Patron: H.R.H. The PRINCE OF WALES

Joint Services Expedition to Brabant Island Antarctica

December 1983 – April 1984

to The Alpine Club

With best wishes

Chris Fuse.

FOREWORD

This is the official report of the Joint Services Expedition which explored Brabant Island between 8 January 1984 and 16 March 1985. The report was completed within two months of the return of the Second Summer Party to Britain, in order to serve as a basic record of events and activities. It does not attempt to cover the scientific results, only the fieldwork itself. Follow up reports will cover particular results, and complete sets of all subsequent papers and reports will be lodged with the Royal Geographical Society and the Scott Polar Research Institute libraries.

The expedition succeeded in exploring most of the island, overland or by boat, although a few small areas remain unvisited. Amongst many and varied achievements I believe that our most important one was proof that overwintering in tents in Antarctica is practical. This should open the way for other small, mobile and inexpensive expeditions visiting the Antarctic, and wishing to remain there for longer than one brief summer season.

For convenience of description, some unofficial place names used by the expedition have been used in this report. These are shown in inverted commas on maps and in the text. These unofficial names should not be quoted in subsequent literature.

All 35 team members who took part in the 3-phase expedition join me in thanking everyone who helped to make it possible.

This report is dedicated to all those who helped us, and to the following:

1. Lieutenant Gary Lewis Royal Navy, who worked for over a year as Equipment Officer of the Second Summer Team. He then suffered the bitter disappointment of returning injured to Britain from Port Stanley, their last port of call on the journey south.

2. Staff Sergeant Graham Greenway, who had played a major part in our preparations for nearly two years. He then fractured his leg after less than a month on Brabant Island.

3. Our families, wives and sweethearts, who allowed us out to play, and then spent months at home waiting for news.

Chris Furse.

Commander Chris Furse, Royal Navy
Hegg Hill,
Smarden,
near Ashford,
Kent, TN27 8NX.
England.

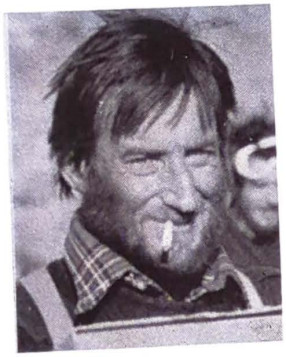
17 May 1985

CONTENTS (and AUTHORS).

ATKINS

CORBETT

DE SILVA



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FIRST SUMMER

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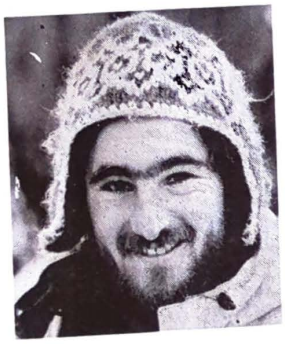

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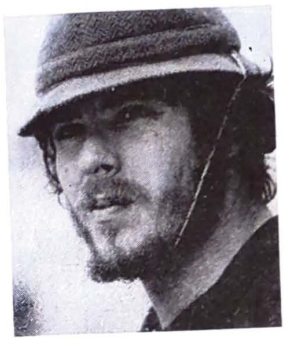

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SECOND SUMMER LAND PARTY

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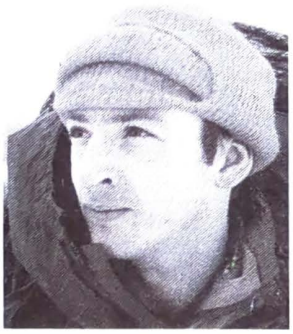

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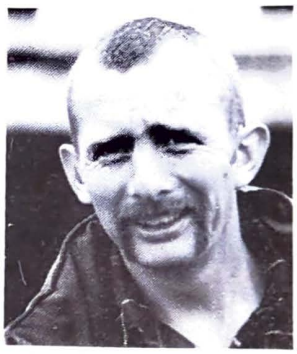

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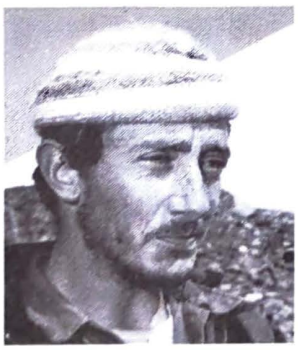


MARTIN

RINGE

TAYLOR

TEAMLIST: FIRST SUMMER and WINTER PARTIES.

Patron: His Royal Highness The Prince of Wales.
Overall Expedition Leader: Commander Chris Furse RN.
Rearlink: Director of Naval PT and Sport:
Lt.Cdr. Clive Waghorn RN and Flt.Lt. Bill Hankinson RAF.

FIRST SUMMER PARTY. 10 MEN. (January 1984 to March 1984, plus travel).

Commander CHRIS FURSE RN. (48).....Staff of Flag Officer Medway.
Leader; Scientific coordinator; Ornithology. (mountaineer).

Flight Lieutenant BILL HANKINSON RAF. (31).....RAF College, Cranwell.
Deputy leader; Botany; Meteorology. (mountaineer).

Corporal TED ATKINS RAF. (25).....RAF Gutersloh.
Survey; General maintenance. (mountaineer).

Leading Airman (Photographer) JED CORBETT RN. (24).....Fleet Photographic Unit.
Still photography; Cine photography. (coxswain).

Corporal JEFF HILL RM. (27).....Commando Logistic Regiment.
Radio; Fish; Stores.

Marine MAC McLEOD RM. (23).....Royal Marines Poole.
Tidal records; Electrical maintenance. (mountaineer).

Doctor JONATHAN MORRIS, civilian.(25).....St.Bartholomews Hospital.
Doctor; Terrestrial invertebrates.

Lance Corporal KEVIN de SILVA RE. (24).....1 Training Regiment RE.
General assistant. (mountaineer; coxswain).

Lieutenant SIMON TRATHEN RM. (25).....Royal Marines Arbroath.
Geology; Geomorphology. (mountaineer).

Corporal DICK WORRALL RM. (31).....Royal Marines Poole.
Boats; Seals & Whales. (mountaineer; coxswain).

WINTER PARTY. 12 MEN. (March 1984 to December 1984, plus travel).

Commander CHRIS FURSE RN. (49).....Directorate Naval PT and Sport.
Leader; Scientific coordinator; Ornithology. (mountaineer).

Surgeon Lieutenant HOWARD OAKLEY RN. (30).....Institute of Naval Medicine.
Deputy leader; Physiology; Doctor; Meteorology.

Corporal TED ATKINS RAF. (25).....Personnel Management Centre RAF.
Skidoo & general maintenance; Survey. (mountaineer; skidoo driver).

Corporal JON BEATTIE RAF. (25).....RAF Kinloss.
Terrestrial invertebrates; Maintenance. (mountaineer; skidoo driver).

Leading Airman (Photographer) JED CORBETT RN. (25).....Fleet Photographic Unit.
Still photography; Cine photography.

Captain NICK EVANS PWO Yorkshire Regiment. (32).....Army Staff College,Camberley.
Geomorphology; Fuels quartermaster. (skier).

Monsieur FRANCOIS de GERLACHE, civilian. (23).....Comite Antarctique Belge.
Seals & Whales; Tent repairs. (skier).

Sergeant JOHN KIMBREY RM. (29).....Commando Training Centre Royal Marines.
Fish; Rations; Boats; Maintenance. (mountaineer; skidoo driver; coxswain).

Corporal JIM LUMSDEN QLR. (26).....1st. Queens Lancashire Regiment.
Radio; Assistant meteorology; Camp stores. (skidoo driver).

Mister MIKE RINGE, civilian. (23).....Nottingham University.
Geology. (skidoo driver).

Lance Corporal JOHN SPOTTISWOOD RE. (25).....35 Engineer Regiment.
Seals; Skidoo operations; Maintenance. (mountaineer; skidoo driver)

Sergeant PETER STUTTARD REME. (29).....3 Flight Army Air Corps.
Botany; Psychology; Electrical maintenance. (mountaineer; skidoo driver).

TEAMLIST: SECOND SUMMER PARTY. 17 MEN. (December 1984 to March 1985, plus travel).

Patron: His Royal Highness The Prince of Wales.
Overall Expedition Leader: Commander Chris Furse RN.
Second Summer Party Leader: Lieutenant Commander Clive Waghorn RN.
Rearlink: Director of Naval PT and Sport.
Flt.Lt. Bill Hankinson RAF.

BOAT PARTY. 7 MEN.

Lieutenant Commander CLIVE WAGHORN RN. (37).....Britannia R.N. College, Dartmouth.
Team leader; Canoeing; Assistant ornithology. (mountaineer; canoeist)

Lieutenant RICHARD CLEMENTS Royal Anglians (25).....Royal Anglian Regiment.
Fish; Seals & Whales; Stores. (mountaineer; canoeist)

Lance Corporal KERRY GILL Royal Signals (22).....4th.Armoured Division HQ, BAOR.
Radio. (canoeist; skier).

Leading Airman (Photographer) TIM HALL RN. (27).....HMS Daedalus
Still photography; Cine photography; Mechanical maintenance. (mountaineer; coxswain).

Lance Bombardier MARTIN HUGHES Royal Artillery. (29).....Kiel Training Centre.
Terrestrial Invertebrates; Ornithology; Power boats; Survey. (coxswain; skier).

Lieutenant GARY LEWIS RN. (27).....HMS.Cochrane.
Ornithology; Equipment.

Lieutenant ALISTAIR MOFFAT RE. (27).....Junior Leaders Regiment RE, Dover.
Botany; Scientific coordinator. (mountaineer; canoeist).

Captain TONY WILLIAMS RAMC. (25).....Royal Army Medical College.
Doctor; Geology. (canoeist).

SOUTHERN PARTY. 10 MEN.

Flight Lieutenant STEVE TAYLOR RAF (33).....RAF.Leuchars.
Party leader; Meteorology; Glaciology. (mountaineer).

Lieutenant SIMON ALLEN RTR (22).....3rd Royal Tank Regiment.
Radio; Postmaster. (mountaineer).

Flight Lieutenant Dave Ball RAF (33).....RAF.Cottesmore.
Stores; General Maintenance; Psychology.

Leading Airman (Photographer) RONNIE BARKER RN. (24).....HMS.Osprey.
Cine photography; Still photography; Electrical maintenance.

Lieutenant PAUL FLINT RN. (27).....HMS.Cochrane.
Geomorphology. (mountaineer).

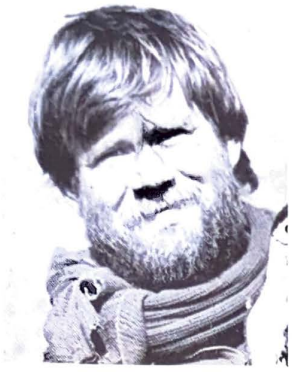
Staff Sergeant GRAHAM GREENWAY REME. (27).....S.E.M.E.,Bordon.
Stores; Ornithology; General maintenance. (skier).

Sergeant WILLIE LAWRENCE RE. (31).....74 Engineer Regiment.
General assistant. (mountaineer).

Captain STUART MARTIN RAMC. (32).....Royal Army Medical College.
Deputy Party Leader; Terrestrial Invertebrates; Doctor; Botany. (mountaineer).

Mister MIKE RINGE, civilian. (23).....Nottingham University.
Geology. (mountaineer).

WINTER



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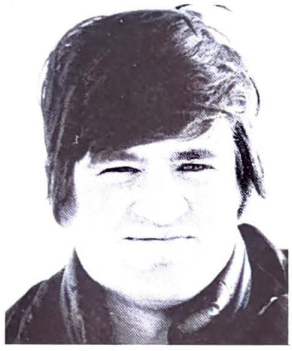

EVANS

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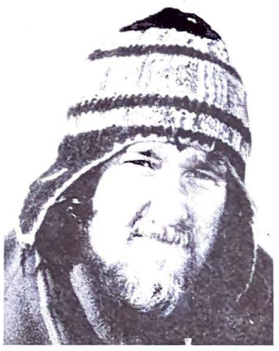
DE GERLACHE

KIMBREY



LUMSDEN

OAKLEY

RINGE

SPOTTISWOOD

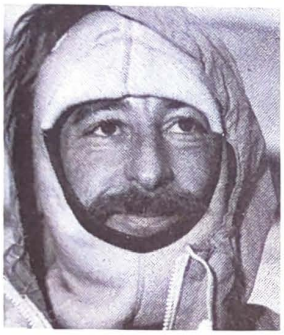
STUTTARD

CLEMENTS

GILL

HALL

SECOND SUMMER BOAT PARTY



HUGHES

LEWIS

MOFFAT

WAGHORN

WILLIAMS

Brabant Island lies off the west coast of the Antarctic Peninsula at 64S, within the Antarctic Treaty area. About forty miles long and 15 wide, it is part of the Palmer Archipelago, together with Anvers Island and several much smaller islands. The 10-30 miles wide Gerlache Strait separates the archipelago from the Peninsula itself, and the broad wedge of Dallman Bay lies between Brabant and Anvers Island to the south. To the west and north the island is exposed to the open Bellingshausen Sea: on clear days it is possible to see Smith Island (70 miles north), and sometimes also Deception Island 98 miles northeast in the Bransfield Strait.

Although north of the Antarctic Circle, the archipelago is wholly Antarctic in climate and character. Cold Antarctic surface water stretches over 300 miles north to the Antarctic Convergence, which roughly corresponds with the limit of packice in winter. Icebergs are always present in winter and summer. The climate is maritime, with successive depressions arriving from the west, then tending to be baulked by the 6000ft barrier of the Peninsula. Mean monthly temperatures were expected to range between -10C and +1C, with minimum down to -40C at sea level. Unlike continental Antarctica, precipitation is very high at this latitude. Winds over Gale Force are frequent, and may arise very quickly; however there are longer calm spells and more sunshine than further north on Elephant Island and the South Shetlands.

Brabant Island itself is very mountainous. The main ridge runs north and south reaching about 8500 ft at Mount Parry above precipitous western seacliffs, with gentler, more open snowslopes on the eastern side. Lower but equally dramatic mountains extend north,northeast and south from this main ridge. Deep bays cut into the coasts between the mountains, and a few drowned peaks form offshore islands.

The island is deeply covered with snow and ice, apart from small coastal points, a few nunataks and ice-swept cliffs above the glaciers.

Seals, penguins and other birds, minute terrestrial invertebrates, and some sparse vegetation are almost entirely confined to the snowfree coastal areas.

During the brief Summer, from November to March, planes sometimes overfly en route to and from the bases further south, and an occasional ship passes offshore. However in Winter the isolation is complete. The only outside contact then is by radio, with the nearest British Antarctic Survey bases at Faraday (87 miles south) and Signy Island (552 miles north east), and with Palmer Station, the American base 66 miles south on Anvers Island.

Many people have sighted Brabant Island in passing, but hardly any had ever landed on its inhospitable shores. Before this expedition it was difficult even to find photographs of the island. The small and scattered snowfree areas had prevented economical exploration by BAS scientists, although the geology in particular was of great interest.

Altogether Brabant Island was an ideal target for an expedition like this, having multiple aims, with scientific exploration accomplished by mobile parties of mountaineers and canoeists. It was one of the largest unexplored islands in the world, and one of the hardest challenges.

HISTORY

by Chris Furse.

The scanty history of Brabant Island is hard to find, beyond the brief summary in the Antarctic Pilot. I am indebted to Dr Geoffrey Hattersley Smith and Mr A.G.E. Jones for the research which provided most of the information below.

On 19 February 1819 the South Shetlands were sighted for the first time, from the storm-driven brig Williams. Her Captain, William Smith, returned to land there in October 1819. In January 1820 Edward Bransfield RN, appointed Master of the Williams, surveyed the strait that now bears his name, and while doing so sighted Trinity Island. Sealers working the South Shetland beaches, started to use Deception Island as a secure harbour in 1820/21. Nathaniel B Palmer, Captain of the sealer Hero, (who may have sighted the Peninsula, but probably never sighted Brabant Island), was surprised in February 1821 to meet the ships of Thaddeus von Bellingshausen's Imperial Russion expedition near Deception. Finishing an unheralded circumnavigation of Antarctica, Bellingshausen had discovered Alexander Island, then sailed north in a blizzard past unseen Brabant Island. In February 1821 John Davis, Captain of the sealing brig Cecilia, found more sealers than seals in the South Shetlands: from Low Island he sailed SE reaching 64S near the Peninsula, and quite probably sighting Brabant Island. In 1824 James Hoseason, mate of the brig Sprightly, charted Hughes Bay (northeast of Brabant Island) around Hoseason and Intercurrence Islands, and possibly as far as Two Hummock Island. It is likely that Hoseason and other sealers sighted Brabant Island in that decade, and some may even have landed there, but they were all secretive, and few relevant records remain. Within that decade the sealers from Britain and New England had stripped the beaches: In 1829 Webster reported finding not a single seal in the South Shetlands. In February 1829 Henry Foster, in command of HM Sloop Chanticleer, landed on Hoseason Island, and named the highest mountain to southward Mount Parry after the Hydrographer of the Navy, the former Arctic explorer. As the seals dwindled, the Enderby Brothers, oil merchants of London, sponsored further explorations: In 1832 John Biscoe in the brig Tula with the cutter Lively, landed on the west coast of Anvers Island, naming the area Graham Land, after the First Lord of the Admiralty.

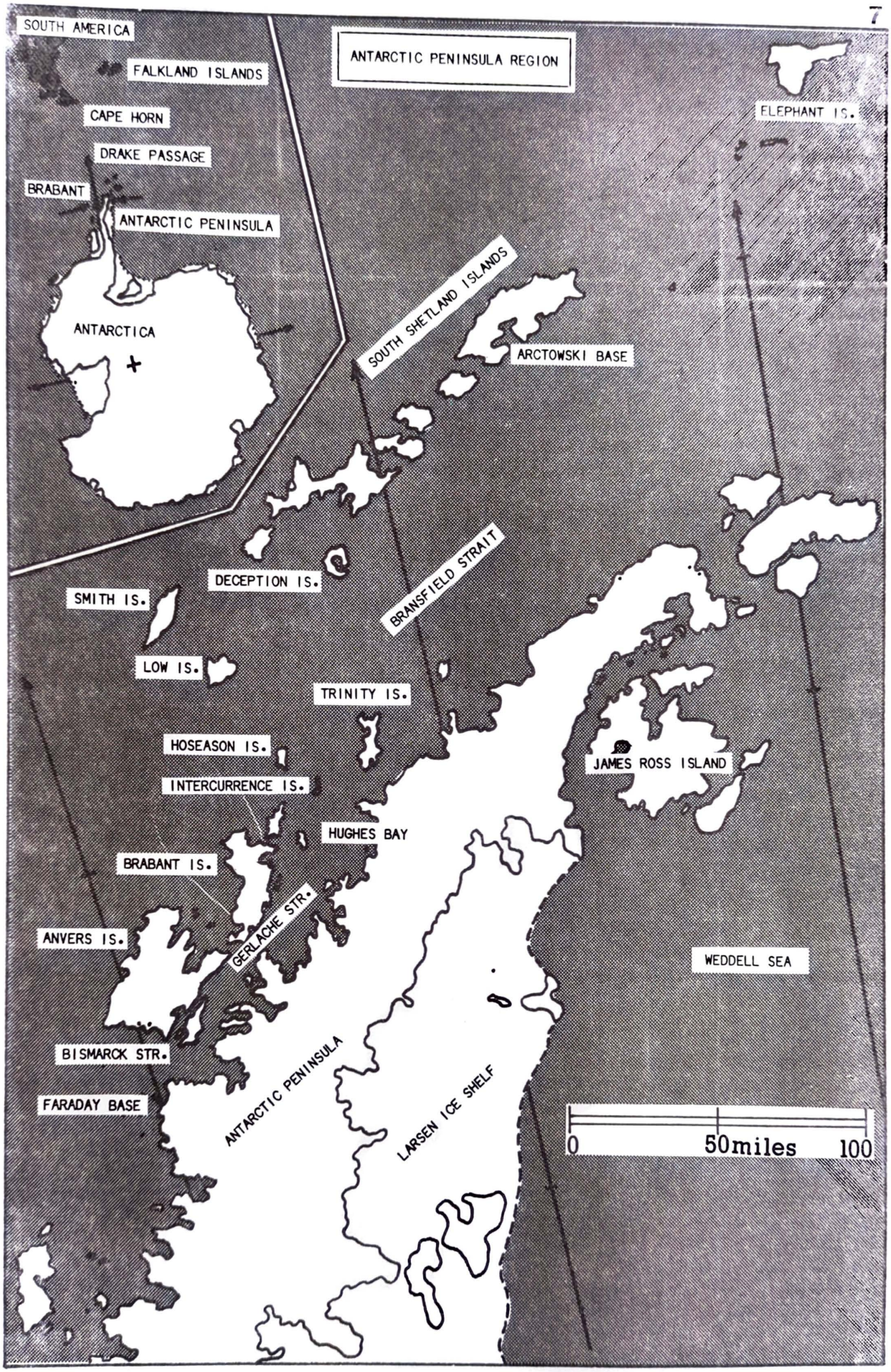
About 1840 three major national expeditions (d'Urville of France, Wilkes of the United States and James Clarke Ross of Britain) all spent some time near the South Shetlands, as well as reaching the far coasts of Antarctica. However none of them came so close to Brabant Island as had Bellingshausen.

American sealers later again visited the Islands off the Antarctic Peninsula, sporadically and in small numbers. Brian Robert's Chronological List mentions a few American visits to the region before 1873, and fifteen in the following twenty years, but with no details of where they went. Robert Headland of the Scott Polar Research Institute is bringing that list up to date, but (in April 1984) had found no records relevant to Brabant Island, although it is known that some sealers landed south of Anvers Island. At some time in this period, Brabant & Anvers Islands became known as "Palmer Land".

In 1873 the steam whaler Gronnland, Captain Edouard Dallman, sailed from Hamburg to explore the region on behalf of the German Society for Polar Navigation. In November 1873 he reached the South Shetlands, meeting a little fleet of sealing schooners from Stonington Connecticut. There were very few seals. He went as far as the south end of Anvers Island. There he discovered a strait which he believed led ENE, either separating "Palmer Land" from the Peninsula, or breaking right through the Peninsula: he named it Bismark Strait. During this voyage Dallman also discovered the bay which now bears his name, but understandably believed that Brabant and Anvers Island were joined parts of "Palmer Land". He approached Cape Cockburn quite closely but did not land: clearly this was already a well known, named feature though the charts were inaccurate. He saw many Humpback and "Sulpher-bottomed" (Blue) Whales, at that time still virtually immune from the whalers.

Whalers may have visited the area in the 1890s, when steam power and Svend Foyn's invention of the harpoon gun at last allowed them to hunt the fast and powerful rorquals, so plentiful near the ice.

Adrien de Gerlache, a young Lieutenant in the Belgian Navy, personally initiated, organised and led the Expedition which inaugerated the "Heroic Age" of Antarctic exploration, in the Norwegian sealer Patria, which he bought, refitted, and renamed the Belgica. One of his several aims was to discover the strait which was then supposed to lead east from Hughes Bay right through the Antarctic Peninsula in the latitude of Hoseason Island. He proved that no such strait existed, and instead he was led southwards into the Gerlache Strait. On 30 January, 1898, Lt de Gerlache and Lt Danco (Belgian), Roald Amundsen (Norwegian), Dr Frederick Cook (American) and Henryck Arctowski (Polish) made the first recorded landing on Brabant Island at Cape d'Ursel on the south shore of Buls Bay, with two small Nansen sledges, snowshoes, one tent, one stove and 10 meters of silk rope. They spent five days and nights on the piedmont, protecting their tent with snowwalls, and reaching about 1700ft, but unable to get up the Icefalls above. This short stay was notable for several reasons. It was not only Amundsen's first stay ashore in Antarctica, it was the first time on record that anyone had used tents in Antarctica, or sledges. The expedition then discovered the Schollaert Strait separating Brabant from Anvers Island, before sailing south through the Gerlache Strait into the Bellingshausen Sea. Belgica was beset in the pack and they also became the first men to winter in Antarctica. Many of the names around the Gerlache Strait derive from the Belgica expedition, including Brabant itself, Lecointe Island, Buls Bay, the Solvay Mountains and the Danco Coast. (Gaston de Gerlache, son of Adrien, led the 1957 Belgian National Expedition to Antarctica in 1957; in turn his son Francois was a member of this expedition). We felt many links with the Belgica expedition as we wintered in tents & hauled pulk sledges with Francois).


SOUTH AMERICA
FALKLAND ISLANDS
CAPE HORN
DRAKE PASSAGE
BRABANT
ANTARCTIC PENINSULA
ANTARCTICA
ANTARCTIC PENINSULA REGION
ELEPHANT IS.
SOUTH SHETLAND ISLANDS
ARCTOWSKI BASE
DECEPTION IS.
BRANSFIELD STRAIT
SMITH IS.
LOW IS.
TRINITY IS.
HOSEASON IS.
INTERCURRENCE IS.
JAMES ROSS ISLAND
HUGHES BAY
BRABANT IS.
GERLACHE STR.
ANVERS IS.
WEDDELL SEA
BISMARCK STR.
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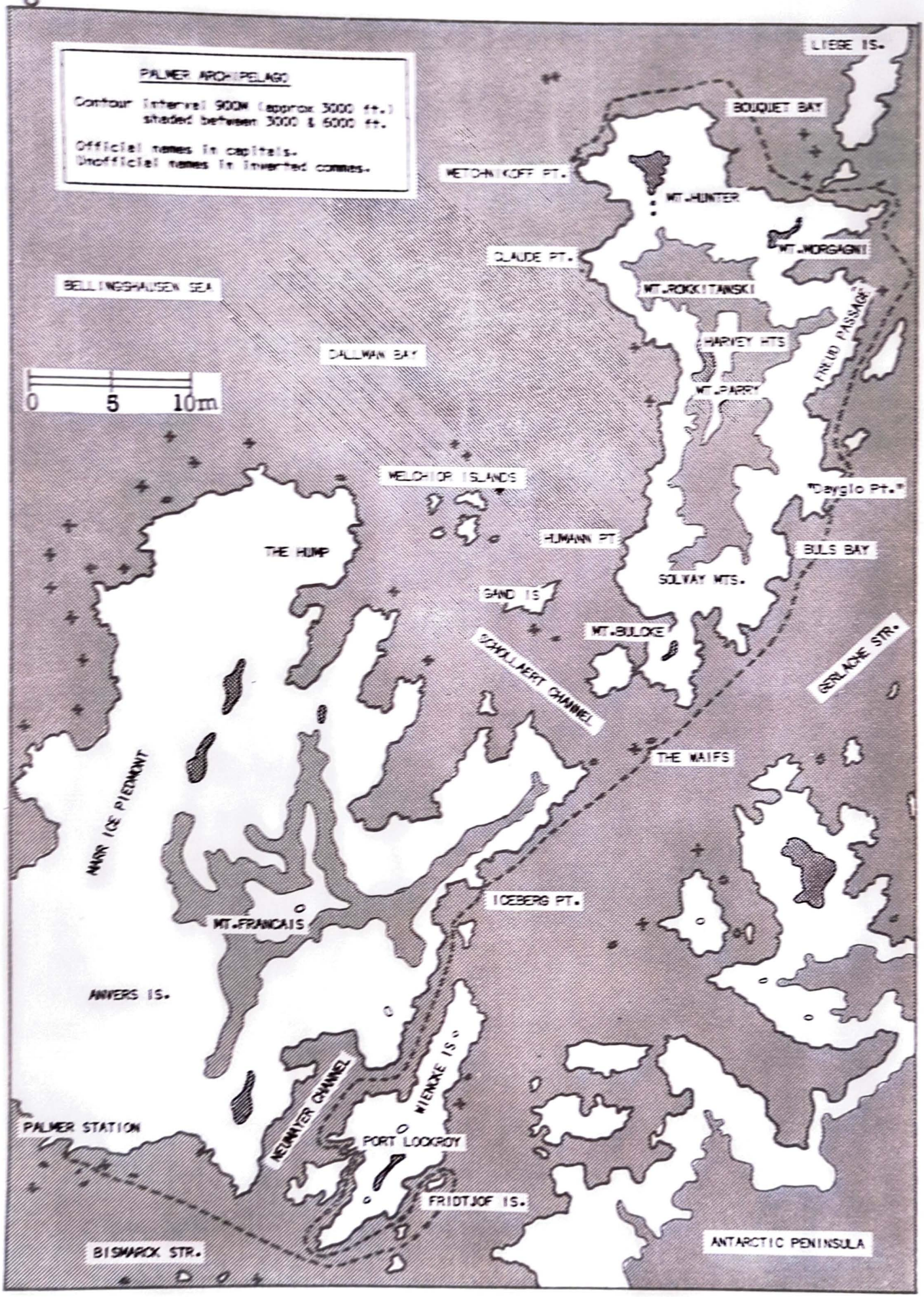
PALMER ARCHIPELAGO
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Official names in capitals.
Unofficial names in inverted commas.
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LIEBE IS.
BOUQUET BAY
METCHNIKOFF PT.
MT.HUNTER
MT.MORGAGNI
CLAUDE PT.
BELLINGSHAUSEN SEA
MT.ROKKITANSKI
HARVEY HTS
DALLMAN BAY
MT.PARRY
LYNCH PASSAGE
WELCHOP ISLANDS
"Dayglo Pt."
HUMANN PT.
THE HUMP
BULS BAY
SOLWAY MTS.
SAND IS
MT.BULOW
SCHOLAERT CHANNEL
GERLACHE STR.
THE MAIPS
MARR ICE PIEDMONT
ICEBERG PT.
MT.FRANCAIS
ANVERS IS.
NEUMAYER CHANNEL
WIENCKE IS.
PALMER STATION
PORT LOCKROY
FRIDTJOF IS.
BISMARCK STR.
ANTARCTIC PENINSULA

Jean Baptiste Charcot's French expedition down the west coast of the Peninsula in 1903-05 was a great scientific success. He passed the northern tip of Brabant and named Pointe Metchnikoff, Presqu'ile Pasteur and Cap E. Roux after three eminent bacteriologists (who were probably family friends) and also Claude Point and Astrolabe Needle (the latter after d'Urvilles vessel).

In 1913 an expedition, sponsored by the South Georgia whaling company of Salvesens, visited the Palmer Archipelago. We have found only one reference to this, by the geologist Ferguson. Their ship SS Hanka visited Duperre Bay, which they named "Shackleton Bay". Geological collections were made there, plus a smaller collection at Buls Bay.

Hill Bay was named after Lt.Cdr.Leonard Charles Hill RNR, who served in the William Scoresby in 1931, and Discovery II from 1931 (in command from 1935 to 1939). Between the wars Brabant Island must have been a familiar landmark to the pelagic whalers.

The unsung British Grahamland Expedition of 1934-37 under John Rymill, landed further south at Stonington and the Argentine Islands, and surveyed a vast stretch of the Peninsula, finally disproving the theory that it was separated from the Antarctic Continent. Their sailing ship Penola probably passed near Brabant. One of the team, Brian Roberts, certainly appears to have been familiar with the Island's features.

From 1943 there was increasing scientific activity in the region, with several nations establishing permanent bases in the South Shetlands and down the west coast of the Peninsula. The nearest basehuts to Brabant were the British base at Portal Point in Charlotte Bay, and the Argentine station in the Melchior Islands, both abandonned before 1980. Although ships passed the Island regularly, records have been found of only four landings on Brabant Island between the 1913 landing and this Joint Service Expedition.

In 1951/52 parts of the east coast were surveyed by Cdr.Hunt RN in charge of an RN Hydrographic Unit attached to FIDS. A further survey of the southeast coast was carried out by Ken Blaiklock in April 1955, in the Norsel, chartered by FIDS. However they do not appear to have landed.

In 1956/57 Hunting Aerosurveys overflew the Island at 13000ft taking aerial photographs for FIDASE. In the same season helicopters were used to land Survey Parties on the summits of Lagrange Peak and Hunt Island. (NB The name of Hunt and Harry Islands have sometimes been confusingly transposed). These parties do not appear to have moved, nor to have stayed more than a day, while they established ground control for the subsequent photogrammetric mapping of the Island.

When the subsequent DOS map of the area was being produced in 1959, Brian Roberts at the Foreign Office gave names to many of the unnamed major features in the region. He developed a pattern of associated names in different areas. For Brabant Island he extended Charcot's use of names of people who were landmarks in the field of medicine: 33 of the official names around Brabant Island derive from that paper exercise.

In 1964 a FIDS geologist Roger Bally landed briefly by boat somewhere on Brabant Island. However Dr Adie at BAS was unable to find any record of his findings.

In 1972 Chilean geologists made a rapid 3 day reconnaissance of the region using helicopters from MV Piloto Pardo. In one day they visited a number of sites around Brabant Island, collecting some samples and sketching the major fault systems observed.

In 1973, following his participation in Malcolm Burley's JSE to Elephant Island, Crispin Agnew of Lochnaw planned an overwintering expedition to Brabant Island, which was approved in principle by the Joint Services Expedition Trust, Sir Vivian Fuchs and the new Director of BAS, Dr.Laws. The Foreign Office commented that Brabant Island was exceptionally inhospitable, even by Antarctic standards, and advised consideration of other possible areas. That expedition did not happen. The Island remained virtually unexplored, although a familiar sight to many voyaging south.

The fifth known landing in the 86 years since de Gerlache was just two weeks before we landed. Visiting Palmer Station we learnt that RV Hero had circumnavigated Brabant Island just after Christmas 1983, landing an ornithologist by boat at two sites to census the breeding birds. This visit was made in collaboration with BAS, who have since reported the results: this did cause us some surprise,coming at that particular time, after 20 years of total neglect of Brabant Island.

We found no relics of sealers or whalers. (One whale's jawbone and a few small ribs at Metchnikoff Point were likely to have been brought onshore as flotsam or by strandings). The only evidence of earlier visits was at Minot Point, where there was a dilapidated metal beacon, and a rectangle of turf had been cut from an offshore islet.

A magnificent bronze plaque was presented by Baron Gaston de Gerlache to commemorate the first landing by his father in 1898. We had planned to install this near their landing site at Buls Bay, but its weight (over 50 lbs) was prohibitive for sledging south over Harvey Heights. So,while Francois was on the Island,we installed the plaque in a cairn above our basecamp at Metchnikoff Point, looking south to Anvers Island and northwest across the Bellingshausen Sea. This is being dedicated as an official Historic Monument.

ORGANISATION MILESTONES:

by Chris Furse.

This diary of main events & activities covers the central administrative organisation of the expedition in Britain. It touches only briefly on the Equipment Procurement and Fund Raising and scientific arrangements. The purposes of including this dull but vital work in this report are: firstly to provide a factual record, and secondly to give prospective expedition leaders an indication of the work load they must be ready to take on. Hopefully this will not put them off!

The expedition was not conceived by any club, or committee or authority, it was just dreamed up by Furse. So the overall programme strategy was matched to his career from the first. For two years, while serving in the 8th Frigate Squadron in 1980 - 82, minimal effort was expended, merely laying the foundations. The real hard work was all put off until after mid-1982, when the selected team became available to share the workload. The expediton was planned for 3 phases to cover the Spring & Autumn, and also to ensure that at least one phase would fall between two Naval jobs for Furse.

In practice a few ripples did disturb the smooth flow of this strategy - but they always do, plans are merely a basis for change.

1980 June.....Informal discussions with Captain Barker of HMS Endurance.
1980 August....Initial outline proposal (for 16 month expedition to James Ross Island) sent to BAS,& copied to FCO, RGS, Hydrographer, HMS Endurance, DNPTS & DNOA(E)
1980 November..Meeting Furse/Director of BAS. Decided on Brabant Island.
" " ....Updated prospectus for 16-month JSE to Brabant Island submitted to DNPTS, seeking Endorsement by JSET (and copied to the other authorities above).
1980 December..Expedition Fund account opened with Williams & Glyns Bank, Farnborough.

1981 January...JSET endorsed the expedition in principle,with reservations about wintering.
1981 February..HMS Endurance photo reconnaissance of Brabant Island (completed March).
1981 March ....Photographs of Brabant Island taken by Burkitt from RV Hero.
1981 May.....Case for over-wintering submitted to JSET through DNPTS.
1981 June.....Dr.Thomson of BAS initiated plans for Geology Research with Nottingham.
" " ....Government announced HMS Endurance would be scrapped in 1982.
" " ....Expedition plans revised to "hitch a lift" on available shipping.
" " ....Furse applied to DGST(N) for 3900 mandays rations to be landed in 81/82.
1981 July.....DGST(N) & NP 8901 agreed to provide rations & kerosene respectively.
" " ....HMS Endurance agreed to land rations & kerosene in March 1982.
" " ....Approached Jeppesen Heaton Ltd. to freight rations to Port Stanley.
" " ....Approached Lindblad Travel Inc., USARP & USCG seeking transport for team.
" " ....Canvassed Institute of Naval Medicine, & APRE for physiological work.
" " ....JSET formally Endorsed the First Summer phase. They would be prepared to consider the Second Summer later. However the Director of SPRI had advised that wintering in tents was too dangerous and the JSET recorded a "final & irrevocable" decision not to support the Winter Phase.
" " ....At this point, prospects for the expedition looked rather bleak.
1981 August....Before sailing for the West Indies, Furse sought support for Wintering in tents from Surgeon Captain Dalgliesh & Doctor Stonehouse.
1981 September.Captain Dalgliesh discussed Wintering with DGNPS (the Naval member of JSET). DGNPS would be prepared to reconsider, if MDG(N) could state that the Physiological research was valuable, and that a Doctor would be available. Dalgliesh discussed physiology with Vice Admiral Harrison, MDG(N).
" " ....Canvassed for Equipment Officer through AMA, RNRMMC & RAFMA.
" " ....Formal request to MDG(N) for a Medical Officer.
" " ....Approached Society Expeditions & Westrallan Farmers Transport for shipping.
" October...HMS Ariadne in Washington. Furse visited USARP. The Director agreed to consider team transport, if plans were supported by the Director of BAS.
1981 November..Sir Rex Hunt, Governor of the Falklands & High Commissioner of BAT, signalled his support in principle.
" " ....Rations packed at RNVD Botley.Furse family weekend marking-up for 5 dumps.
" " ....HMS Nelson agreed to act as Accounting Unit for rations.
1981 December..Rations embarked in MV AES at Deptford.
Freight charges of £2000 funded by Furse's initial contribution.
" " ....HMS Ariadne in London. Furse visited MDG(N). Sir John Harrison called for written physiological research proposals to evaluate. (Oakley earmarked).

1982 January...Squadron visit to Portsmouth. Furse visited Surg.Cdr.Golden at INM.
" " ....Oakley taken on as Physiologist. Experimental protocol programme laid down.
" " ....Waghorn (old friend) volunteered: taken on as Equipment Officer.
" " ....Application for formal Approval submitted to Royal Geographical Society.
1982 February..Draft Defence Council Instruction (seeking 1S & OW volunteers) submitted.
" " ....Rations arrived Port Stanley: stored by NP8901 with locally purchased fuel.
" " ...(26th).Rations & kerosene embarked in HMS Endurance.
1982 March ...(1st-3rd).Endurance unable to land rations due bad sites & worse weather. Kerosene drums ruptured by heavy seas, replaced by ship's Avcat. Rations & fuel landed at Palmer Station instead.
" " ....Expedition plans changed to sledge stores from Palmer Station over Marr Ice-Piedmont to north coast of Anvers Island, then ferry or sledge across Dallman Bay to Brabant Island. Supporters advised.
" " ....Sir Vivian Fuchs supported plan to winter in tents.
" " ....Started to look for Inflatable Power Boats, Sledge parachutes & Skidoos.
" " ....Requested facilities for Initial Team Meet,& Winter Mountain Training.
" " ....Furse finished job as SMEO to 8th Frigate Squadron.

1982.March....(2nd).RGS decided to give Approval to the Expedition,(advised on 25th).
" " ...(31st).DGST(N) agreed to freight stores to Falklands on the annual tanker.
1982 April....(1st).Defence Council Instruction published calling for 1S & OW volunteers.
" " ...(2nd).Argentina invaded the Falkland Islands.
" " ....Arranged venue for Selection Interviews at the RGS in September.
" " ....Furse joined engineering staff at HM Naval Base Chatham.
" " ....Oakley submitted his Experimental Protocol for Physiological Research.
" " ....Oakley (& other future team members) departed for the Falklands campaign.
1982 May.....Customer Code Number allocated to expedition for stores from RN.
1982 June.....Case for wintering re-submitted to JSET through DNPTS.
" " ....Belgian & Norwegian Antarctic Institutions canvassed (commemorative plaque).
" " ....Furse passed over for Captain (staffwork, paperwork, social attributes and tact). His priorities switched from naval engineering to expedition.
" " ....MDG(N) & INM endorsed Physiological research, and advised DGNPS for JSET.
" " ....Illustrated A3 prospectus produced (photostat copies).
1982 July.....JSET formally Endorsed whole expedition, including the Winter phase.
" " ....Bernard de Gerlache met Furse, discussed plaque, & Francois participating.
" " ....Oakley returning from Falklands in SS Canberra met Cyril Cooper of SCRDE.
1982 August....Shortlist of applicants for interview drawn up.
" " ....Canvassed for more applicants through main tri-Service newspapers.
" " ....HMS Endurance returned to HM Naval Base Chatham.
1982 September.HRH The Prince of Wales agreed to be Patron of the expedition.
" " ....New headed writing paper ordered (Emperor Penguins).
" " ....Diplomatic Clearance in principle applied for through MOD,and FCO informed.
" " ....DGST(N) agreed to provide two 5meter Avon inflatable boats on loan.
" " ....Decided to buy skidoos for journey from Palmer, as well as boats.
" " ....Outline Equipment List drawn up.
" " ....West German Wegener Institute canvassed for transport.
" " ....Government announced that HMS Endurance would continue in service. Big day!
" " ....Expedition plans outlined in letter to Commanding Officer HMS Endurance.
" " ....Furse discussed scientific aims with BAS in preparation for team selection.
1982 October..(5th-6th).Selection Interviews for 1S & OW at RGS, chaired by Malcolm Burley. 10 team members & 10 reserves selected (some late applicants to follow).
" " ....Waghorn appointed BRNC Dartmouth - unable to join First Summer. Waghorn nominated as Leader of Second Summer Party.
" " ....John Spencer engaged for civilian fund-raising.
" " ....Lifeguard Equipment Ltd. offered to lend one 5meter inflatable workboat.
1982 November.(12th-14th).Initial 1S & OW Team Meet for weekend at RAF Llanrwst. Jobs allocated; organisation "tree" formed; team briefed.
" " ....First sponsorship received (from RN & RM Mountaineering Club).
" " ....Professor Baker submitted application to NERC for geology research grant.
" " ....Requested allocation of Unit Identity Numbers for Army & RAF stores.
" " ....Commando Logistic Regiment RM agreed to provide stores-packing facilities.
" " ....PSTO(N) Devonport agreed to act as Stores Accounting Authority.
" " ....Addback funding requested from DNPTS for skidoos & basecamp tents.
" " ....Structaply hut ordered.
1982 December..Contacted Defence Attache Santiago about Chilean Naval Chinook helicopters.
" " ....Arranged with JSMTC Scotland for 1S & OW Summer Training period site.
" " ....Furse visited SCRDE discussed clothing trials.
" " ....Canvassed three Service Medical DGs for Doctor for First Summer.
" " ....Furse failed to chop thumb off: recruited Dr.Morris through hospital & RGS.

1983 January...Newsletter No.1 sent out (29 team members + COs + 41 external addressees).
" " ....Initial enquiry to DGST(N) for freighting of gasoline to Falklands.
" " ....Canvassed Insurance Companies about insurance for equipment.
" " ....FCO confirmed that expedition was acceptable under the Antarctic Treaty: but NB. 1.Adventure "training" not allowed, and NB. 2.No approaches to foreign authorities for logistic support.
" " ....Folder prospectus produced for fund-raising (photostat illustrations).
" " ....Applications to RGS & Gino Watkins Memorial Fund stated scientific work was "for" BAS. The Director BAS declined to endorse them, due to this wording.
" " ....BAS reported that expedition rations at Palmer were perished. HMS Endurance requested to inspect rations at forthcoming visit to Palmer.
" " ....Doctor's certificate obtained that conditions required 5000 k.cals/manday.
1983 February..DGST(N) agreed to provide Booster Rations.
" " ....DNOA(E) agreed in principle to Furse taking part in the expedition.
" " ....MVEE Chertsey agreed to overhaul & modify the two ex-Transglobe skidoos.
" " ....LEA approved SCRDE providing specified gear on loan for trial.
" " ....Expedition allocated Unit Identity Numbers for Army & RAF stores.
1983 March....(1st).Lord Lewin & Sir Vivian Fuchs hosted fundraising lunch at Furse House. Saccone & Speed first commercial sponsors,funding new skidoo (£5400). Bob Angell of Pacesetter Enterprises became honorary cinefilm adviser.
" " ....Initial enquiries about transport of team & general stores to Falklands.
" " ....NERC approved grant for Geology Research Studentship at Nottingham.
" " ....Team members unable to discuss projects with BAS scientists. Problem identified: arranged to submit proposals to the Director of BAS. Hankinson & Furse accelerated enquiries at Universities etc.
" " ....HMS Endurance inspected rations at Palmer Base, & reported them usable.

1983 March.....Request for assistance in 83/84 forwarded to CO HMS Endurance.
Carriage of gasoline noted as potential major problem.
" " ....Defence Council Instruction published seeking 2S volunteers.
" " ....Two weeks winter training at BOBC Norway (Hovden) for 1S & OW (17 men).
Further selection to First Summer (8 team + 3 reserves), & Winter (7 + 2).
3 team + 6 reserves "carried over" to Second Summer due postings etc.
" " ....Oakley took over from Waghorn as Equipment Officer (neither at BOBC).
" " ....DNPTS approved Addback funding for second-hand skidoos, basecamp tents.
Furse tore up £10,000 Addback cheque (due payment before 1 April).
Williams & Glyns pretended they had torn it up, and accepted it.
1983 April.....Civil Commissioner approved Expedition Sub-Post Office on Brabant Island.
" " ....CO Endurance agreed in principle to assist expedition,
but with particular reservations about carriage of gasoline.
" " ....Fuel consumption of boats calculated from Avon figures for speeds.
" " ....Potential alternative freight arrangements reviewed & some canvassed.
" " ....Two skidoos bought from Transglobe Expedition,taken Sloane Square to MVEE.
" " ....Newsletter No.2 sent out (26 team members + COs + 27 external).
" " ....Draft bid-letters for Addback 83/84 sent to all team members to use.
1983 May.....Civilian equipment costs defined (£33,000 min.),controlled spend arranged.
" " ....Waghorn canvassed manufacturers for sea kayaks for Second Summer.
" " ....Beattie, de Silva & Stuttard attended symposium at BM Natural History.
" " ....Prof.Baker & Furse interviewed 9 shortlisted applicants for studentship.
1983 June.....Ringe selected (after some hiccups) for Geology Research Studentship.
" " ....List of scientific projects submitted to BAS requesting some collaboration.
" " ....TransAntarctic Association granted expedition £2000 (had asked for £750 !).
" " ....Glossy coloured expedition brochure produced by DPR(N).
" " ....Arranged facilities at RGS for Second Summer selection interviews.
" " ....Detailed rations budget drawn up. Increased numbers discussed with DGST(N).
" " ....Procurement of 4-star gasoline & freighting to Stanley organised by LEA.
" " ....Furse visited HMS Endurance in refit at Portsmouth.
Captain McGregor agreed to increase 1S & OW teams to 10 each.
" " ....Formal bid for ship's support submitted to Hydrographer & CO Endurance.
1983 July.....Furse visited BAS to brief Brazilians on Elephant Island (no transport!).
" " ....Endurance Planning Meeting in MOD, chaired by DNOT.
Outline programme included support to JSE.Outward journey through Panama.
" " ....Endurance agreed to embark ten 45gal drums of gasoline in Chile.
" " ....Arrangement with Sunday Telegraph for priority of news/regular articles.
" " ....Newsletter No.3 sent out (25 team members + COs + 43 external addressees).
" " ....Typical days work: 7 in-letters,10 out; 19 phonecalls; 3 payments, 1 grant.
1983 August....Scientific project sheets submitted to Director BAS for approval.
" " ....Plessey Electronics Ltd agreed to provide 3 Clansman radios on loan.
" " ....Two weeks Summer Training at JSMTC Dundonnell for 1S and OW.
First Summer Party now 9 team members + 0 reserves; Winter Party 7 + 3.
" " ....Advertised to fill vacancies after 2 withdrawals.
" " ....Requested approval for Atkins & Corbett to remain over the Winter.
" " ....Trathen arranged facility for Pre-Departure Meet at Penver Cottage.
" " ....Requested Diplomatic Clearance for 1S Party outward through Chile.
" " ....Cotswold Covers Ltd arranged to design, print & market First Day Covers.
" " ....Advised DNPTS of intended arrangements for writing-off damaged equipment.
" " ....HM Customs & Excise ruled no VAT exemption for goods delivered in UK.
" " ....Prefabrication of Tri-Wall Hut began at RE Chattenden.
1983 September.Winter Training dates changed to January (for 2S with OW).
" " ....Norsk Polarinstitutt agreed wording of Belgica plaque (at 3rd attempt!).
" " ....Lumsden released to assist Hill packing stores at RM Coypool.
" " ....HMS Endurance agreed to Winter Party increase from 10 to 12.
" " ....HMS Endurance visit to Valparaiso confirmed.
" " ....Hankinson booked 1S flight direct to Santiago, through MetroTravel Services.
" " ....Flag Officer Medway hauled down his flag. Furse largely free for JSE work.
" " ....Director BAS approved BAS collaboration on 11 scientific projects,
(unfortunately most BAS scientists gone south).
" " ...(26th-28th).Selection Interviews for Second Summer at RGS.
6 team members and 16 reserves selected.
" " ....Newsletter No.4 sent out (42 team members + COs + growing external list).
1983 October...Defence Attache Santiago arranged special blend 4-star gasoline by Shell.
" " ....Trathen made informal agreement with RM Eastney for printing Final Report.
" " ....Hankinson & Furse attended "Welcome Home party" at RGS (!).
" " ...(14th-16th).Initial Weekend Meet for 2S at Penver Cottage.
McLeod interviewed & taken on as 10th First Summer team member.
De Gerlache first met other team members.
" " ...(16th-21st).Pre-Departure Meet for 1S at Penver Cottage.
Final stores-packing at RM Coypool (4 extra team members kit obtained).
" " ....Outboard Motors 3-day course at RM Poole, arranged by Worrall.
" " ....Weekend skidoo aquaintance at SEME Bordon,with Oliver Shepard.
" " ....Informed (in confidence) of Rolex Enterprise Award for Hankinson.
" " ....Corbett authorised to purchase quality 16mm cinefilm equipment.
" " ....Fuji Photo Film (UK) Ltd donated 55,000 ft of colour reversal film.

1983 November.(1st).1S Stores embarked in HMS Endurance at Portsmouth.
Arranged to ship excess OW stores south in SS Andalucia Star.
" " ....DGST(N) authorised purchase of gasoline in Chile.
" " ....Atkins 2 week survey course at School of Military Survey, Hermitage.
" " ....Agreement finalised with Chris Bazalgette/John Spencer for fund-raising.
" " ....Lord Lewin's endorsement secured sponsorship by Allied Lyons (£1500).
" " ....Furse signed contract for book with Croom Helm Publishers Ltd.
" " ....Team transport UK-Stanley in March 84 requested (for OW out and 1S back).
Problem identified - uncertainty due low priority on trooping flights.
Asst.Chief Defence Staff Personnel & Logistics approached for influence.
DGST(N) approached for travel in Royal Fleet Auxiliary.
" " ....RFA Resource (Captain McLaughlin) agreed to transport team.
" " ....RFAs programmes changed due Lebanon crisis. Resource not going to Stanley.
" " ....RFA Fort Austin (Captain McLaughlin in new ship!) offered team transport.
" " ....Proposed JSE programme serials forwarded to CO HMS Endurance.
" " ....Newsletter No.5 sent out (to 40 team members + COs).
Newsletter distribution handed over to Ball (100+ external copies sent).
1983 December.(1st).Furse briefed HRH The Prince of Wales.
" " ....First 2S canoe training weekend at Dartmouth.
Waghorn's end date at BRNC settled (for July 84).
" " ....Administration,Treasurer & Sciences tasks handed over to 2S.
Fund-raising task handed over to Randall (applied & selected October).
Randall withdrew. Fund-raising handed over to Ashcroft.
" " ....Furse briefed DNPTS, Captain Chrishop.
" " ....Furse visited BAS Cambridge, discussed radio with Deputy Director.
" " ....Formal request to BAS for radio link through Faraday Base.
" " ....Detailed Rearlink arrangements made for distribution of bulletins in UK.
" " ....Finance & insurance arrangements for civilian team members defined.
" " ....Corbett extended personal camera insurance to cover expedition kit.
" " ....Formal agreement made with Colour Processing Laboratories Ltd. for stills.
" " ....Formal agreement made with Pacesetter Enterprises Ltd. for cinefilm.
" " ....Arrangements for Rolex Award Film made with Transworld Ltd.
" " ....Pre-expedition physiological tests for Winter Party at INM.
" " ...(16th).Official Farewell Party in RRS Discovery in St.Katherine's Dock.
ACDS.P&L advised trooping out (RFAs changeable; Movements optimistic).
Decision on OW outward travel handed over to Oakley.
Waghorn took over UK Leadership.
Private Farewell Party in Grosvenor Hotel.
" " ...(17th).1S Party departed from Heathrow Airport.
" " ....Furse briefed Instituto Antartico Chileno. (No Chinooks south this year!).
" " ....Trathen discussed geology with Professor Gonzales Ferran in Santiago.
" " ....Oakley arranged OW outward travel in Fort Austin,direct UK-Stanley.

1984 January...Two weeks Winter Training for 1S & OW teams in Cairngorms.Suitable weather.
(Waghorn unable to attend due job at BRNC).
Equipment & Travel tasks handed over to 2S.
2S team now 14 team members + Ringe + 4 reserves.(7 boats;rest land).
" " ....Evans two week survey course at School of Military Survey, Hermitage.
" " ....HMS Endurance longcast received.
" " ....Ball arranged 1S return travel trooping ship & flight from Stanley.
" " ....Sapper Brandon completed prefabrication of Triwall Hut with Coward.
" " ....BAS agreed to pass radio bulletins through Faraday & Cambridge to DNPTS.
" " ....DPR declined to fund Lecture Sets of 100 slides for team members.
" " ....Newsletter No.6 sent out (team members, COs, NOK + many external).
" " ....Ball made agreement with Tony Bray for marketing philatelic covers.
" " ....Second Summer team stores meeting in London.
" " ....Press Conference & farewell party for OW team in Portland Heights Hotel.
" " ....Winter Party embark in RFA Fort Austin at Portland.
" " ....Second 2S canoe training weekend at Dartmouth.
1984 March.....OW Party busy collecting last minute items Stanley and Leith.
" " ....Third 2S canoe training weekend.
1984 April.....BAS Stanley office closed.Bulletins now by facsimile Faraday to Cambridge.
" " ....1S Party returned to RAF Brize Norton. Biological collections lost.
Hall & CPL began processing 1S photographs.
" " ....Hankinson & Morris visited to Geneva to receive Rolex Award for Enterprise.
1984 May.....Hankinson sent individual thankletters/debrief to 18+ authorities.
" " ....Fourth 2S canoe training weekend.
" " ....HMS Endurance returned to Portsmouth. Greenway collected 1S return stores.
" " ....Waghorn submitted request for assistance 84/85 to Endurance & FOF.3.
" " ....Ball clarified travel arrangements for November 84-January 85.
" " ....Two withdrawals from 2S. Canvassed for extra volunteers in Service papers.
" " ....Newsletter (31st) sent out (team members, NOK, COs and external).

