1/2 deg below the horizon when we arrived, therefore sunset and sunrise were virtually simultaneous. I found this constant daylight made rising much easier than in the Alps, although over a period of time you could be really short of sleep without realising it.

By now some of us had the luxury of a seat in the snow with a trench dug for our feet and a table area between us. Not having to eat with a squashed up stomach when camping is high living indeed!

Monday 7th August.

SNOW PLATEAU to OASIS

Departure was at 3.30am under a clear sky, the temperature -7 deg C, but no wind. We were sorry to leave our high camp and the exceptional quality of light that provided such wonderful views. The light, now coming from a low angle, illuminated distant sea ice as we retraced our steps into the glacier valley. One snow bridge we had crossed on ascent had collapsed, revealing at least a six foot gap. Of such stuff are nightmares made. At one point, because of the frequency of the crevasses and the rope length between us, it meant we were all four poised to cross a different crevasse simultaneously . This cartoon image entered my mind:



The icefall was a more dramatic, but safer area through which to pass. After four days of white scenery, the orange/pink granite rocks of the moraine leading back to "Oasis" were most restful to one's eyes. We arrived at 7.30am. We needed more food from base camp and John left for this task at 10am. The rest of us enjoyed a leisurely and luxurious - it's all relative of course- time, a wash in water melted from the snows above, brews with dried milk, having primed, lit, pumped and guarded the primus, and a sun bathe in the hot sun - shade temperature not far above freezing.

Any other living thing we see is commented upon as otherwise we are alone in this corner of the arctic. From the tent I observed a yellow butterfly feeding off Saxifrage, and would you believe it, a fat blue bottle! We are aware of the fragility of the environment here as our footsteps around the campsite soon created dust bowls. The flora is quite varied but only grows with very shallow roots. Up here the Arctic Willow is much smaller than at sea level and clumps of grass with black-headed seeds grow only two inches high. The Blue Mountain Heath with its mauve lantern shaped head, and the purple Saxifrage nearby, I noticed have fleshy leaves for retaining moisture.

Phil & Mike got into "house-work" to-day organising the contents of their tent, a Super Nova. Pamela & I, who are sharing a Gemini (only 6'x3'6"), went to inspect the Super Nova, and renamed it "The Palace".

Tuesday 8th August.

FORAYS FROM OASIS

Malcolm departed at 2am for base camp with a list of 'goodies', (Pamela's too personal to mention), that we each hoped he would be able to carry back. Lesser mortals might have left the whisky off the list, but not Malcolm.

At 4am Chris woke Margaret, Phil & Pamela, but it had rained hard and the weather looked unpromising so they returned to their sleeping bags for a while. Eventually they left at 7am for an exploratory walk up the Korridoren glacier to look for possible camping sites further up. I went to the 'Palace' for breakfast and started writing the "Ballade of Milne Land". It was raining and misty, I spotted them on the glacier at 7.30am and thought they were returning. However they didn't arrive until 1.30pm, when we heard a whistle warning us to make a brew. They reported problems with glacial rivers and medial & lateral moraines, as there were many side glaciers.

Later, John returned with an enormous load and Malcolm likewise, shortly afterwards. Too much sweet tea too soon made Malcolm sick from his exertions but he recovered quickly after a short sleep. He reported being dive bombed by a Glaucous Gull that was nesting on a rock in the middle of the river above base camp.

That evening the group gathered in Mike's Palace where talk included technical comparisons of the binoculars we had with us. It was of great value to the expedition's spirit to have a tent large enough to accommodate us all. The plan was laid to depart at 4am the next day taking gear and six days food up the Korridoren.

Wednesday 9th August.

OASIS CAMP

4am - drizzle - decision delayed until 5am by which time it was worse so all systems into neutral. There was persistent rain for the next nine hours. Pamela & I were invited into the Palace for elevenses and lunch, and we were glad to stretch our legs as knees get a hammering in cramped conditions. Later Margaret & I played four letter Mastermind with limited success, as Margaret admits, spelling is not one of her strong points. A tot of enlivening Glenlivet ended our day except for throwing the water out that had collected in the corners of my tent.

Thursday 10th August.

OASIS CAMP

Rain and strong gusts of wind assailed us during the "wee small hours". This spell of rain lasted nineteen hours. Mike announced he was going for Margaret's bladder record of fifteen hours without leaving the tent. However John's voice from his Gemini admitted to being confined to his tent for nineteen hours so we thought he wasn't drinking enough. Time passed with Evelyn Waugh for Pamela and five letter Mastermind for me and Phil. A brief let-up in the weather, about twenty minutes of weak sun and a suggestion of blue behind the clouds, had us all out of the tents and cooking on the primus stoves. We finished the whisky so it must clear up.

Friday 11th August.

OASIS to KORRIDOREN CAMP

4.30am John was up trying to encourage the rest of us to move. There was overall grey sky and some light rain. At 8.15am we left carrying food for a maximum of four days. We kept to the left bank of the glacier to avoid the widest crevasses. One supra glacial stream we crossed at its broad, shallow point and another we crossed by means of a large boulder that acted as a bridge. The water below was flowing swiftly down an icy channel three to four feet deep. As we got higher up, the surface moraines ran out and the walking

became easier. At 1.45pm we reached the snowline having come about 12km and risen 450m. It was raining heavily and to continue into the worsening weather we would have to have roped up. Surprise, surprise, no ideal camping spot presented itself so we pitched the tents on the glacier close to a steep side glacier coming in from the north. A shattered cliff close by gave us stones to which we could attach our guylines. Heavy rain for the next sixteen hours ensured we were camping in lakes of water on ice. Chris was heard muttering "when John next has a good idea, remind me to stay in bed". My sleeping bag was wet at the foot and my thoughts were tending towards the gloomy when in answer to a solicitous enquiry from Malcolm, somewhere outside our Goretex horizon, Pamela said "yes thanks we're fine". What a marvellous companion I thought, and then I had an idea. If we put our underlay inside the tent the water would not collect underneath whilst we 'floated' on top. It worked!. A cup of blackcurrant tea from Jacksons of Piccadilly was a great pick-me-up (perhaps the firm should sell Dresden plastic cups to complete the experience?). One needs refinements in such circumstances. Fed up with reading, I began trying to push the extruding feathers of my sleeping bag back inside the material and then we got a fit of the giggles. What a way to spend a day.

Saturday 12th August.

CAMPSITE (at 950m) to KORRIDOREN WATERSHED

The rain ceased at 6am and we left at 8.30am under 8/10's cloud cover and carrying daysacs. The puddles in the glacier contained fine mud and as Chris pointed out one could almost navigate by them as the sun had melted them into kidney shapes with an undercut northern edge. Approaching the watershed the scenery was magnificent. There were glaciers, rock faces and snow peaks in every direction and by now the sun was hot and the sky a brilliant blue or to use one of Margaret's throw away lines, "just normal Scottish weather!". The rope ahead of us stopped, unroped, and were now to be seen leaping about and posturing behind cameras and no wonder, it was a fantastic and unexpected sight we now came across. A glacial lake had drained, leaving pieces of ice fifteen feet high lying at angles on the collapsed slopes. In its blue and icy basin wandered a small figure, John, who estimated the rim to basin depth at 15/20m. We were in an open air sculpture park, the many curious shapes of the ice blocks suggesting names to the imagination.

Both groups continued a little further beyond the watershed but distances were deceptive, the further group reaching a point where the glacier turns north west, narrows and steepens. For another visit it would be exciting to reach the other end.

We were back at camp by 3.30pm, the round trip being 13 kilometres.

We discussed the snow conditions with regard to climbing the following day, and viewed a collapsed cornice on the skyline of the corrie to the north through binoculars.

Sunday 13th August.

ASCENT of 1740m

A beautiful day. The party divided;- John, Margaret and Chris to climb. Malcolm, Pamela, Mike, Phil & Myself to return to the coast for further exploration.

The climbing party departed at 4.20am and ascended the dry glacier immediately to the North of our camp. Within an hour they had disappeared into the corrie. Their account follows:-

After the dry glacier we roped up for the upper glacier, which was heavily crevassed. Above the bergschrund we headed up a snow gully at the back of the

corrie, cramponing close to the rocks on the left of avalanche debris. Above the narrows of the gully we climbed up the snowfield to the left, reaching a summit at 1810m at 7.30am. A Kroner coin was left on the rocks. From the summit tremendous views opened up to the North and with more time we could have followed the ridges for miles. However time was short, because we wanted to be off the snow before it was loosened by the sun, and so we followed the ridge which we had come up first east then south east, to reach point 1740m. A rapid descent was made directly into the same corrie by which they had ascended. There were fewer crevasses on the eastern side. Camp was re-gained at 9.45am.

DESCENT to TEAR DROP

I decided at the last minute to join the trekking party. Having been trying to overcome amoebic dysentery for the previous nine months I thought it wise not to test my strength further, and I had also promised myself a collection of Musk Ox wool and if possible a sighting of these creatures . The other three had done that in 1986.

We packed up and left at 5.30am. The rain had washed much of the snow away and left smooth humps of ice to negotiate. I was just in front of Malcolm when he slipped and landed sideways on a slope of ice about 2m from a large crevasse. I jabbed my ice axe into the ice close by him and he got to his feet safely, suffering a badly bruised thigh and a cut hand. Heavy loads make walking on this surface much more dangerous. At a lake on the corner of the glacier south of point 1867m we paused for photographs, and plodded on to reach 'Oasis' at 10am.

After further packing we left fully laden at 1.30pm. We expected an easy walk but the surface was worse than in the morning and we were forced to make deviations to get round many large crevasses. Mini-snackettes were much in demand, Mike & Phil in particular having a never-ending supply. During the afternoon Pamela also fell on ice, cutting her hand and grazing her arm. We were thankful to reach the 'Glacier Dump' at 4.15pm. The scene below was much altered since the rain. Water churned out from under the glacier with frightening force and sand banks had been washed away. Fortunately we could still find a way off the glacier to the left and onto higher moraine and sand banks.