1984.June.....HMS Endurance agreed to increased 2S team of 20 (including Ringe).
" " ....Hankinson continued search for lost 1S biological collections.
" " ....Service stores not yet arriving at SEME Bordon. Lewis sorted out problem.
" " ....Trathen appointed to Bahrein. Waghorn re-started arrangements for report.
" " ....Amanda Broughton chosen as Miss Brabant Island. Fund raising activities accelerated including raffle for evening with Miss Brabant or an explorer.
" " ....Hankinson driving slow handovers/debriefs 1S to 2S, and post exped.plans.
" " ....Radio message from OW Party: concern about "Dayglo Point" cache & rations. Hankinson canvassed possibility of Hercules airdrop.
1984.July.....Service stores began arriving at SEME Bordon. Greenway checking on receipt.
" " ....Operators course on inflatable boats at RM Poole.
" " ....Hankinson began Staff Navigation Course, continued search for lost samples.
" " ....Ashcroft withdrew. Clements took over PR & Fund-raising (4th in 8 months).
" " ....Final canvass for volunteers through Commands.
" " ....First Summer Interim Report printed. 300 copies distributed by Hankinson.
" " ...(31st).Selection interviews for 6 applicants in MOD Building.
1984.August....Lewis arranged early delivery 550 mandays rations to Stanley for OW Party.
" " ....Tam Dalyell asked Parliamentary Question on JSE. DPR & Hankinson replied.
" " ....Lewis relieved in HMS Juno, giving him more time for JSE stores work.
" " ....Waghorn finished at BRNC, appointed to DNPTS additional for JSE.
" " ....Two weeks Summer Training at JSMTC Dundonnell. (2S + 6 1S.).
5 late applicants attended. Barker & Lawrence selected.
2S team finalised: 7 Boat Party + 9 Land Party + Ringe.
" " ....Hankinson continued search for lost 1S biological collections.
1984.September.Six weeks radio silence explained (OW bulletins filed in Stanley!).
" " ....CBFFI signalled concern over radio traffic.
" " ....Plessey Electronics Ltd. enquired whereabouts of 3 Clansman sets on loan.
" " ....Waghorn visited Endurance to discuss detailed plans.
Radio message sent instructing OW Party all at Metch.Pt.for changeover.
2S plans to be based on all landing at Metchnikoff Point.
" " ....Ball defined and arranged 2S outward travel (trooping flight & ship).
" " ....RM Eastney confirmed that JSE Official Report could be printed.
" " ....First Summer Biological collections finally located (at RAF Lyneham).
1984.October..(4th).Hankinson briefed HRH The Prince of Wales.
" " ....Formal request to CBFFI for facilities for 2S in transit through Falklands.
" " ....Evans' evacuation notified. HQ 1Group Aeromedical Evacuation Section fixed.
" " ....2S Team Training/Stores-packing week at SEME Bordon.
" " ....1S Reunion at RGS (Young Explorers Trust Welcome Home Party).
" " ...(31st).2S stores embarked in Endurance at Portsmouth.
1984.November..Waghorn submitted interim overall expedition report to DNPTS for JSET.
" " ....Flint arranged camera-insurance with Insurance Brokers in Penrith.
Hankinson paid premium. Cheque cashed, and policy presumed arranged.
" " ....Plessey Electronics Ltd agreed to extend loan of 3 Clansman radios for 2S.
" " ....Hankinson took over ALL administrative tasks from 2S.
" " ...(22nd).2S Pre-Departure Press Conference in MOD Main Building.
Evans (just returned) handed over copies all OW Party radio messages.
Consternation at volume of signals not received & extra stores suggested.
" " ...(26th).Second Summer team departed from RAF Brize Norton.
1984.December..Second Summer Party arrived Stanley: no messages from island, no contact.
Waghorn confirmed OW Party return journey details, investigated 2S return.
2 weeks training in camp & canoes. Hughes lone walkabout - hmmph!

1985.January...CO HMS Endurance defined policy for supporting Expeditions.
" " ....Plans & priorities for 2S recovery given to Endurance, radiod to 2S ashore.
" " ....Application approved by RAF for Atkins to join HMS Endurance, to Britain.
" " ....Furse debriefed CBFFI & Civil Commissioner.
" " ....SNOFI confirmed airbridge/air-trooping return journey dates for 2S.
" " ...(26th).OW Party returned to RAF Brize Norton.
" " ...(28th).OW Party post-expedition physiological tests at INM.
" " ...(29th).OW Party Press Conference at Portsmouth.
Times, Telegraph & Guardian use upside-down Union Flag pictures.Oh dear!
" " ....Newsletter (31st) sent out (team,NOK,COs & 103 external).OW prelim.report.
" " ....Greenway's evacuation notified. Aeromedical Evacuation Centre fixed.
1985.February.(7th).Greenway arrived at Heathrow Airport, met by Furse.
" " ....Defence Attache Santiago queried policy on passports for expeditions.
" " ....Furse debriefed DNPTS, Captain O'Reilly.
" " ....Detailed arrangements for Report discussed with RM Printers Eastney.
" " ....OW cineflim rushes viewed. Bob Angell initiated negotiations BBC etc.
" " ....Newsletter (19th) sent out (team & NOK + few only).
" " ...(22nd).Request received from 2S for 3 outboard gearboxes After weekend fixing 2 complete motors from PSTO(N) Devonport, unable to fly out due low priority. 2S informed of failure by radio.

1985.March....(4th).News of Waghorn's crevasse-fall and injury received via DNOA(E).
Rescue actions are covered in narrative section of this report.
Only Rearlink action was informing NOK, and public relations at home.
Telegraph informed 4th, but did not use the story.
Press release issued 5th through DPR started major rescue story all media.
" " ....Agreement with Syndicated Features Ltd discovered, and formalised.
" " ...(10th).Newsletter sent out (team, NOK and 22 external).
" " ...(18th).Waghorn, Clements, Gill, Martin & Ringe arrived at RAF Brize Norton,
Press Conference and mobbing by papparazzi.
" " ...(19th).Furse briefed HRH The Prince of Wales.
" " ....RGS presentation provisionally arranged for 7 October 85.
" " ....JSE bill for equipment costs for Ringe submitted to NERC thro' Nottingham.
" " ....Newsletter dated 31st sent out (team, NOK and 17 external).
1985.April....(8th).Waghorn,Greenway plus four met remainder 2S team at RAF Brize Norton.
" " ....Preliminary overall report submitted to RGS.
" " ....Personal reports on OW party forwarded to DNPTS.
" " ....OW return stores container arrived in Britain for months customs procedure.
" " ....Dixon & Watt, Insurance Brokers refunded premium, cameras not insured.
Hankinson sought legal advice. (See November 84).
1985.May.....OW return stores container received Portsmouth. Boxes distributed.
Kimbrey (with Worrall) stood-by in RM Stonehouse for unpacking JSE kit.

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The following are some of the continuing administrative tasks foreseen.

1985.May.....Corbett & Furse select OW slide lecture set of 120. CPL duplicate 15 sets.
" " ....Hall,Waghorn & Furse select 2S Expedition slide set (c800). CPL dup.3 sets.
" " ....Furse hand camera-ready official report to RM Eastney printing department.
" " ....Waghorn forward 2S personal reports through Furse to DNPTS.
" " ....Kimbrey and Worral unpack, clean and sort out OW return stores.
Stores on loan returned to (Service or Civilian) owners.
PSTO(N) Devonport inspect & assess worn and damaged Service equipment.
Kimbrey,Oakley & Furse raise Forms S.126 for lost or damaged equipment.
JSE kit listed; values assessed; sales "bid-list" distributed to team.
" " ....2S return stores container arrives in UK for customs.
1985.June.....Oakley, Kimbrey & Worrall go through the whole hoop again on return stores.
HMS Endurance returns to Portsmouth, Atkins & McLeod onboard (+ skidoos?).
" " ....Hall & Waghorn select 2S slide lecture set of 120. CPL duplicate 19 sets.
1985.July.....Furse forward book manuscript to Croom Helm Publishers.
" " ....Preliminary report submitted to JSET bi-annual meeting.
" " ....HRH The Prince of Wales Programme meeting. RGS presentation details fixed.
1985.August....Report printing complete. Report & covers handed to binders.
" " ....Report binding complete, ready for distribution thro' team at reunion.
1985.September(27th-28th). Expedition reunion at Apollo Hotel, Birmingham.
View photographs, equipment sales, financial statement/handover etc.
" " ...(28th).Furse to USA ref work, until 5th October.
1985.October...JSE Presentation at the RGS (planned for Monday 7th).
1985.November.(13th & 15th). JSE Presentations to the RSGS at Glasgow & Edinburgh.

1986.February..Gill receives Gold Star Award from Daily Star.
1986.April...."Antarctic Year, Expedition to Brabant Island" published by Croom Helm.

1987.....Wind up Expedition Fund; present accounts to DNPTS.

TEAM SELECTION

by Chris Furse

The great majority of team members were selected from applicants responding to calls for volunteers printed in Defence Council Instructions. Selection was in four main stages over the 18-22 months preceding each phase of the expedition.

1. Applicants had to obtain approval from their Commanding Officers, whose endorsement was required on their initial written application. (In many cases this involved COs obtaining clearance from central appointing/drafting/posting authorities).

2. Written applications included personal details such as age and marital status, adventurous experience including mountaineering and canoeing, scientific qualifications or interests, and experience in various support activities such as doctoring, photography, radio operation and technical trade skills. From the written applications Furse selected a shortlist for interview, calling about twice as many interviewees as were required in the squad.

3. Selection interviews were held at the RGS with a panel of 4-5 interviewers. In October 1982, Cdr Malcolm Burley RN Rtd. chaired the Selection Committee, comprising Furse, Waghorn, Oakley and Chief Petty Officer Steve Williams. In September 1983, Furse chaired the Selection Committee, comprising Waghorn, Hankinson and Oakley. Each shortlisted applicant was interviewed for 15 minutes. At the end of the 3 days interviewing, selection was agreed and all interviewees informed. Some team members were firmly selected forming 40-70% of the planned team, plus a number of reserves to form a total squad of about 150% of the planned team.

4. Over the year plus leading up to departure, reserves were progressively confirmed as team members, as they demonstrated their suitability (primarily during the 2 week winter and summer training periods, also in general preparatory activities). Some reserves melted away during the year, and in practice it was possible to increase the original team sizes so that all suitable remaining reserves could be taken.

Furse had selected Waghorn (an old friend), and Oakley (earmarked by the Medical Director General of the Navy) in advance of the selection interviews.

Ringe was selected in mid 1983 by the normal Universities' routine process for selection of post-graduate research students. Morris was recruited in January 1983 after no suitable Service doctors had been recommended. De Gerlache was recruited in 1983 after Furse had contacted the Belgian Antarctic Committee about a commemorative plaque.

Before each of the three phases departed, withdrawals of reserves reduced the squads below the maximum numbers approved by HMS Endurance. Late recruiting campaigns were mounted through Service Newspapers and mountaineering club bulletins. Resultant applicants were interviewed. McLeod joined the First Summer Party in this manner in October 1983. Barker and Lawrence joined the Second Summer Party after summer training in August 1984. Similar shortfalls in the Winter Party were made up by Beattie transferring from First Summer, de Gerlache and Lumsden transferring from Second Summer, plus Atkins and Corbett extending from the First Summer.

Although the three teams contained many quite inexperienced men, and no widely recognised "stars", they proved excellent collectively and individually. The progressive selection was confirmed as a satisfactory method and in particular the real value of interviews by a panel.

Note on Leadership of Parties on the Island, & the Narrative Reports.

One of the few rules of this expedition in the field was that every group or party must have one recognised Leader. Choice of leader depended upon the main activity, appropriate experience being the main factor. Through the course of each phase, most suitable team members were given an opportunity to lead a party. Service rank was ignored: in case of doubt the rule was that the eldest member of a party would take over, or would nominate another as leader (in fact no such doubts ever arose). Throughout the following narrative sections of this report, the first name is the Party Leader, other members of the party being listed in alphabetical order.

The outward journeys were always considered more critical because, if arrangements failed, the expedition would simply not happen.

BASIC RATIONS AND FUEL FOR FIRST SUMMER AND WINTER.

December 1981.	PSTO(N) transported rations from RNVD Botley to Gravesend Docks.
January 1982.	Rations sailed MV AES Gravesend to Port Stanley (commercial freight).
February 1982.	Rations stored by NP8901 in Stanley. Kerosene obtained locally.
March 1982.	Rations and kerosene embarked in HMS Endruance. Unable to fly ashore onto Brabant due 3 days bad weather. Landed at US Palmer Base instead, stored in the open there.
January 1983.	BAS staff inspected rations, reported many perished.
March 1983.	Supply Officer Endurance inspected rations, found them usable
January 1984.	Rations and fuel embarked in Endurance, transferred to Brabant Island.

4-STAR GASOLINE FOR FIRST SUMMER AND WINTER.

July 1983.	RAOC Petroleum Centre transported 32 drums of gasoline from West Moors to Southampton.
August 1983.	Gasoline sailed in STUFT ship to Port Stanley. Stored by Falkland Islands Logistic Battalion. (Drums shipped south in Endurance February, March and Dec.1984)
December 1983.	10 drums from Shell Chile embarked Endurance Valparaiso, shipped south and landed on Brabant Island.

FIRST SUMMER GENERAL STORES

November 1983.	Transported by PSTO(N) from Coypool and Botley(etc) to Portsmouth. Loaded by JSE into Endurance hold. Ship sailed that month.
December 1983.	Bulk stores moved from hold to hanger at Valparaiso.(Hankinson hit by craneload falling 60ft, happily only needed 9 stitches in scalp.)
January 1984.	Landed at Brabant Island (and some at Palmer Base) with team.

FIRST SUMMER TEAM. (10 Men)

December 1983.	17th. Commercial airflight from Heathrow to Santiago (changing at Paris & Bogota). Train Santiago to Valparaiso. (Total 8 days in Chile). 28th. Embarked in Endurance, sailed via Patagonian channels.
January 1984.	Landed at Brabant Island (and Boat Party at Palmer Base).

WINTER GENERAL STORES

November 1983.	Stores found too much for Endurance hold on loading. Transferred to PSTO(N) Portsmouth Outward Shipping Store and crated.
December 1983.	Shipped south in SS Andalucia Star from Southampton to Stanley.
February 1984.	Embarked in Endurance at Stanley. Some stores landed on Brabant Island that month. Skidoos & other stores transferred from Palmer to Brabant by Endurance.
March 1984.	Remainder of stores landed on Brabant Island with Winter Party.

WINTER TEAM (9 Men)

February 1984.	17th - Embarked in RFA Fort Austin at Portland,sailed to the Falklands
March 1984.	8th - Helicopter transfer to Endurance at San Carlos. 2 days Stanley. Sailed in Endurance via South Georgia, South Sandwich, South Orkneys and survey off Trinity Island to Brabant Island.

EXTRA RATIONS AND FUEL FOR DECEMBER 1984.

September1984.	Collected in Stanley by Falklands Islands Logistic Battalion.
October 1984.	Embarked in RRS John Biscoe.
November 1984.	Landed at Metchnikoff Point, when evacuating Evans.

FUELS FOR SECOND SUMMER PARTY.

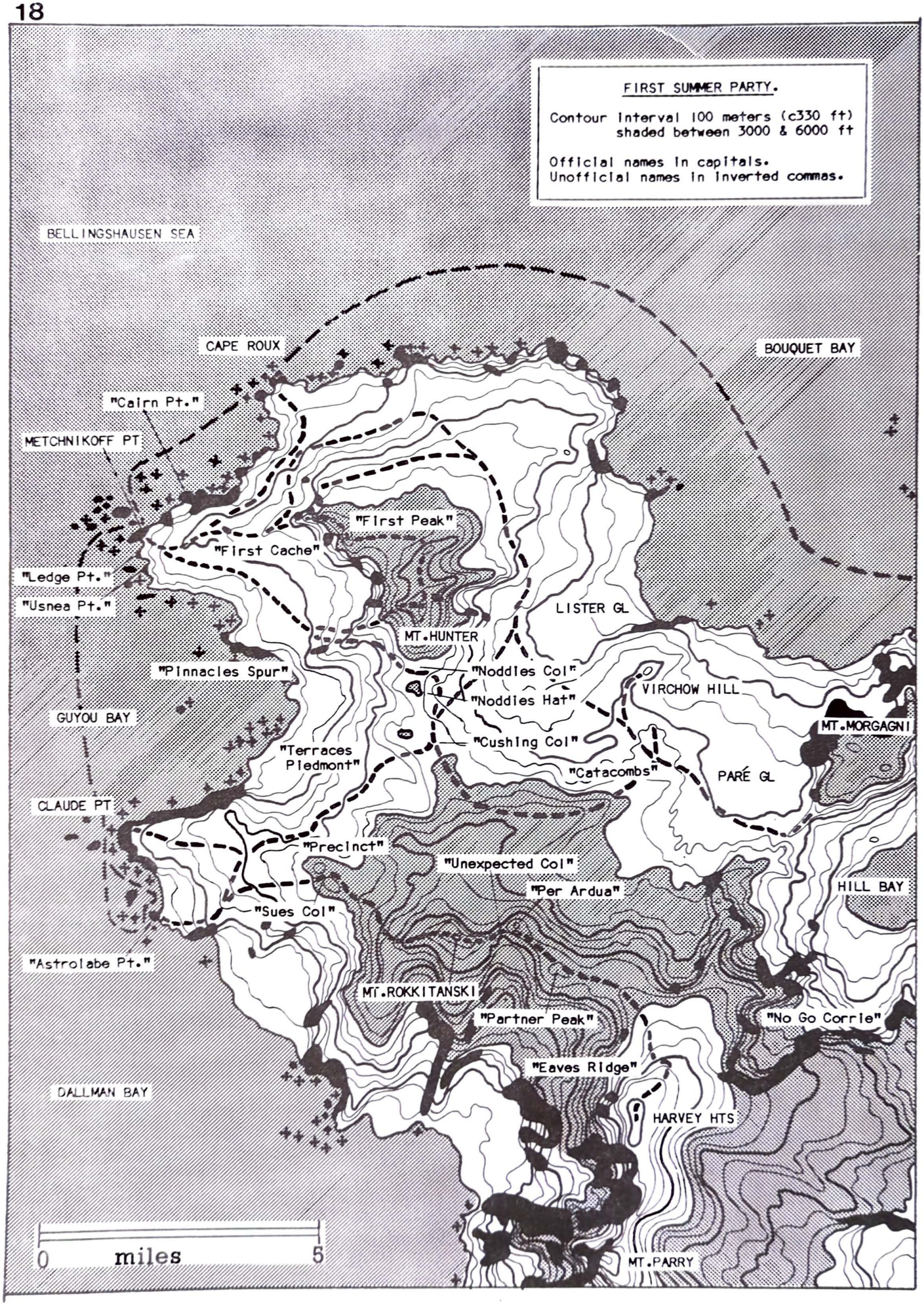
August 1984.	Freighted south from Britain in MOD contract cargo ship.
September1984.	Stored by Falklands Islands Logistic Battalion in Stanley.
December 1984.	Embarked in Endurance, shipped south to Brabant Island.

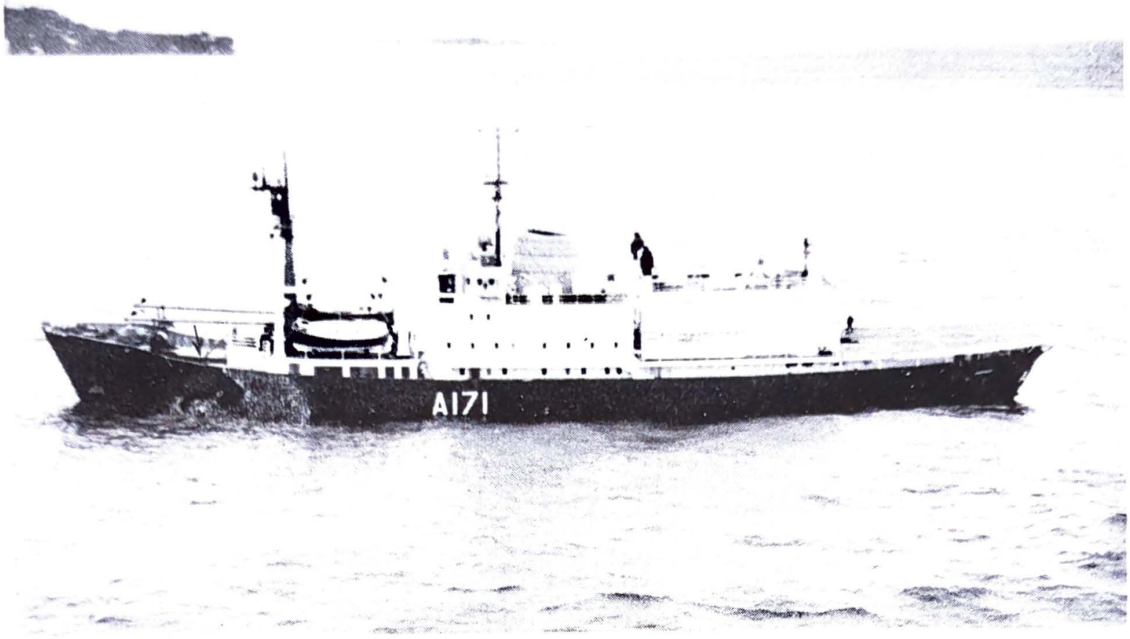
RATIONS AND GENERAL STORES FOR SECOND SUMMER PARTY.

October 1984.	Transported from RNVD Botley & SEME bordon etc. to Portsmouth. Loaded by JSE into Endurance hold.
November 1984.	Endurance sailed to Stanley
December 1984.	Stores landed on Brabant Island with Second Summer team.

SECOND SUMMER TEAM

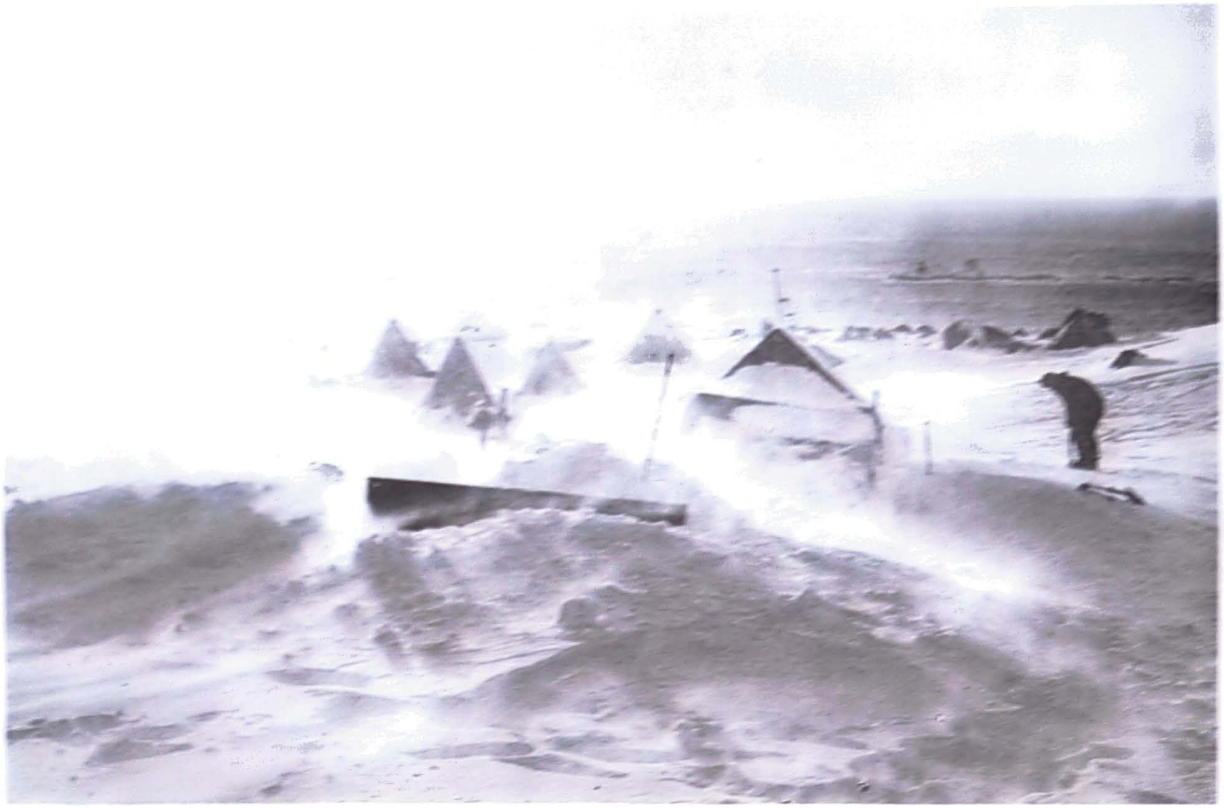
November 1984.	Trooping Flight from RAF Brize Norton to Ascension Island. Embarked in SS Uganda for passage to Port Stanley.
December 1984.	Two weeks shakedown in Falkland Islands. Lewis invalided home air from Stanley. Remaining 15 embarked in HMS Endurance direct passage south.


FIRST SUMMER PARTY.
Contour Interval 100 meters (c330 ft)
shaded between 3000 & 6000 ft
Official names in capitals.
Unofficial names in inverted commas.
BELLINGSHAUSEN SEA
CAPE ROUX
BOUQUET BAY
"Cairn Pt."
METCHNIKOFF PT
"First Peak"
"First Cache"
"Ledge Pt."
"Usnea Pt."
LISTER GL
MT.HUNTER
"Pinnacles Spur"
"Noddles Col"
"Noddles Hat"
VIRCHOW HILL
GUYOU BAY
MT.MORGAGNI
"Cushing Col"
"Terraces Piedmont"
"Catacombs"
PARÉ GL
CLAUDE PT
"Precinct"
"Unexpected Col"
"Per Ardua"
HILL BAY
"Sues Col"
"Astrolabe Pt."
MT.ROKKITANSKI
"Partner Peak"
"No Go Corrie"
"Eaves Ridge"
DALLMAN BAY
HARVEY HTS
0
miles
5
MT.PARRY



HMS Endurance. Good weather for flying and for moving gear from the hold (arrowed) to the flight deck aft.

Metchnikoff Point from the South. Base camp was on the 150ft col arrowed



Basecamp in July 84. Winds keep the hut fairly clear, but the stores boxes are repeatedly covered.

Basecamp in August 84. Digging down to the stores box. The hut porch has drifted over.

Initial Landings from HMS Endurance. 6-12 January 1984.

On 6th Endurance arrived off Palmer Station, where the rations landed 2 years earlier were stacked near the helipad. With help from the base-staff, four food "dumps" of rations and kerosene were embarked by helicopter, leaving the fifth in case the team eventually had to be landed at Palmer. The 3 skidoos with associated stores and the 2 Avon boats, 4 engines and other boat stores were landed. Endurance then motored north through the Neumayer Channel in lovely weather, sighting the Solvay Mountains at about midnight. Worrall stayed up overnight reconnoitering the boat journey route by binocular.

The overall plan was to land four dumps of food and fuel, one each at Humann Point (the main basecamp), Metchnikoff Point (the secondary basecamp), Buls Bay, and somewhere in the north east, with corresponding proportions of general stores. If this was achieved, it was intended that the fifth dump of food and fuel would be transferred from Palmer Station in February or March.

However on 7th a helicopter reconnaisance showed that the intended main basecamp at Humann Point was totally unsuitable, with no reasonable boat landing, and no safe helicopter landing site. Later that day another helicopter reconnaisance located a good helicopter landing on the point south of Claude Point, and a much better basecamp site at Metchnikoff Point. No further flying was possible that day.

Trathen, as Stores Marshall, completely changed the stores dump allocations accordingly, working from the Box List, which indicated the main contents of nearly 800 boxes. In broad terms all "Main Base" boxes would now go to Metchnikoff Point, most "Secondary Base" boxes to Buls Bay, and the boxes earmarked for Buls Bay would now be landed at the point south of Claude Point. This frantic reshuffle demonstrated the importance of the brief Box List and of using a simple numbering system with clearly numbered boxes (rather than lengthy "manifests" and contents written on boxes). Some mistakes were made in the rush, but commendably few: the penalty of any bad distribution would have been severe.

On 8th January two dumps of food and fuel plus about half the other stores were flown in to Metchnikoff Point. Boat party members were used for this shore party, to give them local knowledge. Finally Furse, Atkins, Hill and McLeod were landed at Metchnikoff Point. Endurance lay offshore overnight. Next morning some final stores were flown into Metchnikoff Point. One dump of food and fuel was then landed at the low point south of Claude Point, opposite Astrolabe Needle. Endurance then moved round into Gerlache Strait.

On 9th a helicopter reconnaisance found no suitable dump site in the area south of Buls Bay identified as likely from the aerial photos. However a low point was found between Buls Bay and Pinel Point, and one dump of food and fuel plus various stores were landed there.

Endurance then departed to Faraday Base with Hankinson's 6-man Boat Party on board. Visiting Port Lockroy they encountered the tourist ship MS World Discoverer where Hankinson raised some funds for the expedition On 11th January the Boat Party were landed at Palmer Station, and Endurance departed.

Taking full advantage of the fortuitous spell of good weather the first major crux of the expedition had been overcome, landing on Brabant Island, not having to move stores from Palmer Station by skidoo and boat. This had only been possible because of the enthusiasm and professionalism of Captain McGregor's ships company and flight on board Endurance.

Base Camp Party. 8-27 January 1984. Furse, Atkins, Hill, McLeod.

They settled in, rationalised the stores boxes into three anti-penguin zaribas and started routine meteorological records, plus a breeding bird survey and seal counts. Day trips to nearby "Skua Bluff", pulling Arctic Rations up to "First Cache" and crossing "Footsore Piedmont: served as familiarisation to roped skiing, but blisters then immobilised Hill and McLeod.

On 14th Atkins led Furse up the lovely Grade I-II northwest ridge of Mount Hunter to "First Peak" (4000 ft). Camping on top at midnight, they plodded over two other intermediate tops to reach Mount Hunter (4900ft) on 15th. Atkins went into a bergshrund on the descent but climbed out to save Furse embarassment on a precarious iceaxe belay above. They returned to basecamp late, exhausted, elated, and badly blistered.

Hill had established radio contact with Faraday. Communications with the Boat party were poor, but on 18th they reported arriving near Buls Bay and the first priority became reconnaissance and marking of their route from Harvey Heights to basecamp. On 16th McLeod and Hill pulled to the foot of "Pinnacles Spur"; next day they were stopped by the Icefall the other side, so left the food cached there and returned. Furse and Atkins then found and marked a pulk route over the top of "Pinnacles Spur". They were discovering that travel on Brabant was much slower than Furse had expected, based on experience on the comparatively easy terrain of Elephant Island.

The weather then deteriorated. Atkins made a 1/1000 map of Metchnikoff Point by plane table, to support scientific work. McLeod set the wind generator to work. Furse and Hill found a Weddell Seal freshly killed by a rockfall at "Cairn Point".

At 0100 on 28th McLeod and Furse were searching for Black-bellied Storm Petrel nests on the moraine when three very large penguins were dimly seen in the half-dark moving up past the stores boxes. The Boat Party had arrived.

Boat Journey. 11-27 January 1984. Worrall, Corbett, Hankinson, Morris, de Silva, Trathen.

After being landed at Palmer Station on 11th they put the two Avon 520 inflatable boats together. They tried the four Johnson 35HP outboard motors but a broken self-bailer on one of the boats took up the next day, to allow the glue to cure. On Friday 13th they left heavily laden, watched by the incredulous station crew, repeating the departure thrice for Corbett's film.

They motored east through a choppy sea in the Bismarck Strait. Keeping well offshore they missed Cape Lancaster and instead turned up the east side of Wiencke Island. Realising their mistake they rounded Fridtjof Island and came back, then up the east side of Doumer Island to land at Port Lockroy. They spent a day there in glorious weather photographing birds; Morris incited Hankinson to swim, and de Silva found a spanner for stove pump-valves.

On 15th they moved on north, turning the blind corner of fabulous Neumayer Channel. After filming the boats in brash toward sunset, they landed at Iceberg Point. Two days were then cancelled due to bad weather.

They set off early on 18th into Gerlache Strait, passing immense icebergs with calls for "Take 42, Scene 12. Action". After stopping at The Waifs for lunch, they approached Brabant Island in thick brash, with leads opening and closing in a following sea making life interesting. One engine hit ice and leapt off the transom breaking the securing clamps: the safety strap held and Worrall quickly recovered it and renewed the broken propeller. They landed at the cache site north of Buls Bay without further incident.

They were stuck there for 7 days, apart from one boat reconnaissance northward curtailed by a snowstorm. They mustered and sorted out the stores into two caches. Trathen marked boulders on the intertidal beach, which gave the site its (unofficial!) name of "Dayglo Point". Hankinson & Corbett skied up to 1200ft to reconnoitre the start of the overland route to basecamp, but agreed that the journey would be quicker by boat. As there were two Clansman radios at basecamp, the boats radio was left at "Dayglo Point".

On 27th, despite marginal sea conditions and still unsettled weather they made a run for it, with some misgivings as there were no known landing places. Encountering much brash ice (and some Leopard Seals) in Freud Passage they made good time to Spallanzani Point. Bouquet Bay was packed with large brash ice but they progressed steadily, with one scare when two Humpbacked Whales suddenly reared up right in front of the lead boat and smiled at them - or were they laughing?. Rounding Cape Cockburn they met a 15-20ft swell. Luckily it was long and rolling but it was really exciting, with the other boat disappearing in the troughs, and the swell thundering onto the cliffs, and sending towering columns of spray into the air as they motored between the stacks around Cape Roux and on into Metchnikoff Point at midnight.

Their total distance covered was about 140 miles, including detours, a great achievement in open boats in the Antarctic. (Boating from scientific bases is strictly limited). The seaworthiness and reliability of the boats and engines had been well demonstrated, and Worrall's meticulous preparations thoroughly vindicated.

Basecamp. 28 - 31 January 1984. Whole Party.

The weather smiled while the Boat Party sorted out their gear and practised roped skiing on visits to "Skua Bluff" and "Cairn Point" for botany, bugs and geology. Scientific work was progressed around Metchnikoff Point, and plans were made for the middle part of this phase, with two parties exploring south, returning to basecamp in mid-February before an attempt on Mount Parry.

Basecamp Trio. 1-16 February 1984. Furse, Corbett, Hankinson.

The two exploratory pulk parties left late on 31 January. The trio remained to complete the initial botanical survey of Metchnikoff Point before catching up the West Coast Party.

After completing the botanical survey they set off in a boat on 5th. Crossing Guyou Bay they found a way through the reefs off Claude Point, only to find no practical landing site at "Astrolabe Point". They sighted two tents on the skyline above, then returned to Metchnikoff Point (via "Cairn Point" to collect the Weddell Seal skeleton).

On 6th they set out with one pulk to go overland to "Astrolabe Point". Camping below Mount Hunter, their Nova tent broke a pole in an easterly blizzard gusting above a measured 55 knots. Despite digging out, walling up, bolstering the broken ends and sitting up supporting the tent, it was a total wreck by breakfast. They cached the pulk and tent etc. and returned to basecamp, a 3 hour journey in continuing blizzard.

Poor weather continued. They progressed sciences around basecamp, and on the points to southward, and recovered the pulk and bits of tent. On 12th they took a pulk to Cape Roux East: removing the bamboo shafts and hauling on fanned traces was not a success. After 3 days of rain (4 inches recorded) they pulked back to basecamp on 16th, to find no one else at the rendezvous. At 1950 the unprotected Nova tent blew out, leaving two newly-pitched Antarctic pyramids. Ten minutes later 3 figures with a pulk appeared over the skyline in rising wind, sleet and rain.

East Side Story. 1-16 February 1984. Trathen, Atkins, de Silva.

Travelling largely at night for good snow conditions, they enjoyed superb weather hauling one pulk around the north side of Mount Hunter, camping the first day beyond Cape Roux, and then crossing Roentgen ridge to camp on Lister Glacier. On 4th they camped at 2500ft on the ridge between Lister and Pare Glaciers, and ascended Virchow Hill (2300ft) on skis.

They were then held up on "Catacombs Plateau" by dense cloud for 6 days, while 6ft of snow fell, leaving the tent hidden in a perfect windscoop. They went onto two-thirds rations. In a brief clearance one day Trathen and Atkins climbed nearby "Kernow Hill" (2300ft), only 2 full pitches, but a Grade IV iceface, which slumped 6 inches bodily while both were on it.

Their aim had been to climb Mount Morgagni. When the weather cleared on 12th they reached "Morgagni Col". However starting up the ramp-like ridge, the deep fresh windslab was a distinct avalanche risk and they prudently returned to the catacombs.

On 13th they started homeward up the ridge, but pitched camp at 3500ft after 3 hours in complete whiteout. Continuing toward Cushing Peak next day they were caught by a blizzard as they traversed around, and pitched camp at about 3100ft. With spindrift pouring downslope they kept 2 hour watches, digging out the tent continuously day and night, until early on 16th when a pole broke under the weight of snow. In a brief clearance they broke camp and felt their way down the ridge until barred by icecliffs approaching "Noddies Hat". They doubled back onto Lister Glacier and came over "Noddies Col" to find the bamboo markers above "Pinnacles Spur". They reached basecamp late that evening after a very hard day pulking over 15 miles in foul conditions.

All three had shown tremendous resource and resilience throughout, and arrived in high spirits. They had developed the basic techniques which were used thereafter, with little refinement, whenever using 3-man pulks. They had also (just) met the deadline, set to meet Endurance's pre-arranged visit next day.

HMS Endurance Visit. 17 February 1984.

The six at basecamp spent a very wet night in two Pyramids.

On 16th Endurance had re-embarked the skidoos and associated kit (but not the rations) from Palmer Station. She arrived off Metchnikoff Point am 17th. Trathen was rushed into a Wasp to organise stores loading: 3 skidoos, 2000 cigarettes, more fuel drums and some general stores were flown ashore. Captain McGregor, Sir Rex Hunt, and his secretary Sue (the first girl on Brabant Island?) were flown ashore and formally opened the expedition's Sub Post Office in a sodden, dirty Pyramid: the first cancelled JSE Cover was posted to our Patron, HRH The Prince of Wales. Trathen returned and the VIPs left, then Endurance headed south: rising seas had terminated flying before the skidoo skis and other stores could be landed. Nor was it possible to launch a Wasp to visit "Astrolabe Point" to seek the missing 4-man West Coast Party.

However that afternoon Endurance visited "Dayglo Point" and managed to fly in the Structaply Hut, plus extra food and fuel and some other stores. (At Stanley she had embarked Winter Party gear shipped out in SS Andalucia Star. Uncertainties about equipment landed at "Dayglo Point" were to prove a problem at and after the changeover in March).

Base Camp. 18-21 February 1984. Furse, Atkins, Corbett, Hankinson, de Silva, Trathen.

Foul weather returned later on 18th, culminating in 80 knot winds and 2 inches of rain on 20th. Base camp (on the glacier) was bare ice, with 3-4ft snow-plinths under the tents and rivers of meltwater, requiring constant replacement of ice-screw "tent pegs" wearing crampons. The absence of the West Coast Party (who had no radio) was causing increasing concern. On 19th it was decided to go overland to "Astrolabe Point" hoping to meet them en route, otherwise to start searching, following their cairned messages. On 21st the weather eased: two loaded pulks were relayed up to the skyline at 600ft, before camping at the west end of Metchnikoff Point, among the 950 bull Fur Seals unexpectedly occupying the beaches.

Cosmic Campsites Ltd. 22 February-14 March 1984. Furse, Atkins, Corbett, Hankinson, de Silva, Trathen.

They left on 22nd with two 3-man pulk teams travelling in loose company, heavily loaded with one radio, Beaulieu cinecamera kit and Bilora tripod, and 2 spare tents (Nevisport Bombproof and Snowline Conquest) as well as normal travelling kit. After two days clag across "Footsore Piedmont" to a windscoop, then up the central ramp of "Pinnacles Spur" to camp in a big crevasse called the Icicle Works, where Hankinson, Atkins and de Silva descended 70ft into the blue grotto below the tents. In better weather they crossed "Noddies Col" next day, where a 7ft bamboo wand protruding 4 inches above the snow showed the West Coast Party had gone that way. On 25th spindrift helped them down from "Cushing Col" onto "Terraces Piedmont" and on to "The Precinct". A deserted 2-tent camp site sharpened the atmosphere of this iceblock ghost town: they camped in the main street while relaying loads through. Hauling out of "Precinct Glacier" they found a snow-wall and abandonned bugs-samples: digging into the drift they found signs of a 1 tent/4 manday camp. Late on 26th they camped above "Astrolabe Point". Hankinson and de Silva visited the point to find it deserted after an occupation, with a pulk cached, but with no cairned message: they returned at midnight. Meanwhile Atkins had heard Hill transmitting to Faraday from basecamp, but could not transmit back, due to battery charging defects.

An immediate attempt on Mount Parry was agreed. On 27th, after caching the radio and Nevisport Bombproof and collecting extra rations from "Astrolabe Point" they pulked up to an exposed site at 3000ft beyond "Sue's Col". A blizzard next day enforced a welcome rest day after 6 days hard pulking. The two Super Nova tents stood it well; the party went onto two thirds rations to give themselves until 10th March. On 29th they pulked up to 4700ft on the west face of Mount Rokkitanski, relaying in whiteout on heavy snow.

Successive whiteout, snow and gales enforced three days stop at the "Eagle's Nest" campsite, with the pulks relayed 200ft up a Grade 11 slope in one respite. On 4th March they got above the cloud, sighted Mount Parry and unofficially named the spectacular west coast bay below "Prince William Bay". That evening they made the First Ascent of Mount Rokkitanski (6000ft) with one of the pulks, before camping at 5700ft on the whaleback beyond. A recce next morning discovered unforeseen difficulties at "Unexpected Col" preventing further pulking. While the remainder stayed in camp mending stoves, Hankinson and Atkins crossed "Unexpected Col" and climbed "Per Ardua" (5700ft) in intermittent whiteout, returning tired and bitterly cold.

Caching the pulks and Snowline Conquest tent they skied on next day. Progress was slow in whiteout, and de Silva was feeling weak: that evening they camped at 6000ft underneath "The Eaves" on the north side of Harvey Heights. Skiing up to Harvey Heights

on 7th, Hankinson & Atkins both felt weak and very dizzy: it was attributed to carbon monoxide poisoning in the tent they shared with de Silva. The party reached the north summit of Harvey Heights (8000ft) at 1500: Mount Parry looked very close, and the skies were clear above a sea of cloud at 5000ft, though bitterly cold. However progress had been very slow, and only 6 x 2 mandays rations remained, so Furse reluctantly decided to withdraw.

They skied back down to the old campsite at "The Eaves", very disappointed. Next day in fine very cold weather, with Atkins and de Silva detouring to ski over "Partner Peak" (5750ft) they collected the cached pulks and dropped down to camp on a bombproof platform just above the "Eagles Nest", having identified one feasible skidoo route up the icefall from Paré Glacier to Harvey Heights. On 9th, 3ft of snow fell, holding them in camp, but next day in superb weather they flew down to "Astrolabe Point" to feast on Compo after two weeks on two-thirds rations.

Although Mount Parry had not been climbed, they had taken pulks to 6000ft, made four high First Ascents and scrutinised the west coast by binocular. Corbett had also seized every opportunity to take cineflim of pulk-mountaineering.

They recuperated for 3 days at "Astrolabe Point", studying the birds, massive basalt columns of varying composition, and extraordinarily rich growth of mosses and of grass and pearlwort (both setting seed) and enjoying the first camp on snowfree ground (the campsite at 40ft height was surrounded by boulders on remarkably clean gravel, as if washed). Radio contact was made with the other party, at basecamp. It was decided that Hankinson and Atkins plus one would remain a few days to make a preliminary survey of the point and vegetation, while the other three returned to base.

On 14th Furse, Corbett and Trathen set off. However Trathen was very weak (after suffering an awful cough for 6 days) so they returned, after caching the pulk and stores at 1000ft.

Link Party. 15-20 March 1984. Furse, Corbett, de Silva.

Leaving "Astrolabe Point" on 15th they cached their pulk on the ridge and skied down to Claude Point, to camp on the earth plateau at 700ft, in rain. De Silva collected grass and pearlwort on the cliffftops (the latter apparently the highest recorded). Furse collected basalt and found finely graded pebbles and algal felts in sandstone (as well as more grass and pearlwort) while traversing the narrow terrace under the basalt lava cap: there appeared to be a feasible route from this terrace down to the beach, where some large driftwood was sighted.

Next day an hour was spent box searching for the pulk in whiteout before camping in a crevasse having missed the route down to "The Precinct". On 17th they crossed the "Terrace Piedmont" into a rising gale, but after several miles on a compass bearing were stopped by soft snow on a slope too steep to move the pulk, and found sanctuary in a crevasse at 2700ft somewhere below "Cushing Col". The blizzard enforced two nights there, comfortably encased in a half inch of frozen rain. Crossing the ridge in cloud on 19th they descended onto Lister Glacier. While Furse was reconnoitring (unroped) along a crevasse the wall dropped and he fell 20ft, but was uninjured though coughing blood for a while. Crossing "Noddies Col", they reached basecamp in the evening of 20th. It was good to meet the West Coast Party after 6 weeks separation, largely incommunicado

West Coast Party. 1 February - 20 March 1984. Worrall, Hill, McLeod, Morris.

They left basecamp at 2130 on 31st January with one pulk, and travelled mostly at night for good snow. Breaking camp above "Pinnacles Spur" Morris lost his sleeping bag, and did without thenceforward. They made the First Ascent of "Noddies Hat", and continued over Cushing Peak and "Cushing Col" and thence across the "Terrace Piedmont" and through "The Precinct". After a tricky negotiation of the crevassed approached, (then still masked by snow), they reached "Astrolabe Point" at 0100 on 6th February.

They were pent up at "Astrolabe Point" for 2 weeks by rain and poor weather. Morris collected samples for later extraction of invertebrates. Without radio, no coordination with the other parties was possible. They were disappointed when Endurance passed offshore on 17th without visiting the point.

Finally, on 20th February they set out for Metchnikoff Point, leaving their pulk, and travelling light with only 4 x 3 mandays rations. That evening they were hit by a blizzard while descending the exposed ridge toward "The Precinct": all four slept under one Phortress outer tent, which was completely covered by a 50 yard drift behind their snowwall when they broke camp next morning. Travelling in whiteout they camped in "The Precinct" on 21st and at 3000ft on "Cushing Col" the next evening. There they decided to travel round the east side of Mount Hunter: they had four main meals left. Crossing Lister Glacier on 23rd they camped on Roentgen ridge, where they ate their remaining food. On 24th they contoured west in cloud above 2000ft until they were stopped by 300ft cliffs dropping off the north ridge of Mount Hunter toward Cape Roux. They skied back 3 miles eastward before descending to the north coast piedmont; then in hot sunshine they headed west again, finally reaching Metchnikoff Point at 2030, very hungry and dehydrated after covering 20 miles in the day.

For the next month they stayed around basecamp. They vacated the icy glacier campsite and moved to the stores dump flat, to a site that was rather besmirched by penguins, but was exquisitely chosen for all-round shelter (and was used throughout the winter). They erected four Nova dome tents - 2 sleeping tents, 1 mess tent and 1 laboratory tent. Using this, Morris made a thorough local collection of terrestrial invertebrates, extracting and preserving about 350 samples.

In mid March Worrall and Morris attempted to take antibiotics to "Astrolabe Point" for Trathen by boat, but were turned back by a steep and nasty swell in Guyou Bay. Next day Morris and Hill broached and nearly capsized attempting to land at "Cairn Point" to collect invertebrates. After a gap, Hill recommenced meteorological records on 14 March. McLeod set the tidegauge to work twice after damage by storms, and Worrall serviced the boats and outboard motors. However for most of the four weeks rain inhibited play.

"Astrolabe Point" Party. 15-24 March 1984. Hankinson, Atkins, Trathen

Trathen's cough (presumed to have been caught when he alone flew out to Endurance on 17 February) gave serious concern, but he recovered, although too late to return to basecamp. The party therefore remained at "Astrolabe Point" until Endurance arrived for the changeover. They were all fully occupied: Hankinson pursued his preliminary studies of the flowering plants and other vegetation ; Atkins prepared a 1/2000 map of the point; Trathen made thorough geological collections from the basalts and the smaller conglomerate outcrops.

Base Camp 20-24 March 1984. Furse, Corbett, Hill, McLeod, Morris, de Silva, Worrall.

These last days were mainly occupied with preparing stores for the changeover and completing Morris' scientific work. Furse, McLeod and de Silva serviced over 1200 philatelic covers working day and night. On 22nd Morris and Furse visited "Cairn Point" and "Skua Bluff" to make invertebrate and geological collections. That evening they held the long-delayed mid-expedition Christmas feast, drawing numbers to open presents from Carole de Silva, and telling the Astrolabe Party over the radio about the goodies they were missing.

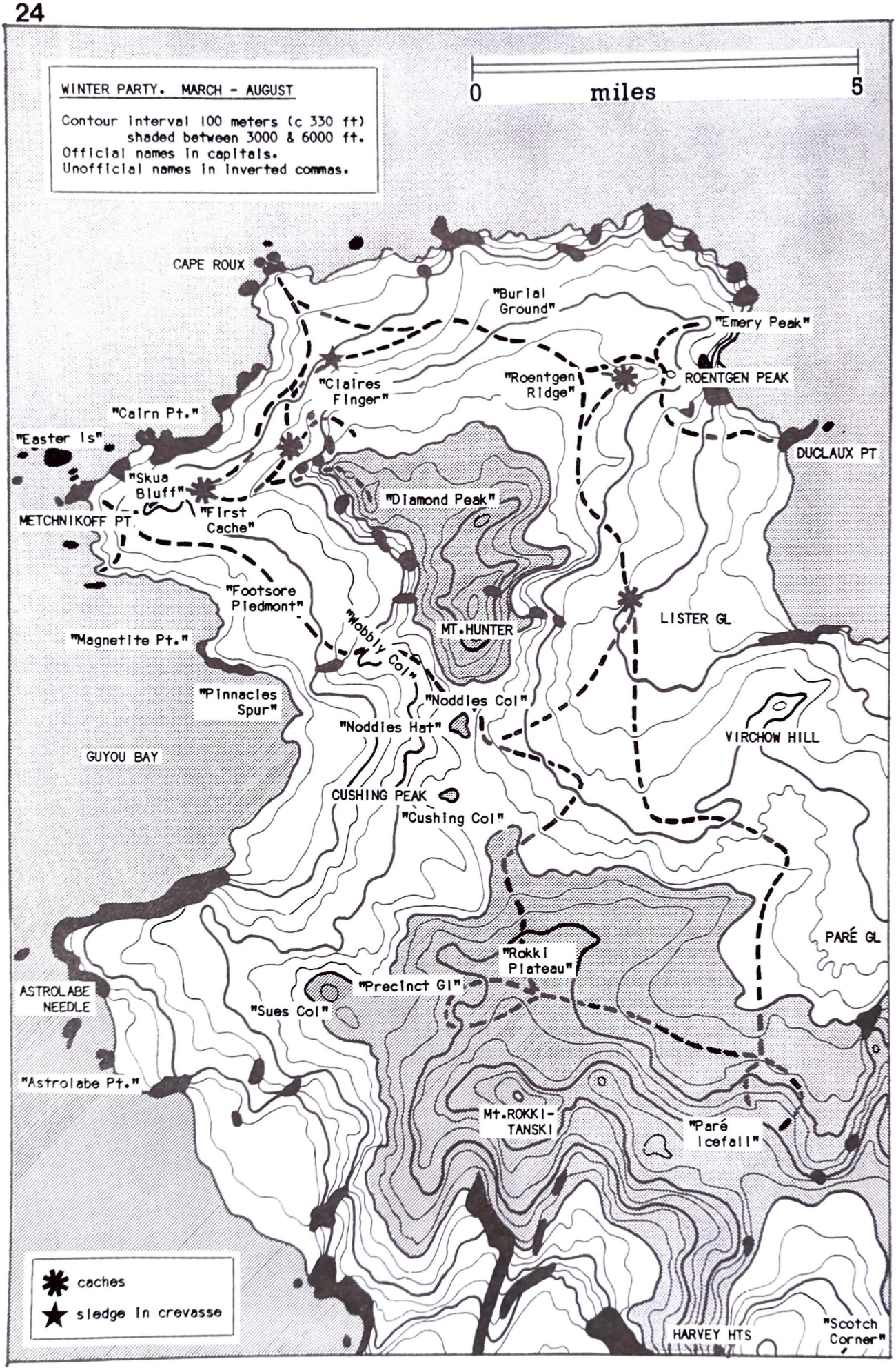
Team Changeover. 24 March, 1984.

Radio contact with HMS Endurance was made on the 22nd. Early on 24th Endurance arrived offshore.

Flying started to "Astrolabe Point", landing food and fuel near the campsite, then embarking the 3-man party.

The first Wasp into basecamp blew over and wrecked the Post Office tent, (another dome tent was also wrecked later). Otherwise the changeover proceeded very well and rapidly. Over 50 loads of food and fuel and general stores (including the TriWall Hut) were landed, then the team changeover occurred very quickly, with 9 clean Winter Party members plus Atkins coming ashore, and 5 dirty First Summer Party members flying out to join Hankinson and Trathen. Furse flew onboard briefly to thank Captain Colin McGregor and his whole ship and flight, say farewell to the seven departing First Summer team,and ask Lt Cdr Andrew Scott (the First Lieutenant) to agree to a 20-man Second Summer team.

Then Lt Dave Isslit flew past the basecamp waving a year's farewells, and Endurance departed northward, the last ship for 8 months or more.


WINTER PARTY. MARCH - AUGUST
Contour interval 100 meters (c 330 ft)
shaded between 3000 & 6000 ft.
Official names in capitals.
Unofficial names in inverted commas.
0
miles
5
CAPE ROUX
"Burial Ground"
"Emery Peak"
ROENTGEN PEAK
"Roentgen Ridge"
"Claires Finger"
"Cairn Pt."
"Easter Is"
DUCLAUX PT
"Skua Bluff"
"First Cache"
METCHNIKOFF PT.
"Diamond Peak"
"Footsore Piedmont"
"Wobbly Col"
MT.HUNTER
LISTER GL
"Magnetite Pt."
"Pinnacles Spur"
"Noddles Col"
"Noddles Hat"
VIRCHOW HILL
GUYOU BAY
CUSHING PEAK
"Cushing Col"
PARÉ GL
"Rokki Plateau"
"Precinct Gl"
ASTROLABE NEEDLE
"Sues Col"
"Astrolabe Pt."
Mt.ROKKI-TANSKI
"Paré Icefall"
caches
sledge in crevasse
HARVEY HTS
"Scotch Corner"

East Side Story. February 84. Leige and Davis Islands from above Pare Glacier.

East Side Story. February 84. Atkins and De Silva resting with 3-man pulk, Mount Morgani beyond.

Conquest snowline box tent on Lister Glacier. Mount Morgagni beyond.

Skidoo party. Spottiswood, Atkins and Beattie on Lister Glacier with some of the mountain of gear they moved in September.

Basecamp. 25 March - 8 April 1984. Whole Team.

The vital first 3 days were luckily fine. Spottiswood, Atkins and 10 helpers erected and sealed the 6 x 10ft Triwall cardboard hut. Stuttard built a gothic table and a 5 x 6ft porch/workshop from pallet timbers and plycases. Kimbrey led a complete rationalisation of the much increased stores, reorganising the dump into 3 lines (against drifting) instead of a zariba (against penguins). On 27th the first of many team gatherings was celebrated in the little hut, or shed.

The weather then deteriorated, with much low cloud, rain and wet snow, and some gales. Movement was restricted to short familiarisation day-trips skiing roped-up on the piedmont behind and visiting the points just to southward. On 2nd/3rd April, Kimbrey, Lumsden & Stuttard visited "Pinnacles Spur", sorting out one cache left there in February, although the other smaller one had disappeared.

During this spell a great deal was accomplished around basecamp. Atkins strengthened the hut with wooden skis and other improvisations. Others helped him, and also Spottiswood who started regular repairs of the Nova dome tents and various vital equipment. Routine recording was continued on Meteorology, Seals, Birds and the Tidegauge and Ringe and Beattie settled down on their Geology and Terrestrial Invertebrates, while Stuttard started the Botany, Psychology and Social Studies work. The only setbacks were Furse setting fire to one dome tent, another tent pole breaking in a gale, and the Tidegauge being damaged a fourth time in a storm.

On 5th April, Oakley began his physiological research programme with a "Fluid Balance Day", followed by weighing and skinfold thickness measurements. (The average weight loss was 13 lbs, 9% of U.K. weights, maximum 43 lbs lost by Furse). On 7th the first victim was wired up with 9 temperature sensors and the 24 hour chart recorder for a Cold Stimulus measurement day.

On 6th Atkins started setting the skidoos to work. "Dutch Courage" (donated by Saccone and Speed, modified by MVEE) started on first pull.

Altogether the Winter Party had made an excellent start, individually and collectively. The hut (and porch) were proving invaluable, for team meetings, scientific and general paperwork, equipment repairs, physiology rigging and unrigging, and as a dental surgery. On 9th an 8 man party left for Duclaux Point.

Basecamp Party. 9-18 April 1985. Oakley, Atkins, Kimbrey, Lumsden.

Kimbrey's blisters (incurred visiting "Pinnacles Spur" on 2nd/3rd) led to blood poisoning and fever. The party therefore remained at Metchnikoff Point, achieving much there. Oakley progressed his physiological research, with all four undergoing Cold Stimulus days. Atkins set all 3 skidoos to work. Then he and Kimbrey excavated the moraine to build a superb 12 x 8ft bombproof skidoo garage/workshop out of plycases, scaffolding, wooden skis and Triwall boxes, taking 5 days and nights. The Union Garage would provide storage, working space, light, shelter and warmth for all equipment repairs throughout the winter, and also freed the hut porch for storage of scientific and photographic equipment, plus the library etc. On the evening of 18th, Beattie, Corbett and de Gerlache returned to base with a story to tell.

Duclaux Point Party. 9-17 April 1984. Furse, Beattie, Corbett, Evans, de Gerlache, Ringe, Spottiswood, Stuttard.

Furse planned a 5-day trip for the Winter Party to experience pulking, and general travelling conditions: the aim was to reach and explore Duclaux Point and if possible some other north coast areas, concentrating on geology. On 7th two pulks were hauled to "First Cache" in high winds. In better weather on 9th the party traversed east from "First Cache", camping in a crevasse halfway to "Claires Finger", then two nights holed up in a blow under Roentgen ridge. A stable depression of 957 mbar allowed them to reach 2000 ft on 12th, camping in a huge snow-filled crevasse and meeting the first low temperature problems with dome tent poles. Next day, after several hours in whiteout they camped just under Roentgen Peak. The 14th was superb: the party skied down to Duclaux Point but lack of time allowed only the briefest geological reconnaissance, getting halfway down the icefall to the northshore, before returning and ascending Roentgen Peak just 80ft above the tents. Pulk travel was much slower now due to the shortening days (sunrise 0820, sunset 1730), with the inexperienced party starting to look for campsites from 1400. Starting with 7 days rations, they had gone onto two thirds rations from 11th: now with two days rations left, prudence dictated returning toward base. On 15th they pulked 9 miles to Cape Roux East. En route Spottiswood and Evans detached to make the First Ascent of "Emery Peak" on skis. Having started with 4 Nova tents plus a set of spare poles, they were now reduced to 2 sets of poles plus some pieces, due to breakage etc.and one set sliding over an icecliff at Cape Roux.

On 16th a party collected geological samples from Cape Roux West. Ringe was unable to walk due to a severely bruised and inflamed "Valluga ankle" from the return pulk journey. Therefore Furse and Stuttard stayed with him (with 3 x 2 mandays rations) while the other five with both pulks and just 2 mandays rations returned to basecamp to fetch more food. They left early on 17th with Spottiswood leading.

Cape Roux to Metchnikoff Point. 17-24 April 1984. All Team Members.

Travelling from "Claires Finger" toward "First Cache", Evans harnessed to a heavy pulk fell 40 ft into a completely unsuspected crevasse, de Gerlache was dragged to lie across the crevasse bridge, but Beattie held the fall magnificently. Spottiswood quickly belayed Beattie then de Gerlache, then lowered his rope to Evans and directed the rescue. Evans, unhurt, managed to free himself from the pulk and then jumared up, to emerge after 2 hours. Their one tent was down the crevasse, and de Gerlache was shocked and rapidly developing exposure, so Spottiswood and Beattie swiftly (1½ hours) dug a 5 man snowhole in the nearby drifted crevasse. All five gratefully crowded in for the night.

Only Spottiswood and Beattie were experienced mountaineers. Evan's skis were somewhere down the crevasse below the pulk. So on 18th Beattie, Corbett and de Gerlache skied through a snowstorm to basecamp to fetch help, taking the rope, and leaving Spottiswood and Evans in the snowhole with one main meal and some drinks to share.

Atkins, Beattie and Kimbrey prepared the skidoos that night. However next day, they could not get them up the iceslope, so Atkins, Beattie and Lumsden took a pulk load of food out, arriving at the snowhole at 1600, to a hungry welcome. That evening Atkins abseiled down to recover the tent, ropes, rock specimens, cameras and finally the pulk, working with a cyalume in his mouth.

Next morning (20th) Atkins went down again to recover Evan's skis from about 80ft down. Then he and Beattie took a pulk with food to join Ringe at Cape Roux. Part way they met Furse & Stuttard returning to get more food, surprised to hear Atkins say "The others are up at the snowhole. There's been quite an epic up there". Furse and Stuttard then joined Spottiswood, Evans and Lumsden taking the two pulks on to basecamp.

On 21st despite a NE gale and spindrift, Kimbrey, Spottiswood & Stuttard tried repeatedly to drive the skidoos out of base, but the powder snow on ice prevented them. Helped by the other 6 they spent the whole of 22nd fighting two skidoos, one steel sledge and a pulk up over the skyline, where they were cached at 600ft, with a glorious blue and gold sunset on Mount Hunter behind.

On 23rd Kimbrey, Oakley, Spottiswood and Stuttard left on 2 skidoos with the loaded 8ft sledge. Above the difficult descent to: "Claires Finger" they cached the sledge: Kimbrey and Stuttard took the skidoos on to reach Cape Roux at 1300. Ringe's ankle had turned septic, but was beginning to recover. He rode pillion as they headed back: after both skidoos had broken through crossing one large crevasse, they were halted by the ramp opposite "Claires Finger". Atkins and Beattie continued with their pulk, to reach basecamp at 1930 in pitch darkness. The other five camped uncomfortably by the sledge. Next day (with great difficulty, and another crevasse near-miss) they managed to get the skidoos and sledge over to "First Cache" before returning to Metchnikoff Point.

Everyone was now safe, and back at basecamp.

Beattie's human octopus belay, and superb leadership by Spottiswood had achieved the successful crevasse rescue and recovery, but the incident had exposed the dangers of small parties with several inexperienced mountaineers. Rules on the composition of parties were tightened up, at the expense of reducing the team's flexibility and mobility. Atkins, Furse, Kimbrey, Spottiswood and Stuttard were categorised as Leaders; Beattie, Corbett and Oakley as Seconds, and Evans, de Gerlache, Lumsden and Ringe as Beginners. Minimum party size was raised from 3 to 4 for anything more than local journeys, with limits on the numbers of beginners in any party.

The dangers of 3 or 4-man pulking were recognised, and 1- or 2-man pulking now became the aim. The first skidoo journey had also exposed their limitations on steep slopes and in powder, the difficulties of towing loads, and the compromises necessary between safety and ease of operation. The honeymoon with the skidoos was over. Much had been learned, but more experience was clearly needed.

Basecamp. 25 April - 10 May 1984. Whole Team.

A belated Easter Sunday was declared on Wednesday 25th. It was calm and grey, the last fine day in April.

The aim was now to get a strong 6-man party away with the 3 skidoos, sorting out load-hauling techniques, and putting a cache on Lister Glacier for winter work. As the poor weather continued, with much snow in early May, it became clear that this trip would be the last major one before Midwinter. Earlier hopes of putting a cache on Harvey Heights, and a light party continuing to "Dayglo Point" were set aside. Atkins, Beattie, Kimbrey, Spottiswood and Stuttard worked very hard preparing skidoo-train equipment, and continually trying to get up the soft snow on the 22 degrees traverse slope to the skyline above basecamp, (this was a major initial hurdle for every skidoo journey).

On 26th Oakley's second physiological Fluid Balance day showed all team members reacting normally to the cold by diuresis, dehydrating the blood (in 3 weeks the team's mean percentage of red corpuscles had risen from 43 to 48), and so resulting in greater susceptibility to frostbite. The first full round of 24 hour "Cold Stimulus" temperature recordings was also completed.

Other scientific work was progressed. Evans completed his initial survey of the beach (but the tidegauge became unusable due to freezing). Beattie found some undescribed large (6mm plus long) mite-like creatures under stones. The Fur Seals had dwindled from 900 to 80, and on 27th the Chinstrap Penguins left, but there was still wildlife work for de Gerlache and Furse, while Ringe worked on local geology. Meanwhile Corbett continued still and cine photography with total dedication.

Lumsden took over the radio, as well as routine met. readings. He arranged with Palmer Station to pass some 250 word messages home. He also made contact once with Station VPC in Port Stanley. On 10th the Skidoo Party set off.

Basecamp Party. 10-29 May 1984. Furse, Evans, de Gerlache, Lumsden, Oakley, Ringe.

The spell of superb weather continued for two weeks around Metchnikoff Point.

From 12th to 19th Ringe and Lumsden camped at "Cairn Point" working on geology. The others made ferry trips there with food and fuel, physiological kit and rock specimens on 12th, 17th and 19th, Oakley staying at "Cairn Point" for the first 5 days and Furse for the last two. Ringe found complex faulting of the granites near sea level, interacting with the confused overlying conglomerates and basalts. He celebrated by starting a 2 ton rock avalanche. Another week's detailed geological mapping would be worthwhile.

On 15th Furse, Evans and de Gerlache visited the point immediately south of Metchnikoff Point, to start geomorphological work on the intertidal rock platform. A 4ft deep windslab avalanche had swept the route on 14th, leaving bare summer ice. It was the first slab avalanche seen since January.

Icebergs were increasing. Sea temperatures dropped below -1c. Frazil ice began forming in small coves. On 15th the first flotilla of icefloes sailed into the skerries.

Throughout this period de Gerlache worked tirelessly repairing Nova tents in the garage. He also shot the first Crabeater Seal for the winter Feeding Study (the meat was delicious). Evans built a shelter for fuel decanting and emergency winter heads. Oakley continued physiological research work, and began measurements of thermal conditions in clothing and tents. (He confirmed that the hut was much colder than tents).

From 21st to 23rd there were heavy snowfalls and drifting, and the weather continued unsettled for the rest of the month. Ringe visited "Skua Bluff" on two days with Furse and Lumsden, unexpectedly finding an andesite exposure. Two of the three radios had been left at "Dayglo Point" and "Astrolabe Point": the skidoo party planned to recover the latter, so Lumsden listened out regularly and Furse began to grow concerned.

On the afternoon of 29th, Kimbrey, Atkins and Stuttard skied into basecamp.

Lister Glacier Skidoo Party. 10-29 May 1984. Kimbrey, Atkins, Beattie, Corbett, Spottiswood Stuttard.

On 8 and 9 May the two big steel sledges, two pulks, 317 mandays rations, 29 jerrycans of petrol and kerosene, and about 800 lbs of general stores were ferried up to 1300 ft at "First Cache".

On 10th the party left Metchnikoff Point with the three skidoos. Drifts made travel difficult, and once Spottiswood's skidoo (in the middle) was rolled three complete turns as the ropes tautened on an awkward traverse. However they reached their planned cache opposite "Claires Finger", where they camped and snowholed, before returning to ferry the remaining gear in bad weather next forenoon. That night one of the parked skidoos was blown over by katabatic gusts.

On 12th Kimbrey, Spottiswood and Stuttard with the 3 skidoos and one steel sledge put a cache up on Roentgen ridge, camping nearby in bad conditions. Next day in two long return journeys, by relaying up the 1200 ft northern spur, they completed the Roentgen ridge cache, and finished back at "Claires Finger" cache. On 14th, while Atkins repaired one skidoo (found to have an iced-up magneto), the others built a second commodious 3-man snowhole and struck the tents ready for an early start.

Over the next two days the whole party moved 11 miles and established a cache at 1000 ft beside Lister Glacier. The first night they camped in cloud halfway down the 2000 ft descent from Roentgen ridge for a reconnaissance on skis, and route marking. Filming the descent on 16th, Corbett's feet were mildly frostbitten, but recovered on Kimbrey's stomach. On 17th Corbett recuperated in camp at the cache, while Atkins repaired both the ex-Transglobe skidoos (re-tightening all cylinder head bolts among other things), and Kimbrey and Spottiswood visited the prominent rock exposure on "The Pepperpot" above. In 8 days they had achieved both main aims (developing skidoo operating techniques, and establishing a large cache on Lister Glacier). They decided to attempt the secondary aims of proving the skidoo route to "Astrolabe Point".

On 18th the whole party took three skidoos and one sledge with 7 days rations up to 2300 ft below "Noddies Col". There they were stopped by whiteout, and held up for 6 nights by continual cloud and heavy snowfalls. Kimbrey built a 3-man igloo, and later a second. Skiing in whiteout they also marked a possible skidoo route up to 3000 ft toward Rokkitanski Plateau.

Despite going onto two thirds rations from 20th, food was getting short. With the skidoos immovable in deep soft snow they decided to return on skis to basecamp by the known direct route over "Noddies Col" and "Pinnacles Spur". On 24th, ten minutes after leaving the igloos, a big serac falling off "Noddies Hat" set off a slab avalanche over a quarter mile wide: attempting to ski clear Corbett fell, and Spottiswood and Stuttard on the same rope helplessly watched the avalanche sweep past 35 yards away, with blocks ending up within 4 yards of the skidoos and igloos. The direct route was risky for avalanches, so they decided to go eastabout: after an exhausting day carrying 60-70lb packs in deep soft snow they reached the Lister Glacier cache that evening.

Snow conditions improved next day, so Atkins, Beattie and Corbett returned to the avalanche site and brought the skidoos most of the way back. Two more days work were required to get all three skidoos and the sledge up the slope to the cache. At 0300 on 27th heavy drifts crushed the Phortress ridge tent and broke one pole: Beattie's boots were buried by snow inside, but Atkins managed to squeeze out into the blizzard to dig out; they had rigged a jury repair by 0700 when Spottiswood as usual shook his three companions in the Vango.

On 28th they made a remarkable 11 mile journey in dense cloud, climbing and descending 2000ft over Roentgen ridge by following the marker flags set out 2 weeks before. Half an hour after sunset, they approached "Claires Finger" in falling snow, with Spottiswood and Beattie's skidoos in line ahead towing the sledge (loaded with two full pulks etc), Corbett driving the brake skidoo, and Kimbrey, Atkins and Stuttard ski-joring between route reconnaissances. Suddenly the sledge dropped into a bridged 40ft deep crevasse, but was held (hanging 4ft down) by the leading skidoos. Within 20 minutes, the sledge had been belayed from dead giants fore and aft, and all three skidoos driven clear of the area, which was evidently a minefield, judging by the groans and rumbles of ice in motion. Two tents were on the sledge, so (after trying vainly to locate the "Claires Finger" cache, they pitched the Conquest Snowline box tent and dug 2 snowgraves near the skidoos, finally settling in at 2100, five hours after sunset, very cold and tired.

Next morning, after early wind and snow, they brought the 3 skidoos around the bowl (once more in whiteout). A trackdrive sprocket on Corbett's skidoo was damaged by tangling with the rope, which took Atkins an hour to repair, before they continued, to arrive at basecamp at 1430 in high spirits, very glad to be home.

They had successfully established 210 mandays caches for later exploration around Bouquet Bay and worked out the best ways of using the skidoos in unusually difficult terrain - up, down and across slopes of up to 25 degrees, often in deep and soft snow, with nasty crevasse conditions. Although granted superb outlooks on some days, the Lister Glacier weather had been bad as usual, with much whiteout and cloud, winds exceeding 60 knots, spindrift and over 5ft snowfall. Temperatures had ranged from below -20c to thaw conditions dangerous for avalanches. It was nearly midwinter, with sunrise now at 1000 and sunset at 1600. The whole party, particularly Kimbrey as leader, had just cause to be proud of themselves.

Basecamp Area, 29 May - 5 August 1984. Whole team.

Poor weather prevented an immediate return to recover the loaded sledge, which was now the first priority. Basecamp routine tasks included a fluid balance day on 31 May: Oakley found 5 blood PCVs had returned to normal values - the first ever scientific evidence of physiological acclimatisation to central cold stimulus.

The weather improved on 2 June. Next day a skidoo party (Kimbrey, Beattie, Ringe & Spottiswood) and a pulk party (Furse, de Gerlache, Lumsden) went to the "Claires Finger" cache, digging 3 new snowholes. For 3 days wind,snow and low cloud prevented skidoo travel, but on 4th Kimbrey and Beattie on skis marked the sledge, while Ringe and the others collected rock samples from "Claires Finger". Rations were limited, so the pulk party skied back to base on 7th. Next day, in continuing bad weather, the skidoo party set off for base, camping in cloud en route and arriving on 9th, to find basecamp heavily drifted, with all 4 Antarctic Pyramid tents pitched.

The third skidoo was out of action while Atkins improvised repairs to a rear trackshaft, strengthening the damaged bearing housing, building up the scored shaft journal with araldite and machining to fit, using a homemade 1 KP (Kimbrey Power) lathe and Swix ski scraper. Spottiswood repeatedly tried to get the other 2 skidoos up to "First Cache", but the snow remained powdery in continuing cold and the slope behind Metchnikoff Point proved insurmountable until 20th. Ringe's ankle had deteriorated again, so that local geological journeys were precluded. Despite a spell of clear, calm, cold weather from 11th to 17th, a period of stagnation in basecamp resulted, leading up to Midwinters Day.

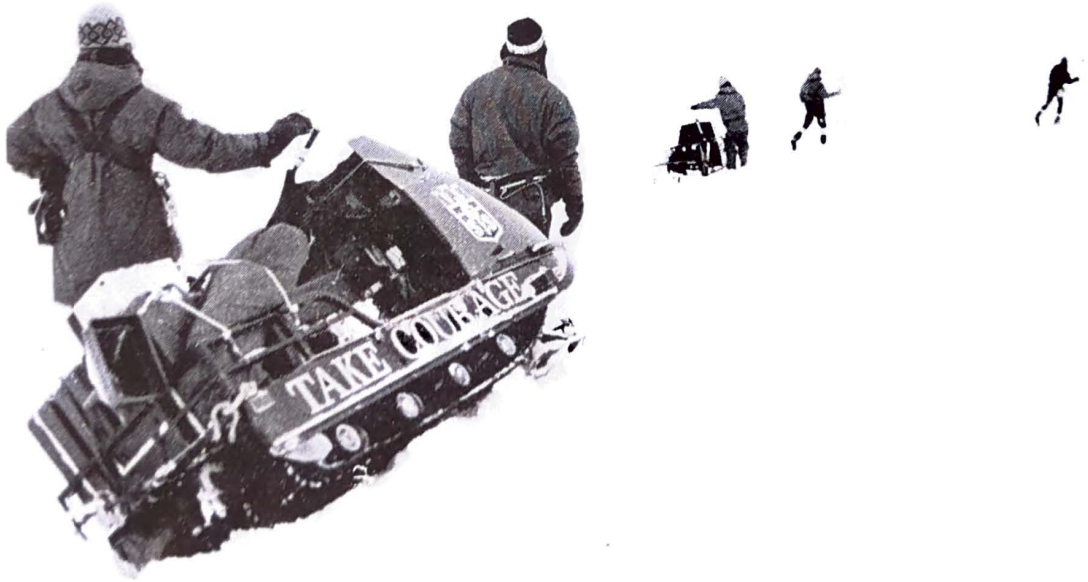
The sciences were all progressed steadily, but much of the short daylight (sunrise 1050, sunset 1535) was taken up by the domestics of living - constantly digging out tents, fuel, food, stores, the hut etc, and repairing and modifying tents, boots, snowgaiters, wristlets, gloves, general clothes, skis, crampons, stoves, tilley lamps etc. The garage was totally buried under snow: Atkins strengthened the roof, and Stuttard spent 8 days building a vast igloo porch using 2 ft thick blocks quarried by Ringe and others. Corbett progressed still and cine work with total dedication, concentrating on advertising photographs for suppliers: not seeing his results was frustrating. Oakley continued 24 hour temperature recording in tents and snowholes; he also went for a fully instrumented swim, recording a finger temperature of -3c (tissue freezes at -0.6c)

Kimbrey led preparations for Midwinters Day: everyone was busy making a present for the team member they had drawn from the hat.

Midwinters Day, 21 June, dawned gloriously calm and sunny. After breakfast Oakley swam among brashice for 20 minutes wearing a Multifab drysuit: Corbett filmed him playing with Weddell Seals until one objected fiercely. Everyone then enjoyed Kimbrey's Winter Olympiad of knockout shovel races and snowball fights plus a timed obstacle race in tent pairs, (Oakley won, fron Ringe and Lumsden). At 2000 a 7 course dinner began in the hut (soup, kaviar, pilchard cake,chicken, Crabeater steak, fruit duff and trifle) with punches, plus sausage rolls etc. We were disappointed to be omitted from the Falklands broadcast to Antarctic Bases (but cheered by a goodwill message next day from the Director and staff of BAS). The opening of team presents revealed marvellous ingenuity and craftsmanship, particularly Beattie's schooner in a Hankey Bannister bottle, Stuttard's beautifully fashioned sheathknife and Atkins' engraved tankard from a Pussers Rum bottle, leather-cased with a Karabiner handle. After a Sods Opera and forfeits, everyone sang his own verse of a ballad written by Oakley. The last four went back to their tents at 0700,four hours before the first earlier sunrise.

Next day Spottiswood and Stuttard got the skidoos up the backslope and ferried food and fuel to "First Cache". On 24th Furse, Beattie, Corbett, Evans and Lumsden left with 2 pulks; and next day Stuttard and Ringe caught them up pitching camp at "Claires Finger" cache. A third sunlit day enabled Beattie to lead Evans, Lumsden, Stuttard on the First Ascent of"Kelso Top" (3000ft) while the other three collected rock samples. Kimbrey & Atkins arrived on skidoos and reconnoitred a Severe rock and ice climb up "Claires Finger".

Sledge recovery June 84. Camp at Claires Finger cache.



Skidoos held up in poor visibility. Recce party going out.

After one day's bad weather fester, Kimbrey, Atkins, Beattie and Stuttard took advantage of two good days to recover the sledge complete with 2 pulks and other stores from the crevasse. It had fallen further and been buried with one end just showing 20ft down: the successful recovery was a great team effort and a great relief after a month. Corbett filmed the recovery; and the others helped initial digging,then collected more rock samples from above "Claires Finger". On 30th a planned film sequence of a crevassee fall and rescue was prevented by rising wind, and premature collapse of the crevasse bridge (Corbett becoming the 4th member of the Head-Under Club, with Atkins, Furse and Evans). Kimbrey & Atkins just managed to fight the 2 skidoos back up the slope in time,and returned to Metchnikoff Point. 32 inches of snow falling that night buried the tents below "Claires Finger", and on 1 July the other five cached the 3 pulks and skied back to base, using some peculiar ropes.

Beattie was confirmed as Leader, having brought his skiing up to his general good mountaineering standard.

Our top priority now was preparations for the move southward in September. Spottiswood, with Ringe and Lumsden, used a spell of good weather and snow to ferry food, fuel and other stores over to the "Claires Finger" cache and retrieve the 3 pulks. Kimbrey checked food stocks, and issues of booster and goodies were increased. After a 2 day search for buried barrels, Evans revealed that gasolene was short for the journey south: after much discussion, estimation and calculation, stores for the journey were severely pruned. A revised plan evolved, with 6 men going right south,and 6 completing the northern exploration from "Astrolabe Point".

Colder, calm, clear weather in the first week of July brought swathes of pancake ice into the coastal bays and by 8th there were many bergy bits and old small floes offshore. Leopard Seals and Antarctic Petrels arrived.

On 7th Furse, Ringe and Spottiswood skied to "Cairn Point" to camp for a weeks detailed geological survey. Relays of porters (Kimbrey & Lumsden on 8th, Atkins and Corbett on 10th, Kimbrey, de Gerlache and Stuttard on 12th) brought over fuel and Compo rations and returned with rock samples. Evans came over on 10th (to establish ground control, hoping for aerial photography by Endurance) and Spottiswood returned to base. That night, under a full moon, a big westerly blew up. Gusts of over 100 knots were estimated at basecamp and Kimbrey and Atkins were blown over while crawling to check the skidoos. The four exposed Antarctic Pyramids and one Conquest Snowline at base, and the sheltered Super Nova at "Cairn Point" all survived, but the Maureen Dome, strengthened Fjellraven pyramid and (old) Gresshoppe pyramid were all blown down with broken poles.

Then for 3 days heavy wet snow fell, producing many avalanches around "Cairn Point", snowslides all round the butte at Metchnikoff Point, and a slab avalanche at Skua Bluff. On Friday 13th three small tent fires occurred due to petrol contamination of parafin for stoves: Furse ordered a formal enquiry, which identified the source as a confusingly marked jerrycan of contaminated fuel. On 14th, another moonlit night, a second big westerly blew up, tearing up the icy crust and flinging it at the tents. (Oakley aptly likened sitting in a tent to sitting inside a kettledrum under shotgun fire). Lumsden recorded -31c, the lowest yet, if correct. Spottiswood and de Gerlache spent half the night digging out their tent, and repairing a tear caused by a high velocity snow-board. All the tents (4 unprotected Antarctic Pyramids, 1 protected Conquest Snowline and 2 protected Super Novas) survived gusts estimated over 100 knots. Next day Furse, Evans and Ringe skied back to base, risking the low route,after taking 40 minutes to plough 100 yards up the ridge.

The sea ice had almost all disappeared, but more icebergs were now about. Changeable gusty weather continued. Deep powder, ice crust, heavy snow and more powder made movement difficult, and dangerous, preventing all but short ski trips to "First Cache" and "Skua Bluff".

At basecamp work continued on all fronts. Spottiswood and de Gerlache fitted storm guys to Super Nova tents and repaired poles. After another fluid balance day on 20th Oakley found that everyone had now acclimatised to cold, with blood PCVs returned to normal. Lumsden worked tirelessly on the radio: the Palmer route had dried up, but he managed to send 250-word messages through the Falklands Station VPC. On 20th July (in the first message received since 25 May), we learnt that the Second Summer Party would arrive late December, 3 weeks earlier than expected. Concern was rising that the 868 mandays rations (and the petrol) cached at "Dayglo Point" might have disappeared. If so, there was now enough food in the north (including that at "Astrolabe"), to last us until 25 November, thanks to the extra Kimpo and Kimpack made up by Kimbrey earlier from booster & goodies. We could survive on seals and penguins for the last month, but losing mobility.

The weather continued very unsettled for the rest of July, with high winds, cloud and occasional fine days. Temperatures varied, with a difficult mixture of deep soft snow, a hard crust, and sometimes wet heavy snow. Much sea ice arrived, but then blew away again. A planned geological pulk trip to Cape Cockburn was delayed, and delayed, then postponed to late August, to fit in with other planned pulk journeys. Preparations for the journey south continued, and Spottiswood managed to ferry more petrol and stores to "First Cache" on two days. A radio message from BAS expressed great interest in the large mite-like creatures found by Beattie earlier. Photography and sciences were progressed, with one geological trip by Ringe and Furse to "Arch Point", but overall the last two weeks of July were rather frustrating, with lots of digging for stores. Over 5ft of snow had fallen in the month at basecamp.

August began with a northeasterly blizzard and a massive depression reaching 936 mbars next day,which was calm, but with a heavy fall of snow. On 3rd Beattie collected more of the monster mites, including one 7mm long. A spell of superb weather began in the afternoon of 4th, when Spottiswood ferried more gear to "First Cache", reporting a foot of Angels Dust snow on crust. Next morning Atkins took a 4-man party with 3 pulks away to reconnoitre the skidoo route up from Lister Glacier to the shoulder of Harvey Heights at 6000ft. It was the first move of the Spring Journeys.

Basecamp Party. 5-23 August 1984. Furse, Corbett, de Gerlache, Kimbrey, Oakley, Ringe, Spottiswood, Stuttard.

Kimbrey, Ringe and Spottiswood left with 2 skidoos on 5th. They made the first Winter ascent of the NW ridge of Mount Hunter, reaching "Diamond Peak". On 7th they completed ferrying gear on to the "Claires Finger" cache, and Kimbrey climbed "Claires Finger" in crampons (grading the vertical one pitch rock route Severe). After 3 days superb weather, there was 7/10 packice from the shore to the horizon on 8th. Furse, de Gerlache & Stuttard collected rock samples from above "Cairn Point" and returned in increasing snowfall, followed shortly by Kimbrey's party.

After an overnight blow most of the pack had gone on 9th.

Routine basecamp work continued in unsettled weather. With inexhaustible energy Spottiswood prepared and ferried gear for the skidoo journey south. Corbett virtually completed PR and advertising photography after 2 months solid work. Oakley completed the winter series of 24 hour cold stimulus records. On 13th we learnt from Faraday that our last 9 weekly bulletins had been incorrectly sent from BAS Cambridge to the Falklands (!)

Kimbrey, Ringe and Stuttard spent 13th - 16th collecting geological samples on "Pinnacles Spur". The small cache there had been buried and lost. On 15th a 4 day spell of bad weather began, with wet snow, sleet and rain creating severe avalanche risk and dangerous crevasse conditions.

Spottiswood and Kimbrey caught our first fish (10 Antarctic Cod) ledgering from the snowcliffs outside the boat haven. Loose packice was increasing erratically.

We heard from Dr Block (BAS Cambridge) that the "Metchnikoff Monster Mites" collected by Beattie and described by Oakley were probably a significant new Antarctic species, of the obscure family opilioacaridae, known only from Australasia and tropical Indian Ocean islands. We also learnt from our rearlink that RAF Movements had lost all the First Summer botanical and invertebrate samples. On 23rd, in glorious weather, two Humpbacked Whales visited the sound. Five minutes later Atkins' party appeared over the skyline.

Paré Icefall Pulk Recce Party. 5-23 August 1984. Atkins, Beattie, Evans, Lumsden.

They started eastabout along the skidoo route. Heavy, soft snow caused 3 days very hard work, hauling the 3 pulks, camping first at "Claires Finger" cache, then on the ramp up to Roentgen ridge and then a cloudy, but very cold night on Roentgen ridge. On 8th they dropped down to Lister Glacier, camping after missing the cache in cloud.

During breakfast next day Atkins emerged. Ten feet outside the tent (unroped for his morning constitutional) he broke through a crevasse bridge. Very luckily he landed on a snow ledge only 10ft down a deep crevasse. So he climbed out and finished breakfast. Atkins and Evans found the cache (2ft of the upended sledge marker still showing after nearly 3 months), dug it out, and re-erected the sledge marker.

The next three days were all very cold, with continuous cloud. They moved four miles up Lister Glacier, then 2 miles toward Virchow ridge, then another 2 miles onto the ridge. On 13th in better weather, they reached the piedmont below Paré Icefall, camping at 3500 ft. Despite sleeping with their legs in paper sacks, and rucksacks pulled over their sleeping bags, it was bitterly cold.

On 14th all four reconnoitred three possible skidoo routes up the NW side of the Icefall, but with 40-60 degree slopes none were really practical. On 15th, while Beattie and Lumsden dug out and repitched both tents, Atkins and Evans found a route up the SE side where it might be possible for skidoos, with winching from 4,100 to 5000ft.

On 16th Lumsden navigated in whiteout, NW toward "Rokki Plateau". They camped at 4000ft, all entirely cased in crackling ice. Five bad days and nights followed, in almost continual cloud, wind, and heavy snow. Snow like gravel buried the tents completely, 4ft over the tops. Pulks were rigged upside down on A-frames of skis to roof crawlways from the tent doors to the surface, and a rope was rigged between the two tents. Apart from some pole problems the Super Nova tents (with doubled heavy-duty poles, and 4 storm guys) performed very well, but lack of ventilation and pricker defects caused problems with both stoves. On 19th they went onto half rations, with 4 x 3 mandays left. On 20th Atkins and Beattie seized a break to reconnoitre the planned skidoo traverse at 4000ft toward "Astrolabe Point": this looked impassable for skidoos, but the top bowl of "Precinct Glacier" might be better. They just beat the cloud back to camp.

In freezing cloud they moved camp 2 miles NW next day onto the spur above "Precinct Glacier", keeping open the option of restocking food and fuel at "Astrolabe Point" if conditions remained bad. However the 22nd dawned clear and beautiful, so they headed down to "Cushing Col" and then down to 2000ft on Lister Glacier, as usual in cloud. Beattie and Lumsden fell behind on the 1000ft ascent to "Noddies Col", feeling very weak (attributed to CO poisoning), but the party went on over "Pinnacles Spur" onto "Footsore Piedmont". They camped in cloud at dusk just 3 miles from basecamp, extremely dehydrated after a hard 11 mile day.

After a night interrupted by frequent noisy avalanches off Mount Hunter, they returned to Metchnikoff Point in glorious weather on 23rd, jubilant and rightly proud after 18 days meeting and overcoming, at 4000ft, the coldest conditions met so far. They had found the least impossible skidoo route to the south, and also proved the best roping systems for parties with 1-man and 2-man pulks.

Atkins' first major party leadership had been an outstanding success. Lumsden had done very well on his first long trip and was made up to a Second. (Note: Ringe was also now a Second).

They were given a Sundays rest in a gale on Saturday 24th. The Winter Party had been on the island for exactly 5 months.

Basecamp. 23 August - 6 September 1984. Whole Team.

The pair of Humpback Whales on 23rd were the first seen since March. A premature dead Weddell pup was another, sadder symbol of approaching Spring.

On 25th the whole team turned-to for a hard 7 hours digging. All stores boxes were secured for the Spring thaw. The remaining food was moved to surround the hut. The lost last 45 gallon kerosene drum was located and recovered from 12ft under the snow.

Westerly winds gusting to 100 knots blew on 26th and 27th. One Antarctic Pyramid suddenly blew away, exposing Evans and de Gerlache to the storm in the middle of their breakfast (the tent was recovered from the beach undamaged; the snow had been blasted off the valence). Kimbrey and Furse were also blown out with broken Super Nova poles.

After two more days of high winds and foul wet snow, conditions improved on 30th, and everyone busily completed preparations for departure. Beattie modified all six pulks for easier one-man pulking (harness lashings, rope brakes, and aft-end climbing rope clip). Furse, de Gerlache, Evans & Ringe recovered rock specimens etc from "Cairn Point".

Only the roof of the hut was now showing above the snow, and a Triwall box tunnel was rigged, as the porch door was often completely drifted in 10 minutes.

September came in like a lion. Westerly storms and wet snow delayed departure for five days. The sea was 9/10 covered with smashed ice on 1st but it had almost all gone by 5th. Atkins replaced scored piston rings on the third skidoo (the spare pistons were incorrect); soon afterward the "garage" ridge tent was wrecked by the wind. Finally the two pulk parties left on 6 September.

Skidoo Party. 6 September - 14 October 1984. Spottiswood, Atkins, Beattie.

After departure of the two pulk parties on 6th, the Skidoo Party (plus Ringe) cleared up and secured basecamp. Next day they ferried last items to "First Cache", then moved on to camp at "Claires Finger" cache. Ferrying from "First Cache" on 8th, two skidoos were blown over by Gale Force winds. On 10th, after digging out and moving their buried tent they ferried stores 4 miles east, establishing a cache at "The Burial Ground" below Roentgen ridge. Returning into wind 2 skidoos were blown over and empty pulks capsized while airborne.

Returning from their second "Burial Ground" trip on 11th, the Alpine 503 gearbox seized in engagement. They recovered it next day on the 12ft sledge, Atkins stripping it out at "Claires Finger" while the others made another ferry trip in increasing sleet and cloud. Similar bad conditions prevailed on 13th. Spottiswood and Beattie towed the 12ft sledge back to "First Cache", where its towing shackle fell off, and it accelerated past them: Spottiswood raced it into cloud above the Icefall, and crash-stopped it with his skidoo. Beattie's skidoo then subsided half into a crevasse, taking an hour to recover. After striking camp at "Claires Finger", all three returned to Metchnikoff Point with the seized gearbox. While negotiating the "First Cache" slope in dense cloud, Beattie sprained his wrist as his skidoo nosedived off a 3ft sastrugi.

Three days were spent at basecamp in foul wet weather. Spottiswood measured his length in 6" water on the garage floor. Atkins repaired the gearbox by removing the seized 2nd Gear idler from the layshaft, but was ill with stomach cramps on 16th. Meanwhile the others got the Skidoos up the icy traverse to the skyline, with an extra 28 mandays rations etc. On 17th they left. Pitching camp in zero visibility near "First Cache" they found all the tent poles had been broken by the runaway sledge, so walked back down to basecamp. Finally they returned to the "Claires Finger" cache on 18th.

Two days of high winds and zero visibility followed, with the tent repeatedly buried. Several radio messages were exchanged with Faraday Base. Atkins started rebuilding the Alpine 503, working outside in generally desperate weather, having to dig it out repeatedly from drifts. On 21st Spottiswood and Beattie ferried loads onward in good weather, meeting the NE Coast Pulk Party at "The Burial Ground" cache. Evan's ulcer had deteriorated, so they ferried him back to Metchnikoff Point, installing him there with the only radio, before returning to "Claires Finger". Another day of westerly gales and heavy drifts followed, but Atkins completed the skidoo rebuild.

At last on 23rd they took the last loads on, repairing two skidoo defects en-route in localised heavy cloud, and camping with the pulk party at "The Burial Ground". Five days foul weather followed, with the tent, skidoos and cache continually drifting over. Atkins completed a succession of repairs on the two ex-Transglobe skidoos, and also fabricated a metal sledge from an empty 45 gallon fuel drum. In soft drifts and blasting spindrift Spottiswood and Beattie managed 3 ferry trips up 500 ft onto Roentgen ridge on 24th and 28th and also tried unsuccessfully on 25th.

On 29th they made 3 ferry runs, moving camp up onto the north side of Roentgen ridge, despite westerly "Katastrophic" winds rising to Storm Force 10, which froze eyelids together in driving spindrift. These were the worst conditions yet met skidooing, a very severe superlative. In bad visibility next day they repaired the tent and skidoos, and sorted out stores.

On 1st October they ferried all 14 stores loads and moved camp 2 miles to the south side of Roentgen ridge above the Icefall descent. Atkins' new metal sledge proved excellent, carrying a full 45 gal drum, and other loads of 600 lbs. A very hard and satisfying days work was completed in a rising blizzard which continued until late on 2nd. Atkins replaced a manifold gasket and completed the new sledge. At first light (0600) on 3rd, Spottiwood and Beattie recovered the remains of the stores cached (in May) near Roentgen Peak, before bad weather returned.

In fine weather on 4th they made 3 ferry runs down 1300ft to Lister Glacier cache despite deep, soft snow and intense cold. They found the NE Coast Pulk Party camped there, and moved into a large snowhole built by Kimbrey's "Astrolabe" Pulk party: a message at the buried cache said the "Astrolabe" party had finally left on 24th September, after 12 days of bad weather.

On 5th in reasonable weather but difficult, deep powder snow they cleared the remaining ton of stores from Roentgen ridge: the two ex-Transglobe skidoos could not get up the steep top ramp, so Spottiswood worked like a demon making 8 round-trips of 3 miles each, alone and unroped on Dutch Courage, while Atkins and Beattie waited below, under an icefall made more nervewracking by an avalanche nearby. Beattie sorted out the stores again, mustering the rations and decanting all fuel from drums into 55 jerrycans of gasolene and 8 of kerosene. In rising wind and increasing cold, Atkins started making a second metal sledge.

They made 3 skidoo ferries 4 miles south to the head of Lister Glacier before the weather deteriorated on 6th. Atkins renewed a rear tracksprocket bearing damaged by rope, and serviced the other skidoos. Wind and deep drifts prevented movement next day, but on 8th they shifted the remaining 8 loads and moved camp to the next cache at 1900 ft. On the final run a track drive half shaft broke on one Alpine 640.

They remained 4 days/5 nights at "Pit Stop Cache", while Atkins worked outside, completing a very ingenious makeshift repair of the half shaft. Spottiswood and Beattie continued ferrying east over Virchow ridge in very difficult soft snow. On 11th the other old skidoo sheared two engine holding-down bolts, requiring yet another masterfully inventive repair by Atkins, with no suitable spare bolts.

With all 3 skidoos servicable at last on 13th they established their planned major cache at 3200ft at the head of Paré Glacier, on the plateau below the icefall leading to Harvey Heights and the south. Starting with about 3 tons of stores, they had delivered to the intended site a payload of 2 tons - 41 jerrycans of gasolene, 7 jerrycans of paraffin, 178 mandays of rations, and all the other equipment (considerably more than our original estimates). Because of the atrocious September weather it would not now be possible to take the skidoos themselves south over Harvey Heights as originally intended, but this central high-level cache was essential for the remaining Winter Party explorations and should also help the Second Summer Party.

The same day they drove up to "Rokkitanski Plateau" and tried to find a route down onto "Precinct Glacier" in cloud. Neither of the ramps looked safe for a return journey; so they camped at 4000 ft after completing 16 miles, the longest days journey.

On 14th they left the skidoos and hauled 2 very heavy pulks around the flank of Mount Rokkitanski and down to "Sues Col", where Atkins had a nasty slide with a pulk on steepening ice. In almost continual whiteout they continued to "Astrolabe Point", arriving that evening in high spirits after a hard 9 mile journey, to cheer up the others there.

I cannot speak too highly of this whole 3-man team. Over a prolonged period of 38 days they had overcome appalling weather conditions, much bad soft snow and a series of major breakdowns involving all 3 skidoos, with inadequate spares. Every decision made was correct, and they maintained a cheerful attacking spirit throughout, surmounting all difficulties, and seizing every opportunity to move. Spottiswood, Atkins and Beattie are now the 3 most experienced Skidoo men in the Services, and I would think myself lucky if any or all of them could be in my team anywhere, doing anything.

'Astrolabe" Pulk Party. 6 September-11 October 1984. Kimbrey, Lumsden, Oakley, Stuttard.

They left base with 2 pulks on 6 September camping at "Claires Finger" cache and reaching the "Burial Ground" cache next evening. On 8th in worsening weather they moved onto Roentgen ridge, where both tents were buried by drifts despite all-night digging. On 10th they located the Roentgen Peak cache (established in May) and camped under Roentgen Peak, restocking from the cache next day and ascending Roentgen and "Emery" Peaks.

On 12th they moved 5 miles back up the ridge and down to camp at Lister Glacier cache. There they were trapped for 12 nights on reduced rations by unremitting bad weather. Fohn winds gusted over 60 knots on 16th and 17th with heavy freezing rain. On 19th Kimbrey and Lumsden's Super Nova was hit by a mini soft-slab avalanche breaking a pole. Next day strong winds broke 2 poles on their repitched tent so all four dug a snowhole and moved in. Fine weather on 21st was utilised to repair tents and dig out the cache yet again.

On 24th, taking 4 x 7 mandays rations (leaving 10 mandays for the following parties), they finally left the snowhole and pulked across Lister Glacier up to 2000 ft on Rokkitanski north ridge. Storms held them there 4 nights but on 28th they moved up 1000 ft in a brief easement. On 30th, after another stormbound day, they skied south up the ridge, but were caught by a severe blizzard while in great difficulty pulling capsizing pulks up an icy 40 degree slope. They dug a snowhole before an evening clearance enabled Kimbrey and Stuttard to reconnoitre up to 3700 ft.

On 1st October they moved up over "Hollys Col" (over 4000 ft), then started descending into the head of "Precinct Glacier", where they were caught by whiteout in a maze of bad crevasses. Pitching tents in a rising easterly,Oakley and Stuttard's Super-Nova broke 3 poles; after sewing up the tears, risking frostbitten hands, it ripped again so they collapsed the tent and moved into the other tent. All four lived cramped into the one tent for three stormbound nights, with an evening break on 2nd allowing Kimbrey and Stuttard to discover the one route down the crevassed area. They had been living on half or two thirds rations for many days.

On 4th they broke camp before breakfast and pulked down to 3000 ft, where the clouds cleared allowing them to complete the 6 miles down to "Astrolabe Point". Arriving with just 3 mandays rations between them, they found the top 4 inches of the cache marker pole protruding from the snow, and quickly dug out food, fuel and the radio. They pitched camp with great relief!

In 29 days they had only had 5 clear of whiteout and been able to move for only 37 hours, averaging just under 1 mile per hour. In the 22 days since reaching Lister Glacier cache they had eaten only 14 days of rations (which were already under 80% of the 5000 calories per manday considered necessary in these conditions). Unlike the other pulk party they had not enjoyed the security of skidoo cache support. Their successful journey required all their resource, & determination and good humour. All four earnt great credit, especially Kimbrey the party leader. Without his experience, and in particular Stuttard's support, their very survival would have been doubtful in often desperate conditions.

After one day's recuperation they started digging for the 3 fuel drums (One kerosene and two gasoline), and the stores boxes separately cached, and for 100 mandays missing compo. For 7 days they dug through deep icy snow to ground level, feeling weak due to lack of food. Meanwhile Lumsden caught up the radio backlog and further improved communications, Oakley recorded bird life as well as continued meteorology recording, and Stuttard began a detailed study of the flowering plants and other vegetation beginnning to emerge from snow cover.

Northeast Coast Pulk Party. 6-21 September 1984. Furse, Corbett, de Gerlache, Evans, Ringe.

The first four left base on 6 September with one pulk, joining the "Astrolabe" Pulk Party at "Claires Finger" cache at dusk. On 7th they dug the cache out of 6ft snow. Ringe arrived that evening with the Skidoo Party.

After 2 days stormbound, they moved to Cape Roux East on 10th. Corbett climbed Cape Roux West and Ringe did geology on both points on 11th/12th. Rain, wet snow and gales then delayed them 3 days.

On 16th they moved 5 miles east to "The Burial Ground" cache under Roentgen ridge, Corbett navigating largely in cloud, a very heavy uphill haul in windslab drifts for Evans as horse. Camped beside the cache at 1500 ft Storm Force westerly winds repeatedly buried the tents over the next 5 nights - both Super Novas withstood burial very well. A half day break on 18th enabled a short recce trip to the north coast by Furse, de Gerlache and Ringe. Evans had developed a mild duodenal ulcer in August, it was now worse.

Sunshine on 21st allowed the tents to be moved up to the surface and the cache was moved up another 4 ft. At noon Spottiswood and Beattie arrived with 2 skidoo loads. Evans nobly suggested he stay by himself at Metchnikoff Point. This avoided a 2/3 week return journey by the "Astrolabe" party ferrying Oakley to tend Evans at Basecamp; it also helped our tightening rations situation. Furse gladly agreed: Evans would keep the Skidoo Party radio, and request a precautionary medical evacuation by RRS John Biscoe, due nearby shortly. Within an hour Evans was waving farewell from the back of a skidoo heading home.

Northeast Coast Pulk Party. 21 September-11 October 1984. Furse, Corbett, de Gerlache, Ringe.

After Evans' departure they relayed the pulk onto Roentgen ridge. The Equinox was yet another westerly gale, but on 23rd they checked the cache near Roentgen Peak, then visited Cape Cockburn for geology. On return they found the Skidoo Party camped on The Burial Ground" in cloud.

On 24th they moved in cloud to Roentgen Peak, pitching camp in rising wind and falling snow. Westerly winds (reaching 80 knots on two days) held them there for 6 nights with only two brief breaks. Freezing rain on 25th provided a helpful rigid armour-plating of ice on the tents. At last on 30th they moved down in cloud to camp at 1200 ft above Duclaux Point. Ringe visited an interesting basalt formation nearby on "Vango Ridge".

Visiting Duclaux Point on 1st October, they climbed the ridge but could reach only 2 rock outcrops. After a gale next morning the weather cleared. A BAS Twin Otter was heard overhead, the first sign of other humans in 6 months.

They pulled to Lister Glacier cache in cloud on 3rd, and next day climbed "The Pepperpot" (1850ft); and Ringe and Corbett also visited two rock exposures. The Skidoo Party arrived that afternoon. Furse got mild snowblindness on a geology trip with Ringe and de Gerlache to Virchow Hill and recuperated on 6th. To minimise mouths on the hill they decided to go direct to "Astrolabe Point", but another westerly storm prevented departure on 7th.

Helped by the skidoos (and now with a second pulk freed by Atkins' second fuel drum sledge), they ascended Lister Glacier on 8th to camp at 2500 ft. Fine weather at last prevailed and after camping on "The Terrace Piedmont" and west of "The Precinct", they reached "Astrolabe Point" on 11th to be welcomed by Kimbrey's Astrolabe pulk party.

Using food and fuel cached by the May and September skidoo parties, despite much bad weather they had covered eight geological sites (4 more than planned), and completed the geology south to Virchow Hill.

Metchnikoff Point. 21 September-3 November 1984. Evans.

Returning by skidoo on 21 September with a worrying duodenal ulcer, Evans remained alone in Basecamp with the only Clansman radio then manned by the expedition. He established communications with Faraday, and requested a precautionary medical evacuation. Late in September was not possible, but BAS agreed that the RRS John Biscoe would attempt to pick him up on 4-6 November if weather permitted, or otherwise on 26-28 November. Failing that, USARP also agreed that USCGS Glacier could recover him on 4 December by helicopter. These generous offers typified the helpful actions of the British and US scientific authorities in such cases of real need.

Evans occupied himself fully recording seals and birds around the point (thus covering a gap in our observations), and tending and clearing up Basecamp. He also continued his beach study. He later said he had not felt lonely, spending much time reading, and listening to the radio.

On 23 September, while visiting the west end of Metchnikoff Point, he was caught in a small slab avalanche and swept 30ft down onto the shore rocks. He was uninjured but lieing awkwardly, with his legs buried and clamped in snow. The waves breaking on him first consolidated the snow debris, but then gradually helped remove it. Finally he freed himself by pulling his foot out of his boot, after a frightening experience, without hope of help. On 5 October he at last heard the "Astrolabe" Pulk Party on the radio, and thereafter was in daily contact with one or another of the parties. The first few Chinstrap Penguins visited the camp level on 13 October and by the end of the month about 2000 were present. There were many other signs of Spring, with increased radio traffic, a plane overflying, & wildlife arriving: but surprisingly no Weddell pups were seen.

On 3 November Evans was picked up by John Biscoe. The ship sent 3 Geminis inshore, landing 220 mandays rations, kerosene, gasolene, philatelic mail & some marvellous goodies for the other parties. Six weeks alone cannot have been pleasant, but he had remained remarkably cheerful.

"Astrolabe Point" 11-14 October 1984. Furse, Corbett, de Gerlache, Kimbrey, Lumsden, Oakley, Ringe, Stuttard.

On 12th the Astrolabe Pulk Party continued digging for stores, while the others took a Sunday. For the next 2 days Kimbrey led the majority portering rations up toward the skyline. Meanwhile Oakley and others completed the digging: after 550 cubic yards (over 200 tons) of snow had been excavated it was ultimately clear that monstrous waves, perhaps early in August, must have overwhelmed the 15-20ft basalt "seawall" and swept away the lower cache from 60 yards beyond, nearly 30ft above high tide level. 3 fuel drums, 96 mandays compo and other stores were missing: luckily the upper cache a few yards further up had escaped. With further savings over the last two months, there was still enough food and fuel in the north to last everyone until late November. In continuing fine weather, Ringe & Stuttard progressed geology and botany, both most interesting there.

Drastic revision of plans was necessary because of several factors: the loss of stores from "Astrolabe Point"; the delays due to September weather; a signal just received from Endurance required the whole team at Metchnikoff Point for the changeover; serious doubts about the safety of the cache at "Dayglo Point" had been exacerbated by the losses at "Astrolabe"; fifthly, but not least, their experiences had made a heavy impression on the Astrolabe Pulk Party who were still recuperating from their long period on half rations. Plans were constantly discussed.

De Gerlache & Lumsden volunteered to join Furse going over to "Dayglo Point" to check the cache there. (Ringe also volunteered, but completion of geology in the north was considered more important). With Evans having the second radio at base camp, there was no communications with the Skidoo Party. So on 14th Furse decided to move up over "Rokkitanski Plateau" next day with de Gerlache and Lumsden, to link up with the Skidoo Party, before continuing to "Dayglo Point".

"Astrolabe Point". 14-17 October 1984. Whole team, except Evans.

On the evening of 14th Spottiswood, Atkins and Beattie tumbled cheerfully into the camp. Their arrival enabled more coordinated and better plans. The main body would attempt the first ascent of Mount Parry. After helping the first stages of portering, Stuttard would return with Oakley to "Astrolabe Point" to progress ologies. Atkins volunteered to join the "Dayglo" party after the ascent of Mount Parry.

On 15th portering 270 mandays Arctic Rations up to 1000ft was completed. The 16th was a Sunday, allowing everyone to rest and prepare for weeks in the hills.

First Ascent of Mount Parry. 17-31 October 1984. Kimbrey, Atkins, Beattie, Corbett, Furse, de Gerlache, Lumsden, Ringe, Spottiswood.

As the most experienced mountaineer and climber in the team, Kimbrey organised and led a Himalayan-style assault from sea level, portering and sledging a logistic triangle of food and fuel over 15 miles to 6300ft, before the final 7 miles/2100ft along the ridge. Additional food was taken from "Astrolabe" for subsequent exploration around Hill Bay, and food and fuel from the Skidoo Cache was taken for the "Dayglo Point" and Mount Morgagni parties. The skidoos would assist the porterage for 5 miles at 3700 ft around the foot of Mount Rokkitanski.

Ringe and Atkins remained for 2 days making a geological map of "Astrolabe Point" before joining the others, who left on 17th. For 3 days in cloud but little wind, two parties leapfrogged camps to "Sues Col", and ferried loads in short stages up the NW ridge of Rokkitanski to 3700ft, using all 7 pulks.