After the harsh ice, this area of sand, arctic willow and small pebble-lined pools was a treat. I was slowing down by this time but Mike got 'sent' by his Walkman and steamed ahead actually humming despite having relieved me of my double boots and Pamela of the rope she had gallantly carried. A photo-stop was made for Ptarmigan that seemed not in the least frightened of us. Meanwhile Pamela and I had a brief but rejuvenating dip in a pool which probably curtailed the photography as I can't enter cold water silently.

Phil & Mike had the brew ready by the time the three of us reached 'Tear Drop'.

Monday 14th August.

ASCENT of 2080m by John, Margaret & Chris

We departed at 1.20am heading west up the Korridoren, the snow conditions having improved from two days previously. After 2.5km (1 1/2hrs) we swung right into a side glacier, moving up on bare ice through crevasses at the entrance, into the floor of the valley which gave easy going on the south side. We headed for the back of the corrie, and up steep snow and avalanche debris. A large bergschrund was crossed via ice blocks. The back wall was hard nevé steepening continuously. John used his hammer as a second tool and placed one runner before reaching the col at c 1800m. This turned out to be a sharp snow ridge plummeting on either side to glaciers. We turned north. It was fairly level for a few hundred metres, corniced to the east and a steep snow slope to

the west. The surface was well frozen crust on damp unconsolidated snow and large areas tended to settle underfoot. The ridge formed two broad steps leading to a summit on a plateau at 2080m. The time was 6.10am. Descent, via the same route, was quick as we were even less happy with the snow once the sun was on it. We arrived at camp at 10.10am.

TEAR DROP to BASE (Mal, Mike, Phil, B & P)

A dream of a morning. A brood of ducks that had been making cosy noises during the night were swimming at the far end of the lake. Malcolm set the scene by plunging into the water - uttering not a sound! Pamela and I followed, Phil was to be seen cautiously washing his feet and I think Mike was trying to ignore all this activity. I found yet another caribou antler, buried deep in moss. Many wheatears played on the rocks.

Returned to base to find a box had fallen over, in the food tent, and had knocked the primus which had in turn leaked paraffin into a meal of rice. We re-organised and re-labeleed food boxes.

Tuesday 15th August.

ASCENT of 1490m & DESCENT to OASIS (J, M & C)

We packed up camp and left at 1.40am, heading diagonally down and across the Korridoren. At one stream two belays were taken before it was jumped. We left two sacks at the base of the climb and took one daysac containing gear and food, which Margaret carried. This base was the eastern most of three glacier noses descending from a half height plateau. We ascended on dry ice to this plateau, small bergschrunds appearing towards the top. We then traversed westwards on easy ground up to a col between a rock pinnacle and the main mountain. A scramble on loose rock led us to the summit of the pinnacle. From the col we ascended the main mountain on a steep ice slope followed by snow ridges to a fine snow summit -1490m. There were good views of sunrise over Pt1247m on the ascent. Walking east we continued pleasantly along the summit ridge, the excellent views remaining. From a subsidiary top it was possible to drop directly to our original starting point. The snow conditions were good, the cloud over Scoresby Sund keeping the sun off and maintaining the consolidation of three fine days.

We picked up our sacks, re-crossed the river at a lower point, where it was bridged by ice, and arrived at 'Oasis' by noon.

BASE to BREGNEPYNT (Mal, Mike, Phil, B & P)

It was fine weather and a beautiful clear light enriched our vision. The mosquitoes were less voracious and the Autan worked so we set off in good spirits. We took two day's food, plus enough for a siege in the mens case, and started walking round the coast to the north. There was much scanning by binoculars of the ground ahead and at times we walked as though every tread might break a spell, so magic was the atmosphere. There was evidence of Musk Ox, droppings, hoof marks, wool caught on the ground, but where were they?

To-day we had no need of snackettes, but could enjoy a proper picnic stop in which we gazed transfixed by the fleet of ice-bergs in the sund. The peaceful scene was only disturbed by a sound like distant gun-fire as pieces of ice broke away. Is there an Admiral out there after all? It seemed too wonderful to be chance.

In the afternoon we were treated to an amazing show when an enormous ice-berg began to avalanche its sides, sending a stream of ice into the sea. It began to roll, at first barely perceptibly, to and fro. As more chunks fell, we heard the roar and saw the 'root' of the ice-berg emerging, water cascading off its sides. This movement continued perhaps for two hours until the ice-berg stabilised, reshaped. Tripods enabled this scene to be recorded in full.

The camp site was by a babbling brook, its main outlook the sund but nearer to a tarn complete with King Eider hen and seven ducklings. Two Red Throated divers landed that evening, clearly a scheduled flight. During the night a great quacking arose. It was Barnacle Geese, possibly disturbed by the photographers who at 2.30am arose to expose the sunrise.

Wednesday 16th August.

OASIS to BASE (J, M & C)

Got up at our leisure, packed all the remaining supplies left by the others into our already large packs. We ensured that there was no litter left, Shouldered our burdens and staggered down to Base camp.

PHOTOGRAPHIC & SKETCHING FORAYS by BREGNEPYNT

A day spent wandering in rapt appreciation. A cool wind sprang from the sund but bright sun provided that special light I was now associating with the Arctic. Phil, Pamela and I explored further north along the coast and got quite a shock when we found six empty, rusting fuel drums and signs of people having camped on a beach. The fire had been left complete with, foil, cans and rusting hexamine (meta-fuel type) stoves. The lines of sea-weed indicated about a 2 foot tide here. A medium sized ice-berg broke a little and altered its equilibrium.

Phil and I carried on to a promontory that gave us a good view of Bear Island and its jagged rocks that were outlined in the late afternoon against the sombre rocks of Renland. Once again I felt it would be most exciting to explore further and to get a closer look at Ofjord or possibly find another glacier route onto our snowcap. The Wheatear here were too quick to photograph but I managed to get a sound recording of them.

Back at camp Malcolm and Mike had been photographing the ground practically inch by inch. Finding a caribou antler was no longer a surprise and so one was commandeered as a drying rack for our "smalls".

After Phil had given us our finishing share of whisky Pamela and I were soon asleep, being unable to focus on reading any longer.

Thursday 17th August.

RETURN to BASE CAMP (Mal, Mike, Phil, B & P)

The weather deteriorated and drizzle began. Pamela and Phil returned by a low level route whilst Malcolm, Mike and I followed a higher line onto the moorland, still looking for the elusive Musk Ox. I had collected a few bag fulls of hair. Mike insisted that we could be looking at them and not see them. At one place it was clear they had rubbed themselves against the rocks. Their wool is one of the finest animal fibres in the world and I hoped to collect enough to spin and knit into a small scarf or hat. In the end I got about 160g. The blaeberry leaves were already turning to rich autumn colours and there were many plants to be photographed. For much of the time we walked without talking. I felt the remaining time on the island to be precious.

We were making for a valley that descends from the north directly to the landing strip and base camp. As the mist descended onto the rocky and grassy promontories we felt comfortably at home as if in the Lake District. Then, almost beyond the point where we could see them, Mike whispered "Musk Ox". Seven were grazing on a plateau on the far side of a stream with steep banks. Leaving our sacks, and with cameras at the ready we crept and crawled round boulders to within 15 metres. Malcolm with his 70-210mm lens approached somewhat incautiously near. They heard the click of the camera and he felt a moment when they might charge or flee, as they turned simultaneously, heads raised in the direction of the sound. Then they fled uphill, making fast

progress with their short legs, their long coats of hair dancing around their ankles like the adornments on a medieval horse.