On 20th, in brilliant calm sunshine, a good route was found up from the top bowl of "Precinct Glacier". Kimbrey, Spottiswood and Corbett moved up to camp at 4300ft on "Rokkitanski Plateau" and made two skidoo trips down to 3700ft, bringing rock samples and biscuit for "Astrolabe Point" and taking rations back up.

Oakley & Stuttard had assisted portering up to 3700ft. On 21st, with mixed feelings, they returned to "Astrolabe Point" for 6 weeks botanical and other scientific work of higher priority than mountaineering.

That day the 6 man pulk party sledged 10 miles around Rokkitanski. On pitching camp a Fohn gale broke 7 tent poles and one of 3 tents had to be collapsed. Meanwhile the skidoo threesome moved the remaining stores around to the Skidoo Cache. Superb weather on 22nd allowed the advanced basecamp to be established with all stores at 3700ft at the foot of Paré Icefall. Atkins and Beattie reconnoitred the icefall behind camp, finding a steep useable route up to the ridge at over 5000ft.

Every evening Lumsden worked the radio. As well as continuing communication with Evans at base, and with Faraday, Palmer and Signy Island, the extra height now enabled him to talk direct with VPC Falklands. We asked RRS John Biscoe to embark food and fuel from the Army in Stanley, hoping it could be landed when picking up Evans, and thus avoid the need to take penguins eggs and seals at base in December.

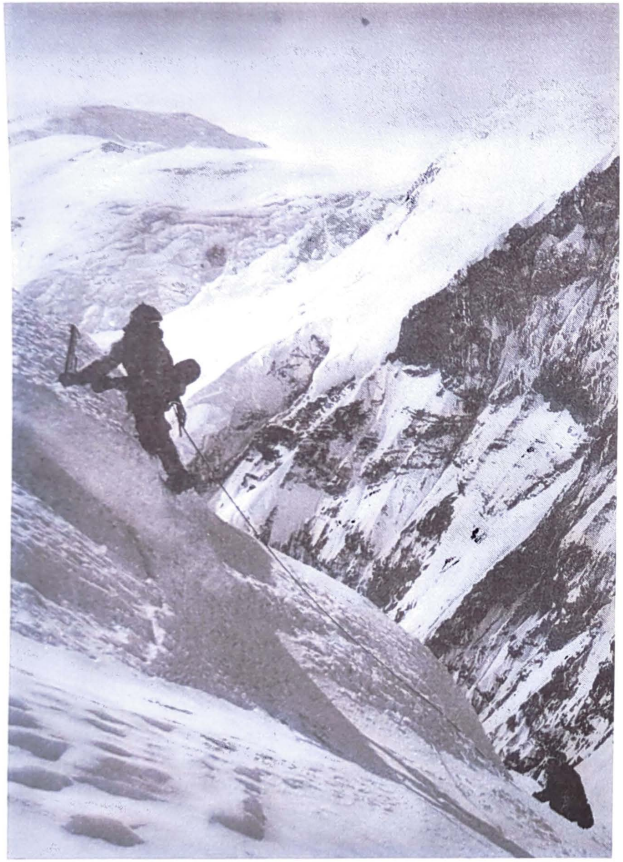
In two days 256 mandays rations etc were portered halfway up the icefall (five return trips each, all sweating in calm cloud) and the team moved up to Camp 8 at 4800ft on 24th. Thursday 25th was a welcome Sunday rest, before moving 238 mandays rations etc up to Camp 9 at 5300ft on the edge of the whaleback ridge. Furse broke a ski-binding on the final lift: so on 27th Kimbrey and Spottiswood returned 6 miles to the Skidoo Cache (in cloud below) to collect the spare binding, while the others ferried gear 2 miles up the ridge to 6300 ft, in glorious weather.

Kimbrey and Spottiswood returned early on 28th, after some difficulty at the widened schrund halfway up the Icefall. The team then sledged the final loads onward, and moved up to establish Camp 10 at 6300 ft, before taking 4 pulk loads on to 6400ft at "Scotch Corner".

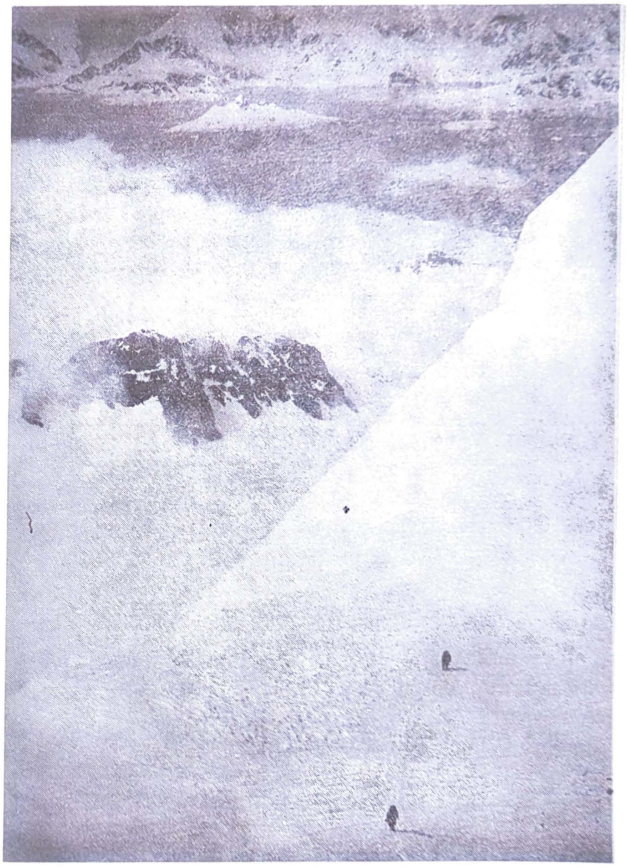
Waking to another sunny day at 0400 on 29th the team with 5 days rations and 2 pulks first established Camp 11 at 8000ft on the north summit of Harvey Heights before midday, then continued on skis with light packs to the south end of Harvey Heights, before changing to crampons for the final impressive ridge. 500ft below the summit Spottiswood & Furse turned back exhausted. At 1620 Kimbrey triumphantly led the other six to the summit (8,400ft).

Midday in winter. Looking North from Metchnikoff Point.

Snowhole. Atkins and Beattie sitting out a blow during the sledge recovery in June.

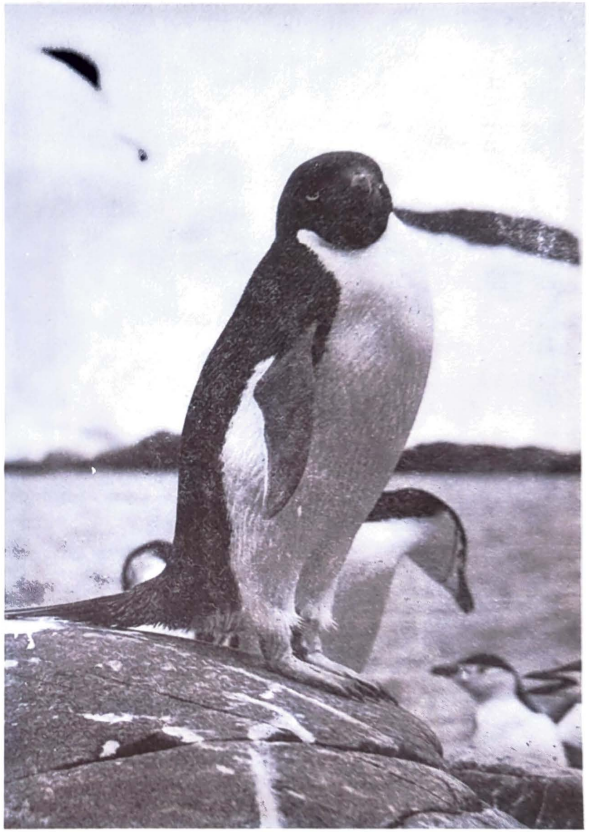


Mount Parry, final slope.



The Solvays. Party between 'Ben Bangers' and 'Ben Mash' the Gerlache Strait and Antartic Peninsula beyond.

Blue-Eyed Shag



Adelie Penguin in Chinstrap Colony

Radio. Lumsden using the radio in fine weather in October.

Ascent of Mount Parry October 84. Mount Parry from the second porters' camp above 'Astrolabe Point'.

After still and cine photography by Corbett, Ringe collected basalt from 7400ft on the summit ridge (possibly the highest rocks collected in the Peninsula region?). The last of the seven returned to camp by 2100, as the sun set behind Mount Francais: all were exhausted after a very long and hard day.

On 30th the majority moved camp down to 7000ft on the NE shoulder of Harvey Heights and portered the Dayglo Party stores up from "Scotch Corner". In continuing good weather Atkins and Corbett made another ascent of Mount Parry with Furse, plus a 10 minute detour to tick off the main 8100ft southern summit of Harvey Heights; on 31st, with visibility under 50 yards in cloud, they moved down and found the others in a beautifully made and drifted camp, heavily drifted by the high winds.

From the first rations portered out of "Astrolabe" on 13th the ascent had taken 16 days, including 2 rest days. Team members had averaged 85 miles travel each, with 21,000 ft vertical ascent. Average porters stores packloads had been 35 lbs, plus up to 70lbs on pulks; average personal & tent packloads when moving camp were 60 lbs. Kimbrey's demanding leadership and detailed organisation, with all-out effort by everyone, had exploited fine weather to achieve the ascent just in time before conditions deteriorated. At the same time adequate caches had also been established for the "Dayglo Point" and Hill Bay parties. Although no pitches were above Grade 1, the ascent required a wide range of mountaineering skills, and all the logistics of a Himalayan ascent (except paid porters). The spectacular summit of Mount Parry was worth all the effort.

After a day of bad weather on 31st, the "Dayglo" party departed on 1st November.

Hill Bay Southern Party. 1-18 November 1984. Beattie, Kimbrey, Ringe.

On 2nd they moved down the eastern shoulder of Harvey Heights and pitched camp at 5100 ft, their base for geology and ski mountaineering down toward Freud Passage.

Next day they collected rock samples at "Freud Heights", where they also found several lichens and mosses, by far the highest so far at 2700ft. After a days bad weather they made the First Ascent of Einthoven Hill on 5th: Ringe collected rock samples and almost lost a ski, before they returned in cloud. On 6th they made First Ascents of the three 3700ft "SSH Peaks" overlooking Hill Bay, finding out that a ring contour on the map was incorrect. (See Survey Report). They returned in whiteout again, another long upwards plod in sticky snow, and were then held up by 2 days snow and high winds.

On 9th in cold cloud they dragged the pulk up through heavy snow to "Scotch Corner" cache at 6400ft on Harvey Heights, where they replenished rations and camped. Next day they collected basalt at 5000ft along the Morgagni spur, enjoying fantastic views down into Hill Bay and Laennec Glacier. Two more days cloud and high winds followed.

On 13th they moved to the head of Paré Icefall at 5500ft replenishing food and fuel there. Four days of unremitting foul weather then frustrated plans to climb Mount Rokkitanski. The tents were completely buried after a blizzard on 15th

Finally on 18th they descended the icefall in clear windy weather and camped beside Spottiswood and Corbett's empty tent.

Leading a strong party Beattie had achieved most of their original aims, despite foul weather severely reducing the time available. With only one tent and limited food the featureless windswept east ridge of Harvey Heights was a dangerous place in these conditions but they made light of it.

Hill Bay Northern Party. 1-18 November 1984. Spottiswood, Corbett.

On 2nd they returned from 7000ft on Harvey Heights to 3600ft at the foot of the Paré Icefall, camping beside the parked skidoos.

In good weather on 3rd they drove over to the main skidoo cache and dug it out. Five days bad weather followed with much snow and some high winds. On 9th they again drove to the Skidoo Cache, digging it out yet again and collecting stove spares. Another 8 days bad weather, with a 50 knot blizzard on 15th, then prevented any outside movements beyond digging out their Super Nova tent, and having to move it when too heavily drifted.

On 18th they made the First Ascent of "Slouxie Peak", the fine 4400ft snow and ice pyramid on Morgagni spur (with Corbet leading and Spottiswood photographing for a change). On return to camp they found Beattie, Kimbrey and Ringe. Once again they had made light of apalling conditions which could easily have demoralised less experienced parties.

Paré Glacier Party. 18-30 November 1984. Kimbrey, Beattie, Corbett, Ringe, Spottiswood.

On 19th they moved everything to the main Skidoo Cache at 3000ft on Paré Glacier, making two skidoo trips in whiteout. Heavy snowfall next day prevented movement. Their aim was to make the first ascent of Mount Morgagni, but time and food were running short for relief of Oakley and Stuttard at "Astrolabe Point". Kimbrey generously stood down to let Beattie lead this climb.

On 21st Spottiswood & Beattie took 2 skidoos to "Morgagni Col", unroped to allow "barging" runs. They returned to collect Corbett & Ringe. After skiing up the icefall from the col they found deep soft new snow on the steep face which forms the western ridge of Morgagni, and withdrew because of avalanche risk. Morgagni had now frustrated attempts by strong parties in February, May, August and November, by a combination of the conditions prevalent on Lister and Paré Glaciers, and avalanche risk on the mountain itself.

Returning toward the Skidoo Cache they were hit by an unheralded blizzard just before reaching camp. They hurriedly pitched their one Super Nova and all four piled in. The tent stood up to very high winds for the next two nights without a snowwall. They reduced to 2/3 rations, as did Kimbrey, alone with two tents only 300 yards away at the cache. Early on 23rd they moved to the cache, in a short break between high winds and heavy snowfall.

For five days heavy snow fell, totally burying the cache, the upended 8ft sledge cache marker, the skidoos, & the tents. Snow conditions were so bad that Kimbrey took 20 minutes to reach the other tent only 15 yards away on the flat. They reduced from 2/3 to 1/2 rations on 27th. On 28th they replitched tents in waist-deep powder snow.

The weather improved on 29th. It took all day to dig out the skidoos and move the cache onto the surface yet again. Long ramps were made to get the skidoos 6ft up onto the surface. It was clearly impossible to drive the skidoos back to Metchnikoff Point taking fuel, as had been planned. The pre-arranged first alternative was to park the skidoos at 1000ft above "Astrolabe Point", leaving everything else at the Skidoo Cache, ready for the Second Summer Party landing (expected to be at "Astrolabe Point" following Endurance's signal in October).

In fine weather on 30th Spottiswood barged a 2ft trough up to 4300ft on "Rokkitanski Plateau". The 3 mile journey took 7 hours and Dutch Courage required plugs renewed twice and 2 new drive belts. Beattie and Ringe spent 2 hours digging out the old skidoos halfway up before getting tows from Dutch Courage. Breaking camp, Kimbrey & Corbett were dropped off at 1700 to return to Metchnikoff Point, while the others continued toward "Astrolabe" by skidoo.

The horseshoe of Mount Hunter, Mount Rokkitanski, Harvey Heights and Mount Morgagni ridges clearly acts as a trap for moist northerly airstreams, causing much cloud and exceptionally high snowfalls on Lister and Paré Glaciers. The 5-man party had endured a month of unusually bad Spring weather, without serious difficulties. This apparent eas should not mask the skill and cheerful fortitude required.

"Astrolabe" Relief Party. 30 November 1984. Spottiswood, Beattie, Ringe.

After dropping off Kimbrey and Corbett they continued across "Rokkitanski Plateau", on good hard snow at last. They drove the 3 skidoos at high speed down onto "Precinct Glacier" and then over "Sues Col", to park them at the 1000ft cache above "Astrolabe Point" - a quick 3000 ft descent in 3 hours.

Descending on crampons, Spottiswood became the 6th member of the Headunder Club, falling 35ft into a cavernous crevasse: he was held by Ringe. Although initially hanging upside down with his rucksack, he climbed out uninjured 45 minutes later, after Beattie had chopped away the lip where the rope had bitten in 3ft. They reached "Astrolabe Point" at 2100.

"Astrolabe Point" Scientific Party. 21 October - 30 November 1984. Oakley, Stuttard.

They returned to the point on 21st October with one pulk, after helping to porter stores up to 3700ft beyond "Sues Col".

Stuttard undertook detailed work on vegetation transects, and particularly recording the Spring regeneration of grass and pearlwort. The planned temperature monitoring of clothing assemblages was frustrated by higher air temperatures, but instead Oakley worked with Stuttard on micrometeorology and made a terrestrial invertebrate collection for Beattie. Oakley also recorded thorough observations of birds over the 6 weeks, overlapping and correlating with Evans' observations at Metchnikoff Point, and providing our only information over the important month of November.

The weather was generally dismal throughout the 6 weeks, with much calm cloud in October, and some storms in November. Rough seas in mid-November again overwhelmed the "seawall" although they did not quite reach the camp; Stuttard had an involuntary swim in the "moat" while photographing the breakers.

They expected the relief party on 22nd November (evidently incorrectly briefed by Furse). Without a radio, they became increasingly concerned about the safety of the others in the following week. They finished their Compo (exclusively Chicken in Brown Sauce!) and started on the small stock of Arctic Rations. After no-one arriving with the better weather on 29th, they ate their first Chinstrap, and counted limpets on the few accessible rockshelves. They were very glad of company when the others arrived late on 30th.

Claude Point Pulk Party.1-12 December 1984. Stuttard, Beattie, Oakley, Ringe, Spottiswood

On 1st they prepared the stores cache for recoveries etc at changeover, and loaded the pulks on the glacier. On 2nd they moved out with 3 pulks, made up to 77 mandays rations from the caches above. At the 1000ft cache Spottiswood bad a nostalgic farewell to Dutch Courage and the other skidoos; they camped near the 2000ft cache.

On 3rd they cached most of their food on the ridge and skied down to camp at 2000ft above the middle of the cliffs running east from Claude Point. The next two days were spent exploring the cliffftops to Claude Point, covering geology, botany, birds and bugs. (Stuttard and Spottiswood also searched for the fabled middle route onto "Precinct Glacier").

On 6th they pulked through "The Precinct" and camped in warm cloud on the "Terrace Piedmont", where they were held up for a day by wind and snow. In a 4-hour break on 8th they made the hard haul up to 3000ft on "Cushing Col". Easterly gales and spindrift stopped them there for 3 nights, until 11th, when they moved on the camp at 2000ft on "Pinnacles Spur". Ringe added to his August rock collection from the pinnacles. Stuttard rightly set aside his plans to climb Mount Hunter from the SW, because of the high risk of avalanche.

By taking a heavy load of rations Stuttard had enabled thorough ologies on the journey. They reached Metchnikoff Point on 12th to find basecamp apparently deserted, but cans of beer in the hut.

Basecamp Advance Party. 30 November - 12 December 1984. Kimbrey, Corbett.

Leaving the skidoo party on "Rokkitanski Plateau" in the evening, they skied down the ridge to "Cushing Col" with one pulk. Stopping to rest at "Noddies Col", they unclipped from the pulk, which tobogganed away into Lister Glacier with Corbetts cameras and exposed film. Luckily they found it safe a mile below. After camping that night at "Noddies Col" they reached Metchnikoff Point pm 1st December, finding a message from Evans left in the hut.

November weather was as bad as September. Two super Novas in spindrift.

Lumsden repairing snow walls in fine weather.

'Dayglo' party above Bulls Bay in November 84. Looking across to Celsus Peak (CP) and 'Mount Frederick Cook' (MFC).

Celsus Peak, December 84. Lumsden above the cached skis (arrowed). Later he fell 130ft.

Next day they made radio contact with the Dayglo Party, and for the next two weeks the two parties were in regular contact. It demonstrated how much better it would have been to have had radio contact between parties throughout the year.

The Triwall Hut was still deeply drifted and the garage still totally buried. They dug out the goodies left by RRS John Biscoe, dug out the boats which had been drifted 4ft deep since Evans left on 3rd November, and started to dig out and sort out stores boxes. Hail and rain on 8th, 9th and 10th removed 3ft of snow, and exposed a lot of gash lost through the winter months, and they began a major clearance.

Sighting the Claude Point Pulk Party arriving on 12th, they hid in boxes, but laughter soon gave them away.

Dayglo Party. 1 November - 15 December 1984. Furse, Atkins, de Gerlache, Lumsden.

The aim of this party was to check the doubtful cache at "Dayglo Point", so that the Second Summer Party could efficiently plan their exploration of the south, even if they were all landed in the north.

On 1st November, they left the remainder of the Mount Parry team at the 7000ft camp on Harvey Heights, taking 3 pulks, very heavily laden with 4 x 25 mandays rations, 12 gallons Kerosene, the (only) radio, and miscellaneous stores to cover the expected cache digging work, and possible retreat if the cache was lost. In 3 days glorious weather they travelled steadily downward, camping at 5000 ft above Malpighi Glacier and at 2100ft on Mackenzie Glacier. Caches of food and fuel were left en route at 5600ft (4 x 5 mandays), at 2300ft opposite Hunt Island (4 x 5 mandays) and above "Dayglo Point" at 1700ft (4 x 13 mandays).

Late on 3rd they arrived at "Dayglo Point". They immediately found both caches visible and evidently secure. Two days of gloating, overeating, digging out and mustering stores and recording wildlife followed. They then prepared to leave to explore the Solvay Mountains, and visit Humann and Fleming Points. The 1700ft cache was stocked up to 4 x 30 mandays plus porridge oats and breadmix etc. High winds on 9th discouraged high travel, but Furse visited Buls Bay, on a pilgrimage with de Gerlache.

On 10th RRS John Biscoe was sighted, the first ship this season. She sent in a boat. The two crewmen were the first outsiders in 8 months. Evans was also in the boat, saying hello after 7 weeks separation, and also farewell. They took the "weekly" radio bulletin covering the ascent of Mount Parry, as the radio appeared to be dead.

Next day was declared a Sunday to demolish the Biscoe goodies (bread, veg, fruit and whisky), but Atkins and de Gerlache made a final stores lift on skis. Atkins fell 20ft into a crevasse, but was well held by de Gerlache, and climbed out with minor lacerations, before completing the lift to the 1700ft cache; de Gerlache was promoted to a "Second". High winds prevented departure on 12th: that evening a little 2000 ton iceberg calving off the Icecliffs set up waves that lapped onto the camp spit at "Dayglo Point".

Leaving on 13th, four heavy 1-man pulks were hauled inland to 2100ft. This totally self-supporting 30 day exploration would be the longest of the expedition, the first with one pulk each. After 2 days (first heavy snow & then a blizzard), on 16th they pulked on up to 3000ft before being stopped by heavy soft snow. After skiing up nearby "Black Sheep Top" four days of frustration followed with cloud and snow, although one relay load was back-packed up to 3600ft on 18th before a westerly gale stopped play.

Finally on 21st the pulks were dragged up to 3600ft on the plateau behind "Family Ridge", through awful heavy snow. A SW gale arose on arrival and steadily worsened: at 0300 next morning both tents' snowwalls were blown down, but Atkins plugged the gaps. After reaching a steady 80-100 knots, the wind gradually eased through 22nd to a calm at midnight when the cached earlier relay loads were collected. 23rd and 24th each started well: First Ascents were made of "Father Peak" (3950ft) and "Mother Peak" (3800ft) as cloud enveloped the area each morning. Four more fester days on "Windy Col" followed, with a NE gale and spindrift, which later moderated to cloud and heavy snowfall. 16 days had passed since leaving "Dayglo Point", with little achieved. However the large loads possible with 1-man pulks allowed them to outlast the bad spell.

On 29th, still in cloud but calm, they pulked 5 miles around in heavy snow to camp at 3500ft on the Island's waist between the Solvays and Mount Parry. On 30th, in superb weather, de Gerlache led the First Ascent of Mount Imhotep (4050ft), thought to have been his grandfather's target in 1898. That evening Atkins located a coaxial-cable defect with a sailmakers needle and headtorch and repaired it: Lumsden made his first radio contact for 4 weeks, and the area was called "Plessey Bealach".

December began beautifully. After an alpine start they pulked 4 miles south on perfect snow and at 0815 pitched camp on "Solatun et" (4200ft), the high bowl in the heart of the Solvays. That evening Lumsden on skis led the First Ascent of Red Rose Summit (5250ft), and then transmitted the first radio bulletin since John Biscoe's visit 3 weeks before. On 2nd, cloud stopped climbing, but Lumsden made contact with Kimbrey at basecamp, and also received a Rearlink message advising that Second Summer plans were now based on half landing near Buls Bay to explore the south.

Four days of superb weather with alpine starts then enabled First Ascents of all the major peaks in the Solvays. On 3rd Lumsden led up Galen Peak (5060ft). On 4th Atkins led the highest peak in the range, named "Mount Frederick Cook" (5280 ft). On 5th the southwest ridge was traversed, partly in whiteout making 6 first ascents culminating in the twin tops of "Ben Bangers" (4700ft) and "Ben Mash" (4730ft), returning very tired to sleep on the pulks in sunshine. Atkins recorded altimetry details to quantify map height errors of up to 1000ft. (See Survey Appendix).

On 6th, Celsus Peak proved the hardest climbing so far on the expedition. Atkins and Lumsden started up a 600ft Iceface at 80 degrees, Grade 1V, before moving onto the mushroomed ridge. After four hours Furse and de Gerlache were defeated by the final summit mushroom, but Atkins led Lumsden up a Grade V ice chimney/gulley pitch to complete the First Ascent. Halfway back down the ridge, Lumsden slipped at the top of a 60 degree ice band, and had a 130ft "leader fall", half of it airborne cartwheeling off the overhang below. Luckily the rope looped over a mushroom and the rope absorbed much of the impact before he hit the snow. He was bruised and shaken, but with no major injuries. They skied back four miles/1000ft to the camp on "Solatunet".

After four consecutive alpine starts and hard days, 7th was unanimously declared a Sunday. Three days of cloud, snow and high winds then delayed departure.

On 10th they broke camp at 2300 and headed north. A cache of rock samples had disappeared from "Windy Col", but overnight pulking proved excellent, with warm days asleep while the snow was soft. In 3 nights travel they moved up and down to 3200ft just south of Mackenzie Glacier, then down and up out of Malpighi Glacier in frightful snow to 5000ft, and then up to 6500ft at "Scotch Corner" before getting down to 4800ft on Paré Icefall. There a westerly gale stopped movement on the night of 13th, but in the morning of 14th they dropped down to camp at 3500 ft on the piedmont. Leaving at 2300 that night, after pulking up to 4200ft over "Rokkitanski Plateau" they reached "Pinnacles Spur" for breakfast at 0800 on 15th. Then it took another 8 hours to reach base camp in cloud due to unsafe crevasse bridge conditions. The whole journey from the Solvays to basecamp had taken just under five nights. Although only about 44 miles total journey (climbing 6500ft and dropping 10,500ft) and with light pulks, this was quite exceptional for overland travel on Brabant Island.

I felt very proud of, and close to Atkins, de Gerlache and Lumsden who had all done outstandingly well on the 45 day trip. Apart from checking the "Dayglo Point" cache, they had completed a useful reconnaisance of the south, made over a dozen First Ascents and forcibly demonstrated the potential of 1-man pulks for self-suporting trips of over 30 days. It was nice to see penguins and seals again after so long in the snow.

Basecamp. 12-28 December 1984. Whole team. except Evans.

After arrival of the Claude Point party on 12th, the seven at base progressed sorting stores and clearing gash. Kimbrey began setting the two Avons and 5 OMC engines to work: he and Spottiswood rigged moorings in the boat haven.

On 14th Ringe and Spottiswood pulled over to "Cairn Point" and carried out a 3 day control survey by theodolite, marking 5 stations for aerial photography. After the Dayglo Party arrived on 15th, Kimbrey took the boats out for their first run on 16th, & on 17th collected the two from "Cairn Point". That evening each party told their tales of the last 2 months over sample bottles of whisky and rum in the hut.

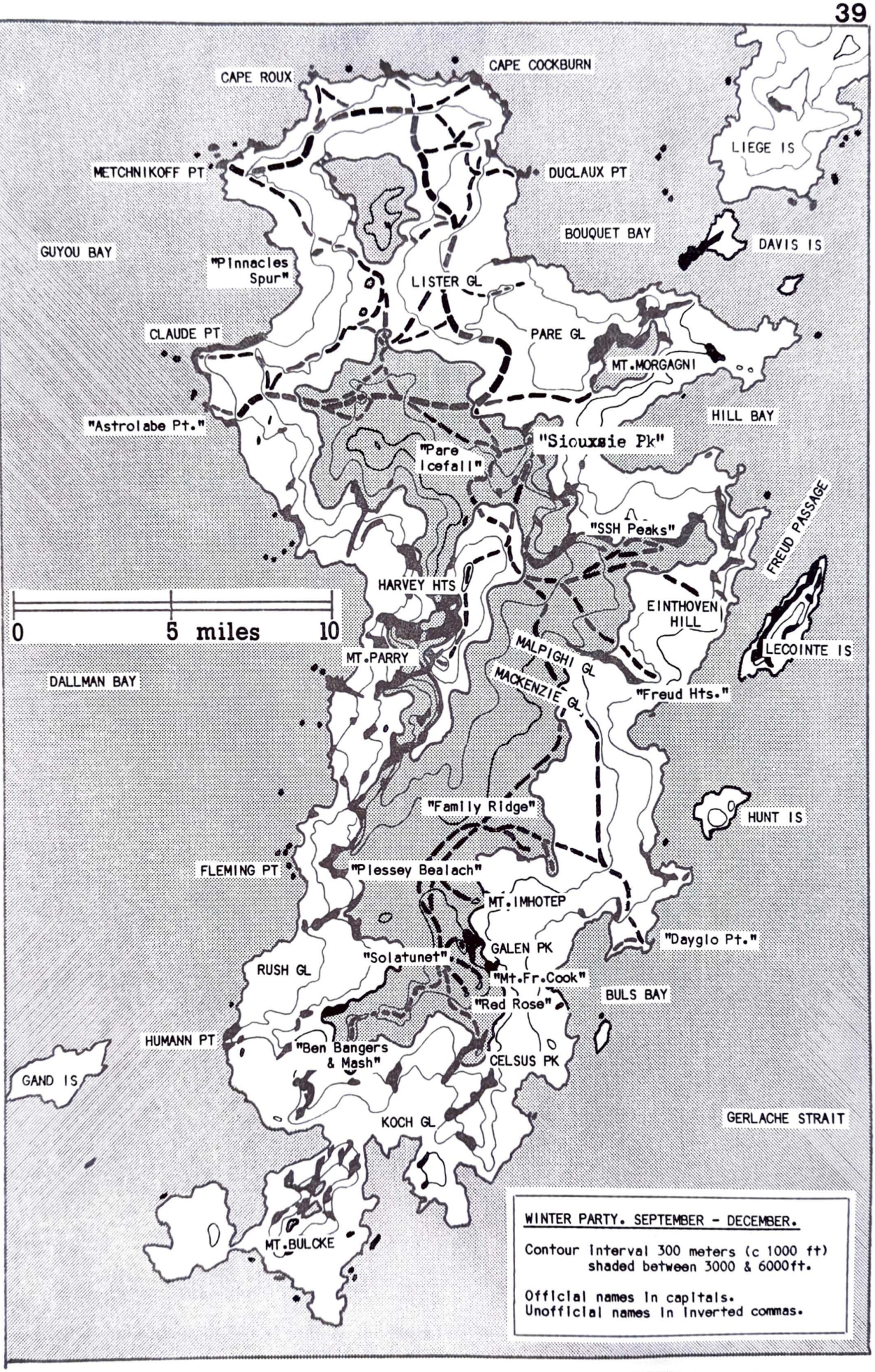
A radio message had been received from the Second Summer Party in Stanley. Station VPC had earlier stated they would listen out on 4067 KHz every evening for the 3 weeks leading up to changeover; however they did not do so, leaving many important questions unresolved, pending direct contact between the Winter Party and the Second Summer Party as Endurance approached.

Kimbrey, Beattie, Spottiswood & Stuttard (& others) laid a mooring in the sound, and trammel nets, catching 2½ft icefish as well as Antarctic Cod. A planned 3-day boat trip to Claude Point was repeatedly postponed in cloudy thawing weather, rain and swell. Beattie, Furse & Stuttart progressed their Life Sciences and everyone prepared stores for the changeover. On 20th the whole team turned-to clearing gash and ditching it over the "Gash Gully" Icecliffs on the south side of the point.

Despite brighter weather the sea remained lively. Finally on 24th Kimbrey, Beattie, de Gerlache, Ringe, Spottiswood and Stuttard set out in the boats for a day-visit to Claude Point. However they met heavy swell in the western skerries. Instead, Ringe, Stuttard and others were landed on "Easter Island" to explore it.

Christmas Day was enjoyed quietly, thinking of going home.

Two days had been allowed for final preparations ready for the changeover on 28th. A foul, wet, and windy Boxing Day reduced the time available, but late on 27th radio contact was finally made with Endurance, and it was learnt that the changeover would not start until 29th. A good 3 hour radio on 28th allowed hurried arrangements by the two parties before the changeover.


CAPE ROUX
CAPE COCKBURN
LIEGE IS
METCHNIKOFF PT
DUCLAUX PT
BOUQUET BAY
DAVIS IS
GUYOU BAY
"Pinnacles Spur"
LISTER GL
CLAUDE PT
PARE GL
MT.MORGAGNI
HILL BAY
"Astrolabe Pt."
"Pare Icefall"
"Siouxsie Pk"
"SSH Peaks"
FREUD PASSAGE
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0 5 miles 10
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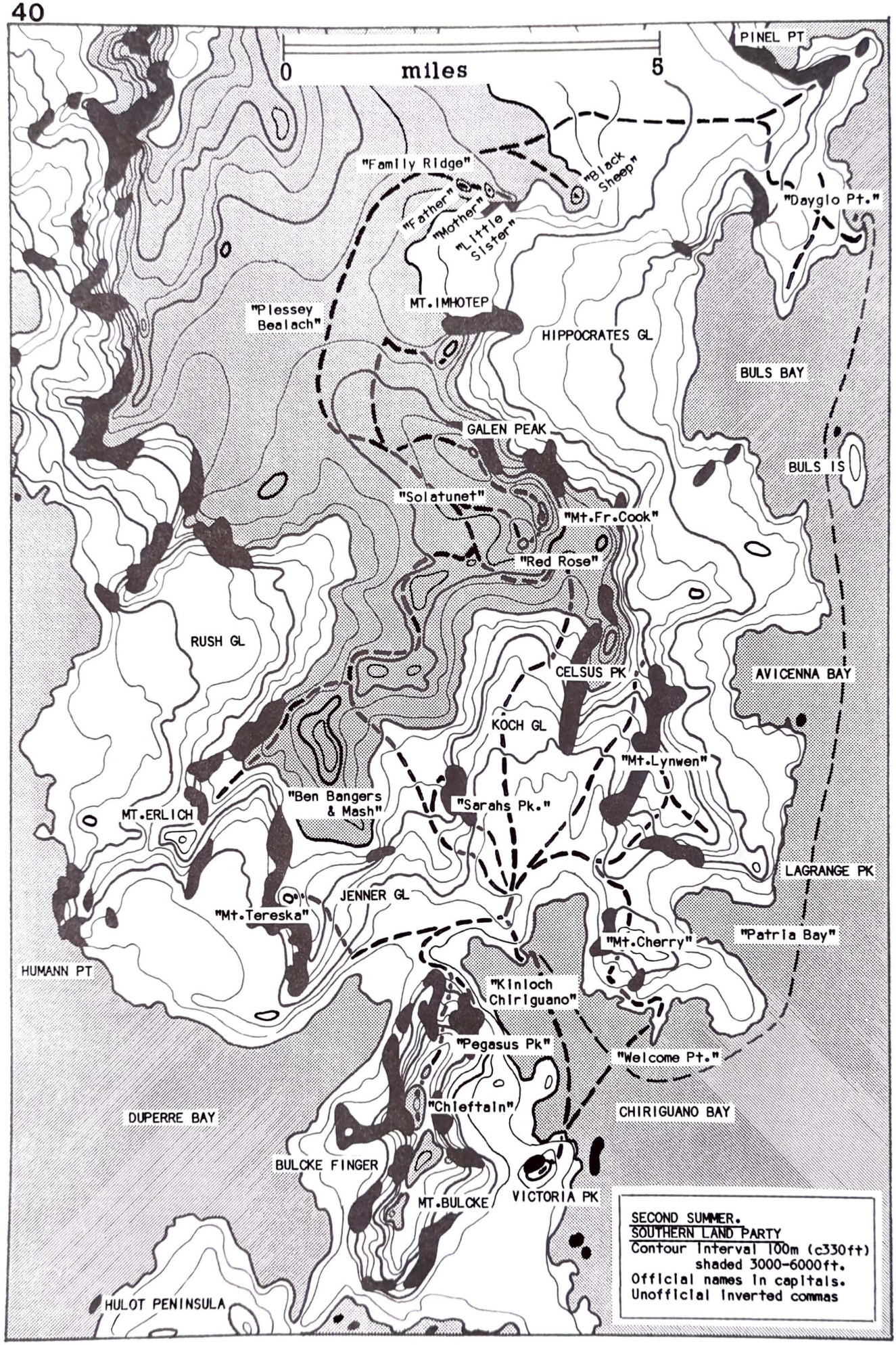
LECOINTE IS
MT.PARRY
MALPIGHI GL
MACKENZIE GL
DALLMAN BAY
"Freud Hts."
"Family Ridge"
HUNT IS
FLEMING PT
"Plessey Bealach"
MT.IMHOTEP
"Dayglo Pt."
GALEN PK
"Solatunet"
RUSH GL
"Mt.Fr.Cook"
BULS BAY
"Red Rose"
HUMANN PT
"Ben Bangers & Mash"
CELSUS PK
GAND IS
KOCH GL
GERLACHE STRAIT
MT.BULCKE
WINTER PARTY. SEPTEMBER - DECEMBER.
Contour Interval 300 meters (c 1000 ft) shaded between 3000 & 6000ft.
Official names in capitals.
Unofficial names in inverted commas.


0
miles
5
PINEL PT
"Family Ridge"
"Father"
"Mother"
"Little Sister"
"Black Sheep"
"Dayglo Pt."
MT.IMHOTEP
"Plessey Bealach"
HIPPOCRATES GL
BULS BAY
GALEN PEAK
BULS IS
"Solatunet"
"Mt.Fr.Cook"
"Red Rose"
RUSH GL
CELSUS PK
AVICENNA BAY
KOCH GL
"Mt.Lynwen"
"Ben Bangers & Mash"
"Sarahs Pk."
MT.ERLICH
LAGRANGE PK
JENNER GL
"Mt.Tereska"
"Mt.Cherry"
"Patria Bay"
HUMANN PT
"Kinloch Chiriguano"
"Pegasus Pk"
"Welcome Pt."
"Chieftain"
DUPERRE BAY
CHIRIGUANO BAY
BULCKE FINGER
MT.BULCKE
VICTORIA PK
HULOT PENINSULA
SECOND SUMMER.
SOUTHERN LAND PARTY
Contour Interval 100m (c330ft)
shaded 3000-6000ft.
Official names in capitals.
Unofficial inverted commas

Team changeover 29th December 84. Wasp bringing the last of the second Summer stores into Metchnikoff Point.

Metchnikoff Point 30th December 84. Remains of a dome tent outside the garage after the first night ashore.

Conquest snowline box tent on Lister Glacier. Mount Morgagni beyond.

Skidoo party. Spottiswood, Atkins and Beattie on Lister Glacier with some of the mountain of gear they moved in September.

HMS Endurance hove in sight off Metchnikoff Point out of fine weather haze at 0930 on 29th. At 1030 the first Wasp flew in to collect Furse, and the second landed Clements to coordinate stores. Through the day Waghorn's 7 man Boat Party were flown into Metchnikoff Point with all their stores, and the Winter Party stores and then team were embarked. Individual handovers were feverishly progressed all day. Spottiswood, Atkins and Beattie were to land at the Skidoos and take them down from 1000ft to the glacier bowl behind "Astrolabe Point" ready for helicopter recovery, but time and deteriorating visibility prevented it.

Overnight Endurance sailed through the Schollaert Channel. On 30th shifting low cloud hampered flying operations. A spit in Avicenna Bay had been earmarked as the most central southern base, however Furse and Taylor were landed there and found the iceramp access rather broken,so Taylor decided to put his base stores into "Dayglo Point". Despite continuing poor visibility, stores were flown into "Dayglo" and a large cache of food and fuel was established on the Avicenna Bay site (partly from "Dayglo",and partly from the ship). Finally Taylor's southern party of 9 men (including Ringe) were landed at "Dayglo Point". After flying had finished Endurance entered Chiriguano Bay to enable a binocular reconnaisance for a cache on Koch Glacier.

Overnight Endurance sailed back to arrive off "Astrolabe Point", ready to move stores from there to Metchnikoff Point, and to attempt to establish caches down the west coast. Low cloud and falling snow delayed operations. Because of the tight schedule, plans to recover the skidoos direct from 1000ft were shelved and also the move to Metchnikoff Point. A hydraulic failure then grounded one Wasp for the whole day. All stores were recovered from "Astrolabe Point" itself, and a cache of food flown onto Claude Point, together with the stores intended for Metchnikoff Point. Cloudbase varied through the day, never rising above 2500ft, but with the two Aircrews alternating in the serviceable Wasp,a remarkable day's work was completed. Working southward,each west coast point was first reconnoitred by Furse,and then 2 Winter Party team members were landed to receive food and fuel. Caches were successfully established at Driencourt Point, Minot Point, Fleming Point, Humann Point and the north coast of Hulot Peninsula. To crown the day Endurance returned into Gerlache Strait: a fairly suitable site on the east side of Chiriguano Bay was found,and another cache landed there. Several additional boat landing sites were also identified around the south coast. Endurance then departed north for Trinity Island.

"Dayglo Point". 30 December 84 to 10 January 85. Whole party.

The first few days were spent settling in at "Dayglo Point", organising the basecamp and stores. On 31st the Hawker Siddeley Memorial (Structaply) Hut was quickly erected. Flint and Ringe started work locally on the beach and shore rocks.

Taylor then organised a period of training in snow and icecraft on the piedmont behind, before exploratory work was begun. On 8th the pulks were used to establish a cache of food and fuel at 1000 ft. The weather continued fair, without the blows encountered in the northwest.

On 9th they left in three 3-man parties with nine 1-man pulks, travelling together, to camp at midnight above Pinel Point. The plan had been for three to travel south to Chirlguano Bay, while the remainder covered Pinel Point and the hills around Hippocrates Glacier for geology. However Greenway's feet developed terrible blisters, and they rearranged parties on 10th, while camped at 2600 ft near "The Family".

Chirlguano Cache Reconnaissance Party. 11-15 January 85. Taylor, Ball, Lawrence.

On 11th they pulled on up and around to camp above Rush Glacier enjoying a magnificent sunset. Next day they reached the ridge at 4300ft overlooking Koch Glacier in poor visibility, where they were holed up for two days in northerly gales and heavy snow. When the weather cleared on 15th, the avalanche risk was too great down into Koch Glacier and they did not have enough kerosene to wait, so they cached the three pulks and rations on the ridge and returned to "Dayglo Point", sighting Endurance heading north.

"Family Ridge" Scientific Party. 11-14 January 85 Ringe, Barker, Martin.

After the others left on the 11th they did two days geology and botany work on "Family Ridge", climbing "Father Peak" during the first day. On 13th they moved camp to just above Pinel Point and found a possible route down. They spent the morning of 14th at Pinel Point roping down the iceslope to the top of the spectacular cliffs for geology, botany and invertebrates, before returning to "Dayglo Point".

"Dayglo Point". 11-14 January 85. Greenway, Allen, Flint

They returned to"Dayglo" on 11th, where Greenway sorted out his feet (and the stores), while Flint and Allen progressed geomorphology, hampered by the beach remaining underwater in the neap tides.

"Dayglo Point". 15-16 January 85. Whole Party.

Ringe & Martin catalogued samples on 15th. Taylor's party arrived at midnight having raced down the last 2 miles, to make radio contact with Endurance as she passed offshore. On 16th Greenway, Barker,Ringe and Martin put a cache up at 1000 ft, but Greenway's feet were again badly blistered. It was therefore decided that Ball would remain with Greenway while the other 7 headed south. For several days there had been no radio contact with the boat party.

Journey South. 17-30 January 85. Taylor, Allen, Barker, Flint, Lawrence, Martin, Ringe.

On 17th, after a mornings geomorphology, they took 6 pulks up to their previous campsite at 2600 ft below "The Family", and continued next day to the head of Rush Glacier in excellent weather but heavy snow. On 19th they continued to the cache at 4300 ft on the ridge above Koch Glacier in cloud and unpleasant high winds. They pitched two "The Tent" ridge tents. That evening the wind strengthed to 50 knots, with gusts reaching about 90 knots, threatening the tents. Two laden pulks were blown past a tent, and one of them went 100 yards downslope toward Koch Glacier.

For three days dense cloud and falling snow prevented movement, but it cleared pm 23rd allowing Taylor, Ringe & Lawrence to recce a pulkroute down onto Koch Glacier. Breaking camp in beautiful weather at 2345 they left a cache with 5 pulks on the ridge and started down, but after an hour were held up by darkness. Cloud and rising wind then forced them to pitch camp, turning in at 0630.

Three days whiteout followed, with the party on half rations. "The Tent" was very wet and a pole broke. On the evening of 27th the weather suddenly cleared: they struck and travelled down the middle of the glacier in superb weather and surroundings, pitching camp near the foot of Koch Glacier at midnight.

28th was very wet and miserable. After 2 weeks out of radio contact, they overheard the Boat Party that evening saying they had moved the Chirlguano Bay cache. On 29th after checking the new cache site at "Kinloch Chirlguano", they moved camp to the snow spur at 600ft above. That evening they were at last able to talk to the Boat Party who had reached "Dayglo Point". The Boat Party came to "Kinloch Chirlguano" next morning, bringing Ball to rejoin the others: plans for the next few weeks were discussed.

"Dayglo Point". 17-29 January 85. Ball, Greenway.

After the rest departed the two continued various local work; Greenway found a small colony of Shags on "Dayglo" that Furse and others had missed.

On 25th a storm threatened the hut and stores. While doubling up hut-lashings Greenway slipped, and a full drum of fuel crushed his knee against a rock with a crack. He was virtually immobilised, and Ball helped him into the hut, where he slept painfully on a bed of food boxes, nursed by Ball.

On 27th the Boat Party arrived out of the blue, and Williams treated Greenway. On 30th the boats took Ball to "Kinloch Chiriguano" and then returned. That night they ferried Greenway out to the MV Polar Duke, bitterly disappointed but resigned, as he was still immobile (later he was found to have fractured his right tibia).

Southern Base Camp. 30 January - 2 February 85. Taylor, Allen, Ball, Barker, Flint Lawrence, Martin, Ringe, Williams. (= Whole Remaining Party).

With the whole party (except Greenway) united again, preparations and plans were completed for exploration of the south end. Food and fuel were brought up from the "Kinloch Chiriguano" cache to the basecamp above and a cache was laid on the col leading to "Patria Bay". At 0900 on 2nd the Boat Party brought more stores: Flint and Allen left with them that forenoon. Martin and Ringe ologised at "Kinloch Chiriguano".

Climbing Party. 2-12 February 1985. Taylor, Ball, Lawrence.

They left in the evening of 2nd and camped by the cache on the col between Koch Glacier and "Patria Bay". Next morning they made the first ascent of "Mount Lynwen" and traversed the ridge, largely on skis. Returning past their camp they also climbed the ridge between "Patria" and Chiriguano Bays, then in rapidly deteriorating weather returned to the basecamp above "Kinloch Chiriguano".

After 2 days with Taylor suffering an eye infection (or snow blindness) and another held up by broken cloud, they moved west on 7th to camp on the bealach north of Mount Bulcke.

On 8th, cloud and falling snow prevented an attempt on Mount Erlich, but they made the first ascent of the 3000 ft twin peak on the SW ridge of the Solvays, before returning to the basecamp above "Kinloch Chiriguano". They stayed there, largely in cloud, until the pre-arranged rendezvous on 12th.

Koch Glacier Scientific Party. 2-9 February 85. Ringe, Barker, Martin.

The first 2 days were spent on geology and invertebrate collecting around the northern fringe of Mount Bulcke. On 4th they worked on the ridge between Koch & Jenner Glaciers, then made a difficult ice and rock ascent of the southern peak on the ridge, returning to camp at 0200. On 6th they moved up the Koch Glacier to work for 3 days on the exposures there before returning to basecamp on the evening of 8th, after a very windy day. After one night camped there with Taylor's party, they moved to "Welcome Point".

Geomorphology Party. 2-9 February 85. Flint & Allen.

Leaving by boat on 2nd they made the first ascent of Victoria Peak with the Boat Party before being landed at "Welcome Point". Together they began survey and studies of the intertidal beaches each side of "Welcome Point", though the neap tides severely limited access.

"Welcome Point". 9-12 February 85. Ringe, Allen, Barker, Flint, Martin.

Weather was poor on 10th but geology, geomorphology and invertebrate work was progressed on "Welcome Point" and the smaller similar point to the northwest. On 12th they rejoined Taylor's party at the basecamp.

Southern Base Camp. 12-18 February 85. Whole Remaining Party.

On 12th the Boat Party were contacted by radio and arrangements made for Flint and Martin to be picked up on 14th and taken to Minot Point for scientific work. Two days of mixed weather were spent on the ridges to north and west of the camp, before learning on 14th that the boats had suffered various troubles preventing them collecting Flint & Martin. Ringe and Lawrence left on 15th for Mount Bulcke: next day they climbed the northern peak but were then stopped by a difficult icestep, and storm force winds. Back at the basecamp they learnt that the boats had more problems; the following fine day was used for photography and planning the next week.

Exploration Party. 18-26 February 85. Taylor, Barker, Flint, Martin.

They planned to visit the Hulot Peninsula and set off in glorious weather on 18th. They were unable to force a route round the steep and broken northeast slopes of Mount Bulcke. After camping one night among the crevasses there, and trying again next day they returned to the basecamp.

After a day spent repairing skis etc. they set off on the 21st hoping to climb Mount Erlich. After caching the pulks on Jenner Glacier in fine weather they reconnoitred a route up to the Solvays ridge east of "Ben Bangers & Mash", but were forced back by 50 knot winds. In poor visibility, next day Martin and Taylor climbed "Sarahs Peak", between Jenner and Koch Glaciers. On the 23rd they hauled the pulks to the 4000ft col east of "Ben Bangers and Mash" but were forced by cloud and then wind to camp there 3 nights, going onto half rations on 25th. In glorious weather on the 26th they had a magnificent ski down to the pre-arranged rendezvous at the basecamp.

Scientific Party. 18-26 February 85. Ringe, Allen, Ball, Lawrence.

On 18th they went to "Welcome Point", visiting en route the SW end of the rock cliffs of "Mount Lynwen". Five useful days were spent at "Welcome Point" and local areas, with Allen covering the beach work and Ringe geology, and the others helping. One day they enjoyed a magnificent display by whales close inshore.

On 24th they completed the work in poor weather, then left to camp all in one Mountain tent on the col between Chiriguano & "Patria"Bays. Next day, after collecting geological samples near the col, they returned to the basecamp,with Ball testing Ringe's iceaxe arrests on skis. The others joined them on 26th.

Mount Bulcke. 26-28 February 85. Whole Remaining Party.

On 26th Taylor, Allen & Lawrence moved to camp at the foot of Mount Bulcke. After rising at 0530 they climbed the first peak and negotiated the icestep in cloud, before the cloud evaporated suddenly to give fantastic views. They reached the peak at the north end of the main ridge but then were stopped by a vertical drop of several hundred feet, which prevented them reaching the slightly higher southern peak. They returned, climbing another of the northern peaks of this spectacular mountain before returning to base camp.

The other five spent the two days on geology and photography at the north end of Mount Bulcke. On 28th the basecamp area was cleared up ready to vacate.

East Coast Party. 1-6 March 85. Ringe, Flint, Martin.

They planned to return to "Dayglo" via Avicenna and Buls Bay. However on reaching the col at 2500 ft below the SE side of Celsus Peak, they found the way down to Avicenna Bay barred by a steep, heavily crevassed slope. They returned to the basecamp for two nights.

On 3rd they moved up to the head of Koch Glacier before very strong winds stopped them. Next day they ascended to the Solvays ridge at 4300ft, finding the cache with difficulty in strong winds and thick cloud. Their snowwall was blown down that night and high winds continued through 5th. On 6th they headed north, meeting Taylor's party below Galen Peak, then continuing in bad visibility to reach "Dayglo Point" at 2230.

High Level Party, 1-9 March 85. Taylor, Allen, Ball, Barker, Lawrence.

Leaving the southern basecamp on 1st with 2 pulks they had a very hard day relaying loads up Jenner Glacier in cloud to camp (still in cloud) at 4000ft on the Solvays ridge east of "Ben Bangers and Mash". Next day they skied west in cloud down the ridge for an attempt on Mount Erlich, but at 2500ft it became obvious that it could not be climbed from that direction so they returned to camp.

On 3rd, in beautiful sunshine but gale force northerly winds they traversed the ridge to the 4300ft cache, where they picked up 3 more pulks plus rations and fuel and continued to camp NW of Galen Peak, at 4000ft.

On 4th Ball and Barker separated from the others to return to "Dayglo Point". After 2 hours they pitched camp in thick cloud and remained in bad weather through the following day. On 6th in good weather they continued,to arrive at "Dayglo Point" in the evening, a few hours before the East Coast Party arrived.

Taylor, Allen & Lawrence broke camp on 4th, climbed Mt.Imhotep in cloud and camped nearer Galen Peak. After a day of cloud they climbed Galen Peak, "Mount Frederick Cook" and "Red Rose Summit" on 6th in glorious weather, before being enveloped in cloud returning to camp. After yet another day of cloud they moved early on 8th and (after pitching camp for 4 hours in cloud),reached "Father Peak" and camped nearby in cloud again. On 9th they climbed "Mother Peak" and made the first ascent of "Little Sister Peak", (3200ft).

Reaching "Dayglo Point" that evening they learnt of great events that had been happening elsewhere, while they had been out of radio contact.

Waghorn paddling through brash ice off East coast.

Clements paddling off typical South East coast spit.

Circumnavigation in February 86. Waghorn and Clements in brash in Bouquet Bay - A 26 mile day.

Leopard seal from the boats, in Bouquet Bay, February 86.

Shakedown Period. 29 December 1984 - 15 January 1985. Whole Party.

On the first night 60 knot winds and drifting wet snow collapsed one Super Nova tent, a dramatic introduction to Antarctica for the 3 occupants.

The first 2 days were spent sorting out rations and stores, strengthening the hut in mediocre weather, and taking the Lifeguard, Mariner engines and canoes etc. down to the boat haven. On New Years Day the Lifeguard was commissioned with a full power trial and the Avons checked. Radio contact was made with Faraday.

On 2nd the whole party went to Claude point in two boats landing in a cove near the penguin colony. While the others ologised, Waghorn, Clements and Moffat attempted to reach the cache, but were stopped by loose rock where the gully reached the foot of the basalt cap. The boats were launched into rising wind and waves bringing brash into the cove. The weather rapidly deteriorated and the passage across Guyou Bay was achieved into the teeth of a rising gale, with winds over 60 knots as they came through the stacks off Metchnikoff Point. They found one canoe blown off the beach and one Super Nova blown-out on the glacier. After a windy night a poor day was spent mending tents.