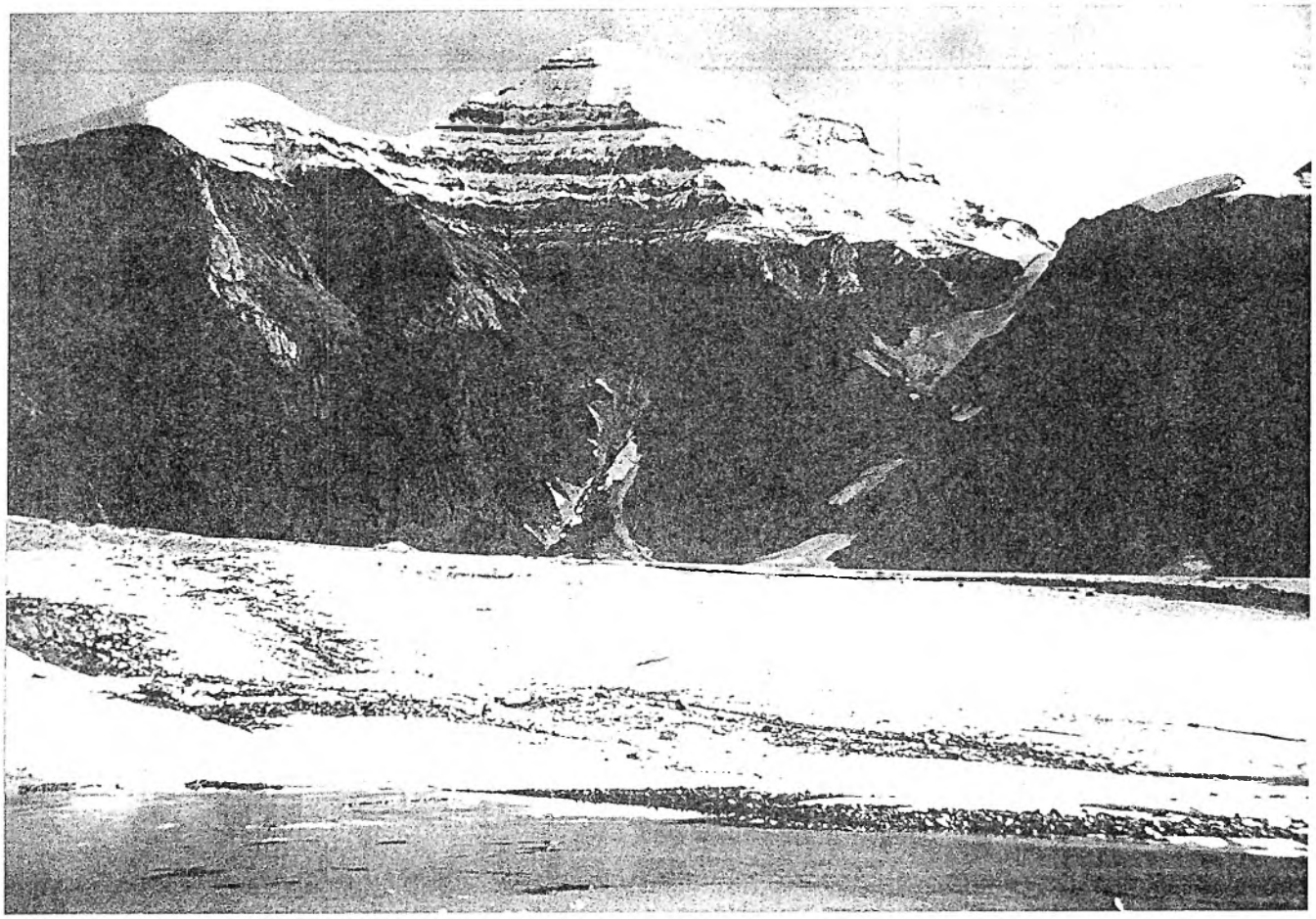
Turning downhill we caught sight of Phil putting the yellow flysheet of his tent over his and Pamela's rucksacks. I couldn't figure out why until I saw him, it seemed only seconds later, flying along the skyline quite high above us, tripod aloft. Pamela came up to meet us and explained that luckily they had seen us and guessed musk ox must be in the vicinity.

The others could be seen safely at base so what a wonderful end to a perfect expedition.

Friday 18th August.

FLIGHT BACK to AKUREYRI

The cloud hung 150 metres above sea level. We packed up. Rubbish was burnt, tin and foil carefully picked out and packed to return with us, a job most conscientiously masterminded by Phil. Innumerable river crossings were made to ferry our gear to the landing strip. From 10.30am to 3.45pm we waited. It seemed a likely prospect that the Twin Otter would be unable to land with such low cloud. About 2pm the clouds lifted a little and at 3.40pm, "was that a drone we heard?". Yes it was. It landed to our cheers and fifteen minutes later we were airborne and flying the 347 nautical miles from Milne Land to Akureyri.



THE BALLADE OF MILNE LAND

To the tune:- The animals went into the Ark.

1 Eight mountaineers went into Milne Land. Bergheil, bergheil.
Eight mountaineers went into Milne Land. Bergheil, bergheil.
The Twin Otter landed, bumpty bump,
They shouldered their sacks to set up base camp,
They all went into Milne Land, the Arctic Wilderness.

2 Eight mountaineers went into Milne Land. Bergheil, bergheil.
Eight mountaineers went into Milne Land. Bergheil, bergheil.
No signs of bear but mosquitoes abound,
The ice-bergs are floating in from the Sound,
They all went into Milne Land, the Arctic Wilderness.

3 Eight mountaineers went into Milne Land. Bergheil, bergheil.
Eight mountaineers went into Milne Land. Bergheil, bergheil.
Three went ahead to P.T.R.* *(push the route)
The rest shouldered loads that would fill a car,
They all went into Milne Land, the Arctic Wilderness.

4 Eight mountaineers went into Milne Land. Bergheil, bergheil.
Eight mountaineers went into Milne Land. Bergheil, bergheil.
An oasis was found in a glacial moraine,
The outside world would have called them insane, So
They all went into Milne Land, the Arctic Wilderness.

5 Eight mountaineers went into Milne Land. Bergheil, bergheil.
Eight mountaineers went into Milne Land. Bergheil, bergheil.
Two ropes of four tackled the icefall seracs,
The glacier above beckoned yawning cracks, So
They all went into Milne Land, the Arctic Wilderness.

6 Eight mountaineers went into Milne Land. Bergheil, bergheil.
Eight mountaineers went into Milne Land. Bergheil, bergheil.
Camp three was on the ice plateau,
And blocks were cut for the Ig'loo' of snow, So
They all went into Milne Land, the Arctic Wilderness.

7 Eight mountaineers went into Milne Land. Bergheil, bergheil.
Eight mountaineers went into Milne Land. Bergheil, bergheil.
One thousand eight hundred and sixty seven,
An unclimbed peak, John's dream of heaven, So
They all went into Milne Land, the Arctic Wilderness.