The 4th was brilliant. Waghorn, Gill and Moffat commissioned the canoes and paddled in the local bays. Waghorn had decided to land 3 at "Astrolabe Point" to collect the Claude Point cache overland, but 2 days poor weather delayed this. Another tent was broken when blown away during repair.

On 7th Clements, Gill and Moffatt were landed by boat on "Astrolabe Point", in partial shelter from the swell on the northern rockshelf. The others revisited Claude Point for further ologising; after being swamped as they left the beach they reconnoitred around Guyou Bay and returned to Metchnikoff Point.

Clements, Gill and Moffat reached Claude Point, but on 8th their tent poles were broken by gale force winds and they spent 24 hours propping the tent up bodily. At Metchnikoff the rising gale capsized the Avon moored in the boat haven: the boat was righted and engines recovered and given first aid. Next day in poor weather they righted the Avon, which had capsized again, baled out the Lifeguard, improved the mooring arrangements and stripped, overhauled and successfully tested the two swamped OMC engines. Despite wind and snow early on, the other three returned to "Astrolabe Point", with heavy loads from the cache on the pulks and in rucksacks.

On 10th two boats went to collect the party from "Astrolabe Point". The first attempt ended when the Avon was swamped by a succession of breaking waves and driven onto the boulder beach under the northern icecliffs. Despite a broken engine clamp, Hall successfully drove the boat off the beach and the self-bailers emptied the boat. Kit and cameras were soaked, but crewman Waghorn much impressed by Hall's sangfroid. After lunch in the bay, to let the tide rise, they tried at a point where the swell was not breaking against the cliff. Clements stood on the rocks, alternately chest deep in water and five feet above, throwing kit into the two boats as they circled around, going alongside at the best moments as the waves swept through. Once safely embarked with all stores they returned quickly to basecamp.

A brilliant day on 11th allowed the whole team in two boats to go round to Duclaux Point, landing and collecting rock samples there. Coming back, no landing sites were found until Cape Roux, where they stopped for tea and ologies, before returning via "Cairn Point" and other beaches to reach basecamp late that evening. (Compare 9-24 April trip!).

Another good day on the 12th was exploited to reconnoitre by boat down to the beach and cache at Driencourt Point. The next three days were spent preparing for the circumnavigation; Clements caught the first fish by trammel net, and preserved several.

During all the days at Metchnikoff Point seal counts, bird studies and botany had been progressed. Altogether a great deal had been achieved in just two weeks.

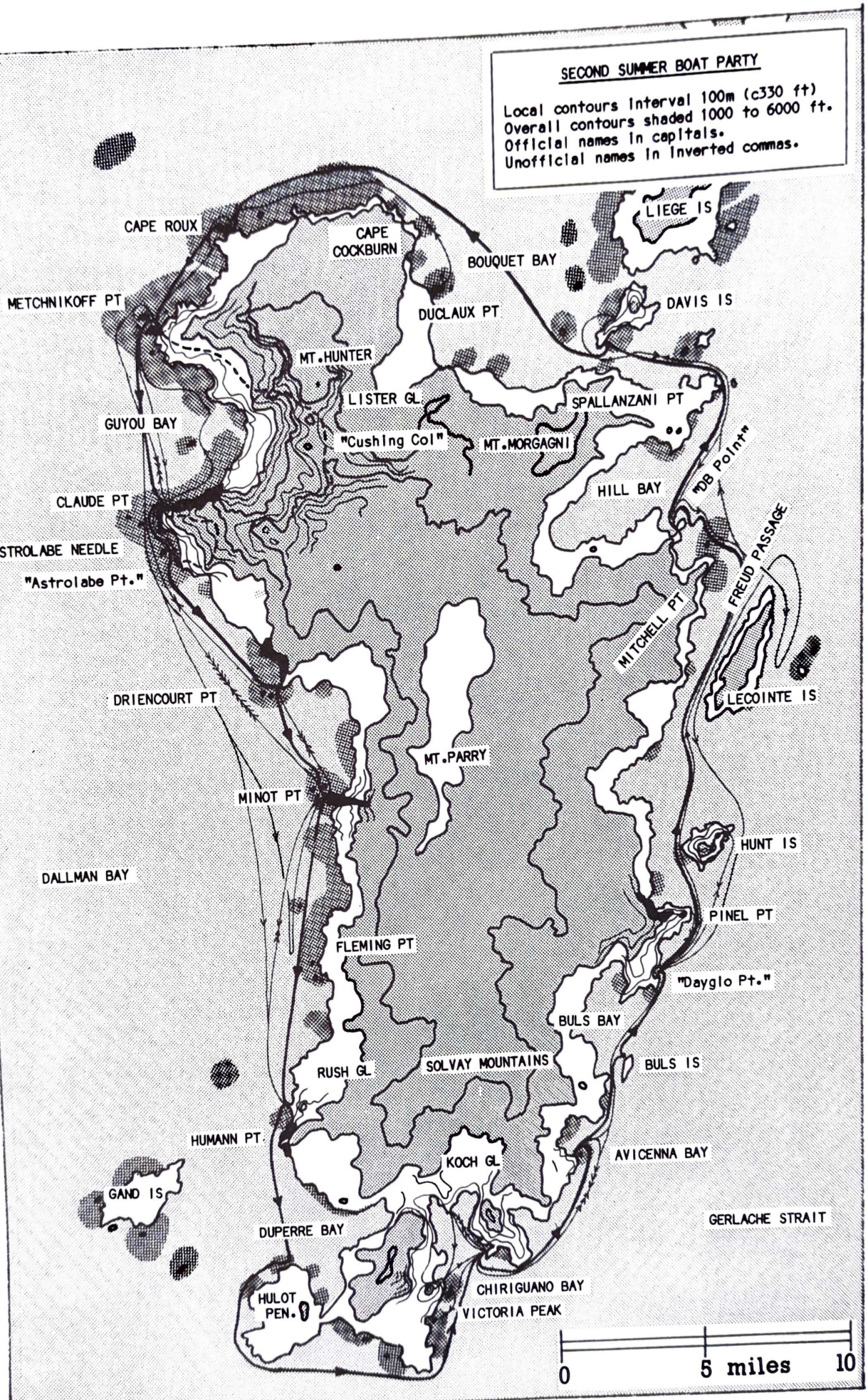
Circumnavigation of Brabant Island, First Half. 16-27 January 1985. Whole Party.

Another brilliant day on 16th heralded the start. After securing the campsite and loading up the Lifeguard and one Avon, Hall filmed canoeing and boating. Setting off in the afternoon the paddle across Guyou Bay in bright sunshine was spectacular and quick. The canoeists landed at Claude Point, to eat and recount Chinstraps and Shags, before paddling on past Astrolabe Needle to Driencourt Point. Hall and Clements laid the trammel net while the others pitched camp.

17th was devoted to science. Waghorn, Gill and Williams canoed out to count Shags on the stacks, while Moffat botanised, and Hughes counted birds and collected bugs. Hall, Clements & Waghorn also visited Minot Point locating a possible boat mooring.

Low tide next morning slowed loading of the boats before all 4 canoes and the 2 inflatables made an uneventful 4 mile crossing to Minot Point. However, unloading at the head of the best of the deep narrow inlets was difficult, as the swell created large breaking waves that swept the boats backwards and forwards and periodically swamped them. Camp was established on snow and ice in the largest of the transverse gullies that were a feature of the terrain. A hot afternoon turned into a beautiful evening as the sun set over Anvers Island.

Again the 19th was set aside to explore the new territory which was amazingly verdant with many nesting Skuas and Kelp Gulls. Hall, Clements and Gill laid the trammel net and dropped Waghorn to explore the largest offshire islet, then motored offshore to photograph a large iceberg drifting slowly north: when half a mile off, it capsized and big waves reached them. Later Clements & Hall climbed the major peak of the point (about 1700ft), and Waghorn (in mukluks) climbed the minor one while counting Skua nests.


SECOND SUMMER BOAT PARTY
Local contours interval 100m (c330 ft)
Overall contours shaded 1000 to 6000 ft.
Official names in capitals.
Unofficial names in inverted commas.
CAPE ROUX
CAPE COCKBURN
BOUQUET BAY
LIEGE IS
METCHNIKOFF PT
DUCLAUX PT
DAVIS IS
MT.HUNTER
LISTER GL.
SPALLANZANI PT
GUYOU BAY
"Cushing Col"
MT.MORGAGNI
"DB Point"
HILL BAY
CLAUDE PT
ASTROLABE NEEDLE
"Astrolabe Pt."
FREUD PASSAGE
MITCHELL PT
DRIENCOURT PT
LECOINTE IS
MT.PARRY
MINOT PT
HUNT IS
DALLMAN BAY
PINEL PT
FLEMING PT
"Dayglo Pt."
BULS BAY
RUSH GL
SOLVAY MOUNTAINS
BULS IS
HUMANN PT.
AVICENNA BAY
KOCH GL
GAND IS
GERLACHE STRAIT
DUPERRE BAY
CHIRIGUANO BAY
HULOT PEN.
VICTORIA PEAK
0
5 miles
10

Carrying the gear over the difficult rocky spurs to the boats slowed up departure on 20th. Waghorn, Clements and Williams set off first in the canoes direct for Humann Point. The boats followed later, and searched vainly inshore at Fleming Point before seeing the canoes offshore. Paddling on in overcast weather was interesting,with plenty of brash off the snout of Rush Glacier. The only possible landing site at Humann Point was beseiged by large lumps of brash ice pounding onto a "beach" of huge boulders: although the canoes could have landed it would have been dangerous for the inflatables, with an enormously difficult pull out to follow. As it was getting late,the canoes were loaded on the boats and all set off for Hulot Peninsula. The cache and only landing site on Hulot Peninsula, reported by radio by Furse,was not found,and the boats moved west around the icecliffs, then headed for Chirlguano Bay, as the easy landing sites reported there were no further than the way back to Minot Point. The swell in Dallman Bay was replaced by a choppy sea with easterly wind in Gerlache Strait. Progress was slow, cold and miserable in the heavily laden boats, and anxiety rose as the fuel tanks emptied, since refuelling would have been difficult in those conditions. However they reached "Welcome Point", got warm hauling the boats out, and camped on the icy slope behind.

The 21st was a well-earnt rest day, drying out in breezy sunshine and exploring "Welcome Point". Next day, while Hughes and Williams ologised, Clements, Hall and Moffat laid the trammel net and then made the first ascent of "Mount Cherry" above "Welcome Point", in poor snow, before being driven back by low cloud. Meanwhile Waghorn and Gill canoed all round Chirlguano Bay, reconnoitering the beach at "Kinloch Chirlguano", visiting several islets, counting birds and seals,and collecting botanical samples. While Waghorn collected wingless midges, Gill collected his canoe which had drifted away; then they paddled back through brash arriving in a rising easterly wind, to join the others as snow turned to rain. On 23rd the inflatables were used to move the cache across to "Kinloch Chirlguano" and take Moffat to botanise at islets on the east side of the bay. The trammel net had disappeared, presumably swept into deeper water by brash.

Having lost radio contact with the southern party for 2 weeks they decided to continue to "Dayglo Point", rather than return to Humann Point just to paddle that 14 miles. However 3 days strong winds and heavy rain prevented this. The one Super Nova and two Mountain tents stood up well to strong gusts, despite standing on pinnacles of ice with water running past.

On 27th they left at midday after doubtful morning weather. Paddling in low visibility was interesting,but conditions improved as they approached Avicenna Bay. There they found the cache had been scattered by falls off the icecliffs behind. The canoeists paddled to the island to count Shags and Kelp Gulls, and laughed at the others as the Avon on the spit was nearly swamped by waves from a large icefall. After lunch they paddled north, where Moffat and Waghorn landed on the islet NW of Buls Island to botanise and count Shags. North of Buls Island paddling was awkward before a southerly wind increasing to Force 4/5. In the confused sea off the north end of Buls Bay, Clements capsized, but rolled up well at the first attempt, the first roll in anger. They arrived at "Dayglo Point" in the evening.

Circumnavigation of Brabant Island, Half Time. 27 January-3 February 1985. Whole Party.

On arrival at "Dayglo Point" the Boat party found Ball nursing Greenway in the hut, apparently with badly torn knee ligaments. Williams turned the hut into a hospital. Their radio was still unserviceable, so they were unable to contact Faraday to ask about shipping in the area. At 2100, deus ex machina, a ship was sighted offshore heading north. Waghorn, Hall and Hughes leapt into immersion suits and in the Avon managed to attract attention by shouting, at 12 knots alongside. The vessel, MV Polar Duke, hove to,and Waghorn negotiated evacuation of Greenway when the ship was next due to pass (on 30th), and informed DNPTS through Faraday. Then they returned to "Dayglo Point".

Next day Hall, Ball, Hughes and Moffat went by boat to Chirlguano Bay, trying to contact the overland party, a windy, cold and fruitless journey. 29th was too windy for boating, but Waghorn and Clements finally repaired the radio antennae and contacted the overland party. On 30th both boats set off,loaded with food and stores requested on the radio. The two parties finally met above "Kinloch Chirlguano"; the land party picked their way carefully to the beach, while the boatists in immersion suits slid joyfully down on their backsides. Ball remained there,and the Boat Party returned to "Dayglo Point". After practising on Gill, they strapped Greenway into a stretcher for an hour or two until Polar Duke hove in sight at 23.30. Greenway was safely embarked and,after refreshments,the boats left at 0200 in a snowstorm, wending their way to "Dayglo Point".

At midday on 31st they left in two inflatables to reconnoitre northward. After meeting strong NW wind and swell at Davis Island they found a feasible landing site there, then a better one just west of Mitchell Point. There was no landing in Freud Passage nor around the north end of Lecointe Island. A Shag colony and possible jump-landing was found at Hunt Island. They returned to "Dayglo" after a useful 50 mile day on one 5-gallon fuel tank per boat. Next day Moffat and Williams visited Pinel Point by boat to ologise, while Hughes repaired a gash in the Lifeguard from a rock,and Waghorn worked on geomorphology and tide measurements.

Good weather on 2nd allowed an 0600 start with more food and gear for the Southern Party. One OMC drive shaft broke in brash ice before they reached "Kinloch Chirlguano". Allen and Flint joined the boats: they landed below Victoria Peak. Waghorn, Hall and Allen on one rope, and Moffat, Flint and Williams on another made the first ascent of this fine pyramidical peak up the eastern arete and returned to the boats. Clements, Gill and Hughes attempted a rock route but abseiled off due to unstable slab, and frightened Waghorn watching as one man alone searched an avalanche cone for a stuff-sack knocked off Clements' rucksack by a falling rock. Allen & Flint were landed at "Welcome Point", and the boat party returned to "Dayglo" after another long successful day.

When the weather cleared on 3rd, Clements, Hall and Gill were ferried to Hunt Island, jumping off onto an impressive icy face. One Mariner propeller shearbush sheared as Hughes returned to "Dayglo". The other four then went to Hunt Island by boat to ologise. The Lifeguard was hauled out with the Tirfor winch, but swamped as the tide rose, making launching difficult. The three had climbed both main peaks, and all seven returned to "Dayglo" in two trips, with a bitingly cold wind and sea. After a late supper the team demolished a bottle of Pussers Rum to celebrate a good few days.

Circumnavigation of Brabant Island. Second Half. 4-5 February 1985. Whole Party.

The weather looked fair, so they tidied up, packed kit and at 1630 set off in 4 canoes and 2 boats. Paddling through Freud Passage, they reached "DB Point" in 2½ hours. The boats were hauled out, and a chunk of the ice arete knocked down and levelled into a shelf where they bivouaced in a row, in sleeping bags and goretex bivvi bags, two using pulks as beds.

At 0600 the sun woke those on the east side of the arete, while hoar frost still lay thick on the two west-side pulk beds. Hughes observed many Snow Petrels around a nearby cliff and Moffat botanised, but they left by 0800 negotiating brash across Hill Bay and reaching the cobble beach on Davis Island for a brew at 1030. As they paddled into Bouquet Bay, the largest of the grounded bergs capsized in an amazing display. Thick brash prevented coasting by Duclaux Point, and they headed straight for Cape Cockburn in broiling sunshine, nudging up gingerly to floes where Leopard Seals dozed. Approaching Cape Cockburn the ice thinned out in the big swell sweeping in from the Bellingshausen Sea. Soon they were battling into a Force 4 wind and sea, with the swell reflected off the spectacular cliffs: their 4 knot speed was much reduced, head down with spray washing the glacier cream off their faces. After 18 miles of paddling Gill and Williams got into the Lifeguard. Slowly Cape Cockburn slipped astern and Cape Roux came closer. They went into the narrow channels, landing to let Gill and Williams put on more clothes, but were alternately floating or perched crazily at an angle of 70 degrees as waves swept by. The inflatables then went round the outside, but Waghorn and Clements after a snack afloat paddled through the 2 yard channel between the cliffs: big surf waves were washing to and fro as both successfully shot through with Fur Seals porpoising across their bows. It was no place to capsize. It took half an hour to battle through an amazing scene of "clapotis" over the next 200 yards, however once clear, with Metchnikoff Point in sight, there was no stopping, and an hour later everyone was home - exhausted and cold, but elated.

Waghorn and Clements had paddled the whole way round (except the 14 miles from Humann Point to Chirlguano Bay), while Gill, Moffat and Williams had alternated in the other canoes. The last day had been 26 miles paddling in 9 hours, the last 17 miles nonstop into some poor conditions. It was a weary but proud team who pitched tents that night.

Metchnikoff Point. 6-11 February 1985. Whole Party.

The weather was generally bad, but a lot of making and mending was progressed. Clements fished, and Moffat and Waghorn ologised on Easter Island. They prepared to put a scientific team into Minot Point.

West Coast Boat Party. 12-27 February 1985. Whole Party.

On 12th in better weather, although still rough seas, Moffat and Williams were ferried to Minot point, and extra food was transferred there from Orleancourt Point. Arrangements were made by radio to collect Martin and Flint on 14th, from the Minot Point camp.

Next day Waghorn, Clements and Gill were ferried to Humann Point, landing with difficulty in a big swell, with growlers squeezing the boats as people and kit were landed on a rock ledge. They camped a little above, beside a rocky spur on Rush Glacier, while Hall and Hughes took the boats back to Minot Point. That night huge breaking swells capsized the Lifeguard at Minot Point, and damaged one engine on the Avon.

On 13th Hall and Williams fetched the Humann Point team, who broke camp and returned with them, in a well-laden boat with one engine, into the teeth of a snowstorm. Waghorn and Clements after a 2 hour struggle with the others heaving, finally righted the Lifeguard, but one engine had been lost, sunk. Hall and Gill went back to Metchnikoff Point in the Avon to repair the damaged engine and get spare engines, while the other 5 camped at Minot Point.

Next day Hall and Gill returned in the Avon,with two working engines plus one for the Lifeguard. Leaving Moffat and Williams at Minot Point, the other five took the two boats back to Metchnikoff Point. Hall & Waghorn top-overhauled the one remaining swamped Mariner and the damaged OMC outboard, finishing am 15th.

At midday the five of them set off from Metchnikoff Point heading for Humann Point in 2 Avons with 4 OMC engines. After stopping to refuel off Fleming Point, they suffered three gearbox failures in rapid succession. One boat with the one remaining engine towed the other 8 miles to Minot Point, to be met by a leering Leopard Seal. Both boats were emptied and everything got clear of the water in a backbreaking operation, and the pickup of Martin and Flint cancelled by radio.

On 16th, Waghorn and Hall stripped all three gearboxes to find identical ahead clutch failures preventing cannibalisation. Waghorn and Hall then set off at 1100 to fetch the remaining spare engines. They had a very rough passage, particularly off Claude Point and into Metchnikoff Point. There they made up a second OMC engine out of various defective engines and put the Mariner on the Avon. Using the Mariner they had a very exciting ride back to Minot Point. Landing in the swell was extremely difficult and the Mariner propeller blades were bent during several brushes with the rocks. The other Avon was launched and the second OMC engine transferred; then the boats were loaded, with everyone getting very wet. Leaving Moffat, Hughes and Williams to progress scientific work at Minot Point the other four headed back. Hall dallied to photograph two Hump-backed Whales off "Astrolabe Point". Out of sight ahead, Waghorn's reconstructed OMC engine failed with a broken drive shaft. However they reached Metchnikoff Point, unloaded the boats and hauled them out. The sun had set long before. A tired and weary team fell into the tents. In 6 days Hall had boated nearly 200 miles to get back where he started. It was still the 16th.

The next four days were spent around basecamp tidying up stores, building a cairn for the Belgica plaque, and trying to reconstruct outboard engines from four damaged ones. This proved impossible with the basic tools carried; spares were requested from DNPTS by radio via Faraday, hoping Endurance could fly them ashore en passant,as she was due to pass by early in her 3rd Work Period. In the meantime the boating plans were abandonned and it was decided to travel overland to "Astrolabe Point", lower the skidoos, and then climb Mount Morgagni.

On 21st just before departing Waghorn was badly bitten on his left thigh by a bull Fur Seal on the beach. Clements gave first aid,while Hall and Gill went by boat to Minot Point, and fetched the doctor. Williams inserted 16 stitches, photographed by a rather green Hall.

Williams stayed with Waghorn on 22nd,while Clements, Gill and Hall departed on skis with pulks to lay a cache ready to attack Mount Morgagni later. They met bad weather with much cloud, taking four days with heavy pulks in unfamiliar terrain to put a cache out near "Cushing Col". On 26th they started back in poor conditions. Hall fell 35ft into a crevasse on "Footsore Piedmont", but jumarred out unhurt, and they reached Metchnikoff Point in the evening of 26th.

On 27th Hall and Clements took Williams back to Minot point by boat. Waghorn skied to Skua Bluff,(unroped) and decreed his fitness satisfactory. The Rearlink in Britain had been unable to fly out outboard motor spares. The four of them prepared to leave for "Astrolabe Point" next day, travelling overland via "Cushing Col".

Minot Point Scientific Party. 12 February - 9 March 85. Moffat, Hughes & Williams.

As described above, they landed at Minot point on 12th. Until 16th much of their time was taken up with helping to right capsized boats and repair broken engines, and Hughes was with the boats most of the time until 15th. With one radio,the Minot Point Party were in communication with the Southern Party, and also with Metchnikoff Point when occupied.

Minot Point was extremely rich in vegetation (grass, pearlwort and mosses) and Moffat made detailed quantitative obervations on plant sociations to determine their variation with height, aspect and other factors. One main reason for this luxuriance appeared to be the remarkably sheltered site - maximum windspeed recorded was only 5 knots, in a 3-week period when high winds were recorded elsewhere on the island. There was also ornithological interest for Hughes, particularly a large population of South Polar Skuas. Williams collected rock samples, and helped the others,including collection of terrestrial invertebrates.

Williams was fetched on 21st to stitch up Waghorn, and returned to Minot on 27th. The party continued their scientific work at Minot Point, with Hughes mapping the point by plane table in support of the botany and geology.

Williams was lifted out by helicopter on 7 March. Moffat and Williams followed him on 9 March.

Note by Furse: Waghorn's Second Summer Boat Party achieved an amazing amount of work, using the boats to cover most of the coastline. The virtual circumnavigation of the Island in canoes, a journey of about 86 miles by Waghorn, Clements and others, was in itself a tremendous achievement, but they had also worked hard at the sciences throughout, particularly Moffat on botany. The events in March have received more publicity: their outstanding earlier achievements deserve fuller recognition.

Waghorn's Crevasse Fall and Injury. 28 February - 9 March 1985.
Waghorn, Clements, Gill, Hall (and many others).

This incident hit the world headlines. It put Brabant Island on the map of people's consciousness. Such an accident is always a possibility in mountaineering, it was always a possibility on Brabant Island. Everyone concerned did the right thing, and the successful rescue was effected in the shortest time that could have been possible, even in the Summer Season, in Antarctica. It was in many respects a model rescue. The chronological facts are set down here for the record.

28 February 85. Clements, Gill, Hall and Waghorn left the radio at Metchnikoff Point, and camped in Gale Force winds on "Footsore Piedmont" below "Pinnacles Spur", after a long days pulking.

1 March 85. In cloud they relayed the pulks over "Wobbly Col" and "Noddies Col" and camped on the head of Lister Glacier close under "Noddies Hat".

2 March 85. Initially in good clear weather they hauled the pulks across the head of Lister Glacier. Cloud closed in, and they found the way down to the west barred by crevasses in 20 yards visibility. So they camped.

3 March 85. Starting in clear weather but high wind and spindrift they traversed south, rising toward "Rokkitanski Plateau", looking for the way west.

Clements and Hall with two pulks led on one rope, with Gill leading Waghorn on the second rope. Traversing along a "roadway" between crevasses, Clements and Hall moved up left across a fading crevasse line. Gill followed their tracks. As he crossed the crevasse at about 1000, Waghorn moved 3ft left off the ski tracks. The roof of the crevasse fell under Waghorn, and he pendulumned to land (70ft directly below Gill), on his back, pack jammed in the narrowing crevasse, and partly held by Gill, straddled across the top of the crevasse.

Blocks of snow and ice fell on Waghorn and one broke his right thigh.

Clements and Hall came back immediately. They put in a deadman belay and secured Gill, then put in another with a jumar on the live rope between Gill and Waghorn.

Gill was shocked and bruised. Telling Gill to dig a tent platform, Clements put another belay in for his own rope, and went down to Waghorn. By then Waghorn had freed his arms and released his rucksack. Clements helped Waghorn free himself, put the rucksack on a wedged snow block, saw Waghorn's right leg was bent "with two knees", and then jumared out. While Clements lowered a First Aid pack and a flask of hot chocolate to Waghorn, Hall rigged a 2 to 1 pulley system, with an Alpine Clutch.

Clements, Hall and Gill then hauled Waghorn up, and through the crevasse lip, to lie in the blowing spindrift. It was 1130, just one and a half hours after the fall - good time in a real situation.

They dragged Waghorn into the Super Nova tent that Gill had erected. The amount of blood suggested a compound fracture, but Clements ascertained this was due to Waghorn's use of the Omnipon pain-killing syrette. Clements straightened the break, and left Gill to cut up a Willans Sit-Harness and splint Waghorn's legs together.

Hall abseiled down the rope to get Waghorn's rucksack. Unable to find it, he jumared out, with some difficulty due to icing. Clements abseiled down: Waghorn's rucksack had gone, and the crevasse disappeared into blackness 200ft below. Clements jumared out, once falling 30ft on iced-up jumars, to be held on the figure of eight at the end of the rope. The temperature was about -10c. With Waghorn's rucksack were lost his personal sleeping bag etc., plus stove and tent flysheet.

At 1700 Clements & Hall skied back up to the cache on "Cushing Col". Despite wind and spindrift they found the cache, and returned at 2030 with 14 mandays Arctic Rations, 2 gallons of Kerosene and other necessities.

After deciding on the best course of action, Gill cooked an evening meal on the one stove. Clements and Hall then spent the night in the Super Nova inner tent, while Gill tended Waghorn in the one complete tent.

4 March 1985. At first light, before 0600, Clements & Hall said goodbye to Waghorn and Gill, and set off up over "Cushing Col". Conditions grew worse, with continuous cloud and strong winds making it impossible to stand upright. Finally, in the afternoon, they got down off "Pinnacles Spur", where they dug a snowhole - but uncomfortable with no stove and only one sleeping bag between them. Later in the afternoon the wind eased to Gale Force and they forced on to reach Metchnikoff Point at 1830. They had, in one day of bad weather, completed a journey which normally took several days.

At 2100 they contacted Faraday Base by radio giving the details, with the position of the tent near "Cushing Col". Faraday forwarded the message to DNPTS, and to HMS Endurance. Rothera Base joined the conversation and offered to help by Twin Otter.

Above "Cushing Col", Waghorn and Gill lay, talking, playing scrabble, and wondering whether Clements and Hall would get through. It was windy.

5 March 1985. Endurance received the signal in the small hours, in Port Stanley: her sailing date was immediately brought forward to that day.

The Chileans at Rudolfo Marsh Base volunteered help, but their Bell helicopters did not have the range for the return trip. USARP offered refuelling facilities at Palmer Base. Since weather was bad on the Peninsula, these generous offers were declined, for the time being.

At 0500 Endurance signalled to Britain stating action in hand. (Furse received this, through DNOA(E), at midday. Everything possible was being done. The Rearlink in Britain simply manned the phone, while the story broke in the media).

While preparing to leave Stanley, one of Endurance's Wasps ditched with engine failure. SNOFI ordered RFA Olna to proceed south, embarking two anti-submarine Seaking helicopters of 826 Flight from RFA Reliant. Lt Issitt, Senior Pilot of the Endurance Flight, transferred to Olna to, brief the aircrews of 826 on Antarctic conditions, and Brabant Island in particular.

Mr Ed Murton flew up from Rothera Base in the BAS Twin Otter that forenoon, in appalling weather conditions. He overflew "Cushing Col", but saw nothing through the cloud.

At "Cushing Col" the gale of wind continued; Waghorn was reasonably comfortable and the tent seemed secure. Waghorn and Gill heard the Twin Otter in the cloud and hoped that Clements and Gill had got through. Clements and Hall had hoped to fetch the party from Minot point to help, but the weather and sea were too rough. They waited at Metchnikoff Point, talking by radio with Faraday and Minot Point (and the Twin Otter).

Wednesday 6 March. RFA Olna was moving south across Drake Passage at nearly 20 knots, ahead of HMS Endurance. Captain McLaren of HMS Endurance was in command of a 2-ship Task Unit. Captain McLaughlin of RFA Olna already knew the expedition, having taken the Winter Party south in RFA Fort Austin a year before. Both ships met bad weather in Drake Passage.

Ed Murton flew up from Rothera again in the BAS Twin Otter. Again he met bad weather, but this time, through a break in the cloud, he spotted the tent on "Cushing Col", with Gill outside waving. The Twin Otter dropped a jerrycan of Kerosene, but it disappeared.

Waghorn was in surprisingly little pain, but conditions in the tent were uncomfortable. The wind had dropped, allowing Gill to go out, erect a good snowwall and dig a snowhole in case the tent blew down. They saw the Twin Otter and knew that help was on the way. The jerrycan dropped within a ropes length, and Gill was able to recover it. Now they could afford to keep the stove burning for warmth.

Clements and Hall were still storm-bound at Metchnikoff Point. That evening they heard by radio that Olna with 2 Seakings might be in range next day.

Thursday, 7 March. At midday Olna was 100 miles north of Brabant. The two Seakings were launched. Cloud prevented their approaching "Cushing Col", however they picked up Clements and Hall from Metchnikoff Point.

The BAS Twin Otter once again flew up from Rothera, but could not sight the tent through the cloud.

The two Seakings attempted to fly into "Cushing Col" through the afternoon, but cloud cover continued, except for a momentary break at 1700, when the tent was sighted. Williams was picked up from Minot Point, but then flying was discontinued at 2100 in deteriorating conditions.

Waghorn was quite uncomfortable, now four days after the crevasse fall. They could hear helicopters through the afternoon, but after a brief glimpse of one at 1700 nothing more was heard. Somewhat dispirited, he and Gill settled into their fifth sleepless night.

Endurance was still coming south. On board, Atkins and McLeod were busy making deadmen and preparing to take a team of Royal Marines ashore to go up to "Cushing Col" if the helicopters were still held up by cloud.

Friday, 8 March. Cloud still smothered Brabant Island, and high seas made deck operation hazardous. However at 0800 Clements, Hall and Williams were flown from Olna to Endurance to brief the Captain, Flight, and Marine Detachment.

Low cloud prevented rescue, but one of the Seakings flew round the south end of Brabant Island, picked up Martin and Ringe from "Dayglo Point", and then continued around the north end, back to Olna. The Royal Marines in Endurance, with Atkins, Hall and McLeod, prepared to be landed behind Claude Point. Two 5-man groups were lifted off Endurance, but when weather closed in they were landed on Olna.

At 1400 there was a break in cloud around Endurance. Lt.Cdr.John White took off in the one remaining Wasp despite the ship rolling 20 degrees, and managed to sight the tent "in a web of crevasses". Olna was still in cloud, but the two Seakings were launched.

One Seaking winched Williams down to the tent, plus Clements and 3 Marines. Williams gave Waghorn painkillers and, with Gill and the others, strapped him into the stretcher ready for winching out.

At 3pm the Seaking lifted Waghorn out and flew him back to Olna. As the cloud closed in again the others were winched out also.

Martin and Dr WRP Bourne, (Olna's surgeon), treated Waghorn, who was remarkably perky. Olna set course back toward the Falklands.

Back in England, the Picture Editor of the Mail on Sunday finished printing Corbett's pictures and returned to London. The successful rescue, in only 5 days, had spoilt his story, but even he was glad, like all of us.

9 March.1985. Williams was transferred from Olna to join Hall in Endurance. Clements, Gill, Martin and Ringe continued in Olna to the Falklands, with Waghorn in the Sickbay

Later that day Endurance picked up Moffat and Hughes from Minot Point,and then moved through the Schollaert Channel to "Dayglo Point".

Williams was flown ashore to join the Southern Party at "Dayglo Point", but Hall, Hughes and Moffat remained on board Endurance. (Together with Atkins and McLeod they became the only expedition team members to cross the Antarctic Circle, when Endurance visited Rothera Base on Adelaide Island).

10 March. Olna approached the Falklands and the two Seakings flew Waghorn and the others off to Stanley. One Seaking suffered a gearbox failure and had to force-land on Lively Island. Waghorn, Clements, Gill, Martin and Ringe were flown on to reach Stanley that evening, but the other Seaking crew remained camped on Lively Island for two days.

RFA Olna, HMS Endurance, and their helicopters,had achieved an outstanding rescue. The helicopter operations had been quite marvellous, but we will not forget that the BAS Twin Otter flying had also been little short of miraculous. Clements, Hall, Gill and Waghorn himself had each performed outstandingly in very difficult circumstances.

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"Dayglo Point" 6-9 March 1985. Southern Party. Barker and Ball arrived early in the evening of 6th. Later they heard by radio from Metchnikoff Point of Waghorn's accident. Ringe, Flint and Martin arrived at 2230 the same evening.

During the rescue Ball was nominated by Furse as leader of the expedition in the field, specifically for negotiations with Endurance on the further programme,and final recovery.

Throughout 7th they stood by at "Dayglo Point" in case they were needed to help rescue. On 8th Martin and Ringe were lifted out by Seaking to help in the north, not to return. On the 9th Taylor, Allen and Lawrence arrived early in the evening. Endurance then arrived offshore, and Williams (only) was flown ashore at 1800.

SECOND SUMMER NARRATIVE, FINAL PHASE.

"Dayglo Point". 9-15 March 1985. Ball, Allen, Barker, Flint, Lawrence, Taylor & Williams.

Advised that final recovery would be on 15/16 March they had little choice but to continue local sciences, prepare stores for recovery, and spend two days on photography on the piedmont above.

HMS Endurance 9-15 March 1985. Moffat, Hall, Hughes.

The ship visited Rothera Base on Adelaide Island, south of the Antarctic Circle. While there the three of them, together with Atkins and McLeod and the ship's Royal Marine Detachment, camped out on the gentle piedmont glaciers for one night. The ship's one remaining Wasp ditched with engine failure during the visit,again happily with no injuries.

Recovery of Second Summer Party. 15-16 March, 1985. Ball, Allen, Barker, Flint, Hall, Hughes, Lawrence, Moffat, Taylor, Williams. (& Atkins & McLeod).

Endurance entered Chirlguano Bay on the 15th and scientific samples etc. were collected by boat from "Kinloch Chirlguano", "Welcome Point" and the original cache site, in a 50 minute period.

The ship then moved to "Dayglo Point". All the return stores and the team were recovered by ships boat in 1½ hours. Endurance then moved around to the NW. The expedition were given 5 hours to recover stores from Metchnikoff Point next morning.

Starting at 0800 by going ashore in the ships boats, the 10 Second Summer Party team members, plus Atkins and McLeod, and several Royal Marines from the Ships Company, ferried stores from the basecamp. The expedition boats were used to ferry gear offshore, with Ball and Atkins driving in wet conditions. Meanwhile the others ashore worked frantically, bringing gear down 150ft from basecamp and loading the boats. They did very well indeed, getting all the important stores,and only a small quantity of exposed film was subsequently found missing.

Without helicopters, recovery of the skidoos from "Astrolabe Point" was not possible. It was hoped that these could be recovered during the ships 4th Work Period.

Circumnavigation. The four canoes head for a landing beach.

Circumnavigation. February 85. Bivouac site (arrowed) just west of Mitchell Point.
This was the only beach found between 'Dayglo Point' and Cape Roux.

Basecamp in July 84. Winds keep the hut fairly clear, but the stores boxes are repeatedly covered.

Basecamp in August 84. Digging down to the stores box. The hut porch has drifted over.

The return journeys were expected to be much simpler than the outward journeys, the teams inevitably being brought back, and comparatively few stores needing return. In practice they were rather more complicated, due mostly to the three evacuations.

FIRST SUMMER TEAM. (7 Men)

March 1984. Re-embarked in HMS Endurance. Ship grounded on uncharted pinnacle within sight of Brabant. Direct passage to Stanley. One day there.

April 1984. 1st. Embarked in MV Kerens for Ascension Island.
13th. Air trooping flight from Ascension to RAF Brize Norton.

FIRST SUMMER RETURN STORES.

March 1984. Stores re-embarked in Endurance with team. Films and scientific specimens taken with team.
Biological samples lost between Ascension and Britain

June 1984. Remaining stores returned in Endurance to Portsmouth.

August 1984. Biological samples located in RAF Brize Norton.

WINTER TEAM: (Precautionary Medical Evacuation of Evans).

November 1984. 3rd - Embarked by RRS John Biscoe from Metchnikoff Point. Landed at Punta Arenas after 8 day passage. Commercial airflights from Punta Arenas to Heathrow, via Santiago.

WINTER TEAM: (Main 10-man group).

January 1985. 3 week passage in Endurance after re-embarkation, including survey of Orleans Strait & visits to Palmer, Faraday, Bernardo O'Higgins and Signy Island bases.
22nd - 2 days in Stanley.
25th - Trooping flights for 9 men from Stanley via Ascension Island to RAF Brize Norton. (Atkins joined HMS Endurance crew, returning to Portsmouth June 1985).

WINTER TEAM RETURN STORES.

January 1985. Exposed film returned with team. Remaining stores disembarked in Stanley & transferred to container for return by ship.

April 1985. Container finally cleared customs in Britain & delivered to PSTO(N) Portsmouth.

SECOND SUMMER TEAM: (Casualty Evacuation of Greenway).

February 1985. 1st - Embarked in MV Polar Duke from "Dayglo Point".
4th - Landed at Punta Arenas after 5 day passage. X-Ray in Punta Arenas showed fractured tibia, leg put in plaster.
5th - Commercial air flights from Punta Arenas to Heathrow via Santiago, Montevideo & Amsterdam, accompanied by RAF medical orderly.

SECOND SUMMER TEAM: (Casualty Evacuation of Waghorn, plus four).

March 1985. 9th - Clements, Gill, Martin & Ringe with Waghorn, embarked in RFA Olna direct passage to Falklands.
12th - Landed Stanley by Sea King helicopters of 826 Flight
17th - Trooping flights via Ascension to RAF Brize Norton.

SECOND SUMMER TEAM. (Main group of 10 remaining).

March 1985. 9th - Williams landed by Endurance at "Dayglo Point". Moffat, Hall & Hughes remained on board Endurance
after Waghorn's rescue, crossing the Antarctic Circle en route to Adelaide Island.
14th - Remaining seven (Taylor, Allen, Ball, Barker, Flint, Lawrence & Williams) embarked in Endurance from "Dayglo Point".
19th - Landed in Stanley.

April 1985. 5th - Air Trooping flight to Ascension. Two days at Ascension Island due VC10 engine defect.
8th - Air Trooping flight to RAF Brize Norton.

SECOND SUMMER MAIN RETURN STORES.

March 1985. Embarked in Endurance shipped to Stanley. Exposed film and botanical samples returned with team. Remaining stores disembarked in Stanley and transferred to container for return by ship.

May 1985. Container cleared customs and delivered to PSTO(N) Portsmouth.

SKIDOOS. The three skidoos had been cached at 1000ft above "Astrolabe Point" in December 1984. They could not be recovered in March 1985 due to the lack of helicopters. They are being offered to BAS or USARP to keep if they can collect them.

ATKINS returned as a member of HMS Endurance's Ships Company, arriving in Portsmouth on 4 June 1985.

SUMMARY of ACHIEVEMENTS. by Chris Furse.

The first thorough exploration of Brabant Island was carried out, although a few small parts of the island have still never been visited. Most of our high priority objectives were achieved, and also many of the lower priority ones.

GEOGRAPHICAL SCIENCES.

Geology. Field survey covered most of the island, plus a few offlying islets. The subsequent analysis is expected to have regional significance.
Geomorphology. A study was carried out on intertidal platforms & beaches.
Survey. Large scale maps were produced of four coastal points.
Tidal data. Fragmentary records in NW showed much greater range than the predictions.
Sea Ice. Records through the winter in a sea area not previously covered.
Meteorology. Synoptic records (but note mobility),plus data on orographic phenomena.
Ornithology. Breeding survey covered most of Brabant Island & offlying islets. Annual cycle events & activities recorded. Autumn & winter records provided some new data on semi-pelagic foraging populations, and unexpected migration records.
Mammals. Seal counts for nearly all beaches provided data on local populations, including unexpectedly large numbers of Fur Seals. All whale sightings recorded.
Fish. About 80 specimens (of 3 species) caught: morphometric data & samples collected.
Parasites. Small collections made from 6 host species (3 seals, 1 bird, 2 fish).
Terrestrial Invertebrates. Collections made from various sites & various habitats should enable determination of the Arthropods, Nematodes, Rotifers, Tardigrades and Testate amoebae present, filling a gap in present knowledge Field data collected on population dynamics of the larger and commoner arthropods through the year.
Microfungi. Collections made from various areas and habitats.
Botany. Collections around Brabant Island will fill a gap in the known distribution of species. Quantitative field data obtained at two points (with unusually rich stands of Grass & Pearlwort both setting seed) provide the basis for an ecological analysis.
Museum material. Miscellaneous zoological material collected for Royal Scottish Museum.

HUMAN SCIENCES.

Physiology. About 60 mandays of 24 hour multichannel temperature data recorded. Many days fluid balance recording & blood samples have already provided the first scientific evidence of physiological acclimatisation to central cold stimulus. Subsequent statistical analysis will significantly increase knowledge on cold survival.
Circadian rhythms. Over 5000 mandays sleep records (over 38000 data bits) obtained.
Group Social Structure. Regular questionnaires completed over the winter for analysis.
Individual attitudes. Statistical records of pleasures,miseries,cravings & dreads.

MOUNTAINEERING.

First Ascents. Mount Parry (c8400 ft) and 54 other major & minor peaks.
Sledging. One-man pulk sledging techniques refined for totally self-supporting parties mountaineering for periods of up to 5 weeks.
Safety. Only one mountaineering accident in 186 man-months travel in hard country.

BOATING.

Inflatable power boats. The 140 mile First Summer journey from Palmer Base to Metchnikoff Point was believed to be the longest open-boat journey this far south. The Second Summer travelled a total of nearly 1100 boat-miles.
Canoes. All but 14 miles of the 100 mile circumnavigation of Brabant Island were paddled in Nordkapp kayaks - the first ever canoeing of any significance in the Antarctic.

CAMPING.

The first demonstration that teams can live, move & work safely (and in reasonable comfort) in tents for a complete winter (and complete year) in Antarctica.

FUTURE EXPEDITIONS.

Public support. The success of this expedition should help gain support for other expeditions, particularly Joint Services Expeditions & other small, mobile, private expeditions to the Maritime Antarctic.
Leaders. The 35 team members have all gained experience in organisation as well as in the field, to equip them as Leaders or Assistant Leaders of future expeditions.
Planned Expeditions. Three team members are already planning future expeditions:

a. Flight Lieutenant Bill Hankinson RAF: Axel Heiberg Island. (Multi-disciplinary JSE).
b. Corporal John Spottiswood RE: Brabant Island. (Mountaineering, Unit team).
c. Sergeant Peter Stuttard REME: South Georgia. (General adventure, Unit team).

PUBLIC RELATIONS.

Good recruiting material provided for the Services, plus good general PR material for the Armed Services in Britain, & for Britain worldwide (particularly in Belgium).

PERSONAL.

It is hard to measure the effects of the expedition on the 35 team members (8 RN, 5 RM, 14 Army, 5 RAF and 3 Civilian). 33 of them had never before visited Antarctica.
I am only certain that we will remember this all our lives, and will transmit a greater zest for life & adventure to widening circles of friends and aquaintances.
I think we did well, and I am sure the results will prove useful.
I am very proud of my own two teams, and of Clive Waghorn's Second Summer team.

FOLLOW-UP WORK

by Chris Furse

Most of the island has now been covered. However the following few areas were not visited:

a. Mount Morgagni & Spallanzani Point. Interesting geology, and possibly botany etc. Worthwhile first ascents. No beaches found, but good helicopter access.
b. Hulot Peninsula & Mount Bulcke. Interesting, but limited geology and ornithology. Challenging first ascents. Landing beaches in Duperre Bay, or "Kinloch Chirlguano" or Victoria Peak.
c. Humann Point & Mount Erlich. Interesting geology, ornithology, botany, geomorphology and terrestrial invertebrates. First ascent. Very difficult beach, and nasty helicopter landing.
d. Buis Bay & Avicenna Bay. Interesting geology, and possibly ornithology and botany etc. Climbing above. Several reasonable landing beaches.
e. Fleming Point. Interesting geology, geomorphology, ornithology and botany. Difficult boat landings, reasonable helicopter landings.
f. Mount Parry Northwest Ridge. Superb 8400ft snow and ice ridge. Geology samples worthwhile en passant. Access possible from Minot Point. (Spottiswood is planning a 4-man expedition).
g. Mitchell Point. Interesting geology and ornithology. Difficult beach access.

Some other follow up scientific work may be shown to be desirable as post-expedition analysis progresses. If so, the following are the most promising areas (possibly the only ones!):

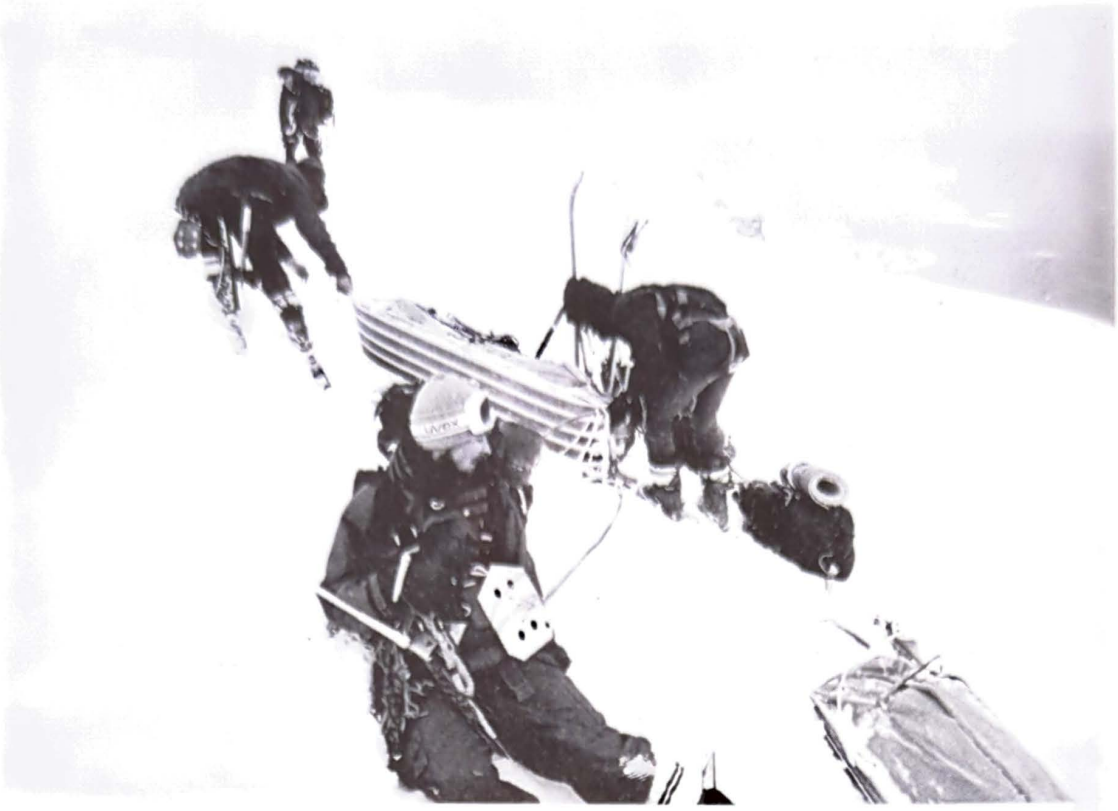
h. Metchnikoff Point. Ornithology, Terrestrial Invertebrates. Excellent beach.
i. Claude Point. Ornithology, Botany, Geology. Usable beach, but climb out very difficult/Severe.
j. "Astrolabe Point". Botany, Invertebrates. Difficult landing.
k. Minot Point. Botany, Terrestrial Invertebrates, Geology, Ornithology & Mountaineering. Difficult landing.
l. Chirlguano Bay. Geology & Mountaineering. Superb beaches.

The following useful small caches remain on the island. Quantities are very rough figures. Further details are available from Furse.

"Dayglo Point". Hut: 100? mandays rations 30? Gals Kero 90? Gals Petrol + General
Metchnikoff Point: 300? mandays rations 90? Gals Kero 180? Gals Petrol + General
(The hut & garage are unlikely to survive more than one winter).
Claude Point: 20? mandays rations 3? Gals Kero
"Astrolabe Point": 20? mandays rations 5? Gals Kero
(3 skidoos at 1000ft above are not expected to survive the winter).
Driencourt Point: 30? Gals Petrol
Minot Point: 50? mandays rations 3? Gals Kero 5? Gals Petrol
Fleming Point: 100? mandays rations 10 Gals Kero
Humann Point: 150? mandays rations 60 Gals Kero
Hulot Peninsula(NE) 50 mandays rations 45 Gals Petrol
"Kinloch Chirlguano" 50? mandays rations 5? Gals Kero
Avicenna Bay 200? mandays rations 40? Gals Kero (but precarious site).

Circumnavigation. The four canoes head for a landing beach.

Circumnavigation. February 85. Bivouac site (arrowed) just west of Mitchell Point.
This was the only beach found between 'Dayglo Point' and Cape Roux.



Duclaux Point Party. April 84. Three-man pulking is hell. (Stuttard fallen horse).

After Evans' crevasse fall April 84. Beattie and Spottiswood dig snowhole on right,
De Gerlache in bivvi bag by packs.

Appendix 1A. INTRODUCTION to SCIENTIFIC APPENDICES by Chris Furse.

Oakley and Ringe were undertaking research projects within their own professional scientific fields. Flint, Martin and Moffat had each undertaken postgraduate work in their disciplines. Trathen had an appropriate honours degree, and Stuttard had completed two years of a relevant degree course. Of the other team members with degree standard education, Furse was an experienced amateur in his field, and Morris, Hankinson and Taylor each had some related field experience; however Clements, Evans and Williams were allocated unfamiliar scientific tasks. De Gerlache and Hughes were keen amateur naturalists. After being allocated scientific tasks, Atkins, Beattie, Kimbrey and Spottiswood each prepared themselves by thorough homework, seeking expert advice, some formal training, and some practice. The remaining team members assisted these, and undertook simple data-collection, such as Met.readings and seal counts.

Widely varying scientific projects were undertaken, within the competence of team members (ranging from the complete geological survey to collection of a few seaweed samples for Carbon 14 dating). About a quarter of the projects were initiated by the team members themselves, but the majority resulted from direct approaches to individual researchers identified from the Directory of University Research; and some projects were undertaken in collaboration with the British Antarctic Survey. A potential overload of scientific work was intentionally taken on, to ensure that all team members were always fully occupied (particularly in winter when travel was limited), and to cover against lack of subject material on the island, or equipment failures etc. Altogether 81 projects were arranged, 26 by expedition team members, 15 in collaboration with BAS, and 40 for other outside researchers.

The top priority of the expedition as a whole was the widest possible scientific coverage of the island - put simply:- (Areas X Sciences) = max. Within this framework, individual projects were allocated Priorities, from A down to D, depending on the perceived importance of the data, on the interest shown by the specialists receiving the material, and on our expectations for achieving worthwhile fieldwork. In the list below, these priorities are shown in brackets after the project reference number.

In general we achieved most of our targets. Some shortfalls were due to the physical difficulties of covering every part of the island in the time available, others were due to lack of subject material. A very few shortfalls in the field resulted from equipment failures or faulty field techniques. We had hoped that having two summers would produce some follow-up projects in the Second Summer, but temporary loss in transit of most of the First Summer samples for several months frustrated this. The early finish of the Second Summer phase after Waghorn's injury also curtailed some projects. Notwithstanding these miscellaneous problems, the samples and written data we have obtained should provide good raw material for subsequent analysis to put Brabant Island on the scientific map(s).

In many cases documented collections and raw field data are simply being passed to the relevant specialists for their analysis. However the results of some projects will be worked up by the team members concerned, producing collated data and in several cases further analysis. Several scientific papers are expected to arise directly from our findings; other data will doubtless be published in due course as component parts of geographic and taxonomic review papers. In the list below, the name of the person undertaking post-expedition analysis is shown in brackets.

IBM have very generously given the expedition a PCXT computer for post expedition analysis. We intend also to use this for a Brabant Island Database (BID), entering field data (eg met.records) sample details, publications etc. This will provide unrivalled coordination of results to benefit scientific customers, who will be able to access all the data simply and quickly. Oakley is the BID Manager.

The brief reports in the following appendices indicate the nature of the fieldwork and coverage achieved, but few attempt to describe the results. My book about the expedition (and the island) will include more of the preliminary findings, although in many cases the full analysis of our material will take several years.

I and other expedition team members will continue to take a keen and active interest in the post expedition analysis. Copies of all published results will be collected, together with summaries of unpublished results, outlines of any ongoing work, and a list of published references to Brabant Island material. In about 1990, two full sets of these papers etc will be bound and lodged in the libraries of the Royal Geographical Society and the Scott Polar Research Institute to provide an accessible compendium of scientific information from Brabant Island in general, and from this expedition in particular (by that time the two will be virtually synonymous).

(Appendix 1A. Page 2).

GEOLOGY. (1S: Trathen. OW: RINGE. 2S: RINGE & Williams.)
1.(A). Igneous history & petrology of Brabant Island. (Ringe, JSE. Nottingham University).

GEOMORPHOLOGY. (1S: Trathen. OW: Evans. 2S: FLINT.)
1.(C). Radiocarbon dating of sediments to support Projects 3 & 10. (Not required).
2.(D). Large-scale mapping of patterned ground. (No suitable sites found).
3.(C). Former sea-levels: raised beaches. (Flint, JSE, with Dr.Dawson & Dr.Hansom.)
4.(C). Beach formation processes. (Flint, JSE, with Dr.Hansom).
5.(C). Intertidal rock platforms. (Flint, JSE, with Dr.Hansom).
6.(B). Intertidal boulder pavements. (Flint, JSE, with Dr.Hansom).
7.( ). (Project deleted).
8.( ). (Project deleted).
9.(B). Sub-tidal slope profiles by echo-sounder (equipment defective).
10.(C). Glacier fluctuations. (Flint, JSE. Notes for reference, little evidence available).