8 Eight mountaineers went into Milne Land. Bergheil, bergheil.
Eight mountaineers went into Milne Land. Bergheil, bergheil.
On the neat P.D. summit they had a snack,
Margaret bit into a Mars Bar and wants her tooth back.
They all went into Milne Land, the Arctic Wilderness.

9 Eight mountaineers went into Milne Land. Bergheil, bergheil.
Eight mountaineers went into Milne Land. Bergheil, bergheil.
Up the next virgin peak was a classic line,
To Phil it felt at least minus nine,
They all went into Milne Land, the Arctic Wilderness.

10 Eight mountaineers went into Milne Land. Bergheil, bergheil.
Eight mountaineers went into Milne Land. Bergheil, bergheil.
Back at camp oasis there was rain and moraine,
Mike tried for the record - himself to contain!
They all went into Milne Land, the Arctic Wilderness.

EXPEDITION BALANCE SHEET

Chris Whitford

Income		(£)	
Grants:	Austrian Alpine Club	300	
	Mount Everest Foundation	400	
	Scott Polar Institute	450	
	B.M.C.	200	
			1350
Members' Payments (1):			
	M. Graham	1114	
	M. Garrett	1142	
	P. Glanville	1099	
	P. Nixon	1079	
	J. Shrewsbury	1122	
	B. Swift	1079	
	M. Sales	1122	
	C. Whitford	1113	
			8870
			10220

Expenditure	
Travel to/from Akureyri	2782
Charter flights to/from Milne Land	5850
Youth Hostel in Reykjavik	56
Insurance	720
Aerial photographs	47
Hire of radio beacon	41
Equipment (2)	79
Food and fuel (3)	479
Radio permit	26
Bank charges	13
Administration (4)	127
	10220

Notes:

1 Payments by the expedition members varied because of different travel arrangements.

2 The major equipment cost was the purchase of a second-hand frame tent.

3 In addition to the food cost in the balance sheet each member provided 14 man-days of food, with a typical cost of £75 each.

4 Administration includes various items such as headed paper, postcards, stamps etc. Some costs were paid for by members without being charged to the expedition.

5 The cost of producing this report is not included.

CONCLUSION

We went,
We saw,
We conquered,
We returned, safely.

The expedition capitalised on the previous (1986) trip in both specific knowledge of the terrain and in general experience of travel in Greenland. The established airstrip allowed us to fix objectives, and we could plan a route from our previous observations.

We had realised from our previous trip that the mountains are best approached by snow routes, working at 'night', and reconnoitring any difficult terrain before carrying full packs over it.

This time we never came close to any rock which made us regret our decision to eschew it. Most of what we saw was very inviting; we gazed in awe at the superb rock walls, and debated whether they were as solid as they appeared. Climbing on them looked well beyond our standard, and even if it wasn't nobody cared to go too close to the large piles of rubble below them after hearing a few bumps in the night.

On the snow, moving our day back by six hours was well worth while, although there never was a crust which would hold every footstep. The snow was often better on our return at six or seven in the morning than on our departure at one. In clear skies there was sufficient light, but overcast skies destroyed all contrast which made snow bridges invisible. A good look around and marking the start of the route in the previous afternoon paid dividends.

The initial load carrying and route finding gave time to change to an earlier day; floundering around thinly bridged crevasses at noon gave the incentive. Dozing off in the afternoon sun was a lot easier than getting up in the midnight cold.

The separation of reconnaissance and load carrying worked well. The usual question of equity was somewhat tempered by the realisation that once the advance party was carrying climbing gear, tentage and even minimal supplies, it was neither light nor fast.

For most of the members of the expedition this was the second time they have been to Milne Island and yet there is still enough challenging exploration left to justify a third trip.

Without doubt the Korridoren glacier offers scope for another party to achieve many virgin summits and even some nice rock climbing routes. Perhaps now a school or college expedition society should go for about two months and therefore have enough time to thoroughly explore the summits and rock walls that surround the Korridoren glacier.

Malcolm Sales FRGS ARPS.
Expedition Leader.

ACKNOWLEDGEMENTS

It is well said that "No man is an island". By the same token no expedition ever left home without at least some help from outside its own membership. Our expedition was no exception to this rule, and I would like to take this opportunity to thank the many people who helped us on our way. Below I have listed a few of those who in some way contributed to our adventure.

SPONSORSHIP

Austrian Alpine Club.	£300
British Mountaineering Council.	£200
Mount Everest Foundation.	£400
Scott Polar Research Institute.	£450

GOODS & SERVICES

Croxton European Transport.	Shipping gear to Iceland.
Emtrad Ltd.	Locat Radio Beacon.
EPIgas.	Stoves & Fuel.
M4 Design.	Photographic Film.