GLACIOLOGY. (1S: no-one. OW: Evans. 2S: TAYLOR.)
1.(D). Quantify flow/accumulation/ablation on Rush Glacier.(Abandonned when base moved).
2.(D). Datum level across one ice-shed. (Not achieved).
3.(C). 10 meter ice-core for radio-isotope analysis.(Dr.Peel,BAS).(Equipment mislaid).

SEALS & WHALES. (1S: Worrall. OW: Spottiswood & de Gerlache. 2S: Clements.
1.(B). Seal census & annual cycle data. (Furse, JSE, collated records for BAS reference).
2.(A). Crabeater Seal winter feeding samples.(Dr.Croxall,BAS).(Not enough seals).
3.(C). Crabeater Seal skeletons & skulls for display.(Royal Scottish Museum).
4.(C). Crabeater Seal tapeworms.(Dr.Andersen).(None found in 3 seals examined).
5.(B). Microfungi on moulted sealskin. (Professor Pugh, Portsmouth Polytechnic).
6.(D). Blubber samples for organochlorine analysis. (Dr.Skelton).(Not achieved).
7.(D). Whales, records of all sightings. (Furse, JSE, collated data for BAS reference).
8.(D). Ectoparasites from seals.(British Museum of Natural History reference collection).

MARINE BIOLOGY. (1S: Hill. OW: Kimbrey. 2S: Clements.)
1.(C). Fish morphometric data & otoliths. (Dr.Martin White, BAS).
2.(C). Fish for display. (Royal Scottish Museum).
3.(C). Fish muscle physiology samples.(Mr.Neil Fitch), St.Andrews University).
4.(C). Fish parasites. (Dr.Ivor Williams, Hull University).
5.(D). Marine invertebrates for display. (Royal Scottish Museum).
6.(D). Mussels: annual cycle data.(Dr.Davenport,UCNW).(None found).
7.(D). Crab & squat-lobster samples.(B.M. Natural History). (None caught, or seen).

ORNITHOLOGY. (1S:FURSE. OW:FURSE,Oakley & Evans. 2S: Hughes,Greenway & Lewis.
1.(B). Breeding census. (Furse, JSE.)
2.(C). Annual cycles all species present. (Furse, JSE.)
3.(B). Penguin foraging routines. (Abandonned - no suitable study colonies found).
4.(C). Seawatches to record coasting movements. (Furse, JSE.)
5.(D). Sheathbills for display & taxonomic study.(Dr.Lyster,Royal Scottish Museum).
6.(C). Ectoparasites. (BM.Natural History reference collection).(Not achieved).
7.(D). Endoparasites. (Dr.Williams, Hull University).(Not achieved).
8.(D). Penguin tapeworms. (Dr.Karin Andersen, Oslo University).
9.(D). Macroscopic arthropods from nests. (Dr.Bill Block, BAS).
10.(B). Microfungi from feathers & nests. (Professor Pugh, Portsmouth Polytechnic).
11.(D). Snow Petrel morphometric data. (Dr.Alan Cowans, Sydney, NSW.).(None caught).
12.(C). Kelp Gull foraging data. (Dr.John Croxall, BAS.)
13.(C). Antarctic Tern foraging data. (Dr.Croxall, BAS).(No suitable study colonies).
14.(D). Blue-eyed Shag foraging data. (Dr.Croxall, BAS).
15.(D). Breeding adaptations data. (Irene Werth, Leeds University).(Project vague).
16.(C). Multivariate analysis breeding dates in region. (Furse & Oakley, JSE).

(Appendix 1A. Page 3).

BOTANY. (1S: Hankinson. OW: Stuttard. 2S: MOFFAT & Martin).
1.(B). General vegetation survey & collections. (Dr.R.I.L.Smith, BAS with Moffat JSE).
2.(D). Flowering plants, cold adaptation data. (Professor Crawford).
3.(C). Moss-turf & moss-carpet reference sites descriptions. (No suitable sites found).
4.(D). Mossbanks, descriptions. (Dr.R.I.L.Smith, BAS).(No mossbanks found).
5.(D). Mineral content of lichens & mosses near bird colonies. (Dr.Brown).
6.(C). Macrofungi & moulds. (Dr.Ray Watling, Royal Botanic Gardens, Edinburgh).
7.(C). Microfungi from various habitats. (Prof.Geoffrey Pugh,Portsmouth Polytechnic).
8.(C). Predacious microfungi. (Dr.Wyborn, Central London Polytechnic).
9.(B). Recolonisation after recent glacial recession. (Dr.R.I.L.Smith, BAS).(& see 11).
10.(B). Bryophyte collections. (Dr.G.Bell, Inst.Terrestrial Ecology, Edinburgh, with Moffat JSE).
11.(B). Vegetation analysis after receding ice-cover.(Moffat JSE,with Dr.Oxley).(& see 9).
12.(B). Vegetation analysis over environmental gradients. (Moffat, JSE, with Dr.Oxley).

TERRESTRIAL INVERTEBRATES. (1S: Morris. OW: Beattie. 2S: MARTIN & Hughes.)
1.(B). Arthropods, distribution & taxonomy. (Dr.Mike Usher, York University).
2.(D). Mites & springtails annual population dynamics. (Dr.Bill Block, BAS).
3.(D). Belgica antarctica population dynamics & distribution.(Dr.Bill Block, BAS).
4.(C). Gut contents of commoner arthropods. (Dr.Bill Block, BAS).
5.(C). Nematodes collections. (Dr.Maslen, Tropical Development & Research Institute).
6.(B). Rotifers collections. (Dr.Herbert Dartnall).
7.(C). Tardigrades collections. (Miss Sandra MacInnes, BAS).
8.(C). Protozoa: testate amoebae collections. (Dr.Humphrey Smith, Coventry Polytechnic).
9.(C). Morphological variability of Belgica antarctica. (Dr.Mike Usher, York University).
10.(D). Arthropod collections from Falklands in transit. (Dr.Mike Usher, York University).
11.(B). Life cycle data on the tick Ixodes uriae. (Dr.Bill Block, BAS).

PHYSIOLOGY. (OW: OAKLEY).
1.(A). Acclimation to central cold stimulus.(Oakley,JSE,Inst.Nav.Med,with Dr.R.Goldsmith).
2.(A). Comfort of clothing & tents. (Oakley, JSE and Institute of Naval Medicine).
3.(D). Surface temperatures of seals & penguins,incidental measurements.(Oakley, JSE).

PSYCHOLOGY & SOCIOLOGY. (1S: Hankinson & Morris. OW: Stuttard & Furse. 2S: Ball).
1.(B). Effects of cold stress.(Dr.Hayden Ellis).(Curtailed due equipment failures).
2.(D). Changes in circadian rhythms. (Dr.Folkard, Sussex University).
3.(D). Analysis of pleasures/miseries/cravings/dreads questionnaires. (Furse, JSE).
4.(D). Control of circadian rhythms by melatonin.(Dr.Arendt).(Curtailed due ethics).
5.(D). Stress-related health problems. (Morris, JSE).
6.(C). Social interactions within isolated group. (Morris, JSE, with Barts.Hospital).
7.(D). Use of data-logger for reaction tests in cold climates. (Not achieved, technical problems).

METEOROLOGY. (1S: Hankinson & Hill. OW: Oakley & Lumsden. 2S: Taylor).
1.(B). Synoptic records to support other sciences. (Oakley, JSE, fair data & assessment).
2.(D). Orographic airflow modification. (Oakley, JSE).

SURVEY. (1S: ATKINS. OW: ATKINS & Evans. 2S: Hughes & Allen).
1.(B). Topographic mapping of local areas to support sciences. (Atkins et.al., JSE).
2.(D). Height checks of DOS map by altimetry. (Atkins, JSE, fair data to DOS.).
3.(B). Map Cairn Point by photogrammetry.(Not achieved due ship programme changes).

HYDROGRAPHY and OCEANOGRAPHY. (1S: McLeod. OW: Evans. 2S: Waghorn & Taylor).
1.(B). Iceberg drifts & surface currents. (Abandonned due equipment problems).
2.(C). Sea-ice cover through the year. (Evans, JSE, fair records for reference).
3.(C). Tidal records in Bellingshausen Sea. (Supt.Tides,Hydrographer).(Incomplete data).
4.(C). Amendments to the Antarctic Pilot. (Furse & Waghorn JSE for Hydrographer).

APPENDIX 1B. GEOLOGY. by Mike Ringe.

The aim, to sample & map the geological formations of Brabant Island, was to a great extent fulfilled, with over 350 samples being collected. Subsequent analysis at the University of Nottingham should enable a detailed geological history of the island to be deduced. Although a brief geological reconnaisance had been carried out by the Chileans in 1977, our own more detailed & extensive study will greatly enhance existing knowledge.

The mapping of Brabant Island does allow the basic outline of the geological history, given below, to be pieced together, and more detailed information from the 300 + samples still awaiting analysis will eventually further enhance this. However 40 samples collected by Trathen have already been analysed and show interesting results. From these it would appear the island's geological setting is probably a spreading back-arc basin, with K-Ar age dates from volcanic from "Cairn Point" giving an age of less than 1 million years. Basic geochemistry of the basalts has also shown affinities with both the South Shetland Islands and the James Ross Island groups. Thin section work has shown some extremely fresh basalts and intrusives, and has given an insight into some of the tuffaceous rocks which apparently show both sub-aqueous and sub-ariel volcanic activity. Again more detailed observations are needed.

Sampling and mapping was often difficult, especially along the West Coast, where 3000ft plus cliffs rise from the sea. However detailed maps have been produced of Metchnikoff Point, "Cairn Point", Cape Roux, "Astrolabe Point", Minot Point and "Welcome Point (in Chiriguano Bay), which provide evidence of cross-cutting relationships of intrusives and hosts enabling a history to be produced.

The rocks exposed on the island appear in general to become younger from South to North, with Cretaceous(?) conglomerates and tuffs forming the oldest rocks found. Excellent examples of large, rounded, water-eroded clasts, inter-layered with 3-6 ft. bands of tuff (indicative of a contemporaneous phase of explosive volcanic activity) were found on the northern slopes of Mt.Bulcke. Samples from "Welcome Pt" should provide details of its subsequent history, involving at least 3 later phases of basaltic intrusives.

The mid-section of the island is composed of great thicknesses of coarse tuffs & conglomerates interlayered with basaltic lavas and sills. These overlie the conglomerate, although the true relationships are unclear as yet Sampling was limited both on the West Coast and around Hill Bay, and will provide only a general outline of this phase.

Large scale intrusives, of Andean age(?) were found at Metchnikoff Point (where an excellent vent agglomerate is present), and at "Easter Island","Cairn Point", Cape Roux, and inland to "Claires Finger" in the north, and at "Dayglo Point" and Pinel Point in the south- These are xenolithic Quartz Diorites, although compositional variation is common; in places they show metallic sulphide mineralisation. At "Astrolabe Point" a fresh, high-level basic intrusiv exhibits excellent cooling columns & possible in-chamber crystal separation, and probably relates to the young lavas to the north.

At Metchnikoff Point the intrusive exhibits an eroded upper surface, overlain by a coarse basaltic-rich agglomerate about 120ft thick. Here the agglomerates show no depositional structures, but at "Cairn Point" & elsewhere around the N.& NW coast crossbedding and grading are a common feature. The agglomerate thickens considerably toward the East, and at Cape Cockburn it reaches at least 950m thickness.

Overlying this agglomerate in the north are young (1m years) horizontally bedded basaltic lava flows. These are the cap-rock of the sequence, and form characteristic bluffs, as at Metchnikoff & "Skua Points". At Metchnikoff Point there is a series of lavas (3-15 ft thick), vesicular, fresh and occasionally showing good flow structures. These lavas, although reddened by iron staining and obviously iron rich, are not the Magnetite flows noted by the Chileans: indeed, no evidence of such rock-types was found. The lavas include no tuffaceous material indicating a quiet, flowing phase of volcanic activity. Elsewhere the lava flows reach thicknesses of over 300 ft, as at Claude Point & probable vents were found on the NE side of Virchow Hill,at Duclaux Point and just north of it at "Vango Ridge".

Tuffs are present at "Pinnacles Spur" and Claude Point. On "Pinnacles Spur" they are coarse & altered, in contrast to Claude Point, where they are very fine, graded and waterlain. Obviously explosive volcanic activity preceded the young capping lava flows, but the exact relationships are unclear.

Faulting was difficult to define precisely due to limited inland exposures. However there appear to have been 2 main phases - a NE-SW phase and a NNW-SSE phase. Coastal faulting is apparent as distinct, parallel-sided bays where preferential erosion has occurred along the faultlines, as at Metchnikoff and "Cairn Points". Large-scale NE-SW faulting also cuts the island, but definite evidence is scarce due to the extensive glacial cover.

Further study will now take place at the Department of Geology, University of Nottingham, under the supervision of Professor Peter Baker. Techniques used will include both reflected and polarised light microscopy, X.R.F., X.R.D., A.A. electron probe, K-Ar age dating, and basic wet geochemistry. Departments at other Universities will also be involved in this work, which should take about 2½ years. In 1987/88 my PhD thesis should be presented and papers published; preliminary short papers may be published earlier.

Appendix IC GEOMORPHOLOGY by Paul Flint

Some rudimentary fieldwork was conducted in the first two phases, but detailed work was left until the Second Summer as Flint was the only qualified geomorphologist. He studied intertidal phenomena in the southeast, but events prevented his working on the west and north coasts as planned. This was unfortunate, as comparison between the exposed west coast and sheltered east coast would have added value to his intertidal observations. The only visible signs of former sea levels, and of glacier fluctuations were also on the west and north coasts.

Intertidal Boulder Pavements. One beach at "Dayglo Point" and three in Chiriguano Bay were examined in detail. They were characterised by intertidal boulder barriers lieing across the line of the longest fetch, and exhibited patterns of furrows, ridges and depressions caused by brash ice. Sheltered areas were also characterised by well-packed mosaics of boulders. As far as possible fieldwork techniques were used which will allow comparison with research conducted elsewhere in the Antarctic by Dr Hansom. These techniques included plane-table surveys, level transects, and measurements of the orientation, size and composition of boulders and patterns. The movement of tracer pebbles was examined at "Dayglo Point" over a 2 month period. Work was hampered by the unusual tidal cycle - "spring" tides with a 25 hour period changed abruptly to "neap" tides with shorter periods, and with so little rise and fall that the beaches were never exposed. Allen made a considerable contribution to the survey and sampling work. Flint will be working up the results, with advice from Dr. Hansom.

Other Intertidal Phenomena. Other team members observed similar intertidal boulder barriers around the Hulot Peninsula and each side of Duperre Bay. The more exposed coasts further north were characterised by rocky stacks and islets. Wave cut rock platforms were noted from Driencourt Point around to Duclaux Point & those just south of Metchnikoff Point were extensive: however all these (except that at Duclaux Point) were wave washed, even at lowest tides, and unsafe to work. Evans' attempts to plot the movements of boulders on one platform south of Metchnikoff Point using the Golf II Laser Rangefinder were frustrated by losing the tripod, and by defects in the special charging system. Some steeper cobble beaches were found, from Minot Point around to Cape Cockburn. During the winter Evans conducted a monthly survey of one such beach, at Metchnikoff Point: this should permit comparison with the relatively sheltered beaches in the southeast.

Former Sea Levels. The Second Summer Boat Party observed areas of well-sorted, well-rounded boulders at Minot, Fleming and Metchnikoff Points, which may be of marine origin. They occurred at various levels up to about 25-33 ft above present sea level. At Minot Point several such features were mapped by plane table survey, and included on level transects. A proportion of rounded and sub-rounded pebbles at about 80ft on the islet off Metchnikoff Point were unsorted, and no other signs of raised beaches were noted. Rock platforms and stacks around the northwest suggested previous marine planation, at about 25ft and about 50ft above present sea level, but data were not recorded.

Former Glacier Fluctuations. Ice cover in the southeast was too extensive to reveal anything but a small amount of till and striations on the shoreline. Tills were more extensive, but very localised, on the west and northern coasts. Terminal moraines at Claude and Metchnikoff Points and at Cape Roux indicated three (or possibly four) previous "still-stands" by the retreating ice. One boulder of banded gneiss above the shore just south of Metchnikoff Point (and some cobbles elsewhere in the NW) could suggest glacial transport from the Antarctic Peninsula.

Radiocarbon Dating of Organic Material. The only organic materials found that were suitable for radiocarbon dating were bivalve shells (elongated, flattened, 8-10cm long) that were locally abundant in till at the base of ice overlying "Welcome Point". They were not found elsewhere on Brabant Island. Specimens in good condition were collected for identification: it has not yet been decided whether radiocarbon dating is desirable.

Appendix 1D

GLACIOLOGY

Prior to the departure of the first party there had been little interest from outside the expedition, but the Second Summer Party were asked to obtain a 10 meter core, as part of a widespread sampling programme in the region.

Study of the map before had suggested that the only glacier well-suited to recording of accumulation, flow, ablation and discharge budgets was the Rush Glacier. Evans planned a year-long study there, since it was conveniently close to the intended main base site at Humann Point. However, when Humann Point proved unusable as a base, this low priority project was abandonned, with some relief. Experience on the Island suggested that accumulation (and probably other parameters) varied tremendously around the Island. The four areas possibly amenable to study (Rush, Koch, Hippocrates and Lister Glaciers) would each have exhibited characteristics dependant more on aspect and local orographic effects than on the general climatic regime. Any study would also have been prohibitively laborious.

Datum levelling would have been possible on the bealach between the Solvays and the main Mt.Parry ridge, and also (with difficulty) between Mount Hunter and Rokkitanski. However both these areas were subjected to extreme winds, with funnelling effects; accumulations of up to 5 ft were measured over one 3 week period, and on other occasions 2ft erosion was noted in two days. Replicate levelling in later years would not therefore have provided any reliable comparisons, so this project was also abandonned.

Chatham Fleet Maintenance Group manufactured a corer to a pattern supplied by Dr John Gordon. The Chatham corer was landed at Metchnikoff Point, but the drive rods were mislaid. The saga of John Gordon's corer crossing the equator four times, when it was meant to be in Spitzbergen,caused at least two total sense-of-humour-failures in Furse, and is best left under a veil. The expedition would like to record our thanks to John Gordon for his help, and to apologise for taking so long to return his corer. No cores were obtained: however this was not serious as any results would have been subject to the same uncertain local factors as the other two projects.

Paradoxically although almost entirely covered in snow and ice, Brabant Island proved totally unsuitable for routine glaciological data collection within the capability of amateurs. Oakley's snow-board records showed a total snowfall of 38ft through the winter at Metchnikoff Point, and it was almost certainly much greater on Lister and Pare Glaciers. Most of this snow was blown into the sea within days. Local topography changed noticeably over the course of the winter to the extent that contours on a standard British 1/50,000 Ordnance Survey map would have been significantly affected. Interesting glaciological studies into local effects are conceivable, but they would not have any regional or climatic significance. They could only be planned and interpreted by an experienced professional glaciologist and he would have to be a masochistic fanatic to undertake them.

Appendix 1E. METEOROLOGY.

by Howard Oakley
Bill Hankinson
Steve Taylor

Meteorological work on the Island had three aims. The first priority was to compile data that could be used in support of other sciences: this involved twice-daily synoptic observations at 10am and 10pm Local (Peninsula) Time. A secondary aim was to provide forecasting information for travelling, based on measured data, experience accumulated, & luck. The third aim was to investigate orographic modifications to airflow, particularly the micro-scale generation of vortices & other lee phenomena. Micrometeorological work was also carried out for physiology (tents & clothing), and botany (local variations at Astrolabe Point).

Preparations involved the procurement of equipment from Service sources, the Meteorological Office & commercial firms. Advice was obtained from the Meteorological Office & the Norsk Polarinstitutt.

A Base Met.Station was set up at Metchnikoff Point, initially on the crest of the moraine, then (in March 1984) lower down at 180 ft above sea level, in the best position that could be found, although local winds were still greatly modified by shielding. Wet- and dry-bulb thermometers were mounted in a ship's screen, and maximum & minimum thermometers in a box below. A Porton Anemometer and windvane were mounted at 13 ft height. A Snowdon raingauge nearby was used when snowfree in summer, and snow-boards at other times. Atmospheric pressures were recorded using a Thommen mountaineering altimeter, check calibrated afterwards. A precision aneroid barometer would have been better in basecamp, and anemometers reading up to only 65 knots were yet again shown to be inadequate for the Antarctic. A smaller station was used in October and November at Astrolabe Point. When away from base, at least one observer took a hand-held anemometer, dry-bulb, max. & min. thermometers. In the summer seasons (and in September) the Base Met.Station was seldom used: readings were taken at the standard times, and were corrected to sea-level, but these records in these periods are not really comparable, due to the variety of situations, and to the wide variation of conditions produced by local topographic effects that were observed as well as height.

The harsh, polar maritime climate of the Island is reflected in the accompanying table of monthly records. The summers were cool and wet, with frequent depressions, and with most big winds coming from the Northeast. Autumn brought a major thaw, and several gales, settling in May-June to give fine cold spells interspersed with heavy snowfalls. July and August brought the strongest winds at basecamp with Southwest winds in clear skies exceeding 100 knots on several occasions. September was windy, snowy and generally cold, but with the first Spring thaw. October was much better, but November was again very windy, with both SW and NE blizzards. Unlike the high Antarctic, precipitation is heavy: during the winter a total of over 38 ft of snowfall was measured, but most of it was soon blown away as spindrift. A Spring melt occurred early in December, heralding the return of the summer weather.

Different locations on the Island often experienced very different weather. The long ridge of mountains running from north to south, and the blocking effect of the Antarctic Peninsula, produced marked orographic effects. Lister and Pare Glaciers became notorious for trapped cloud & snowfall, and Fohn winds were sometimes very strong in the gap between Harvey Heights & Mount Hunter, and that north of the Solvays. However strong, truly Katabatic winds (as opposed to Fohn winds) only occurred rarely, in cold anticyclonic conditions. Minot Point was a remarkably calm spot with winds below 5 knots while blizzards raged elsewhere. The northwest coast from Astrolabe Point to Cape Roux frequently enjoyed a pool of clear sky generated either in the lee of Anvers Island in SW winds, or in the lee of the Antarctic Peninsula in NE winds. A feature under some stable conditions was low stratus from sea level up to between 1000 and 5000 ft, with clear skies on the tops. Overall the met records tabulated overleaf being largely in base camps show more rain than people experienced while travelling, but less snow, less sunshine and and very much less wind.

We expected bad weather, and we got it. Our records included 120 knot winds (in the hills, not shown in the table), up to 32 inches snowfall and up to 2 inches rainfall in 24 hours, and sea level barometric pressures ranging from 936 to 1028 millebars. Spindrift was a major phenomenon not recorded by the standard meteorological methods employed. The weather was changeable with snowfall and/or rain on 70% of days. However average cloud cover was less than in the South Shetlands, and quite often the weather was really glorious.

Measured	Windchill Effective Temperatures.			
Temperature Degrees C.	5 knots Force 2	20 knots Force 5	37 knots Force 8	64 knots Force 12
+ 5	+ 3	- 9	-13	-14
- 7	- 9	-26	-31	-34
-12	-15	-34	-38	-40
-23	-26	-51	-55	-60.

In Antarctica the effective temperature due to windchill is a more realistic measure of cold than actual temperature. In a Gale Force 8 and actual temperature of -7, one feels as cold as in calm at -31.

Detailed field data will be lodged with the National Meteorological Library, Bracknell. It is hoped that post-expedition analysis will yield a couple of descriptive papers and one concerning orographic effects, to be submitted to British journals.

MONTH		Days with Obs.	No. of Obs.	Temperatures Abs Min.	Mean	Abs Max	Mean cloud cover	(Measured) Windspeed Mean	Max	Barometric pressure Abs Min	Mean	Abs Max.	Total Precipitation measured Rain	Snow	Days when following recorded Rain	Snow	No snow No rain	Sun	Winds over 34kts	Winds over 60kts
		Days	No.	degrees Centigrade			Oktas	Knots		Millebars			Centimeters		Days					
1S	JAN	17	29	- 1.0	+ 1.4	+14.0	4.4	9.5	45	986	993	1012	NR	NR	7	4	8	10	5	0
	FEB	21	30	- 3.0	+ 1.7	+ 6.8	7.0	12.3	60	961	993	1013	11	NR	11	5	7	7	4	1
	MARCH	16	32	- 4.0	+ 1.1	+10.0	6.5	7.7	40	980	997	1018	6	NR	10	6	3	7	4	0
OW	APRIL	30	60	- 9.0	- 1.6	+14.0	5.7	10.1	60	965	986	1005	9	45	10	18	7	18	13	1
	MAY	31	62	-13.0	- 3.6	+ 5.0	5.0	8.4	40	958	979	1018	NR	142	5	22	9	18	8	0
	JUNE	30	60	-11.0	- 4.4	- 0.6	4.9	8.1	40	958	1001	1019	NR	119	2	20	10	21	6	0
	JULY	31	62	-14.6	- 4.2	+ 0.5	5.8	9.5	100	986	1006	1028	NR	165	9	20	9	15	11	4
	AUG	31	62	-17.4	- 4.5	+ 0.5	4.8	10.5	100	936	992	1021	NR	114	7	25	6	22	13	3
	SEPT	30	60	-14.3	- 4.1	+ 9.8	5.8	7.6	80	966	994	1017	NR	371	8	27	3	14	20	6
	OCT	31	55	-13.0	- 1.1	+14.5	5.5	4.7	80	951	990	1014	NR	67	8	22	9	26	8	4
	NOV	30	60	- 5.4	+ 1.0	+20.1	6.3	3.6	80	954	983	1009	NR	159	13	22	8	23	10	3
	DEC	29	57	- 6.0	+ 2.9	+23.2	6.4	5.0	80	968	1001	1023	NR	38	12	12	12	21	8	2
2S	JAN	31	62	-21.0	- 0.4	+13.1	7.0	13.2	90	971	992	1007	16	NR	14	14	11	13	5	1
	FEB	28	56	- 9.5	?	+11.0	7.1	11.3	30	958	980	997	1	NR	1	14	13	7	0	0
	MARCH	8	16	-16.0	?	+ 7.0	7.0	12.0	60	976	985	995	0	NR	0	4	4	3	1	1
TOTAL		394	763	NA	NA	NA	NA	NA	NA	NA	NA	NA	NR	NR	117	235	119	225	188	26
Abs MAX.		NA	NA			+23.2	5.9	8.9	100	965	991	1028	NR	136	NA	NA	NA	NA	NA	NA
MEAN				-10.5	-1.2	+ 9.9														
Abs MIN.				-21.0						936		1013								
% DAYS		100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	60	30	57	48	7

Appendix IF SURVEY by Ted Atkins

Survey work planned for Brabant Island was limited to producing large scale maps of particular snowfree areas as needed to support the geology, botany, terrestrial invertebrate and ornithology projects.

Basic survey equipment was drawn on loan from the Hydrographic Department of the Navy and the Royal Engineers. (A Golf II Laser Rangefinder was also generously lent to the expedition to facilite plane table mapping, but unfortunately the battery charging arrangements became defective).

Atkins and Evans were each given 2 weeks pre-expedition training at the School of Military Survey. Despite neither having any previous survey experience, this proved quite adequate. Hughes had been trained in surveying for the artillery.

There was an existing map of Brabant Island (the Directorate of Overseas Surveys Sheet SQ 19-20/4 in Series BAS 250) at 1/250,000 with 100 meter (c330ft) contour interval. This had been prepared in 1974, by photogrammetry, from aerial photographs taken by Hunting Aerosurveys in 1956/57. Despite only two local ground control points being occupied (on Lagrange Peak and Hunt Island) this map was found to be remarkably accurate, except for a few heights, as noted below. Photostatic enlargements of the DOS map to 1/33,000 were used for most scientific mapping, with details of snowfree areas etc being sketched in, using the 9 inch square Hunting Aerosurvey prints kindly provided to us by DOS.

While climbing in the Solvay Mountains, Atkins found several heighting errors. The most obvious of these was Galen Peak: according to the map, this mountain should have been the third highest on the island, but it proved to be about 1000ft lower than shown, and two nearby peaks were higher than Galen Peak. Several other errors of 50-500 ft were discovered in the Solvays, plus two isolated errors at "Per Ardua" peak and between Eindhoven Hill and Laennec Glacier. In the Solvays we recorded altimeter height differences between the camp site and each summit, and barometric pressures at the Solvay camp (by Thommen mountaineering altimeter) were recorded daily at 1000 and 2000, for later correlation with the simultaneous meteorological records at sea level. After check-calibration of the two altimeters in Britain, the resultant heighting information will be passed to DOS.

The following local topographic maps were prepared during the expedition:

A. Metchnikoff Point was mapped at 1/2000 with 50 meter contour intervals. Atkins completed the map in about a week in January 84 using a plane table and telescopic alidade. Plane tabling proved very simple, with the advantage that results required no complicated equipment and were not subject to plotting errors. The details of the coastline and stacks were interpolated using the Hunting Aerosurveys photographs.

B. "Astrolabe Point was sketch-mapped at 1/1500 with 10 meter contour intervals. Atkins completed the map in two 2-day periods helped by Hankinson in March and by Ringe in October using a Silva sighting compass and a climbing rope to measure the baseline. Heighting was by Thommen altimeter. The resultant accuracy was adequate for the purpose required.

C. At "Cairn Point" in December 84, Ringe and Spottiswood spent two days preparing a sketch map. They also established six stations using the Kern theodolite and marked the stations for subsequent aerial photography from 5000ft for a large scale photogrammetric geological map. The events of March 85 prevented Endurance's Wasps undertaking the photography.

D. Minot Point was mapped at 1/1000 with 10 meter contour intervals in March 85. Hughes used plane-table techniques, (allowing direct mapping of botanical and geological features by Moffat & Williams). Heights were obtained by Hilger Watts level and telescopic alidade.

E. "Welcome Point" was mapped by Allen and Flint in February 1985 to support geomorphology and geology studies.

F. Cape Roux East was sketch-mapped by Ringe in April & September 84, by pacing with Silva Compass and Thommen Altimeter. Various other areas were sketched by cruder visual judgement.

Evans recorded the extent of sea ice off the north & west coasts from April to October inclusive. No extensive floes were seen, though the sea was occasionally covered with broken ice to the horizon. Ice cover in this area has seldom been recorded in winter, so these records may be of some interest, although this was the third successive winter with unusually little cover along the west coast of the Peninsula. The records will be collated and passed to the Hydrographer and BAS for reference.

The measurement of iceberg drifts as an indicator of currents and tidal streams was a project generated by the expedition. A Golf II Laser Rangefinder system had been very generously provided on free loan by Measurement Devices Ltd and Lasergage Ltd: this enabled rapid direct plotting on a single plane-table which promised a high frequency of position. Metchnikoff was an excellent site, although the 9km limit of range precluded plotting the bergs far out in the Bellingshausen Sea. Unfortunately the rangefinder tripod, after being landed with the winter party, was lost under snow until the December thaws, and the rangefinder battery charging unit capacitor failed, so no data were obtained. Since outside interest had been negligible, this failure was not serious, but it was disappointing.

The tidegauge was installed in the boat haven at Metchnikoff Point in March 1984. Records were obtained for 3 days before the sensor was moved by heavy seas. The equipment was moved around the cove to a second site, but after another storm an even more sheltered site was found where boulders had fallen into the sea. In mid-March the third set of records was started, but some days were lost after the team changeover due to unfamiliarity with the equipment; then further problems with sensor movement and air leaks developed. Attempts to set the equipment to work again in May were nugatory as the moisture in the sensing tube was then frozen. Although no complete 18 day record had been obtained, the results had allowed some comparison with the predictions for Nansen Island, the nearest site quoted. The timings corresponded quite closely; however the range at Metchnikoff Point was considerably greater, as might be expected, with Nansen Island in the comparative seclusion of the Gerlache Strait. Observations later in winter and spring indicated a yet greater range at Metchnikoff Point. Messages sent back in winter did not reach Britain, so the necessary replacement equipment was not brought out to set the Tidegauge to work during the Second Summer. This failure over the 3 seasons was most unfortunate as the tidal conditions were found to differ from predictions at "Dayglo Point" (in the Gerlache Strait) as well as in the Bellingshausen Sea at Metchnikoff Point.

Draft amendments to the Antarctic Pilot coverage of Brabant Island are being submitted to the Hydrographer of the Navy. These are all minor, comprising information on boat landing sites, and inshore dangers, plus reference to the Refuge Hut left behind at "Dayglo Point".

The paucity of data obtained for these projects was rather disappointing, however external interest was minimal, so expectations have not been dashed. It must be admitted that the two failures were partly due to inadequate homework and to lack of attention to detail on passage out and in the field, as well as to the loss of communications through the Falklands.

Appendix IH PARASITES by John Kimbrey & John Spottiswood

Several projects for collection of parasite samples had been arranged. To spread the load, fieldwork was undertaken by the various team members covering the host species.

These projects were all accorded low priorities, although parasitology is one of the areas where knowledge of the Antarctic is still scanty. No permits were sought to kill hosts, but samples were taken on an opportunity basis, when fish or Crabeater Seals were collected for other projects, and when dead or badly-injured seals or birds were found.

The collection of parasites was a cold, dirty, laborious and generally unpleasant task which induced little enthusiasm in any of us. It must be admitted that the paucity of samples collected reflects this. Nevertheless Furse, Hill, Kimbrey, Oakley & Spottiswood each spent several days cutting up penguins, fish and seals and we hope the specimens will prove useful. Because both the Second Summer parties needed to be very mobile to cover the remainder of the island, the parasite projects were abandonned at the end of the Winter phase. The notes below cover the various projects on parasites. All material collected is being passed to the specialists concerned.

Seals Project 4, and Birds Project 8. (Dr Andersen is working on a revision of the cestode genus tetrobothriidae).
Three Crabeater Seals: Stomachs & guts were examined but no parasites found.
One Weddell Seal: Samples of cestodes, plus nematodes were collected from stomach and gut.
Three Chinstrap Penguins: Complete intestines were preserved without dissection.

Birds Project 7. (Endo parasites). No samples were obtained, because precedence was give to Dr Anderson for gut samples from the very few Chinstrap Penguins obtained. No other freshly dead birds were found before the scavenging species had opened them.

Birds Project 9. Nest material of Kelp Gulls, Sheathbills and Chinstrap Penguins was examined, and visible organisms extracted for BAS as part of the overall terrestrial invertebrate work.

Terrestrial Invertebrates Projects I & II. While collecting arthropods at Metchnikoff Point, free living ticks Ixodes Uriae were found under stones near two Chinstrap Penguin colonies. Project II was arranged to obtain further information during the Second Summer.

Seals Project 8, & Birds Project 6. (Ectoparasites for B.M. collections).
No ectoparasites were found on three Crabeater Seals searched. One tick-like creature was collected from the anus of a dead Weddell Seal, plus skin from the anus and "armpit" of one dead Fur Seal.
No ectoparasites were found on 2 dead Chinstrap Penguins searched. Plans to obtain ectoparasites from live Wilsons Storm Petrels using Drione Powder were shelved, (to reduce disturbance at the very few nests around base camp that were accessible for study.)

Marine Biology Project 4 (Fish Parasites). Kimbrey examined 15 Antarctic Cod (n. neglecta): no ectoparasites were found but the visceral cavities were heavily infested with nematodes: samples of these nematodes and of complete organs were preserved. Kimbrey also externally examined 4 icefish (c.aceratus) before preserving the fish whole. A fluke-like ectoparasite nearly 2 inches long was found near one specimen's eye, and some other smaller taxa around the pectoral fins, and these samples were preserved. Clements collected fish specimens for BAS, incidentally including some parasites.

During preparations we had helpful advice from Martin White at BAS, the Marine Biology Laboratory at Plymouth and others. Two trammel nets were purchased, and tried out at Dundonnel (catching almost as many crabs, and hedgehogs as fish!). Shakespeares donated several rods and reels.

Initial attempts to catch fish by rod and line at Metchnikoff Point were fruitless, but Crabeater meat bait was tried and succeeded in catching the first fish in July. Rod and line was proved quite successful thereafter, with limpets and other baits, but artificial lures were never successful. The Second Summer boat party also caught fish on rod and line at Metchnikoff Point. The Trammel nets were used successfully off Metchnikoff Point in December 84 and in January 85. The Second Summer Boat Party used nets successfully there and also off Driencourt & Minot Points and in Chriguano Bay before one net was lost when dragged into deepwater by sea-ice, preventing its use up the east coast. The boat party also caught some fish at Metchnikoff Point in a fish trap made of an old fishing net wrapped around a dead Fur Seal's head. Altogether rod and line was the easiest and most entertaining method of fishing, though catches were all of the commonest species (n.neglecta). Spinning was not attempted.

The total of fish caught was modest (none in the First Summer, 38 in Winter and 48 in the Second Summer). Most were "Antarctic Cod" notothenia neglecta (of two distinct sizes, differing in colour); but several ugly, pallid icefish (Chaenocephalus aceratus) were caught in trammel nets. In the Second Summer a few small orange fish were caught: these await identification, but may have been the smaller size-class of n.neglecta some of which had been caught in winter.

Whole specimens have been preserved to satisfy various requirements. Basic measurements and Fin Ray Counts were taken for nearly all fish caught. 25 specimens were dissected in the Winter and about 30 in the Second summer, providing a number of specimens of gut contents, otoliths and parasites. However in a tent-based expedition like this it was probably a mistake to take on a project using preservatives that had temperature limits within the environmental range: for this and other reasons, the fish muscle project was not achieved.

The fishing projects were of low priority, as some work had already been done in the Palmer Archipelago including Dallman Bay. However they were worthwhile, providing some results, much interest during the expedition, and also some good variety on the menu.

Much work has been carried out on Antarctic plankton. During preparations it was clear that external interest was insufficient to justify any fieldwork, which would anyway have interfered with other expedition activities.

We had hoped that some simple statistical annual cycle work on the widely distributed Antarctic limpets would be worthwhile, but no bids were received. The three projects on marine invertebrates were very minor, and only a few display samples were obtained. In the event a variety of marine algae were present, both in situ and as flotsam: apart from limpets and some small crustacea the only invertebrates observed were a very few starfish and jellyfish, plus some barnacles on 30ft Kelp stems cast up as flotsam. Flint also found some elongated 8-10 cm bivalve shells in glacial till at Chiriguano Bay.

Appendix IK

TERRESTRIAL INVERTEBRATES

by Jonathan Morris
Jon Beattie
Stuart Martin

Collection of invertebrates from the simple Antarctic terrestrial ecosystem can be undertaken by unqualified amateurs, provided they are prepared to do a lot of homework beforehand, and to persevere meticulously with the rather laborious fieldwork. Therefore projects were actively sought. Collections have been made up and down the Antarctic Peninsula but knowledge of the distribution of some orders is still remarkably scant, and Brabant Island was a complete blank on the map for all orders. Although the very limited terrestrial fauna varies little through the maritime Antarctic, further definition of the variations is required and Brabant Island appeared to be in the border area between the ranges of some arthropod species. Researchers in several invertebrate orders also have difficulty in obtaining specimens from the Antarctic away from permanently manned bases, as BAS scientists are fully occupied on their own projects. Consequently approaches to Universities etc elicited several keen responses and a variety of collecting projects were arranged. In addition simple pilot studies on the annual cycles and populations of some of the commoner and more conspicuous arthropod species were set up with BAS.

Each project involved collections from widespread sites on the island. A variety of habitats were also to be sampled, including: moss turf; wet moss carpet; grass roots; lichens; algae; ahumic "soil" with and without organic fouling by penguins (and other birds); freshwater.

The larger arthropods were searched for by eye, collected using a brush, or a "Pooter" or a knife, and preserved in alcohol. For Tardigrada & Rotifera samples of substrates were just collected and dried. Similarly for the Testate Amoebae, habitat samples were simply collected and preserved in Bouins Fixative, without any examination or extraction process. Nematode collections involved a lengthy extraction process using trays flooded with water and concentration of (invisible) organisms by successive syphoning before preservation in a solution of Formalin and Acetic Acid. This process proved difficult in a tent: a special "bugs tent" was set up during the First summer, but extractions of nematodes were limited in the two later phases.

Smaller arthropods, together with other organisms virtually invisible to the naked eye were extracted from habitat samples using funnel elements provided by York University. Instead of the large and elaborate apparatus, with electric heating above and cooling below, each fan-assisted, a simple "dalek" arrangement was made from a plastic dustbin with 9 funnel elements, heated by electric light bulbs or a Tilly Lamp above, and cooled below by melting ice. Live organisms moved through the habitat sample in each funnel downward away from the heat, until falling through the gauze, to be collected in the sample bottle of ethanol attached to the bottom of the funnel and immersed in iced water. The First Summer samples indicated that periods of extraction by this means needed to be longer than the 2 days employed. By the time this was realised, much of the winter extracting had already been completed, but longer periods were used thereafter whenever practical, and it is hoped that more complete and representative samples will have resulted. This "dalek" extractor was a simple device and is suitable for mobile expeditions, provided longer extraction times are shown to be effective.

Collections were made from the following sites:

First Summer: Metchnikoff Point;"Cairn Point" and "Astrolabe Point" (approx 350 samples).
Winter: Metchnikoff Point; "Skua Bluff"; "Cairn Point" & "Astrolabe Point".
Second Summer: Metchnikoff and Minot Points; Chiriguano Bay; Koch Glacier; "Wellcome Point". "Dayglo Point" and Pinel Point.

Population studies of conspicuous arthropods were undertaken at Metchnikoff Point, where three representative sample plots were taped out by Morris and collections made at about monthly intervals through the year.

Examination and identification/analysis of material collected will take some time, and the loss of the First Summer samples for several months in transit delayed initial examinations. Nevertheless, from the observed occurrence of larger arthropods in the field it is clear that a fairly rich invertebrate fauna exists on several of the more richly vegetated northwestern points such as Metchnikoff, "Astrolabe" and Minot Points. The east coast is in contract biologically sparse, although springtails, a few larvae of the wingless midge and several species of mite were found in the area around Chiriguano Bay.

During arthropod population studies in the winter, mite-like creatures up to about 9mm long were found free-living in a dormant state among debris under stones below Chinstrap colonies. From increasingly detailed descriptions radioed back, BAS tentatively attributed these to the obscure family Opiliocaridae, known only from various sites around the Indian Ocean, from Madagascar to New Zealand, and raising hopes that the expedition had discovered a new species (and family) very significant to the history of the Antarctic. However after the lost First Summer samples were recovered, examination revealed adults, larvae and eggs of the Tick Ixodes uriae, which is known from about 47 sites in both the Arctic and Antarctic. It appears to be parasitic on birds, but little is known of its life history: so the expedition's observations will be of interest, though not so dramatically exciting as we came to believe in mid-winter.

Appendix 1L

BOTANY

By Bill Hankinson
Peter Stuttard
Stuart Martin
Alistair Moffat

Botanical sampling and surveys require greater knowledge than does collecting invertebrates, involving differentiation of species, subjective description of habitats and judicial selection of suitable sites and methods for more detailed work. Fortunately team members with relevant training and/or abilities were available in each party.

Vegetation was generally sparse, particularly on the east and south coasts where no vascular plants were found. However, on one or two of the northwest and west coast points (notably Minot Point, "Astrolabe Point" and Claude Point), unexpectedly rich stands of mosses occurred together with both the two Antarctic species of flowering plants in surprising profusion. No well developed mossbanks were found (either live or moribund) and only very small areas of poorly developed moss carpet. Away from the few rich coastal points vegetation was mainly restricted to lichens, with some small moss cushions. Even on the few exposed outcrops there was scarcely any vegetation inland; nevertheless lichens were found at two east side sites at 3000 ft.

Collections of mosses and substrates, for analysis of mineral contents, were made in each phase. Collections of likely habitats for microfungi (including species predacious on nematodes) were made in each season, covering Skua & Kelp Gull nests, dead chicks, moulted sealskin, penguin guano and other attractive material. These collections will simply be passed to the relevant researchers.

The only toadstool-type macrofungi found were some small clusters of brown Agarics collected from a grassward at Metchnikoff Point in April and January and from various moss associations on Minot Point in February.

The main aim was to determine the range of plants species present, and their distribution around the island by collection and preservation of specimens for subsequent identification. These samples will be lodged in the herbarium at the Institute of Terrestrial Ecology at Edinburgh, plus some possibly held by BAS at Cambridge. Representative collections, covering mosses, lichens, algae (and liverworts?) were made at the following sites:

First Summer. Cape Roux East, "Cairn Point", "Skua Bluff", Metchnikoff Point, "Ledge Point", "Usnea Point", Claude Point and "Astrolabe Point".

Winter. Metchnikoff Point and "Astrolabe Point".

Second Summer. Cape Roux East, Metchnikoff Point, "Easter Island", Claude Point, Drlencourt Point, Minot Point, Chirlguano Bay, Avicenna Bay, Pinel Point (1000 and 3300ft), Hunt Island, and near Mitchell Point.

Moffat in the Second Summer Boat Party was able to make particularly widespread observations. The only botanically rich area not visited was Humann Point.

In all three seasons more detailed observations were made in particular areas.

In the First Summer, (using 1:2000 maps produced by Atkins), Hankinson prepared vegetation maps of Metchnikoff and "Astrolabe" Points. He spent 2 weeks at the latter point in March, making detailed records of sociations in several areas where Antarctic Hair Grass and Pearlwort were remarkably rich with both in flower and both setting seed. A rich substrate of decayed limpet shells was present in many of these sites. (Nearby at Claude Point, both were found in flower at about 900ft, apparently the highest record of Pearlwort in the Antarctic).

In the Winter phase Stuttard measured the die-back of grass roots in Autumn at Metchnikoff Point (and the Spring regeneration at "Astrolabe Point"). At "Astrolabe Point", from mid October to the end of November, he recorded detailed observations of plant species and sociations, together with details of progressive exposure as the snow melted. At the same time he and Oakley recorded soil and vegetation temperatures, and micrometeorological data. Subsequent analysis is required, but the dependance of the two flowering plants on total sunshine was evident in the field, both being confined to north-facing slopes, and being replaced by mosses under the more persistent snow banks. The observations at "Astrolabe Point" will be written up and provided to BAS for reference.

In the Second Summer, Moffat made a detailed study of the flora at Minot Point in February and March. This was by far the richest area on the island: a total of 37 species were identified with luxuriant stands of mosses and both flowering plants on the many north facing terraces. Minot Point appeared remarkably sheltered, with virtually no wind. A quantitative ecological survey was carried out using the classifications developed by Dr.RIL Smith for Signy Island, and referred to the 1:2000 map produced by Hughes. Moffat intends to produce a paper for publication, comparing this site with other areas in the Maritime Antarctic, and Dr.RIL Smith of BAS has offered to help and advise on this.

Appendix IM

SEALS

by Dick Worrall
Francois de Gerlache & John Spottiswood
Martin Hughes & Richard Clements

Seal counts were made regularly at Metchnikoff Point and Seals were counted at all other coastal areas visited to give an indication of the local populations and distribution. Observations on moult, breeding and social behaviour were also recorded.

The one high priority project was collection of Crabeater Seals stomach contents through the winter, for statistical analysis, as part of the BAS contribution to the International BIOMASS Project. (Seals' digestion is rapid, and sampling by BAS in summer had obtained little material: it was expected that larger food samples would be obtained as the animals built up reserves for the breeding season). Unfortunately there was little packice, bringing very few Crabeaters to Metchnikoff Point, and the three seals shot in May and June contained nothing in their stomachs.

Some samples of skulls and skeletons were obtained from these three Crabeaters and from Fur and Weddell Seals found dead. Cleaning and packing of the skeletons proved very difficult,with no sheltered rock pools available to exploit the scavenging crustracea.

The three Crabeaters were dissected looking for gut tapeworms, but all three were remarkably free of infestation. In contrast several endoparasites were collected from one dead Weddell.

The blubber sampling was planned for late in the Winter, but no more Crabeaters hauled out then, so this low priority project was abandonned. Collections of moulted hair or skin were made from 3 species for examination of microfungi.

The seal counts and concurrent observations will be collated and a report provided to BAS for reference. No Ross Seals were sighted but the other 5 Antarctic species were all recorded.

Elephant Seals. (Mirounga leonina). At Metchnikoff Point at least one was seen each month, with maxima of 6 in summer. One suckling pup was seen. A few individuals were seen at three other points. Although only recently recorded this far south, Elephant Seals were already established at Palmer Station.

Weddell Seal. (Leptonychotes weddelli). Present on suitable beaches all round the island and occasionally on icefloes. A time-series analysis will be made of the widely fluctuating counts at Metchnikoff Point, where the largest population on the island reached a maximum of 60 in January. Surprisingly few pups were seen.

Crabeater Seal. (Lobodon carcinophagnus). Only a few were seen in the northwest, with none in March and April. This scarcity was attributed to the lack of icefloes this winter. Breeding behaviour was observed in October but no pups were seen. More were seen in summer on icefloes around the east coast particularly in Gerlache Strait, Freud Passage and Bouquet Bay.

Leopard Seal. (Hydrurga leptonyx). A few were seen in winter associated with sea ice. In summer few were seen on the north and west coasts, but more off the south and east coasts particularly in Freud Passage. No pups were seen, nor breeding behaviour observed.

Fur Seals. (Arctocephalus gazella). In each Summer a large influx occurred. From early January Fur Seals (most, possibly all, males) were present on all beaches visited. The great majority were around the northwest coast, with maxima of 950 and c700 at Metchnikoff Point, in February 84 and 85 respectively. A flipper-banded male and several pale sandy individuals suggested emigration from South Georgia, where a "Krill famine" occurred in summer 1983/84. Numbers dwindled through the winter, with none seen in November, before the next summer influx began in December. No pupping nor breeding behaviour was seen, although some very small animals were believed to be moulted pups. The NW coast must be a potential site for further southward expansion of their breeding range.

WHALES

Disappointingly few whales were sighted from the island. However they were seen more frequently by the boat parties in each summer, and from Endurance one or two were usually sighted each day, with a maximum of 12 Humpbacks in the Gerlache Strait one January day. Apart from a very few old bones at storm beach level on Metchnikoff Point, no skulls or skeletons were found ashore, and there was no evidence of any past whaling activities.

Humpbacked Whales. (Megaptera novae-angliae). This was the most commonly identified, and most unidentified sightings were probably of this species. One or two were occasionally seen off all parts of the coast, but most commonly in the Gerlache Strait. The latest sighting was in mid March; a couple visited Metchnikoff Point in August but no more were seen before November.

Rorquals. Some seen in Dallman Bay and the Gerlache Strait in the Second Summer were tentatively identified as Sei Whales (Balaenoptera borealis) but this cannot be confirmed.

Southern Right Whale. (Eubalaena glacialis). Two individuals were sighted in the Second Summer. This species appears to be recovering and possibly extending its range southward.

by Chris Furse
Martin Hughes
Graham Greenway

Our primary aim was a simple breeding census: most (but not all) of the coastal areas were covered. Breeding populations were generally sparse even on suitable areas, but the variety of species was greater than expected.

Information was obtained on the timing of events through the full annual cycles of resident species. Breeding dates of several species were earlier in 84/85 than 83/84: this should provide interesting comparisons, particularly in conjunction with the different changes recorded at Arctowski and Palmer Base and with data from Signy Island etc. A multivariate factor analysis is now planned using the expeditions PC Computer, provided relevant data from other sites can be obtained.

Records were kept of feeding, flocking and breeding habits through the year. The position of our winter basecamp at Metchnikoff Point provided better opportunities for seawatches through the winter than do the sheltered bay situations of most permanent bases. Large coasting movements of several petrel species were recorded. Recoveries were made of four Gentoo Penguins, two Chinstrap Penguins and one Sheathbill marked by the USARP.

Some material was collected for several minor projects (Numbers 5,8,9 and 10). This is simply being passed to the relevant specialists.

Preliminary breeding census results will be passed to BAS for their forthcoming publication on breeding birds of the Peninsula region; detailed maps and supporting notes will be provided later to BAS, for reference. A general paper on the birds of Brabant Island in relation to the surrounding region will be submitted for publication. The following outlines the observed status of species.

Blue-eyed Shag. P.atriceps. Localised breeder in small numbers. Large winter flocks.
Emperor Penguin. A.forsteri. (The only Antarctic breeding species not recorded).
Chinstrap Penguin. P.antarcticus. Numerous breeder at three sites. Absent in winter.
Gentoo Penguin. P.papua. Non breeders. Reverse migrants in Autumn. Occasional in winter.
Adelie Penguin. P.adeliae. Occasional non breeding visitors, in summer only.
Macaroni Penguin E.chrysolophus. Very few non breeding visitors, in summer only.
Rockhopper Penguin. E.chrysocome. One vagrant ashore in December.

Light-mantled Sooty Albatross. P.palpebrata. (Only certain record 50 miles offshore).
Black-browed Albatross. D.melanophris. Regular offshore (occasionally inshore) summer only.
Grey-headed Albatross. D.chrysostoma. Several "probable" sightings offshore in summer.
Giant Petrel. M.giganteus. Regular in small numbers throughout year,no breeding colonies.

Antarctic Fulmar. F.glacialoides. Localised breeder. Frequently seen inshore in summer, but only rarely in winter.
Cape Pigeon. D. capensis. Patchy breeder in north & west. Scarce in midwinter.
Antarctic Petrel. T.antarctica. Absent summer. Occasional winter,more regular in Spring.
Snow Petrel. P. nivea. Widespread probable breeder. Rare late summer,numerous in winter.

Antarctic Prion. P.desolata. Three wings found in Skua territories, at 3 different sites. One "probable" flock inshore in December.
Blue Petrel. H.caerulia. (Only certain records 90 miles offshore in summer but the December flock possibly this species).
Black-bellied Storm Petrel. F.tropica. Scarce summer visitor, breeding strongly suspected in several areas.
Wilsons Storm Petrel. O.oceanicus. Widespread numerous breeder. Absent in winter.

Brown Sku. C.s.lonnbergi. Scarce summer visitor, a very few bred. Absent in winter.
South Polar Skua. C.s.maccormicki. Patchy but widespread breeder. Absent in winter.

Kelp Gull. L.dominicanus. Widespread resident in small numbers. Autumn migrant.

Antarctic Tern. S.vittata. Widespread breeder in small numbers. Roosting flocks throughout winter and one large non breeding flock in summer.
Arctic Tern. S.macrura. Several "probable" sightings in spring and summer.

Sheathbill. C.alba. Very localised breeder. Similar winter population widely dispersed.

Physiological studies of man in the cold are common. What makes this expedition's work unique is the fact that all were living in tents, unheated for most of the day and night, and all spent over nine months doing so. Investigations were aimed first at determining whether man's fluid balance showed acclimatisation, if there was adequate cold stimulus. Secondly, other general features such as weight, fat thicknesses, fitness were monitored, and thirdly the microclimatology of clothing, tents and other shelters was investigated. This work was carried out as a major project of the Institute of Naval Medicine, with the advice and help of staff there (particularly Surgeon Captain Golden Royal Navy) and of Professor Rainer Goldsmith, of SCAR.

Equipment consisted of a Hawksley micro-haematocrit centrifuge, a Christ hand centrifuge (for spinning down plasma samples), and venesection kit, scales, skinfold callpers, a Grant CR50 45-channel datalogger, Grant DB9U 9-channel intermittent chart recorder, 26 Grant thermistors, an Aga Thermopoint 80 infra-red temperature 'gun', and humidity sensors developed at INM. An Oxford Scientific Oxylog recorder failed on the journey down, but other equipment worked very well, particularly that made by Grant Instruments.

The detailed results have yet to be fully analysed, a task which may take several years even with IBM's microcomputer. However, it is clear already that the members of the winter team are the first subjects ever to have shown unequivocal evidence of major acclimatisation to the cold. They were assaulted with syringes and needles every four weeks until August and wired up for an average of 60 hours to record skin and clothing temperatures. They collected their urine over 24 hour periods and logged activities, perception of warmth, comfort and thirst, and fluid intake at regular intervals over the winter months. All also attended INM before and after the expedition, for laboratory investigations.

It has been reported that men exercising in the cold can become very dehydrated within days, leading to thicker blood, which in turn makes frostbite more likely. (During the day they sweat out water; drinking large quantities does not suffice to replace it, because when cold overnight the body pushes out more water in the urine). In May most of the team were waking at least once a night to pass large volumes of urine, and blood samples showed typical dehydration. This night-time cold diuresis had almost disappeared by July; by then blood PCV's had returned to normal, demonstrating acclimatisation. Skin temperatures and micrometeorological data confirmed that there was a marked cold stimulus throughout this period. Tents were warm with the cooking stove alight, but became cold at night (5 degrees C above ambient).

The story is but partially unfolded: a large amount of data, blood and urine samples are being analysed in UK, at RNH Haslar, and then numerical analysis will be carried out on the IBM PC. A series of papers is planned for submission over the next few years in order to present the results. Undoubtedly more interesting and useful facts will emerge, thanks to the long-suffering experimental subjects.

Appendix 1Q

PSYCHOLOGY AND SOCIOLOGY

By Bill Hankinson
Jonathan Morris
Peter Stuttard & Chris Furse

Isolation of a small group of men, living in hard, cold conditions and under physical stress appeared to offer opportunities for studies. Approaches to psychologists and personnel research establishments in all three Services produced negative responses. However Hankinson found several very interested outside researchers, while Morris and Furse each generated their own studies. The following studies were undertaken.

1. Effects of Cold Stress. This was planned to correlate with a long term study at Aberdeen University on the effect of cold stress on tasks that do not require a short term memory. Unfortunately the Reaction Tester was provided with a battery pack which needed boosting at low temperatures and was unusable after the generator failed. The few results obtained suggested that cold stress affected the instrument more than the men. Permance was also badly reduced by poor visibility of the Odd/Even numbers when in bright daylight.

2. Changes in Circadian Rhythms. This was planned to correlate with a study of sleep patterns (& quality) in progress for several years. It was anticipated that living in tents, without the regular timetables of a BAS base hut, in the abnormal light/dark cycles of Antarctic summer and winter, would provide ideal conditions to assess free-running patterns. All team members completed sleep logs daily including all sleeps. (Name, Date, Sleep time, duration and quality, and whether self waking or not, with notes on influential external factors. The 5482 man-nights covered provided over 38,000 bits of raw data which was passed to Dr Folkard for analysis. However our subjective impression was that sleep patterns (and quality) were not free-running, being dominated by the weather, and by the daily travelling plans, except for one short period in basecamp before midwinter, when many team members began working late and waking late.

3. Pleasures/Miseries/Cravings/Dreads. Furse wrote a questionnaire which was completed periodically by all team members, ranking their top ten pleasures, & top ten miseries etc. After pilot trials in the First Summer this study concentrated on the Winter Party who completed the questionnaire 9 times, including "before and after" and one pair in basecamp in July as a consistency check. It is planned to analyse the results on the expedition's IBM PC computer. Examination of the results already suggests definite group trends over the 9 months, (some ramp changes, some temporary ones, and some end-effects) and also interesting comparisons between categories: eg marital status, age group, educational qualifications, practical skills, individual tasks, and exploratory subgroups).
Ranked top overall were:

Pleasures - Warm sleeping bag.
Miseries - Cold damp nights and insecure tent equal.
Cravings - Female company, sex and family affection equal.
Dreads - Someone (else) killed.

Furse will canvass for a professional psychologist interested in collaborating on the analysis.

4. Control of Circadian Rhythms by Melatonin. Recent research on sheep indicates that melatonin produced by the pineal gland has a controlling effect on body rhythms. The next stage was servicemen, and double-blind tests were conducted in the First Summer, the sleep logs providing the supporting data. This trial was discontinued in the Winter phase, due to the doctor's professional unease at the ethics of using this unregistered drug.

5. Stress-related Health. Short general questionnaires were completed by team members. Morris believes that the results show definite trends, and will be assessing their significance.

6. Social Interactions Within an Isolated Group. This expedition provided an excellent opportunity for such a study. Morris devised a questionnaire and conducted a pilot trial in the First Summer. He completed the questionnaire himself in private interviews conducted periodically. The Winter Team all agreed to this study, with Stuttard voted in as the interviewer. The completed questionnaires have been passed to Morris, who will analyse them, with supervision from the Consultant in Psychology at Barts Hospital. After producing group sociograms, he will test the significance of various factors likely to influence the social structure. Use of codeletters will preserve anonymity (although team members expect to be able to identify everyone!) This project interrelates with Project No.3, and some cross-analysis may be undertaken.

MFC Antarctic pyramid tent being dug out of a drift.

Physiology. Kimbreys turn with the rucksack, and the unmentionable. Oakley taking humidity readings in clothing.

Circumnavigation. Boats in scattered brash off the East coast of Brabant Island.

Appendix 2A

RADIO COMMUNICATIONS.

by Jeff Hill
Jim Lumsden
& Simon Allen

Purpose. The main aim was to pass information to and from the expedition rearlink in Britain at intervals of about a week. The secondary aim was to have contact between separate parties while on the island.

Equipment. Neither the team nor individual team members could obtain any radios on loan within the Services. Hill approached two manufacturers who generously lent us sets.

Plessey Electronic Systems Ltd lent the expedition three PRC320 "Clansman" HF Transceiver sets. These are the main British Army manpack set: they proved utterly reliable throughout the 15 months, despite being subjected to low temperatures, drifting, high humidity in tents, rain, sea-spray, and rough useage. The comments below refer to these sets, which provided our only external communication and our main internal one.

Whip and end-fed aerials were taken, but seldom used. Dipoles cut to length proved most effective and convenient using a mast in basecamp, but skisticks or bamboo marker wands proved satisfactory when travelling. Headsets and handsets were both used.

In basecamp 3 amp batteries were charged with a portable engine-driven generator: in the Second Summer Solar Panels from the SAS proved very effective. When travelling, 1 amp batteries were used with a hand charger: this proved very reliable, although ½-1½ hours cranking was required prior to schedules.

Just before departing Racal Telectronics Ltd were approached for VHF "walkie talkies", and lent us three old PRM 4160T sets. These line-of-sight sets were occasionally used between basecamp and local parties, and between the skidoo team and route-finding ski parties. Rechargeable Ni-Cd batteries proved satisfactory, but when the generator failed, packs of expendable batteries were less effective, and rather cumbersome.

Spare headsets and handsets were held in basecamp. The main sets needed no repairs, but discontinuity problems occurred sometimes in the handsets, coaxial antennae cables aerials and the various associated connectors. Losses of communications for over 2 weeks in November and February were initially attributed to "blind spots" but eventually found to be due to such discontinuities.

Deployment of HF Sets. The difficulties of overland travel were underestimated in the First Summer. Because the sets were heavy, one was left at "Dayglo Point" in January and another at "Astrolabe Point" in March. Consequently, although one was normally available for external communications, the Winter Party did not have two sets for internal communication between parties until early December 84. The Second Summer made better use of the sets, with the Southern Party having one and the Boat Party two (one left at Metchnikoff Point). Intercommunication between separate parties was sorely missed on many occasions in the first two phases, and occasionally also in the last phase.

Frequency. It was soon found that changing frequencies was more nuisance than it was worth. The BAS common frequency of 4067KHz (set as 4069KHz on the Clansmans) proved best for external communication, and internal schedules could be arranged in clear periods.

External Contacts. Our main contact was with Faraday Base; the base operators were very helpful and Mark became an unknown friend over the long winter. We also talked quite often with Mike at Palmer Station and Steve at Signy Island. Only very occasionally was 2 way communications with the Falklands possible, but we were always able to hear Station VPC clearly from Stanley. The following places were contacted, (in order of useage):

BAS Faraday Base (87 miles). Good 2-way comms almost always.
BAS Signy Island Base (552 miles). Usually good reception; transmission over 50% good.
USARP Palmer Station (66 miles). Good 2-way comms almost always.
BAS Rothera Base (290 miles). Usually reasonable reception, transmission nearly 50% good.
Falklands Station VPC (886 miles). Usually good reception, transmission very seldom successful.
Bird Island, South Georgia (c1200 miles). Occasional reasonable reception.
HMS Endurance (1-300 miles). 2-way comms often good, but erratic.
Polish Arctowski Base (c160 miles). Reasonable 2-way comms. several times.
Chilean Rodolfo Marsh Base (c80 miles). Good 2-way comms a couple of times.
BAS Halley Bay (c800 miles). Reception often reasonable, transmission successful once.
RRS Bransfield, RV Hero, RRS John Biscoe, RRS Discovery, MV Polar Duke and RFA Olna were occasionally contacted when in the vicinity and we talked once with MS Lindblad Explorer off South Georgia and once with a Russian Base somewhere.
The expedition was not able to speak with the naval helicopters which used VHF, but did talk with the BAS Twin Otter during Waghorn's rescue, it being equipped to contact BAS field parties on 4067 KHz.

Links with Britain. BAS had agreed to pass one 100 word bulletin per week. These were radioed to Faraday, who transmitted them in facsimile by satellite to BAS Cambridge, who in turn sent them to DNPTS by post or telex. A distribution "tree" (to Next of Kin, the Sunday Telegraph and the local PR Officer) had been pre-arranged. However DNPTS were short-staffed, so these messages were simply passed to the nominated Expedition Rearlink Officer to distribute: with hindsight it would have been better to arrange forwarding direct from BAS Cambridge to the Expedition Rearlink. Otherwise this arrangement worked very well except for a 6 week period in midwinter when BAS forwarded bulletins instead to SNOFI, who filed them (!). Short outward messages were also allowed by this route, and a few longer scientific messages back, however longer logistic or personal messages were not allowed.

In April Palmer Station agreed to send 250 word messages back by radio to the USA, and then by post to Britain. However after sending 6 messages, Palmer's workload increased and after May only one (personal) message went this way, until a resumption in the Second Summer.

In June Lumsden arranged a further two-way link through Station VPC in Stanley, after CBFFI had expressed interest. During the remaining 6 months of the winter each team member sent one personal message home by this route, and a dozen logistic messages were sent back advising the Second Summer party about stores. A few outward personal messages were received by this route, and it wasn't until December that we realised that the great majority of our messages, although received and copied in the Falklands, had somehow never reached addressees in Britain. Apart from causing misunderstandings in parallel traffic over the BAS route, these lost messages handicapped the Second Summer Party's equipment planning and the philatelic arrangements.

VHF Sets. Light modern walkie-talkies powered by expendable Duracell batteries would have been very useful for parties working out of basecamp, or near each other in the field. They would also have been very useful between roped parties working in close company - eg skidoos, reconnaissance parties, surveying parties, mountaineering parties when portering cinephotographic sessions and boat parties etc. etc.

Summary. The radios we took were invaluable to us, even though we did not properly exploit them for internal communications, and despite breakdowns and delays in the routeing of messages back to Britain.

Recommendation. If Service radios are not available and costs need to be minimised, an expedition like this would be well advised to take just one TX/RX set capable of 2-way communications with one nearby base. This would be left in basecamp, possibly with a spare set. Adequate internal communications between parties should usually be possible using small compact VHF sets such as CB radios. All of these could be powered by expendable batteries for simplicity.

It was considered essential to have a doctor to cover the Winter phase, and highly desirable to have one in each Summer phase. As no Service doctor was available for the First Summer, a civilian doctor was recruited. Two team members (Hill & Lumsden), had been trained as Medical Assistants, and several were qualified in First Aid. Each person was brought up to date for immunisations (Yellow Fever and TABT), and medical screening carried out, prior to departure. A note was made of blood groups, in case cross-matching was required, and all received a thorough dental work-up. All team members received advanced first aid instruction during travel to the Island, which proved its worth particularly in the Second Summer. Before some long isolated trips selected individuals were given a dental brief and temporary filler.

The problems posed by the expedition included the environment, the extreme limitations to nursing and care facilities, the difficulty of moving casualties, the need for mobility of equipment, and the impossibility of speedy evacuation for most of the time. Not only did the environment make minor degrees of cold injury universal, but it posed more serious threats such as deep frostbite, hypothermia, and trauma associated with crevasse falls, or other skiing and climbing accidents. As a result, a very comprehensive base medical kit was taken, with sufficient instruments, drugs and books to enable almost any surgical procedure to be attempted, all traumatic conditions and medical disorders to be covered, and all necessary dentistry to be carried out. Small portable kits were made up for pulk parties, and larger rucksack units for skidoo parties. The aim was that such parties would have sufficient to carry out immediate care whilst evacuating the casualty to base in a pulk. Almost all of this was supplied by DMED Ludgershall, with a little support from some drug companies.

First Summer: Significant injuries were confined to Hankinson who required 9 stitches in his scalp at Valparaiso, and 3 in his thumb in February. Blisters from Valluga boots were very common. Most team members suffered mild frostbite (continuing numbness) of fingers and toes. Several dental fillings transferred themselves to frozen Rolos. Carbon monoxide poisoning occurred in at least one tent. The only potentially serious medical problem was severe bronchitis suffered by Trathen in March, he having been the only team member to go on board Endurance in February.

Winter: To our delight, there were no serious injuries in the winter and surprisingly few dental pain cases. Only one of the team required suturing: (Kimbrey who stabbed himself with a Swiss Army Knife). Blisters from Valluga boots were very common, but usually treated successfully with tincture of benzoin: however, Ringe suffered from severe and infected erosions on his shins, and Kimbrey had a transient septicaemia following deeply infected blisters. Lumsden administered antibiotics to Atkins after a crevasse fall (the SAS elephant needle was worse than the lacerations). Mild carbon monoxide poisoning was not infrequent, and mild snowblindness common as spring turned to summer. First degree frostbite was universal in the fingers and frequent in the toes. In contrast anal and rectal problems were minimal. Although up to a dozen fillings were lost by one older team member, no teeth had to be extracted. Dental work by Oakley and Kimbrey was restricted to temporary fillings with COLTOSOL or CAVIT, sometimes with preparatory DYCAL lining: these usually required renewal every five to eight weeks. Sadly Evans developed a mild duodenal ulcer during the late winter which worsened in September and he was eventually evacuated in November as a precautionary measure.

Second Summer: The third team were less fortunate with respect to injuries. On the journey south Lewis suffered a trapped Sciatic nerve/slipped intervertebral disc and had to return from Port Stanley. On 25th January, Greenway's right knee was crushed against a rock at "Dayglo Point" by a rolling fuel drum, immobilising him. After nursing by Ball, Williams diagnosed torn ligaments or a fracture and applied a plaster of paris splint reinforced by a GRP canoe repair kit: Greenway was evacuated on 30th January and on 9th February at Queen Elizabeth Military Hospital, Woolwich, a large chip was resecured to his tibial plateau by 3 screws. On 21st February Waghorn required 16 stitches to heal a deep six inch long Fur Seal bite in his thigh; intramuscular and oral antibiotics were administered and the wound healed quickly allowing him to ski. On 3rd March Waghorn's right femur was broken completely (but cleanly), just above the knee in a crevasse fall above "Cushing Col"; after first aid by Clements he spent 5 days with the broken leg strapped to to the other by pieces of climbing harness, with only one initial syrette of Omnipon, plus Fortral and Codeine phospate tablets to kill the pain before evacuation by helicopter. On 19th March at RN Hospital Haslar he was operated on to pin the bone with an intramedullary nail and to clean the break. Blisters were again a problem and incapacitated Greenway. Lesser problems included one infected finger, a lost dental filling replaced by "Cavit", the effects of fumes from a hexamine stove and two mild cases of snowblindness.

Further details of equipment and problems are given in a more detailed report lodged with the RGS and available from Surgeon Lt Oakley RN, at INM, Alverstoke, Gosport, Hants PO12 2DL. Anecdotal material will be published by medical journals in due course, as well as a summary report covering aspects of the overwintering and canoeing.

Appendix 2C CAMPING by Ted Atkins

In 1912 the 6 man Northern Party of Scott's expedition led by Campbell, survived for 7 months throughout the winter in an icecave on Inexpressible Island at 75S. In 1949 Dalgliesh, Stonehouse and Jones spent the three midwinter months in tents on the Dion Islands at 66S. In 1957 some of the TransAntarctic Expedition spent part of the winter in tents at 75S. Some others have wintered in makeshift sheds, and sledging parties of BAS and other expeditions have moved in every month of the year. However no previous expedition had lived for the whole winter in tents, or independent of a base hut for a whole year. The plans for this expedition were strongly resisted by some acknowledged authorities because we planned to winter in tents. Luckily Sir Vivian Fuchs, David Dalgliesh and Bernard Stonehouse supported our plans, and finally Vice Admiral Sir John Harrison with David Dalgliesh won us approval.

We lived in tents throughout the 15 months, except for snowholes used occasionally for 2-6 days (once for 12 days) and igloos once for up to 6 days. A 10 x 6ft cardboard shed was erected at Metchnikoff Point in March as a laboratory, casualty station and meeting place (sometimes with a wee nip to keep out the cold!): however this hut was never slept in, nor was anyone greatly tempted to do so, as it was colder than the tents. A small skidoo garage was also built out of stores boxes at base camp, but only used for work, not living. An 8 x 8ft wooden hut was erected at Dayglo Point in January 85: this did serve its purpose as a casualty station when Greenway spent the only 5 nights indoors on Brabant Island with a fractured leg. We learnt quite a lot about camping over the 15 months, particularly about living in small, light tents which could be carried on rucksacks: some of us spent over 6 months in such little tents, in all months of the year.

Our main basecamp tents were two man Antarctic Pyramids from MFC Survival as used by BAS. They were quick and easy to erect in less than a gale, but we had difficulties pitching them in high winds: a storm guy on the apex would have solved this. During the winter months some of us dug a snow trench down the centre of the tent, creating a sleeping bench on each side. This allowed us to sit with our feet in the trench, and facilitated entry and exit through the tunnel door. Our camp was divided over trenches, because it left no room for a third person in an emergency, and space for kit was reduced. Through the dark days of winter we had time to make our pyramids homely. Comfort was largely due to our Tilley lamps, which burnt for most of the time, giving both heat and light. Wet gloves and socks dried well hanging alongside our breadmix, proving in the apex of the tent. These tents were too heavy and bulky for pulks, so we never took them in the mountains, but they made basecamp feel like a secure home.

Wild Country Super Nova domes proved to be our number one tents for travelling. They were a very convenient and comfortable tents for two men to live in. We also used them as 3-man tents quite often (and once 4 men); as such they were reasonable, but rather inconvenient when three shared for long periods. Three men per tent saved fuel. However two per tent was preferred. A 6 man party in the mountains with 3 tents could repair one and still be comfortable; starting with three per tent gave no such margin.

The Super Nova was easy to erect with two people, except in a blow. In anything more than a strong breeze, the poles tended to break while the tent was being erected. Another big problem with the poles was that, in very cold weather, the connecting elastic froze in its extended state, and the surplus of elastic had to be fed into the last section of the pole: - this could not be done wearing gloves, and more than once the elastic was cut, as both feeling in our fingers and patience deserted us.

At first we simply made a flat platform and pitched the tent. The dome shape made a beautiful windscoop keeping the entrance clear even with 6ft of snowfall. However we soon found that the poles broke in gusts above 55 knots without protection; unless the tent was collapsed, the torn outer tent then flogged itself to pieces. Three of the four poles could be fitted double and this became our standard routine. Later we also fitted storm guys at the 4 pole crossover points. Together these two modifications increased the blow out windspeed to 80 knots when unprotected: still not enough. (Wintergear incorporated storm guys and fittings for double poles in the Mountain Tents: the Second Summer team found these better, and also found that doubled light duty poles were less prone to breakage on erection).

In the first summer and early winter we tried to find snowfilled crevasses to camp in for shelter. When this was impossible we dug the tent platforms down and heaped up the snow to form walls all around. Although this system protected the tents from wind, they drifted up badly, and were more prone to burial. In winter we often woke to find our tents completely buried One August morning at 4000ft we discovered the snow was 4ft above the top of our tent; we needed a tunnel to get out, and we lived like rabbits until the weather allowed us to dig out. Although the Super Novas stood up to burial extremely well, keeping an airway open in these conditions required a lot of attention. Over our nine months of winter, 38ft feet of snow fell, and the spindrift was worse. We had a rethink, and decided digging in was not the best method.

Our adopted system for pitching camp was to site the tents individually, spaced across the prevailing wind and to build a protective wall of sawn snowblocks for each tent. After many experiments we settled on 3ft high horseshoe-shaped walls, cutting the blocks to form a windscoop outside the wall, and ramping up the outside of the wall to protect it from erosion. It became routine to build these every time we pitched. If the weather was fair, one person started to put up the tent while the other built the wall. If we had to pitch in a blow, we both built the backwall first, then erected the tent in its lee. It generally took us 2 hours to complete (from unroping to the first brew), and it was worth every minute for the security we earnt.

With the tent reasonably secure, we would put our kit inside. This was normally two Karrimats, a sleeping bag inside our bivouac bag, a "tent stuffsack" of personal gear, cooking stove, nester pots, mug and spoon. We took it in turns to be the first man in. The inside man had the important job of getting that first wonderful brew on. Meanwhile the outside man finished the outside jobs, getting the rations, filling the back-porch with snow (for water), and finishing off the snowwall etc. The pulks had to be secured and marked with bamboo canes. Some of us chose to dig a hole in the (downwind) entrance porch. This made it easier to get in, and formed a bench where we could sit and brush off snow before entering the inner tent. The extended porch of the Super Nova was an asset as a weatherlock; we could get in and close the outer zip before opening the inner tent. With a 2-man tent we could afford the luxury of having our packs in the porch, which also braced the tent out.

Inside, the layout was normally the same in all tents, with Karrimats on each side, the stove on an insulation strip in the middle, and food and pots taking up the remaining central space. Boots and snowbrush were usually in the front porch with the peebottles and small snowshovel, but in 2-man tents they could be put with other personal gear in the segments outside the Karrimats.

We took turns to cook (spoil, burn, spill) our food. If it had been a long day, it was meal, then sleep. When we stopped with time to spare (normally due to weather), we had time for diaries, reading, and a game of chess or scrabble.

Breakfast was the least popular meal to cook, especially when we were on alpine starts (any time between 0100 and 0600). We melted water the night before: it usually froze, but a pan of ice will melt more quickly and easily than very cold snow. Caution was needed with our metal utensils, as they would stick to ungloved fingers in cold conditions. Cold mornings looked brighter once the stove was lit. The first brew and breakfast (porridge) arrived together. Drinking became a chore in the mornings - we tried to have 3 pints to combat dehydration. However this was not always possible, as internal pressure built up and tripped the panic switch, and desperation gave us manic strength to overcome the horrors of frozen front zips. It wasn't all over once outside either if there was spindrift: we discovered it was better to face the wind, as we collected less snow in our longjohns that way.

Breaking camp normally took 3 hours from the cook waking to moving off: we seldom managed it in less than 2 hours, and it usually took even longer after heavy drifting. In very cold weather, separating the pole sections was time consuming: they froze together requiring us to cup the joints in our gloves and rub fast until the friction heat freed them. Application of grease eased this problem.

Snowholes were used on several occasions in emergencies after tents had been lost down crevasses, or blown out, or crushed by snow. Inside a snowhole you can feel safe, oblivious of the worst weather outside - that is until all the airholes block and the candle goes out. The deep cold winter snowdrifts were ideal for snowholes, and we sometimes used them in preference to tents. If took us about 4 hours to dig a planned snowhole, and we often got wet digging. However once established a snowhole was drier, if rather colder, than a tent, and time could be saved breaking camp next morning.

Igloos were also used occasionally in preference to tents when conditions were good, with hard-packed snow to make good building blocks. Igloos were secure, excellent to live in, and intensely satisfying to build, but only Kimbrey could build one in less than 3 hours.

Winter camping on Brabant Island was not easy. The wind was our main enemy, and the best lesson we learnt was to take time and care building good snowwalls: it did not pay to knock them up too hastily, because the wind would blow them down! The weather kept us on our toes all the time - if we were not sure the tent was really secure, the only answer was to put boots on, go outside and make sure.

Occasional rain occurred even in winter, but then it was mainly a problem of people getting wet, not of tents falling down. (In fact freezing rain sometimes helped by casehardening the outer tents). However in summer the melting snow surface caused problems. The surrounding snow would melt away, leaving the tents perched on 3 - 4 ft pedestals: a lot of work was needed to keep the valences firmly weighted. and snowwalls simply vanished. When the bare glacier ice was exposed this work sometimes required crampons on. Snowholes were difficult to make then and wet to live in. However conditions up in the hills were usually still cold enough; on the coasts we could usually find a sheltered patch of moraine to camp on, and snowfilled crevasses came into their own again for tents or snowholes.

Over the whole 15 months quite a few mobile tents were wrecked by wind or snowslips (and one was burnt); several were temporarily lost down crevasses, and some permanently lost in buried caches. However we never relied solely on our tents: snowsaws and snowshovels were always carried separately, and we had trained to use snowholes as our ultimate fallback.

We confirmed that wintering in tents is safe and practical, and that work and travel are possible in such conditions. We hope that this demonstration will open the door for other well-prepared small expeditions to winter in the Peninsula region. Nevertheless we consider that a small hut at some convenient basecamp site is essential, as a group meeting place, a casualty station, and to provide a convenient place to repair equipment. For a small expedition the ideal construction for such a hit would be of strong stores boxes, with some battens to act as a frame and to support a tarpaulin roof.

Appendix IV — SKIDOOS. — by Ted Atkins

The skidoos were originally our insurance against the Endurance being unable to land us on Brabant Island. In that case our optimistic plan was to be landed at Palmer Base and use the skis to ferry our supplies overland, then into boats across to Brabant.

Three skidoos were purchased, a new Alpine 503 (sponsored by Seccombe & Speed) and two ex-Transglobe Alpine 640's. The 640's were serviced by WREE Chertsey, who also incorporated various modifications suggested by SAS and by Oliver Shepard of the Transglobe team. Alpines are workhorse machines with two drive tracks and one steering ski.

In the event Endurance was able to land us on Brabant Island. However after a month on the island we decided that the skis would be useful there, as unexpected piedmont glaciers seemed to offer reasonable routes. Endurance transported the three skis from Palmer Base to Matchkikoff Point.

Driving skis is easy in good conditions. Operating them on Brabant Island was not easy, and we had a lot to learn. All our skis carried spares and tools under the seat. Spottiswood modified cowlings to carry ice axes and marker wands. The most important tool carried was the shovel.

Brabant is so crevassed that the skis had to travel roped together. This is very difficult in mountainous terrain, tight turns and changes in speed caused the rope to tangle into skis and track. Stuttard alleviated this problem by fitting elastic shock cord into the rope, this took the slack in and made life much easier.

Snow conditions decided when we could travel. Ice or (worse) loose snow caused traction problems. There was little we could do about ice conditions except crampons and manhaul over problem areas. (We have since learnt about ice-studs which can be fitted to the tracks). In deep snow we would make several runs with a lightly loaded ski until we had established a track. Traverses caused problems. The skis tended to fall off downhill or roll over. Once one ski had gone off it would pull the other two off as well. With luck we would stay on our tracks then drive around for another go, if not, more digging. Often we would dig a track along the traverse line before attempting it, this worked well.

Sledges were a big problem. The ex-Transglobe steel sledges we had bought for hauling heavy loads across the gentle Warr Ice Piedmont on Anvers Island were far too heavy for Brabant's mountains. Sometimes the skis could not pull the empty sledges! Once one ski was overloaded the big problem was trying to coordinate power from two or three skidoos to one heavy sledge. We found it better for each ski to pull its own load. Each ski has a load area behind the seat. This was used for ferry runs on steep ground when a loaded sledge could not be pulled. For most of the winter we used our bulks although, these were not really strong enough and tended to capsize due to their narrow base. I made sledges from 45 gall drums by cutting down one side and opening them out. These proved to be the answer, attached close behind each ski. They lasted the course and could carry large loads (eg 16 full jerry cans or a full 45 gallon fuel drum).

Our skis just limped the last leg of the course. The new 503 gave little trouble apart from a slezed gearbox, but our 640's required a lot of attention. Although we had a good spares backup we were still caught short. This meant repairing parts which really needed replacement (eg sheared drive axle). The amount of spares carried depended on the trip and distance from base. Methanol proved invaluable in winter for de-icing carbs, magnitos etc. We made it practice to put a squirt in the carbs every morning.

Skidoo driving was shunned by some (in favour of manhauling pulks!). It was never easy, often tense, sometimes beastly cold, and we could never afford to relax. Despite the problems of mountainous operation in winter we learnt a lot and got results. The caches left by skidoos made travel quicker, easier and safer. A full report will be made available to the R.G.S.

Footnotes by Furse. We called our skidoos "skis"; they are called "doos" by the British Antarctic Survey, who are the experts on skidoo operation. Our lack of previous experience was a severe handicap, but by sheer chance Spottiswood (a rally driver) was an enthusiast who became an expert, and Atkins was a mechanic of genius whose report above has typically understated the mechanical problems they overcame with our old machines. The skidoo team operated in more mountainous terrain than usually traversed by BAS and in crevassed areas unlike most Arctic users. Operation in winter proved particularly difficult because of the heavy snowfall and severe drifting, not to mention the cold. The bungee tow rope and the fuel drum sledges are two very useful innovations by a team of skidoo cowboys who performed superbly through the long winter.

"Manhauling is neither glorious nor heroic, but unpleasant, sweaty, toilsome and stupid".
Roald Amundsen (member of Adrien de Gerlache's Belgica Expedition, 1898), after their discovery of Brabant Island, and the first Antarctic sledging there.

"Merde, these crazy British and their ******* pulking".
Francois de Gerlache (member of the Joint Services Expedition to Brabant Island 1984) after his first sledging journey there.

Naively extrapolating from Elephant Island experience, I had anticipated journeys on skis - backpacking up to 6 days rations between and from widespread dumps and caches. Luckily Oakley purchased ten 6ft Redningspulkar from a Swedish manufacturer, Solatun Sport. They were flat-bottomed wooden pulks with 4 plastic runners, low sides, and fabric covers secured by hooks and elastic. The harnesses were of flexible 1" dia. bamboo. Such flat-bottomed pulks tend to plough into soft snow more than boat-shaped pulks, but are more stable on traverses. This report covers operation rather than construction, but we should record our satisfaction with the Solatun pulks.

In practice, travel on Brabant Island absolutely required more rations and fuel than could be backpacked, due to the long distances, difficult terrain, short winter days, weather holdups, and our having only 3 dump sites. Pulks proved essential and were used for all major overland journeys. Pulks were taken to 8000 ft during the ascent of Mount Parry, and were used for totally self-supporting exploratory journeys of 2-5 weeks in all seasons. Pulk loads up to 180 lbs were used manhauling; daily distances of up to 23km were achieved and slopes up to 50 degrees were surmounted by relaying. Pulks were also towed behind skidoos with loads of up to 300 lbs, (6 full jerrycans), inevitably getting quite a battering.

Very few team members had used pulks before, and those only 2-man or 3-man pulks; so we virtually learnt techniques backwards, working towards 1-man pulking. Four pulks had been flown into "Dayglo" and those at Metchnikoff Point were initially used as 3-man pulks. Short rope loops were fitted each side at the front and rear for hauling and braking (later the rear loops were moved to the midlength to improve traversing). In February '84 Trathen, Atkins and de Silva developed reasonable 3-man pulking techniques on an 18 day journey to Pare Glacier: they rotated horse/leader/brakeman daily, the horse clipping the shafts direct to his rucksack waistbelt by Karabiners. Leader and brakeman hauled using a prussik from their waistbelt Karabiners back onto the rope, with slack from their harness tie-in. With minor refinements these techniques were used thereafter for 2, 3 & 4-man pulk parties away for up to 3 weeks. However the basic problems of 3-man pulking remained - excessive weight in one pulk, inefficient haulage effort, difficult coordination, awkward relay loads, and poor safety.

Three-man pulks often involved fairly short rope traces, with all 3 men clipped to the pulk. In April, Evans' crevasse fall as horse (& de Gerlache's narrow excape as brakeman) forcefully demonstrated the dangers of the system. Thereafter 1-man pulking was our constant aim. However 3 pulks were then in use with the skidoos, leaving only 3: so realisation of that aim was delayed.

In August, Atkins, Beattie, Evans & Lumsden used 3 pulks on their 17 day winter reconnaissance to 6000ft on Harvey Heights. Two important modifications essential for easy downhill pulking were introduced at this time: the front rope loops were lengthened to double as a rope brake and the bamboo harness was lashed to prevent its sliding sideways on the pulk when over-running. Light clips were also fitted in a partially successful attempt to hold the leaders rope on top of the pulk in normal movement, but to release in a fall (so that the rope held the man rather than the pulk). By then most horses were using their waist and foot jumars/prussiks as their personal protection on the climbing rope, tieing the end of the rope itself to their rucksacks. After a crevasse fall, the rucksack could simply be cast off to hang on the rope end, with the pulk hanging from the rucksack, leaving the man free to jumar up the rope. In crevassed areas all four men were linked on three 45m climbing ropes, but on safe areas it was easier and quicker to travel in two separate roped pairs.

In October seven pulks were used extensively to minimise portering journeys to 8000 ft on the ascent of Mount Parry, each hauled by one horse. Pulley techniques with a 500ft rope were worked out for use straight up steep slopes, but were not in fact required on the traversing routes used.

In November Furse, Atkins, de Gerlache and Lumsden dropped 7000ft to "Dayglo Point" in 3 days, with 25 days food and fuel. Three pulks were taken, freeing the leader to reconnoitre the route down through unknown crevassed terrain. Atkins experimented with a sling operated by the horse, to apply and remove his rope brake.

Starting from "Dayglo Point", this party then took four 1-man pulks to 4000ft on a totally self-supporting 30 day exploration of the south, followed by a 5 night journey back to base reaching 7000 ft. Initial weights with over 30 days full rations and fuel etc were packs of about 40 lbs and loaded pulks of about 160 lbs. By the end of the trip weights were down to packs of 20lb and pulks of 40lbs plus some rock specimens. This was the culminating pulk trip of the Winter phase and the longest of the expedition. It amply demonstrated the advantages and potential of 1-man pulking. Journeys were made overnight to exploit the best snow conditions which proved very worthwhile in summer.

Instrumented tests by a Norwegian physiologist had shown that least energy was expended if all the load was on the pulk, with pack weight minimised. However these tests were undoubtedly made on gently undulating hard neve snow. Our field experience showed that in soft snow and/or on steeper slopes, it is better to carry a good comfortable load in your pack. (Calculations for a total load of 80lb confirmed this observation, and are available). Using daysacks as rations-sacks simplified changing the pack/pulk ratio to suit conditions: more importantly it greatly simplified relaying up steep slopes.

Atkins has completed sketch designs for a light, robust 2-man ridge tent incorporated in one pulk, which can be very quickly and simply erected over the pair of pulks used by a 2-man rope team. He plans to make a prototype for trial.

Manhauling sledges is usually laborious and often exhausting. However it enables one man to transport 200 lbs of gear at a time, instead of needing 3-4 relays backpacking. Pulk sledging with 1 pulk per man is strongly recommended for small parties requiring to be self-supporting for journeys of 1-5 weeks in snowy mountainous terrain. In flatter polar terrain, such pulk parties would be able to load up for 7 weeks, or even more. For small expeditions without the resources to use skidoos, dogs or airdropped caches, the potential of 1-man pulk sledges is tremendous.

Appendix 2F. MOUNTAINEERING by Jon Beattie

One of the aims of the expedition was to make first ascents of Mt Parry and all other major peaks on Brabant Island. The team's mountaineering experience was limited, in fact almost half the team were novices, so it was essential to have pre-expedition meets to train everyone up to a reasonable standard. There were also several novice skiers.

Brabant Island was one of the largest virtually unexplored islands left. The maps had a scale of 1:250,000 and contour intervals of 100 metres; they were used in conjunction with the original aerial photographs taken in 1955/56. The lack of detail on the map was one of the restrictions to movement around the island, in addition to objective dangers such as crevasse fields, avalanche slopes, icefalls, arduous weather conditions and snow conditions. It was imperative to have compact and reliable navigating instruments. We chose Silva T15 compasses and Thommen altimeters, and their combined use was invaluable for movement in cloud.

The nature of the terrain, deep snow with a lot of ascents and descents, made ski mountaineering skis with skins the best mode of travel. We used Dynastar Yeti skis with Emery Altitude Plus bindings and found them excellent. Equipment was carried (or dragged) on Solatun pulks. Troll harnesses were favoured by most, and each person carried an ice axe ice hammer, deadman, two icescrews, a pair of Clog or Jumar ascendeurs or prussiks, plus slings etc. ROD Thatcham had provided a selection of iceaxes varying from the Stubai Manaslu to the older McInnes Massey: a long axe of 85cm was found more suitable in this terrain, although awkward to ski with. Service issue Terrordactyl ice-hammers were used, but several members would have preferred an ice hammer with longer shaft and pick, such as a Curver ice hammer. Clog screwgate and snaplink Karabiners were used throughout: application of WD40 prevented the Karabiner from freezing up in low temperatures.

Valluga Light Extrem Ski Mountaineering boots had been bought by the expedition and were worn by those who could get used to wooden slippers. Several members wore Ultra Extremes and Vivas: with a small modification to the toe piece and worn with Berghaus Super Yeti gaiters these proved far superior to the Vallugas. In desperation two members modified their Dolomites, the drawback being that the leather froze overnight unless placed in one's sleeping bag and they were cold to wear. We used Lowes Footfang crampons, which are simple, easy to fit and warmer; they also proved very durable, but note that the snowteeth at the front are essential.

The team always travelled roped up, using 9mm Edelrid Everdri Kernmantel rope, which proved durable. The ropes were in 45m lengths, usually with two to a rope. Skiing with heavy packs and a pulk was tedious and often frustrating. Occasionally, whilst negotiating large crevasse fields, two ropes of two would rope together for safety. There were two methods adopted by members for tying on. The first was to tie the rope directly on to the harness, with a sling from the rucksack to a Krab sliding on the rope between the harness and waist Jumar: if one fell into a crevasse, the rucsack was jettisoned keeping the rope taut while one jumared up and out,pulling half the weight of the rucksack. This was not useable with a pulk attached to the rucksack, when an alternative method was used. This was to to tie the rope directly to the rucsack, using the Jumars for personal protection: the argument against this is that ascendeurs are not designed to take shock loads; however travelling on tight ropes there should be little shock load. With rucksack jettisoned, one jumared up the taut rope. Deadmen were most often used for belaying in winter, though icescrews were often needed in summer. Long shaft iceaxes made swift belays in crevasse falls, and iceaxe belays were often used for speed when crossing bridges. The dynamic body belay was popular, due to the fact that frozen ropes and Stichl-plates become unworkable. Direct belay systems were also used (usually with an Italian Hitch), while an Alpine clutch was used for hauling, either by direct pull or a 2 to 1 pulley system.

Travel was a slow hard slog. Weather and snow conditions were main factors affecting speed of travel. Short day length in winter, high winds,blizzards, food and fuel shortages led to many plans being altered and to frustrated festers. Objective dangers contributed their fair share of holdups as negotiating crevasses, icefalls, & bergschrunds all took time. Most team members experienced falling into a crevasse, usually held on a tight rope but with 9 or 10 "headunder" falls. However everyone had escaped unhurt until Waghorn's accident in the last month. Quite often the edges were overhanging, which caused problems for the person jumaring out, and for hauling kit out.

Avalanches were a threat throughout the year, in winter due to large snow build up, and in summer due to the warmth. Each team member had a Pieps II transmitter/receiver: however we had a 60% failure rate with them. Snow conditions continually changed throughout the year. Autumn and winter brought deep powder snow (38ft in 9 months) and combined with high winds turned into raging blizzards lasting days. Pulking in this deep powder snow was soul destroying. In spring and summer with warm sunny days the snow surface deteriorated so much that it was worthwhile travelling during the night or early morning.

As expected, most of the volcanic and conglomerate rocks were frost shattered and dangerously unstable, or swept by hanging glaciers, although good granite sea cliffs reached nearly 200ft on the islet off Metchnikoff Point. Kimbrey climbed Claires Finger in midwinter in crampons: this 80ft of glazed granite (graded VS) was the only noteworthy rock route.

Altogether the First Ascents of 55 peaks were made, including 39 over 3000ft. In the first year (except for the 2 day ascent of Mount Hunter) every ascent involved self-supporting pulk trips of over 2 weeks, although it was often possible to climb several peaks on one trip. Usually it was possible to simply travel. However, after the first attempt on Mount Parry had been thwarted by dwindling rations, a Himalayan-style assault was used for the successful ascent in October, portering for 2 weeks of relatively good weather.

Many ascents were straightforward ski-plods (eg Roentgen Peak & "Freud Heights"). Others were simple Grade I climbs (eg Mount Imhotep) or of similar technical standard but requiring route-finding through mushrooms (eg "Mount Frederick Cook"). The northern hills were largely rounded although the NW ridge of Mount Hunter (Grade II or III depending on season) was a fine ridge. The southern peaks were more varied. The most technical climbing in the first year was Atkins and Lumsden's ascent of Celsus Peak, with much exposure, and unavoidable mushrooms (a typical formation of icy snow like giant cauliflowers, caused by moist winds rising up windward slopes): this was assessed as Grade IV, and Lumsden survived unhurt the only serious open air fall of the expedition. Second Summer climbs on Mt.Bulcke in Brabant's new Chamonix were assessed as up to Grade II. One of the most satisfying ascents was Hunt Island, a Grade III ice climb starting from the boats.

A handful of worthwhile peaks remain unclimbed. Attempts to climb Mount Morgagni in the First Summer and Winter phases were each baulked (after long approach journeys) by deep fresh snow creating unacceptable avalanche risk on the steep ramp which was the only feasible approach & in the Second Summer Waghorn's injury occurred in the early stages of the approach. Hales Peak on the northeast ridge of Morgagni also remains unclimbed. Most of the fine peaks on Mount Bulcke were climbed, but not the southern summit (which appeared to be slightly higher from the northern summit). The spectacular spire of Bulcke Finger also remains untouched. Mount Erhlich and some other minor peaks in the south were not attempted, due to the early re-embarkation. The remaining jewel of Brabant Island is the spectacular NW ridge of Mt Parry, rising 8400 ft directly from the sea, it is probably one of the longest classic winter ridges in the world, with many steep ice pitches, and it would be worth a small mountaineering expedition in itself.

The 29 First Ascents listed below are just a widespread selection. Space precluded the 26 others ranging from 1150 - 8050ft. Many of those were just as memorable, as were the journeys to reach them.

15 Jan 84.	Mount Hunter	4,900ft.	Atkins, Furse.
2 Feb 84.	"Noddies Hat"	3,350ft.	Worrall, Hill, McLeod, Morris.
4 Feb 84.	Virchow Hill	2,300ft.	Atkins, de Silva, Trathen.
4 Mar 84.	Mount Rokkitanski	6,070ft.	de Silva, Atkins, Corbett, Furse, Hankinson, Trathen.
5 Mar 84.	"Per Ardua"	5,700ft.	Hankinson, Atkins.
7 Mar 84.	Harvey Heights North Summit	8,030ft.	Trathen, Atkins, Corbett, Furse, Hankinson, de Silva.
14 Apr 84.	Roentgen Peak	2,360ft.	Stuttard, Beattie, Corbett, Evans, Furse, de Gerlache, Ringe, Spottiswood.
26 Jun 84.	"Kelso Top"	3,330ft.	Beattie, Evans, Lumsden, Stuttard.
8 Aug 84.	"Claires Finger"	1,500ft.	Kimbrey.
29 Oct 84.	Mount Parry	8,400ft.	Kimbrey, Atkins, Beattie, Corbett, de Gerlache, Lumsden, Ringe.
5 Nov 84.	Einthoven Peak	2,660ft.	Beattie, Kimbrey, Ringe.
10 Nov 84.	"Amphitheatre Ridge"	4,700ft.	Ringe, Beattie, Kimbrey.
13 Nov 84.	"Black Sheep Top"	3,330ft.	Furse, de Gerlache.
18 Nov 84.	"Siouxie Peak"	4,400ft.	Spottiswood, Corbett.
23 Nov 84.	"Father Peak"	4,300ft.	Atkins, Furse, de Gerlache, Lumsden.
30 Nov 84.	Mount Imhotep	4,030ft.	de Gerlache, Atkins, Furse, Lumsden.
1 Dec 84.	"Red Rose Summit"	5,270ft.	Lumsden, Atkins, Furse, de Gerlache.
3 Dec 84.	Galen Peak	5,070ft.	Lumsden, Atkins, Furse, de Gerlache.
4 Dec 84.	"Mount Frederick Cook"	5,300ft.	Atkins, Furse, de Gerlache, Lumsden.
5 Dec 84.	"Ben Bangers & Mash"	4,700ft.	Atkins, Furse, de Gerlache, Lumsden.
6 Dec 84.	Celsus Peak	4,530ft.	Atkins, Lumsden.
19 Jan 85.	"Minot Peak"	1,500ft.	Clements, Hall.
22 Jan 85.	"Mount Cherry"	1,500ft.	Hall, Clements, Moffat.
2 Feb 85.	"Mount Lynwen"	3,060ft.	Taylor, Ball Lawrence.
2 Feb 85.	Victoria Peak	1,600ft.	Hall, Allen, Flint, Moffat, Waghorn, Williams.
3 Feb 85.	Hunt Island	1,570ft.	Clements, Gill, Hall.
16 Feb 85.	"Pegasus Peak"	3,300ft.	Ringe, Lawrence.
27 Feb 85.	"Chieftain"	3,430ft.	Allen, Lawrence, Taylor.
9 Mar 85.	"Little Sister"	3,500ft.	Taylor, Allen, Lawrence.

Appendix 2G POWER BOATS by Dick Worrall, John Kimbrey, Tim Hall & Martin Hughes

Useage. In the First Summer the 6 man Boat Party travelled in two Avon 520s about 140 miles from Palmer Station to Metchnikoff Point through Neumayer Channel, Gerlache Strait and Bouquet Bay. After that the boats were used only locally from Metchnikoff Point. The boats spent the winter above the beach at Metchnikoff Point, until Kimbrey set them to work in December 84, when they were used for fishing and local journeys.

The Second Summer Boat Party brought a Lifeguard 510 and used this and one or other of the Avons intensively for most of January and February 85, for rapid movement to and from interesting coastal sites and as safety boats for canoeing. Including the circumnavigation of the Island (about 100 miles), about 490 miles were covered in pairs, plus another 100 by single boats - a total of about 1080 boat miles.

Conditions. In the First Summer and Winter most operation was in calm stable weather, though some 8ft swell and dense brash was encountered in January 84.

The Second Summer Boat Party sometimes operated in worse conditions,with winds estimated at Force 6-8 on a few occasions, and several landings in quite heavy swell, sometimes onto exposed rocky shores. Thick brash was encountered on several occasions.

Sea temperatures were usually between freezing and 1 degree below. Although air temperatures were seldom more than 5 degrees below freezing, wind chill effective temperatures were often much lower.

Equipment. The two Avon 520 inflatables (with aluminium deckboards) proved very suitable. They were easy to handle and were generally used when mobility was the prime need. Worrall re-enforced the bottoms to strengthen them, and they proved quite durable, suffering no ill-effects from burial overwinter, nor hitting a bergy bit in difficult seas, though some bottom tears and one or two pontoon punctures occurred. Their 2500lb payload (including engines and crew) was less than the Lifeguard, but on the whole they were more suited to these conditions, because they were lighter and easier to haul out above storm beach level.

The one Lifeguard 510 was more robust, and carried a heavier payload. Although slightly slower and less "handy", it was generally more seaworthy. The extra weight and size were however a handicap, making it more difficult to haul the boat up to safety overnight, although this was partly a function of the different engines fitted.

The five long-stalk OMC 35 HP outboard motors (1981 models) proved totally reliable in the first summer, and all started quickly without difficulty after 8 months without use in Winter, most of the time buried in snowdrifts. Two of them were swamped for several hours when a moored boat capsized overnight: Hall drained them, drowned them in oil, removed the heads for a thorough strip and clean, and they ran well thereafter. In February 85 several transmission failures occurred. Two sheared drive shafts were attributed to repeatedly striking brash ice beforehand. Three gearboxes jammed toward the end of February in quick succession: this was attributed to their apparently being filled with the low-viscosity oil intended for low temperature use in winter. Hall managed to successfully cannibalise other engines to keep two units going. Despite these later defects, these engines were preferred because of their lighter weight, which made it possible (though not easy) to manhandle them up over stranded brash and rocks to above the reach of waves.

The two 40HP Mariner outboard motors proved very durable and suffered no serious defects. However their extra weight and size made them very difficult to manhandle so that the tendency was to moor the boat rather than haul it out - this led to the capsize at Minot point, when one engine was lost as the boat was pounded on the rocks. However Hall and Waghorn stripped and drained the other swamped engine, which ran well thereafter.

All the propellers were fitted with built-in shock absorbing couplings which proved invaluable as brash ice was struck on many occasions. Battered and broken blades required renewal of 2 propellers in the First Summer, and 14 in the Second Summer, most on brash but some when landing loads on rocks in swell. (Propeller guards were not fitted, as these tend to collect and hold football-sized humps of brash).

The Mariners in the Lifeguard were supplied by E.P.Barrus with twin operating gear allowing one-handed control of steering and power. This was tried successfully in January 85, however thereafter the boats were operated on one engine for economy, and to avoid having both damaged simultaneously by striking brash or rocks, so the twin facility was not used.

A Tirfor winch was carried in one of the boats to assist in hauling the boats out of the water, and was well worthwhile. Inflatable "L-floats" (sausages about 4 ft long and 10" diameter) were used as rollers to facilitate hauling out.

The First Summer preferred Multifab Dry Suits, although the small feet made warm footwear difficult to contrive. The Second Summer party preferred Aircrew Immersion Suits because of their greater durability and simpler neckseals. Service Lifejackets were used. Climbing into, and out of, cold clammy outer clothing was made light of. Boat repair kits including oyster clamps proved good, although most of the Bostik 2402 had been used for tent repairs during the winter.

One pint of Duckhams two-stroke oil was used in each 5 gallon fuel tank, giving mixtures of 40:1 or richer. This proved satisfactory. 4-star gasoline was used because the skidoo engines required leaded fuel. A 45 gallon drum with the top cut out was an adequate tank for test running.

Maintenance & Repairs. Tender loving care (by Worrall and Hall in particular) produced remarkably good availability. During the second summer Hall successfully undertook several quite major strips after engines had been swamped, and to change damaged gearboxes and driveshafts etc. These were quickly and successfully achieved, despite lack of socket spanners and impact screwdrivers cached with the skidoos.

Operation & Performance. Whenever possible the boats were operated in a pair for safety. Using one of the two fitted engines this gave a very good margin of safety for failures which was essential in this environment, with strong offshore winds likely to rise very quickly off the glaciers. (On one occasion 5 team members in two boats had an 8 miles tow to the nearest landing site, with one serviceable engine out of four). During the last two weeks on the west coast it was necessary to use one boat alone on several occasions.

Operating on one engine at the lowest stable planing speed (or dogging along at 5-6 knots) proved very economical on fuel. Fuel consumption characteristics were calculated for the Avons, and checked during training: these figures (which proved rather pessimistic) will be provided to the RGS.

Crews varied from one to three. Two in each boat was the ideal for carriage of heavy loads, but up to 6 were carried with full survival gear and rations for overland travel, plus adequate fuel.

The longest total travel in one day was about 50 miles. In the Second Summer the power boats proved conclusively that they were the quickest method of travel around the island - even allowing for several days bad weather, half an hour by boat from Metchnikoff Point to Claude Point was a dramatic contrast to the overland journey time which averaged 6 days, once took 28 days in winter, and was later shown to be fairly dangerous.

The boats were seaworthy enough and there were few days when they could not put to sea. Landings were the main limitation, with only one tiny beach found between Hunt Island and Cape Roux. On the west coast the heavy swell could deposit a boat high and dry on a rock complete with the engine running, while the coxswain waited for the next wave so that he could reverse off again. Complete waterproof suits were essential for landing.

Apart from visiting isolated beach sites to count seals and breeding birds, the boats provided good platforms for whale-watching. They were in turn closely observed by Leopard Seals on several occasions.

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(Footnote by Furse). The First Summer boat journey of 140 miles led by Worrall is probably the longest open boat journey this far south. Waghorn's Second Summer boat party operated successfully for an extended period in often atrocious conditions, in total isolation, running up a total of over 1000 boat-miles around a coast with very few landing sites, sometimes exposed to heavy seas, and often hampered by sea-ice. They exploited the boats' capabilities to the full to explore around the whole island, and to put scientific parties ashore at sites inaccessible overland. They certainly achieved much more than I had believed possible, and I suspect they achieved more than they had thought possible themselves. Each time I read their narrative accounts I learn of another capsize or swamping that they made light of. With little previous experience, Hall proved an outstanding natural coxswain: now he would like to shoot the Colorado in either of the two boat/engine combinations used on Brabant Island. I do not know of any polar work in open boats to compare with the Second Summer Party's since Shackleton's time.

Appendix 2H CANOEING by Clive Waghorn

GENERAL.

Although one of the expedition aims was to carry out a circumnavigation of the island, the principal purpose of taking canoes to an apparently hostile part of the world was to provide an alternative method of tranport, in particular for landings around the island. In the event, a complete circumnavigation of the island was achieved by boat and canoe, although the canoes were not paddled the whole distance.

The circumnavigation by inflatable and by canoe became a scientific reconnaissance, an expedition to climb inaccessible mountains, and a stores transport service. The volume of kit carried meant that the canoes were required as a means of transport to supplement the boats. They were also used as local transport to visit outlying islands & stacks etc to carry out scientific work.

The problems anticipated for canoeing in the Antarctic were bad weather, temperature of the water, lack of landing-sites, and the general hostility of the climate and terrain.

As stated above, the canoes circumnavigated the island successfully in the (greater than expected) periods of good weather. Air temperature was more critical than water temperature, but both boating and canoeing were severely limited by the paucity of any landing sites, particularly on the North East side of the island. During the circumnavigation the canoes were used for local excursions when the boats were either not suitable (eg pack ice in Chiriguano Bay) or not available.

EQUIPMENT.

A. Canoes. Having decided to take canoes and specialist canoeists to a hostile part of the world, the choice of canoe was limited to single sea kayaks, and the world's best canoes for that purpose are Valley Canoe Products Nordkapp Kayaks. We took Nordkapps, and also liberally picked the brains of their designer, and expert sea canoeist Frank Goodman. Four such canoes were bought, modified to take rafting brackets to permit stable rafting of pairs of canoes.

B. Paddles. Lendal Pacemaster blades with fibreglass shafts were used by all. Being light but strong, they were extremely easy and untaxing to use.