ADVICE

Expedition Advisory Service.	General Advice.
Derek Fordham.	Greenland Explorer.
John Muston.	Greenland Explorer.
Dr Mike Townend.	Medical Advice.
Dr Frank Russell.	Medical Advice.

Last but by no means least I wish to thank the expedition members themselves who, along with their friends and relations, each undertook a major part of the planning and preparation of this expedition and thus contributed to their own success.

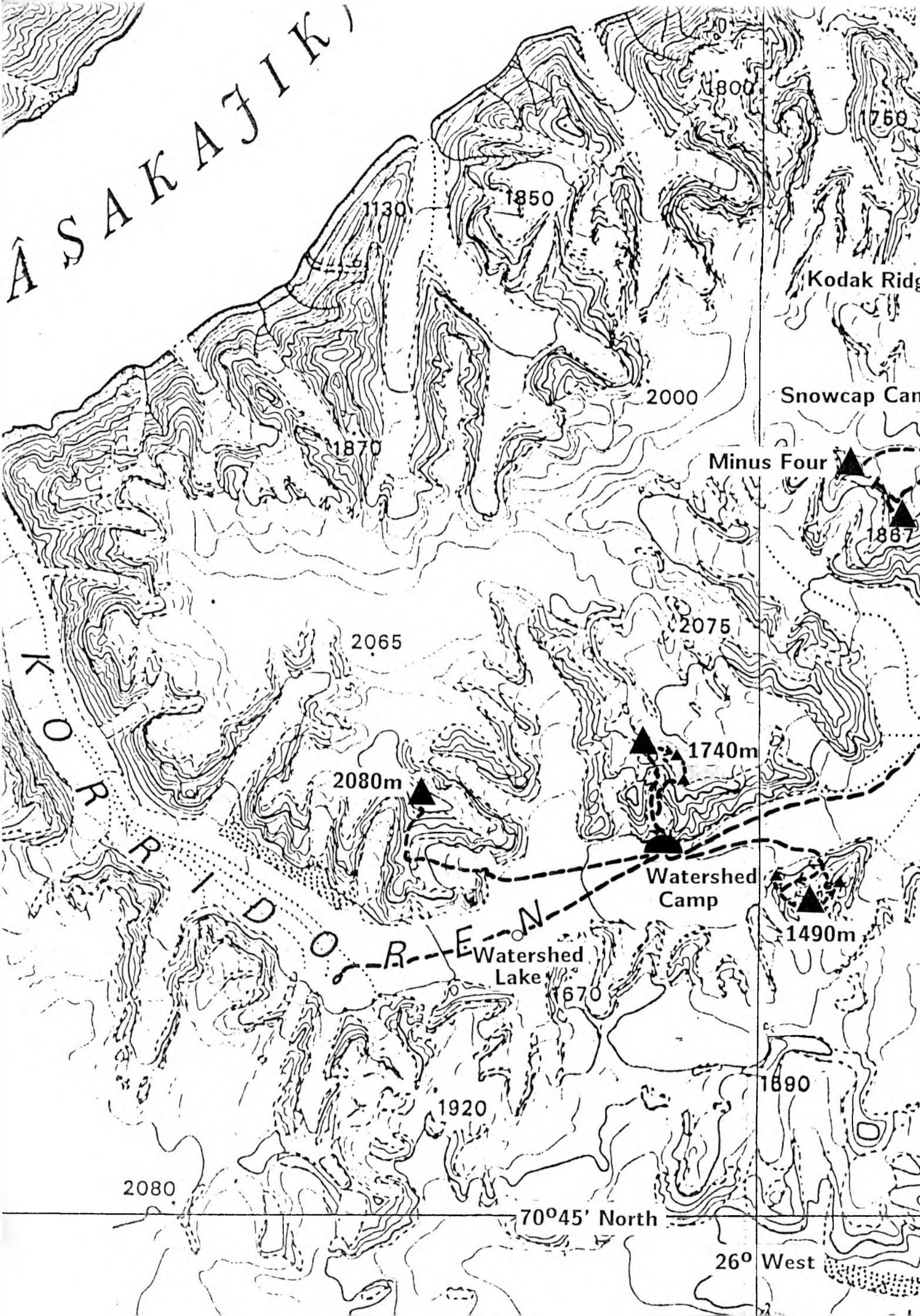
Malcolm Sales FRGS ARPS.
Expedition Leader.

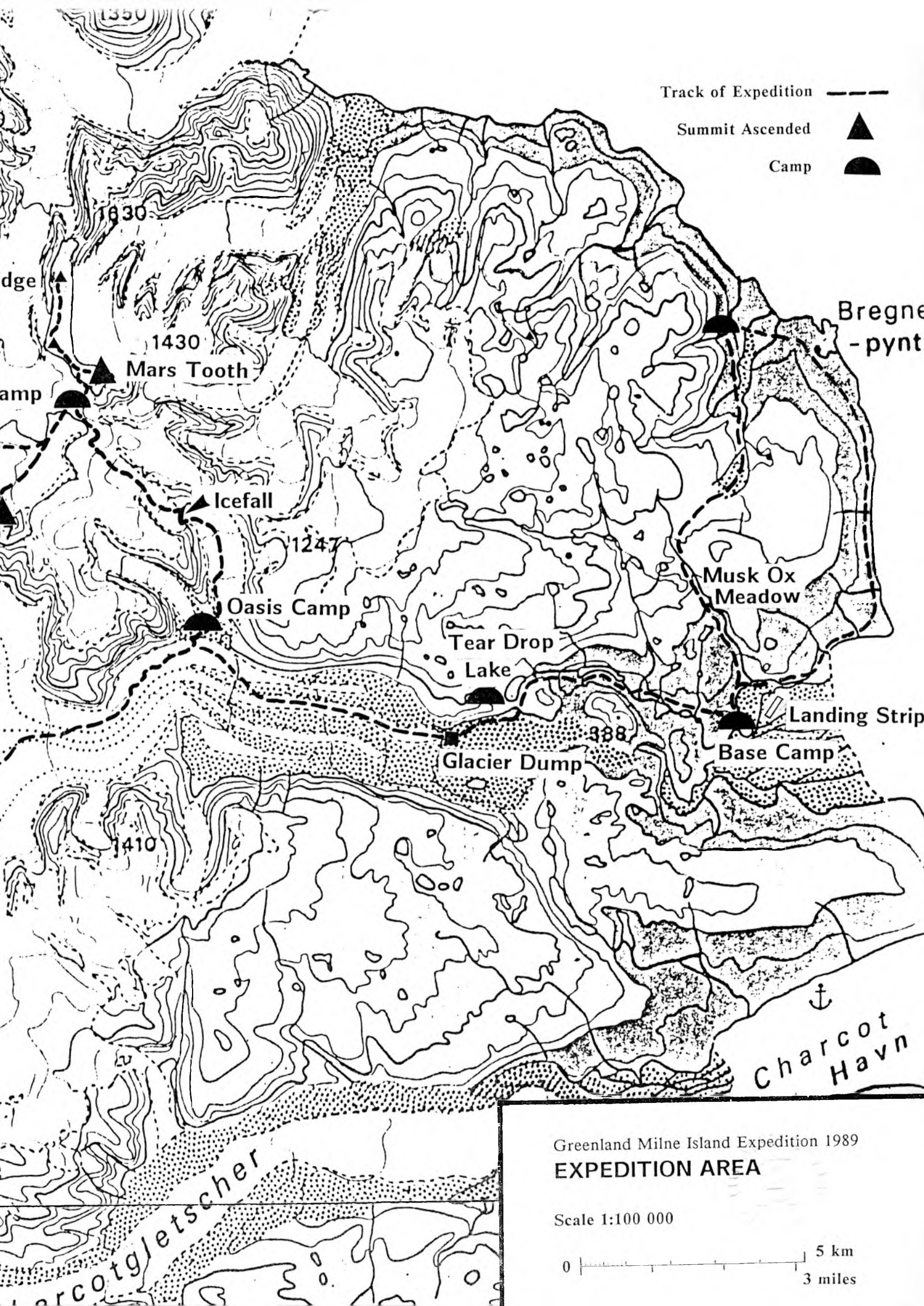
BIBLIOGRAPHY

Malcolm Sales.

Below is a recommended list of reading. This list is not exhaustive and is only intended as a starting point for anybody who may be planning an expedition to this part of Greenland. Further research in the libraries of both the Royal Geographical Society and the Alpine Club is also recommended.

The Arctic and its Wildlife	Brian Sage	ISBN 0 7099 3321-5
Kingdom of the Ice Bear	Hugh Miles Mike Salisbury	ISBN 0 563 20331 0
Polar Expeditions	Geoff Renner	Expedition Advisory Centre
The American East Greenland Expedition	Donald J Liska	AAJ 1972
Greenland: The Experience	Malcolm Sales	AJ 1987
Mountaineering in Greenland	Dolfi Rotovnik Peter Sondergaard	AAJ 1988
Iceland - a handbook for expeditions	Tony Escritt	ISBN 0 948192 00 3
A visitors guide to Iceland	Don Philpot	ISBN 0 86190 140 1


ÂSAKAJIK
1800
750
1850
1130
Kodak Ridg
2000
Snowcap Can
1870
Minus Four
1867
2075
2065
KORRIDOREN
1740m
2080m
Watershed
Camp
1490m
Watershed
Lake
670
1690
1920
2080
70°45' North
26° West


Track of Expedition
Summit Ascended
Camp
1350
1630
dge
1430
Mars Tooth
amp
Icefall
1247
Oasis Camp
Tear Drop
Lake
Musk Ox
Meadow
Bregne
-pynt
Landing Strip
388
Base Camp
Glacier Dump
1410
Charcot
Havn
arcotgletscher
Greenland Milne Island Expedition 1989
EXPEDITION AREA
Scale 1:100 000
0
5 km
3 miles