C. Clothing. Clothing for the canoeist was the most difficult problem to decide. We used service aircrew fibre-pile 'bunny' suits, with thermal underwear, Northern White Water Centre sea cagoules, and goretex overtrousers. Apart from problems keeping the trousers up when sitting in the canoe, this kit was satisfactory, even too warm in the good weather encountered. It is possible that modern lightweight dry suits would have been satisfactory paddling, and provided better protection had any paddler capsized and swum. Protection for the hands was provided by Splashsport fibre-pile paddle mitts. These were good, provided the water was not washing through the mitts continuously, which happened occasionally when paddling into a force 4-5 wind in a confused sea. One paddler, for whom the Splashsport mitts were too small, used Suzy mitts, which were lined with a silver reflecting layer and were satisfactory. NWWC sea/expedition buoyancy aids with their multiplicity of pockets were excellent.

D. Equipment carried. Each canoe pair carried normal camping and personal equipment, and three days emergency rations. Despite the extra volume of clothes to cope with potentially cold weather there was ample stowage space. Sleeping bags were carried in modified Coleman Dry Sacks; other kit was protected by the excellent VCP Aquasacks or BDM containers. Climbing kit, ice axes, boots etc. were carried in the inflatables, usually protected from the inevitable wet by waterproof grips.

E. Each canoeist carried the following safety equipment:-

LOCAT beacon.	Day/night flare.
Miniflare.	Safety/rescue line.
Spare paddles.	Sea water activated lights.

The pocket LOCAT beacons, when activated, transmitted on approximately 121 MHZ and were intended to provide a homing signal for a direction finding receiver carried in the Lifeguard inflatable. (They could also be picked up by satellite). These were not used, although one was found switched on accidently when the mechanism to prevent such an occurrence (a piece of plastic) broke: fortunately any transmissions made were not received! The Miniflares were used sometimes to indicate position to others, but were never seen, so white parachute flares were finally carried instead.

TEAM SELECTION

The canoeists were selected on the basis of having a varied canoeing background, coupled with a variety of rough water experience. Previous sea canoeing experience was a bonus rather than a necessity: indeed to find such experience in young servicemen is rare.

TRAINING

Training for canoeing consisted of a series of separate weekend meetings at suitable locations such as Dartmouth and Portland, the summer fortnight based at Dundonnell; it culminated in the Blue Peter filming at Dover. A great deal of emphasis was put on rescue and rolling practice, and the weekend at Portland in the rough water of the Portland races was excellent value. At Dundonnell a four day passage from Loch Broom to Kyle Rea was undertaken, to practice paddling long distances carrying all equipment and food.

Appendix 2J STILL PHOTOGRAPHY. by Jed Corbett & Tim Hall

Photographic preparations began slowly because the RAF photographer originally nominated for Stills preparations withdrew in mid 1983, leaving Corbett to take on Stills as well as Cine. Equipment and film was gathered at the Fleet Photographic Unit, where it was tested and proven prior to packing. Some generous equipment sponsorship and good advice enabled Corbett to leave Britain well equipped and prepared for a challenging assignment.

Photographic coverage was required for the following outputs:
1. Services PR.
2. Magazine article illustrations.
3. Expedition book illustrations.
4. Presentations & lectures.
5. Scientific records.
6. Advertising material for sponsors and manufacturers.
7. Expedition Report illustrations.
8. Newspapers.
9. Photographic exhibitions.

Brabant Island's photographic section was set up amongst the penguins at Metchnikoff Point. A thousand miles south of the nearest camera dealer, Corbett had to be self-sufficient for a year. He had equipped himself with: two Nikon F2As; one Nikon FM2 (winterised); Nikkor lenses ranging from 16mm fisheye to 600mm telephoto; 2 Nikkonos underwater cameras; four Rolleiflex TLRs (winterised); two Metz CT45 flashguns; Western V and Lunasix Lightmeters, a Benbo Tripod and a range of accessories. (No processing was undertaken, due to the conditions). The rest of the team members had the use of four Pentax SP1000 cameras (3 winterised), 35mm to 300mm Super Takumar Lenses plus Vivitar 2x Converters, four Olympus XA compacts and two Polaroid SK70 cameras. All photographic equipment was powered by Duracell alkaline batteries. All equipment had been serviced by manufacturers or specialist agents.

At basecamp the photographer worked from 10 plycases and watertight "Schmoolly bottles" outside, plus one shelf in the hut porch. Scientific work centred around basecamp, plus other coastal areas. During the midwinter months Corbett concentrated on PR and advertising working to a detailed shots-list, with the full range of equipment available around basecamp.

In the mountains equipment was severely restricted, to the amount that could be carried in a full rucksack or on a heavy pulk, but the skidoos helped considerably. Boating skidooing, pulk-sledging & ski-mountaineering offered fabulous subjects, with spectacular backdrops. There was rarely a moment when Corbett was without a camera around his neck.

Temperatures ranged from +15c to about -30c with monthly means between +2c and -5c. This temperature was not extreme for the cameras, apart from some filters and brittle film. However winds often exceeded Gale Force, producing windchill equivalent temperatures down to and below -60c, affecting the photographers. The overall living and working conditions were very difficult, being both physically and mentally demanding. Corbett began to lose feeling in all his fingers, and went down with mild frostbite in May. Care of equipment and film in these conditions required strong discipline and constant determination, and being unable to see any results for a whole year was a hard strain.

Condensation was a continual major problem in all seasons, but worst in winter and in the hills, requiring meticulous preparations and affecting the choice of lenses. Cameras frequently took severe knocks and we could never be sure that kit was functioning correctly.

Back in Britain, Hall (and later Barker) were busily preparing for the Second Summer. Hall also received, processed, sorted, filed and distributed the First Summer photographs. Their equipment provisioning was severely handicapped by Corbett's detailed feedback message going astray in the Falklands. Further Service equipment was not available and, constrained by a tight budget, they underestimated the attrition rate on equipment and useage of films over the winter

At the end of December 1984 Hall and Barker arrived to find themselves short of equipment, particularly serviceable 35mm SLR camera systems, lightmeters & filters. However they purchased one Nikon before leaving Endurance and had brought more medium-format camera systems: two winterised Hasselblads (on free loan from Pelling & Cross), one CM500 with 80mm and 150mm lenses and one Superwide 38mm fixed lens camera, plus three Fujica HDS 35mm waterproof cameras.

The Second Summer boatwork was extremely arduous for photographic equipment, with a lot of salt spray and several swampings on landing, one of which put paid to Hall's two Nikon cameras, the 150mm Hasselblad lens and his only lightmeter. However Barker generously gave Hall his only lightmeter when the two parties met, and both kept their diminishing equipment in use to the end. Storage of cameras was the main problem in the boats: the only bombproof storage containers proved to be the Bowater International resealable plastic barrels.

The total useage of film on the expedition was as follows:

		Number of Rolls			Types of Film (+ ASA)
		1S	0W	2S	
35mm	Colour Transparency	80	160	270	Ektachrome (64 + 200), Kodachrome (25 + 64) Fujichrome (50 + 100), 3M
	Colour Negative	0	0	0	
	Black & White	85	139	35	FP4 (100), Pan F (50), HP5 (400)
6cm	Black & White	0	42	77	FP4 (125), Pan F (50), HP5 (400)
	Colour Negative	0	53	0	Vericolor (100)
	Colour Transparency	0	0	48	Ektachrome (64)

Late in 1983 Hall had made an excellent agreement with Colour Processing Laboratories Ltd of Edenbridge, Kent. In return for being able to use expedition pictures to market advertising material (to our supplies etc), CPL undertook our initial colour film processing free, and subsequent duplicating and printing at economical bulk rates. This gave us the highest quality processing: a number of beautiful enlargments (up to 7ft x 4ft) have been produced up to the time of writing.

All black and white and colour negatives are held by Corbett and Hall. Sets of contact prints of all black-and-white, and colour-negative films are held by Corbett and Furse, and by Hall & Waghorn for their respective parties. 35mm colour transparencies have been weeded to form an "Expedition Set" of nearly 2000 photos, the remainder being returned to the individuals who took them (and thence distributed among team members). The originals of this "Expedition Set" and of all 120mm colour transparencies are currently held by CPL. Complete sets of duplicates are held by Corbett and Furse and by Hall and Waghorn respectively. Members of each team are being provided with a "Lecture Set" of 120 duplicates of the best 35mm slides of their phase.

Hall arranged with Tophams Picture Library, of Edenbridge, Kent to lodge a selection of the expeditions best photographs with them. These will be commercially available from late 1985, after initial useage by the expedition in magazines etc. has reduced.

Footnote by Furse: The three professional photographers, all from the Royal Navy Photographic Branch, proved their worth in producing an outstanding and comprehensive portfolio of pictures during the expedition, under very difficult conditions. Their keen post-expedition marketing is also a distinct advantage to the expedition. They plan to produce a detailed report covering all photographic aspects of the expedition (particularly cold weather and cold water problems), and this should be printed late in 1985.

Enquiries for expedition pictures may be made as follows:-

General enquiries: Commander Chris Furse RN, Hegg Hill, Smarden Kent, TN27 8NX.
Tel: 023.377.229 (or 01.244.9512)

Black & White prints: (1S and 0W) Leading Airman (P) Jed Corbett,
Fleet Photographic Unit, Tipner, Portsmouth, Hampshire.
(2S) Leading Airman (P) Tim Hall, Photographic Department,
c/o 44 Gladstone Road, Farnborough, Kent.
Tel: 0689.53268.

Colour Reproductions: Mr Bill Davidson, Colour Processing Laboratories Ltd.,
Speedwell Close, Chandlers Ford, Eastleigh, Hampshire SO5 3NB
Tel: 04215.4752.

Library Material: (after late 1985) Topham Picture Library,
Edsels, Markbeech, Edenbridge, Kent.

Appendix 2K. CINEFILM by Jed Corbett
Tim Hall
Ronnie Barker

The aim was to produce a 50 minute film for TV. For this, the most interesting aspects of the expedition revolved around the survival through the whole winter. The film would concentrate on the human element, living in tents, working and travelling. De Gerlache's participation introduced an element of historical interest: tape recordings of his gradually increasing command of English would provide a good impression of time passing. He, Furse and Atkins were chosen as "stars" around whom the story was meant to evolve.

Corbett's cine experience before 1982 comprised a two day course on loading a Bell and Howell. Being tasked with shooting a film throughout an Antarctic winter, he did more than panic. Fortunately, working in the Cine Section at the Fleet Photographic Unit, he was able to pick people's brains, and familiarise himself with the Bolex. He also received helpful advise from Edwin Mickleburgh and John Lane, two professionals with relevant experience.

The Services Sound and Vision Corporation provided on loan two hand-cranked, triple-turret-lens Bolex cameras. After much consideration (largely a matter of finance) the expedition finally decided to purchase an expensive synchronised-sound system: two Beaulieu R16 camera bodies; 10mm and zoom Angenieux lenses; two Uher 4200 Report tape recorders; uni- and omni- directional Sennhauser microphones, plus a Bilora magnetic head tripod etc. The Beaulieu system would provide the bulk of quality TV material, whilst the Bolexes gave a more mobile and dependable cine-facility down to -40c. Ring adaptors enabled Pentax and Nikon lenses to be used on the cine-cameras. Because of the large investment in equipment, the cinefilm became quite a high priority expedition aim.

We had realised from the start that taking the film was only half the task - editing and marketing it were the more difficult half. Early in 1983 John Spencer introduced us to Bob Angell of Pacesetter Enterprises Ltd, a documentary film production company. Showing keen interest as an honorary adviser, Bob gave us definite marketable objectives, and also arranged most useful contacts. Before departure, the expedition made a formal agreement for Pacesetter Enterprises to control the editing and marketing of all our film on a percentage basis. The importance of pre-arranging the marketing end cannot be over-emphasized: without Bob's experience (& enthusiasm) we would have ended up with six hours of excellent material lieing around unseen in boxes.

Fuji Photo Film Ltd donated 50,000 ft of RT 500 (400 ASA tungsten). We then purchased 15,000 ft of RT 125 (100 ASA tungsten) to cater for sunlit snow conditions. These colour reversal films require very precise exposures, so late in 1983 Corbett and Hall flew out to the Alps for a weekend for film tests in snow. 800 Agfa 7 inch sound tapes were purchased.

A late additional task was filming the First Summer Party's outward journey from Valparaiso to Palmer Station, for which Corbett used the 1500 ft of Eastman negative film provided by SSVC. Ten minutes of this film were used in the 1 hour 1984 Rolex Award film.

During Corbett's year on Brabant Island the filming highlights were the boat journey from Palmer Station, wildlife at Metchnikoff Point, pulk sledging and crevasse camping, during the first attempt on Mount Parry and skidooing. These were supported by general daily life and conditions working in the winter, mostly near basecamp. A flexible shooting script was used, with a meticulous log.

The Bilora tripod was used with the Beaulieus. These relied on power from a Honda portable generator set (bought specifically for the cinefilm). Unfortunately the generator became defective in May, and once the batteries ran out, the Beaulieus were unusable. (This was a secret relief to the others when hauling pulks, after experience attempting Mount Parry!). The Bolex were either handheld or supported on a Benbo stills tripod; these cameras proved very reliable and also recovered from condensation quicker than the larger Angenieux lenses. Very little sync-sound material was taken, but wildtrack recordings were made throughout when in basecamp.

The Second Summer filming by Barker & Hall was considered a lower priority, despite the unique canoeing journeys. Supporting sequences on canoeing and technical climbing were the sole objectives. In the event only one Bolex remained serviceable, although Barker took some sequences with a video system brought by Taylor. Safety was paramount during the canoe circumnavigation and Hall found little opportunity to film before his only lightmeter was swamped in a rough landing. The 18 second running time of the Bolex proved very limiting for canoeing. For a mobile expedition like this, an easy to use video, or a Super 8 system using reliable expendable batteries, may be advantageous because more material can be obtained out of base to offset the lower technical quality.

The following material was obtained during the expedition:

	Reels			
	1S	0W	2S	
RT 500	20	40	0	(3 minutes per 100 ft reel)
RT 125	60	48	9	(3 minutes per 100 ft reel)
Agfa Tapes	5	30	0	(15 minutes per 7 inch reel)

All initial processing was undertaken by Rank Film Laboratories Ltd. One copy was then made from each of the reels found acceptable on rushes. There is a great deal of high quality material. At the time of writing Pacesetter Enterprises are negotiating with Yorkshire TV, Anglia (Assignment Adventure), and BBC (World About Us), all of whom are interested in editing the material to produce a TV feature. Pacesetters and the Expedition will retain the rights for sales abroad, where there is definite interest.

Expedition team members will each receive a video copy of the film, and of good offcut material, and these will be available for private and non-commercial showing.

Corbett, Hall & Barker plan to produce a detailed technical report on all aspects of cinefilming, together with their still photographic report.

Enquiries for expedition film may be made as follows:-

Edited film:
Mr Bob Angell,
Pacesetter Enterprises Ltd.,
1 Wardour Mews,
d'Arblay Street,
London. W1V.4AE
Telephone 01-437-5725

General enquiries & private non-commercial showings:
Commander Chris Furse RN,
Hegg Hill,
Smarden,
Kent, TN27 8NX.
Telephone 023.377.229 or 01.244.9512

or

Leading Airman (P) Jed Corbett,
Fleet Photographic Unit,
Tipner,
Portsmouth,
Hampshire.

Appendix 2L POST OFFICE by Chris Furse & Simon Allen

Arrangements to open a Sub Post office on Brabant Island were initiated with the Philatelic Bureau in Stanley in 1981. Our aim was to raise funds for the expedition. In 1982 the High Commissioner of British Antarctic Territories approved opening of a sub-Post Office on the Island for the duration of the Expedition., Furse and then Allen would act as Sub Postmasters, responsible to the Postmaster of BAT in Stanley

From the start we intended to use an agency in Britain to handle all printing and marketing. This proved remarkably difficult. In September 1983 an agreement was made with Cotswold Covers to print 4000 expedition covers, and market them. The covers were shipped south on board HMS Endurance but few orders had been received by January 1984. Lt.Cdr.Farmer, the Flight Commander in HMS Endurance contacted his philatelic agent, Tony Bray. By March 1984 a new agreement had been made between the Expedition, Tony Bray and Cotswold Covers: the expedition would receive 50p nett per cover.

On 17 February 1984, Sir Rex Hunt, formally opened the Sub Post Office in a tent at Metchnikoff Point. The Post Office box from Stanley had been landed that day containing BAT stamps worth £5000, the Brabant Island canceller, standard instructions and forms etc. The first letter posted was loyal greetings from the expedition to our Patron.

Routine Post Office business comprised:

a. Cancelling letters sent by philatelists (& registering some of these).
b. Keeping the monthly Stamp Account. This took only about 2 mandays per phase,but it unfortunately concentrated around the already hectic team changeover periods.

Stamping, cancelling and signing expedition covers was a longer process, best done by a team. A few covers were used by the expedition for thank letters; each team member got a few for private use and some were also sold, at cost, to the crew of Endurance. The great majority of the covers were serviced for sale, with a variety of letters, signatures on the front and additional cachets. The full series of official BAT First Day Covers was as follows:

a.	Opening of Sub Post Office.	Manned Flight.	Cancelled 17 Feb 84.
b.	Opening of Sub Post Office.	Explorers Definitive.	Cancelled 17 Feb 84.
c.	First Day of Stamps Issue.	Marine Life Definitive.	Cancelled 14 Mar 84.
d.	First Ascent of Mount Parry.	Manned Flight.	Cancelled 29 Oct 84.
e.	First Overwintering in tents.	Manned Flight.	Cancelled 29 Dec 84.
f.	First Overwintering in tents.	Marine Life Definitive.	Cancelled 29 Dec 84.
g.	Team Changeover.	Marine Life Definitive.	Cancelled 29 Dec 84.
h.	Closure of Sub Post Office.	Marine Life Definitive.	Cancelled 15 Mar 85.

The First Summer covers (a, b & c) were quickly sold, realising a small nett profit to the expedition. Unfortunately this was not followed up due to total breakdown of communications between Brabant Island and Britain. (Letters detailing the philatelic situation were sent back in March 84 but never arrived, and radio messages through the winter were not received either). As a result the necessary additional covers were not printed for use in the Second Summer and instead of servicing FDCs steadily in basecamp in midwinter the Winter Party had to do the servicing in the last three hectic days, in accordance with two conflicting sets of instructions.The Winter Sub-Postmaster was not well pleased, seeing over £1000 of expedition profit lost; Furse was unaware that his letters had not been received whilst Allen was unaware that they had been sent.

During the changeover the Sub Post Office was moved from Metchnikoff Point to "Daygio Point". The Second Summer Party had brought down a number of the expedition's two postcards and these were serviced as well as the few remaining FDCs.

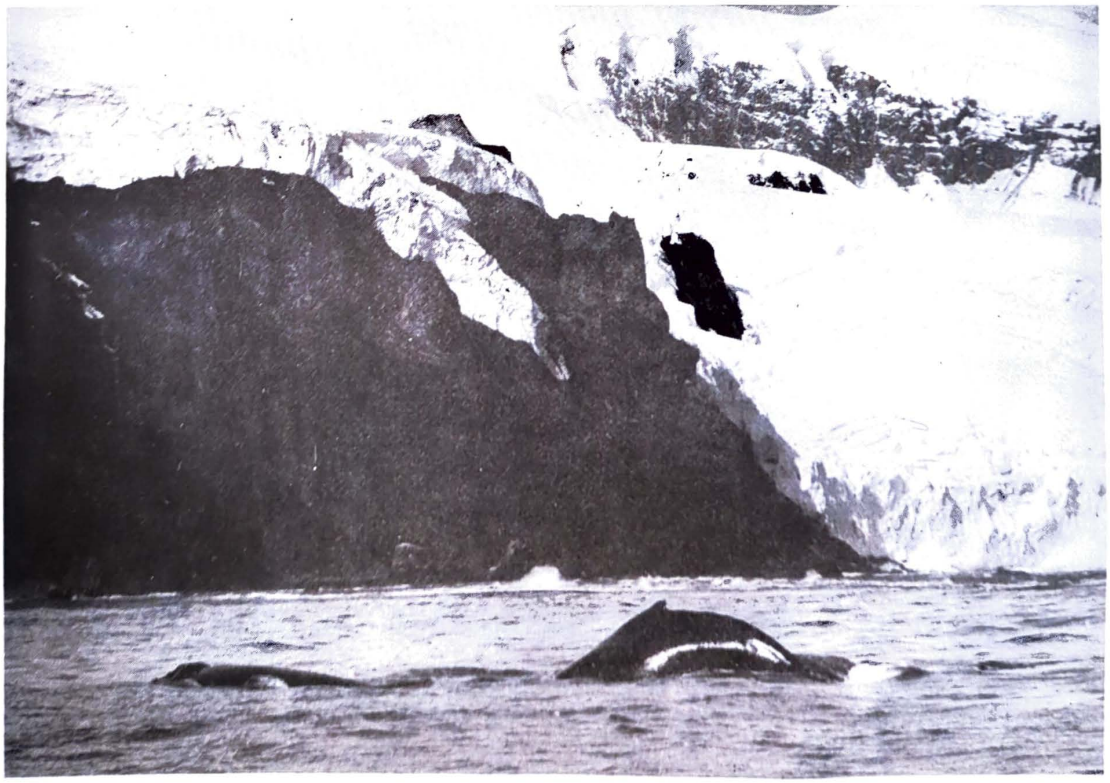
The Sub-Post office was closed on 15 March 85 and the canceller, remaining stamps and stamp accounts were returned to the Post Office in Stanley during the return journey.

Lewis Clifton, the head of the Philatelic Bureau in Stanley was extremely helpful at all times before and during the expedition. A few misunderstandings over Registering and handling of general philatelic mail would have been avoided if Furse had travelled out via Stanley receiving a verbal brief before reaching the Island.

There is voracious worldwide interest in polar philately and First Day Covers can provide a handsome income to help expeditions. However it is a lot of trouble. It is essential to start very early with a dealer, preferably one specialising in the area like Tony Bray. It is also essential that one team member is made wholly responsible from the outset for the philatelic organisation, including keeping full accounts.

Any enquiries on expedition philatelic sales should be addressed to: Tony Bray, Bradford Stamp Centre, 389 Thornton Road, Girlington, Bradford, West Yorkshire. 3D8 9BJ.

Astrolabe needle (c270ft high) with lifegaurd boat.



Two whales near 'Astrolabe Point' from a boat in March 85.

Pulk sledges. Beattie with 1-man pulks prepared for the breakout.

Rucksack contents. Spottiswood with typical items for travelling. (The box arrowed contains 1 manday of arctic rations).

Appendix 3A. INTRODUCTION TO EQUIPMENT REPORTS. by Chris Furse

Of three dozen team members, barely half were experienced winter mountaineers. Progressive team selection continued almost until embarkation. Team members were in widely scattered units. Therefore bulk ordering by the Expedition was chosen, despite the heavy administrative load on our Equipment Officers (in sequence Waghorn, Oakley, Lewis, & Oakley again). The onerous tasks of central packing, and subsequent unpacking, were undertaken in sequence by Hill, Greenway and Kimbrey. Nearly all equipment was thus obtained in bulk by the Expedition, although most individuals also took a few private items.

As an "Endorsed" JSE, we were authorised to obtain Service stores, but with very low priority. Once a part number and tri-Service source had been identified, common consumable items were usually easy to obtain. However expensive or scarce items required two administrative stages: first the controlling authority had to be identified, to get specific approval; then the authorised demand was made on the organisation holding the stock. A major breakthrough was approval to borrow a range of equipment from the Stores and Clothing Research and Development Establishment for trial: we hope the trials results will provide a valuable return to SCRDE, who gave us tremendous help. The staff of PSTO(N) Devonport acted as Stores Accounting Authority for the expedition and gave us wonderful support, help, advice and encouragement.

Some important items (eg tents) were not held by the Services; others (eg radios) could not be spared for the expedition & we failed to locate some suitable Service stores early enough (eg strong stores boxes). In a few cases (eg cine cameras) we obtained Service items, and then also bought better commercial equivalents later on, when our finances improved. We had to pay full retail price for a few items (eg Skidoos), but most firms offered us good discounts; several made remarkably generous free loans (eg Golf II Laser Rangefinder), with a few marvellous gifts (eg Multifab drysuits).

Our tents were very severely tested, in the summers as well as through the long winter. Appendix 3B gives brief assessments.

Standard Service 4-manday "Compo" (tinned) Rations and 1-manday "Arctic" (dehydrated) Rations were used throughout. To bring the calorific values up to 5000 Kcal/manday additional "Booster Rations" were also supplied by the Services, and various goodies donated by firms were added to this booster. Our intention was to use Arctic when travelling and Compo and Booster at main dump sites. However unexpectedly difficult travel conditions produced a mismatch with our food dumps: the Winter Party therefore converted the Booster Rations into extra 8 manday Kimpo base rations and 3 manday Kimpack travelling rations. This allowed us more time in the north, eating about 4000 Kcals/manday and a surplus of 800 days basic rations remained for the Second Summer Party in the south. Weight losses of up to 47lbs were recorded, despite the excellent food provided.

Appendices 3C and 3D show tabulated assessments of our food and general equipment. To save space the columns for Manufacturers and Suppliers use codeletters: the key to these is in Appendix 4H. During the return journeys from the first two phases, team members met to work through the Equipment List, voting by a show of hands on each item. Items generally considered Satisfactory and Adequate in Quantity (and those where opinions were equally divided) have no entry in the "Votes" columns. Where there was a nett bias of two or more votes the nett bias is shown in the tables. (For various reasons the Second Summer Party did not organise this voting session).

To save space most private items have been omitted from these tables. A copy of the complete tabulated assessment will be lodged in the Royal Geographical Society library of Expedition Reports, in a bound volume, together with copies of all the detailed reports which have been prepared on individual items for manufacturers. (Such detailed reports have been made on those items asterisked in the narrow central column).

Most categories of specialised items have been excluded from the tables in Appendix 3F to save space (eg scientific, radio and medical equipment; skidoo equipment, spare gear and special tools; power boat and canoe equipment, spare gear and special tools; photographic equipment; spares and special tools and repair materials for sledges, skis, huts, generators and suchlike). Appendix Two touches on these, but fuller reports are being prepared separately on several of these aspects and a bound set of those reports will be lodged with the RGS. Stationery is not reported on as it would be too tedious.

Most consumable items and personal clothing were resupplied for each phase. More durable items were handed on from phase to phase: these handovers are indicated by + signs in the columns for quantity taken (however this can only be a rough guide, as rates of wear and tear varied widely).

During the winter phase Oakley obtained many 24 hour temperature records in clothing and tents, in parallel with his physiological research. His findings will be reported to SCRDE and to manufacturers, and once again a complete bound set of reports will be lodged with the RGS.

Altogether, we hope to provide a very good bank of information and comment on our equipment, which was subjected to a severe endurance test.

Appendix 3B. PACKING AND RETURN OF STORES.

All Service Rations were packed by RNVD Botley, who also delivered them to the point of embarkation. The RAOC Pétroleum Centre West Moors arranged packing and freighting of gasoline.

With an overload in the dockyards it was not possible to arrange collection and packing of general stores by PSTO(N), which had been so successful on two earlier JSE's to Elephant Island. We therefore cast around within the team to find a volunteer who could undertake this onerous task, in an establishment with a large lockable store available for receipt, checking, sorting, and packing.

Hill packed the stores for the First Summer and Overwinter Parties in the Commando Logistic Regiment stores at RM Coypool, Plymouth. Despite having to use an open area in a large busy storehouse, packing was completed on time. Communications with Oakley (in Portsmouth) were however inevitably difficult: if packing cannot be undertaken near the Equipment Officer, he must at least be able to visit regularly. 15 team members helped in 3 final days packing. Thirteen team members (plus Greenways team of trainees from SEME) loaded the stores on board Endurance in November 83.

One old lesson relearned during the First Summer was the need for good strong boxes of a handy size for manhandling. The Second Summer Party were able to get some stronger boxes (and barrels) but most stores again had to be packed in collapsible plywood cases, albeit mostly of smaller (handier) sizes. It is worth making great efforts to obtain strong boxes (such as Air Portable Thomas boxes etc). As a bonus, these could be built into a shed giving covered access to stores, plus a covered meeting place.

Greenway undertook the packing for the Second Summer Party at SEME Bordon. This was reasonably close to Portsmouth for loading onboard Endurance. Although again far away the Equipment Officer Lewis (at Rosyth, Fife), had a job requiring regular visits to Portsmouth, allowing better liaison at intervals.

The First Summer Party brought back few stores. In addition to exposed film, they brought scientific samples back by air. (Most of these samples were lost for 4 months, but fortunately reappeared at RAF Brize Norton in August, when Hankinson and Second Summer team members distributed them). The small number of boxes returning on board Endurance created problems with customs in Portsmouth Dockyard: after the Ships Officers had overcome this, Greenway collected and distributed the items. The Winter Party's suitcases of travel clothes all miraculously survived the upheaval of the ships Refit, and travelled south again.

In December 84 Ball arranged with the FI Port Auxiliary Service in Stanley (Flint's brother!) for a container to take the Winter Party return gear. On return to Stanley the Winter Party disembarked all their return gear from Endurance into the container, which was freighted back to UK. The Second Summer did the same with their gear returning in March 85 - a much better arrangement, both for Endurance and the expedition.

The Winter and Second Summer containers were cleared through customs in April and May 85 respectively. Oakley arranged with PSTO(N) Portsmouth for specified boxes to be sent directly to particular consignees (eg personal gear, SCRDE trials items, scientific samples, photographic equipment etc). The majority were despatched to RM Stonehouse, where Kimbrey had volunteered to undertake the tedious, anti-climactic task of unpacking, cleaning up, sorting out, mustering, documenting, repacking and despatching all stores returned. By good fortune Worrall had just been posted there and helped. Apart from a few miscellaneous items, return stores fell into three main categories:

a. All Service equipment on loan was returned to (or through) the local PSTO(N). All outworn Consumable items were written off, as were some damaged Permanent items after assessment by a PSTO(N) Stores Inspecting Officer. Kimbrey raised the (S126) forms for Permanent items lost or damaged, giving the reasons (a record had been kept while on the Island). As Equipment Officer (= Unit Supply Officer) Oakley assessed the condition/value of the missing items, and the degree of blame, and forwarded the completed S126 to Furse (as Leader = Unit Commanding Officer) for authorisation and forwarding to the appropriate establishment stores officer or other authority. Where applicable, the team member who had signed for the items was charged the appropriate amount, and was then reimbursed from the expedition fund.

b. Other borrowed equipment was returned to the lenders (eg radios to Plesseys). Letters of thanks were sent, listing the items borrowed and returned, apologising for any damage or losses, and in appropriate cases offering (reticently!) to make good.

c. Equipment belonging to the Expedition (commercial purchases and gifts) was disposed of in various ways. Team members retained their dirty clothes and some similar personal gear. Several expensive, durable items were passed to suitable organisations, to be available for other JSEs (eg canoes to RN Kayak Association). Most other items (eg Iceaxes) were sold by the expedition to team members at a reasonable second hand price, thus helping to finance the concurrent expenditure on photographic processing.

The first to spend a complete year living in tents in Antarctica, this expedition applied the most severe test that modern tents have ever been subjected to.

All British manufacturers were canvassed, plus several Continental ones. However with a few exceptions, the response was disappointingly (often understandably!) negative.

In the event we managed to live in reasonable comfort, despite blowouts and burials. Our main basecamp tents were outstanding. Our main mobile tents also proved good enough, and popular.

Full technical reports on all tents are being passed to the manufacturers. Copies of all these reports will be lodged in the RGS, bound with the other equipment reports. The table overleaf shows the useage of the various types through the year. The total of about 93 tent months experience in these conditions was probably equivalent to much more than 93 years normal useage of a tent in Europe. Brief comments on each type are given below.

2-man Antarctic Pyramid Tents. (MFC Survival). Superby manufactured main basecamp tents, as used by BAS, with ventile cotton outers. Proved bombproof in winds over 100 knots without protection. Formed 6ft windscoops, heavy drifting never occurred as snowwalls unnecessary. Very comfortable for 2, but rather inconvenient for 3. Too large and heavy for pulks; needs apex storm guy to help erection in Force 8; currently unsuitable for rock or ice sites; worth the great expense. Manufacturer responded well to our very few, very minor suggestions.

Super Nova & Nova Dome Tents. (Wintergear/Wild Country). Light mobile tents, very well liked despite several problems. Super Novas much preferred for extra convenience, equal strength. Unmodified tents without snowwalls blew out in gusts above 55 knots; with stormguys and double poles unprotected tents blew out at about 80 knots, but with snowwalls survived over 100 knots. Outstanding aerodynamics formed 6ft windscoops; tents also withstood complete burial very well indeed. Very convenient; very comfortable for 2 and reasonable for 3. Poles easily broken; very tricky to erect in Force 8; frozen pole elastics troublesome in winter; outer tore easily; many spare poles essential. Manufacturer has already incorporated suggestions for stormguys and double poles.

Mountain Dome Tents. (Wintergear/Wild Country). Developed from the Super Nova, these incorporated the 4 storm guy beckets and double poles, plus an extra pole (sleeved in the outer). Appeared stronger than the Super Novas and equally convenient. Second Summer found light summer poles less liable to break during erection than heavy duty poles, and used double summer poles successfully, though not proved in heavy drifting or burial. Expect good response from manufacturer to our proposals which are for three "sets" of improvements:-to the standard tent, plus extra improvements for an expedition version, plus optional extras available with either.

Snowline Conquest Box Tents. (Touring Sports, formerly Outward Bound Equipment, formerly Continental Tents). A very strong and well made pulking tent, that could be pitched in Force 10 winds. Withstood winds of 100 knots without protection. Reasonable windscoop formed, and probably reasonable in drifts but only tested to half height. Rather cramped for 2 men. Bad condensation was major problem; rather heavy. The manufacturer was outstandingly helpful throughout, (in fact some problems were due to their incorporating our suggestions). They are already incorporating the improvements suggested to reduce condensation and weight, to eradicate a problem on the end crosspoles, and to increase convenience.

Nevisport Bombproof Ridge Tent. (Nevisport). A very simple, single-skin ventile cotton tent, as used by BAS sledging parties for emergency use, being easy to pitch, even in Force 12. Easily withstood winds over 80 knots without snow-wall. Needs frequent digging out to maintain room inside. Small for 2 men. Very expensive; too heavy for long pulk journeys; condensation bad in freezing rain. Manufacturer is helpful, and cost is greatly reduced if material can be provided.

Force 10 Mark 5 Ridge Tent. (Vango). This three A-pole version had a rather stronger (sleeved) ridge pole than earlier models, but still stronger poles were needed. Withstood 60 knots without snowwalls, but poles broke in heavier gusts. Needed frequent digging out as drifts over 3ft threatened collapse. Very convenient for 2 men; comfortable for 3; possible with 4. With snowpit the outer made a useful skidoo garage. Usual ridge-tent wind and drift problems; weak poles; poor zips; careless finish. Manufacturer would only supply standard poles etc, even for expedition use.

Phortress Ridge Tent. (Phoenix). A light, small tent, neatly designed, well-made and easy to pitch in high winds. Withstood 60 knots (just) without a snow-wall. Tended to collapse under drifts, and poles broke. Very cramped for two men despite the excellent bell-ends; nevertheless outer used for 4-man bivouac. Not really strong enough for these conditions, and too small for dry comfortable living. Manufacturer concentrates on popular standard models, not specials for expeditions.

Gresshoppe Pyramid. These had been made in Norway, and were old second hand tents from the Belgian Antarctic expeditions. Similar to MFC Survival tents but with corner poles sleeved in outer, making simple apex arrangement easily fitted with storm guy(s). However very small inside. Withstood 100 knots without snowwall before old guys broke; then poles bent double and tent collapsed.

Maureen Dome (Maureen Hardy) A beautifully made prototype, it was restricted to basecamp use because of the large number of guys needed. Poles in outer tent reduced damage when poles broke; however this and radial (as opposed to geodesic) arrangement made interior small and inconvenient. Very helpful individual manufacturer.

Expedition Special Alu Pyramid Tent. (Fjallraven) Small centre-pole pyramids, very light to carry but only used in basecamp due to many weaknesses. Poles broke in winds of about 60 knots even with makeslft corner poles added. Weak in drifts. Small for 2 men, with inconvenient centre pole, and entrance poor in wind and snow. Not strong enough, but outer tent material good, and made lovely stuff-sacs.

The Tent (Ultimate). Used briefly in the Second Summer, but inspired no confidence and small, so not tested in rigorous conditions.

Other Types. Two types of light-weight kiddie tents were donated to the expedition. One of them was erected for trial, but blew down the first night in a mere gale. We were grateful for the donations, and the materials were useful for making mittens and stuffsacs etc: it would be unfair to name the manufacturers.

TABLE: USEAGE OF TENTS (IN TENT-MONTHS, ROUNDED UP)

TENT	NUMBERS TAKEN SOUTH 1S+OW+2S	USEAGE TENT MONTHS 1S J F M	OW A M J J A S O N D	2S J F M	TOTAL	MAXIMUM USEAGE ANY ONE TENT.
		a e a	p a u u u e c o e	a e a		
		n b r	r y n l g p t v c	n b r		
MFC ANTARCTIC PYRAMID	5+ 0+ 0	3 1 -	- 1 4 4 4 1 1 - 3	4 1 1	28	9 MONTHS
WINTERGEAR SUPERNOVA DOME	22+12+ 0	2 2 5	6 5 2 2 2 5 5 5 3	2 2 2	50	5 MONTHS
WINTERGEAR MOUNTAIN DOME	0+ 0+ 4	- - -	- - - - - - - - -	2 4 2	8	2 MONTHS
CONQUEST SNOWLINE BOX	5+ 0+ 0	- - 1	- 1 1 1 - - - 1 -	- - -	5	2 MONTHS
NEVISPORT BOMBPROOF RIDGE	1+ 0+ 0	- 1 -	- 1 - - - - - - 1	1 - -	4	2 MONTHS
VANGO FORCE 10 MK5 RIDGE	4+ 0+ 0	- - -	- 1 - - 1 - - - -	- 1 -	3	1 MONTH
PHOENIX PHORTRESS RIDGE	4+ 0+ 0	1 2 -	- - - - - - - - -	- - -	3	1 MONTH
GRESHOPPE (OLD) PYRAMID	2+ 0+ 0	- - -	- - - 1 - - - - -	- - -	1	1 MONTH
MAUREEN HOME SWEET DOME	1+ 0+ 0	- - -	- - 1 - - - - - -	- - -	1	1 MONTH
FJELLRAVEN ALU PYRAMID	4+ 0+ 0	- 1 -	- - 1 - - - - - -	- - -	2	2 WEEKS
ULTIMATE "THE TENT" RIDGE	0+ 0+ 3	- - -	- - - - - - - - -	1 - -	1	1 WEEK
TWO OTHER ANONYMOUS TENTS	3+ 0+ 0	- - -	- 1 - - - - - 1 -	- - -	1	1 NIGHT

Mobile Pyramid Tents. We believe that the best design to combine good resistance to wind and drifting with easy erection in high winds remains the pyramid (with four sleeved corner poles, and provision for a storm guy from the apex). Ultimate used to make such tents (with sectional poles and both tube and zipped entrances) and they proved excellent on Elephant Island in 1976/77. However Ultimate declined to make a batch of 16 for Brabant Island, and widespread enquiries failed to identify another such tent. There is an opening here for an enterprising and flexible manufacturer, such as Touring Sport Ltd.

Appendix 3D HUTS by Chris Furse

For the overwintering, a hut was wanted as a laboratory, casualty station and place for team meetings. When the support of HMS Endurance was assured, and finances improved, we obtained two huts which could be transported in kit form.

Triwall Hut, erected in March 1984 at Metchnikoff Point. Mr Michael Lethbridge specially designed a house-shaped hut with a floor area of 10 x 6ft. Walls and roof were made of folded ½" thick Triwall packing cardboard, overlapped to give strength and triple thickness. The floor was of 1" marine plywood. Triwall generously supplied the material free, and the hut was prefabricated at RE Chattenden by Sapper Brandon. It was erected over the 3 fine days immediately after the Winter Party arrived and the joints were sealed with Evostik Flashband. Stuttard then built a porch with a floor area of 4 x 4ft, plus storage space in the plycase walls, and a door (opening inward for safe exit in drifts). The Triwall hut was used throughout our time in basecamp, as a laboratory, postoffice, radio shed, and place for team gatherings etc. Happily it was never needed as a casualty station. It required considerable makeshift stiffening by scaffolding and wooden skis etc to withstand wind. After comfortably surviving burial overwinter, the hut began to crack between roof and end walls when re-exposed to winds in December. This type of hut is very vulnerable to rain or wind during the extended period of erection: we had enjoyed our usual good luck at the right time. We could not recommend similar huts for future expeditions, but this one served us outstandingly.

Structaply Hut, erected in January 1985 at "Dayglo Point". This cube-shaped prefabricated wooden hut with a floor area of 8 x 8ft was a standard commercial product, using sandwich-insulated walls and roof. Structaply were recommended to us by BAS. The cumbersome 4 x 8ft sections proved difficult underslung loads, but were flown ashore in February 1984. It proved quick and easy to erect and was used by the Second Summer Party as a meeting place, post office and radio shed: it was also used as a casualty station for Greenway for 5 days. Although much of the wood was untreated and found soggy, it should survive several years. This Hawker Siddeley Memorial Hut was left erected at "Dayglo Point", with some food and fuel as a Refuge Hut.

Union Garage, built in April 1984 at Metchnikoff Point. Kimbrey and Atkins spent a week building a skidoo garage/general workshop with a floor area of 9 x 5ft. Plycase walls opened inward for storage space. A pitched roof was made with a scaffolding ridgepole and rafters of wooden skis covered with Triwall packing case material. It proved invaluable as a workshop. The "Union Garage" survived burial well over the winter, and is expected to last a year or two, despite signs of weakness in summer as the ice melted under the front boxes.

Triwall Boxes. In winter large Triwall packing cases proved useful shelters (for skidoo kennels, cineflim shelters, hut entrance tunnel roof etc). Laid on their sides, with the bottom side cut and flapped out as a snow valence, box modules could be joined up. They lasted a few months each, and the ability to move them about and lift them to the top of drifts was useful.

Recommendation. Wintering in tents was found quite practical. Nevertheless the team agreed that a secure auxiliary shelter was virtually essential for several functions:

a. A meeting place for the whole team together.
b. A work place for maintenance and repairs to equipment.
c. A scientific laboratory.
d. A casualty station.

It was also heartily agreed that a covered storage area was essential, to avoid repetitive digging for buried gear.

At low level in this region snowholes or icecaves would be impractical over the whole winter season, due to the autumn and spring thaws.

The consensus was that the ideal for such a light expedition would be to take stores in wooden boxes strong enough to build into walls, with their open tops facing inward as storage space. A few wooden battens or planks would also be required to use as bolted stiffeners and to support a tarpaulin or strong PVC roof. Two spaces back-to back are desirable, one dedicated as a workshop. Panels suitable for doors are needed. Porch systems are highly desirable: makeshift arrangements with collapsible plycases or large Triwall boxes, (and some stiffening battens) are adequate, and enable upward extension as the hut is drifted over, to minimise the time spent digging out the entrance.

SERVICE "COMPO" RATIONS, in 4-manday packs, used in basecamps.
Provided & packed by Royal Naval Victualling Depot, Botley.
Weight approx 20 lbs per 4-mandays.
Calorific content about 3900 kcal per manday (including biscuit).

ITEM	MENU ABCDEFG	QUALITY VOTES + Excellent : Satisfact - Poor Winter only max 10 vote	QUANTITY per 4-Manday Pack	QUANTITY VOTES + More needed : Adequate - Too much Winter only max 10 votes
Breakfast.Baked beans,tomato sce	ABCDEFG	10+	16 oz (1 tin)	9+
Sausages	A C E G	9+	16 oz (1 tin)	9+
Bacon-grill	B F	2+	16 oz (1 tin)	4+
Baconburgers	D	2+	15 oz (1 tin)	6+
Beefburgers	EF	2+	15 oz (1 tin)	:
Luncheon-meat	A D	7+	16 oz (1 tin)	4+
Drinks.Teabags	ABCDEFG	5+	4 X ½ oz	6+
Instant coffee	ABCDEFG	4+	4 sachets	8+
Sugar	ABCDEFG	2+	14 oz (1 tin)	6+
Instant powdered skimmed milk	ABCDEFG	2+	1½ oz (2 tins)	5+
Supper.Powdered soups.Mushroom	A	4+	3 oz (1 pkt)	-1
Mulligatawny	B	-3	3 oz (1 pkt)	-2
Chicken	C	2+	3 oz (1 pkt)	-2
Oxtail	D F	-10	3 oz (1 pkt)	-9
Green pea	E	3+	3 oz (1 pkt)	-1
Vegetable	G	5+	3 oz (1 pkt)	1+
Meats.Goulash	A	:	32 oz (2 tins)	-1
Corned beef	B	9+	24 oz (2 tins)	3+
Steak & onion casserole	C	9+	32 oz (2 tins)	:
Chicken curry	D	1+	32 oz (2 tins)	:
Steak & kidney pudding	E	4+	32 oz (2 tins)	-2
Chicken in brown sauce	F	-4	32 oz (2 tins)	-3
Stewed steak	G	:	32 oz (2 tins)	:
Vegetables.Carrots	A D G	5+	10 oz (1 tin)	1+
Mixed vegetables	B	3+	10 oz (1 tin)	4+
Processed peas	C EF	-5	10 oz (1 tin)	2+
Mashed potato powder	ABC E G	-5	6 oz (1 pkt)	-1
Pre-cooked rice	D F	8+	10 oz (1 tin)	2+
Puddings.Apple pudding	A	-1	24 oz (1½ tin)	-3
Rice pudding	B E	-1	24 oz (1½ tin)	:
Mixed fruit pudding	C G	5+	24 oz (1½ tin)	2+
Fruit salad	D	9+	24 oz (1½ tin)	8+
Pears	)	7+	)	6+
Peaches	)F	9+	)24 oz (1½ tin)	6+
Apricots	)	4+	)	3+
Snacks.Chocolate,milk	A C E G	5+	4 X 2 oz bars	5+
" biscuit & fruit	B D F	:	4 X 2 oz bars	5+
Boiled sweets in tin	ABCDEFG	:	4 oz	-7
Oatmeal blocks (tin of 5)	A C E G	8+	5 X 1oz in tin	5+
Rich cake	B	10+	12 oz (1 tin)	8+
Margarine	ABCDEFG	5+	8 oz (½ tin)	:
Processed cheese	ABCDEFG	7+	8 oz (½ tin)	6+
Pilchard,tomato sauce	C G	-2	15 oz (1 tin)	-8
Jam.Strawberry	B	9+	9 oz (½ tin)	:
Marmalade	A	5+	9 oz (½ tin)	1+
Raspberry	C	7+	9 oz (½ tin)	:
Black currant	D G	9+	9 oz (½ tin)	2+
Apricot	EF	5+	9 oz (½ tin)	:
From Bulk supplement.Vitamin tab	ABCDEFG	:	1 tablet	:
Biscuits AB (plain,hard)	ABCDEFG	7+	c8 oz (12 bis)	4+
Miscellaneous.Salt	ABCDEFG	1+	1 oz bottle	-9
Mustard	ABCDEFG	2+	¼ oz (1 pkt)	2+
Jiffy tin-opener	ABCDEFG	9+	one	:
Plastic reclosure tin-lids	ABCDEFG	9+	two	:
Matches (book,in sweet-tin)	ABCDEFG	-4	1 booklet	4+
Toilet paper	ABCDEFG	-8	24 sheets	4+

SERVICE "ARCTIC" RATIONS (Dehydrated). In 1-manday packs, used on the hill.
Provided & packed by Royal Naval Victualling Depot, Botley.
Weight approx 3½ lbs per manday.
Calorific content about 4500 kcals per manday.

ITEM	MENU ABCD	QUALITY VOTES + Excellent : Satisfact - Poor Winter only max 10 vote	QUANTITY per 1-Manday Pack	QUANTITY VOTES + More needed : Adequate - Too much Winter only max 10 votes
Breakfast.Porridge.	ABCD	5+	3½ oz	2+
Apple flakes	A C	8+	1 oz	7+
Apple & apricot flakes	B D	10+	1 oz	7+
Drinking chocolate	ABCD	8+	2½ oz	4+
Snack-pack.Biscuits AB plain	ABCD	3+	3 oz	2+
Meat paste.Beef	A	2+	1 oz	3+
" " Chicken	B	2+	1 oz	3+
" " Chicken & bacon	C	5+	1 oz	3+
" " Ham	D	4+	1 oz	3+
Biscuits, squashed-fly	ABCD	6+	3 oz	2+
Chocolate.Rolos	ABCD	8+	4 oz 2x8rolos	-3
" Milk chocolate	A C	3+	2 oz	-1
" Biscuit & fruit	B D	7+	2 oz	3+
Nuts & raisins mixed	ABCD	5+	1½ oz	:
Dextrose tablets	ABCD	2+	1 oz	-2
Drinks.Instant tea	ABCD	4+	2 sachets	5+
Instant coffee	ABCD	9+	2 sachets	8+
Beef stock	ABCD	1+	1 sachet	:
Sugar	ABCD	-4	1 oz(5 sachets)	7+
Powdered skimmed milk	ABCD	8+	½ oz(4 sachets)	3+
Main meal.Soup.Chicken	A	2+	1 oz	-1
" Vegetable	B D	6+	1 oz	2+
" Oxtail	C	-9	1 oz	-7
Meat granules.Beef	A	4+	2 oz	5+
Curried beef	B	10+	2 oz	5+
Mutton	C	-4	2 oz	-2
Chicken Supreme	D	6+	2 oz	1+
Mashed potato powder	A C	-2	2 oz	5+
Pre-cooked rice	B D	10+	3 oz	2+
Freeze-dried peas	ABCD	6+	1½ oz	-5
From Bulk Supplement.Vitamin tab	ABCD	:	one	:
Sundries.Salt	ABCD	1+	1.25 grams	-7
Booklet of matches	ABCD	-5	1 booklet	1+
Handy-Andy paper tissues	ABCD	9+	1 packet of 6	:
Toilet paper	ABCD	-7	10 sheets	:
Wooden spatula	ABCD	:	one	-2

BULK RATIONS.

Bulk supplement provided by DGST(N).82, through RNVD Botley (Rh), to make up rations to 5000 kcals per manday. Intended to be used as a booster with Compo & Arctic, but in practice made up into separate rations.

Additional "Goodies" provided by various helpful firms - used in the same way.

Bulk rations were landed at Metchnikoff Point, "Dayglo Point" and "Astrolabe Point". They were not distributed in exact proportion to the time spent working out of each of these sites (eg only the Dayglo Party saw Mars Bars).

So "Quantity Votes" may reflect distribution rather than total quantity.

Through 1984 the Expedition spent 4,049 mandays on the Island (1S 760 + 0W 3289). 3,900 mandays had been shipped south (Compo 1400 + Arctic 2500). 300 mandays were left at Palmer Station; but 300 mandays Compo were landed in March 84, and another 220 mandays Compo in November 84. So a total of 4,120 mandays basic rations were landed. However 600 mandays remained unused at Dayglo Point, and 96 mandays were lost from "Astrolabe Point". The teams ate 3,424 mandays rations in 4,049 mandays. The Bulk Rations therefore proved absolutely essential, to make up the deficit.

ITEM	SOURCE seeApp4H Supply Make Good Bulk	QUALITY VOTES + Excellent : Satisfact - Poor Winter only max 10 vote	QUANTITY Total on the Island for the 12 months of 1984	QUANTITY VOTES + More needed : Adequate - Too much Winter only max 10 votes
Cereals.Cornflakes	Rh	-1	600 pkts(21gm)	-3
Rolled oats	Rh	4+	156 lbs	-4
Frostles Cereal	Na Na	3+	?	:
Jordans Crunchy Cereal	Jc Jc	7+	?	5+
Chocolate.Milk chocolate.	Nc Nc	10+	425 2oz bars	9+
Plain chocolate.	Nc Nc	6+	425 2oz bars	5+
Yorkie bars	Rc Rc	9+	?	8+
Mixed chocolates	Rc Rc	5+	4 large tins	4+
Mars bars	Rh	4+	144 bars	10+
McDougalls Breadmix	Rh	9+	134 lbs	6+
Plain flour	Rh	:	110 lbs	-4
Egg powder			0	9+
Spaghetti & other pastas			0	10+
Margarine	Rh	1+	40 lbs	-3
Sardines	Rh	7+	200 tins	4+
Stewed steak	Rh	:	144 1 lb tins	:
Instant meals,boil in a bag	Hc Hc	8+	30 2-man bags	6+
Pickled onions	Rh	10+	24 bottles	5+
Sweet pickles	Rh	5+	24 bottles	2+
Chutney	Rh	10+	24 jars	5+
Tomato sauce	Rh	6+	24 bottles	2+
Brown sauce	Rh	4+	24 bottles	-1
Instant soups,used as sauces	Hc Hc	8+	212 tubs	2+
Instant sauces (onion etc)	Cc Rh	8+	400 packets	5+
Currants	Rh	6+	105 lbs	:
Sultanas	Rh	7+	105 lbs	2+
Herbs & spices			0	10+
Tinned vegetables.Potatos	Rh	8+	192 lbs	5+
" " .Beans,tomsaus	Rh	7+	96 lbs	6+
" " .Tomatos	Rh	8+	192 lbs	:
Dried onions & other vegetables			0	9+
Tinned Apples	Rh	3+	192 lbs	:
" Pears	Rh	7+	96 lbs	:
" Pineapples	Rh	10+	192 lbs	3+
Dried apricots & other fruit			0	8+
Jelly cubes	Rh	6+	434 packets	-7
Batchelors Instant Custard	Rh	9+	400 packets	8+
Milk.Evaporated	Rh	8+	288 tins	:
" .Condensed	Nc Nc	10+	?	9+
Teabags (large)	Rh	2+	150 tenpacks	-4
Instant coffee	Rh	5+	50 packets	4+
Real coffee bags	Kb Kb	10+	?	8+
Rise & Shine fruit drinks	He	9+	?	8+
Whisky,various(some used as)	Various	8+	60 bottles	:
Rum (thankyou gizzits)	Ic Ic	8+	24 bottles	:
Newcastle Brown Ale	Rl	10+	36 cans	6+

Limpets (boil add pepper etc)		2+	
Antarctic Cod (fry or boil)		2+	
Chinstrap breast (marinate,fry)		3+	
Chinstrap egg (fry,omelette)		6+	
Crabeater steak (fry,stew,raw)		7+	

ITEM	SOURCE seeApp4H		QUALITY VOTES + Excellent : Satisfact - Poor		RGS Report	QUANTITY TAKEN				QUANTITY VOTES + More needed : Adequate - Too much	
	Make	Supp	1S max 7	OW max10		DENOM	1S 10 men	OW 12 men	2S 17 men	1S max 7	OW max 10
Stockings.Arctic RM white inner		Lf	6+	10+	*	pr	40	24	0	:	:
Survival Aids inners		Sk		7+	*	pr	0	32	0	:	4+
Red loopstitch outers		Ra	6+	10+	*	pr	40	24	0	:	2+
Civilian loopstitch outers						pr	0	0	80	:	:
Pants.Service ECW longjohns		Lf	:	2+		pr	10	12	20	-7	-5
Madalls wool longjohns	Db	Db		:	*	pr	?	1	0	:	2+
Helly Hansen Lifa thermal longjohns	Hd	Hd		5+	*	pr	?	7	0	:	1+
Tog 24 thermal longjohns	Tc	Tc		2+	*	pr	0	1	10	:	1+
Vlioft thermal longjohns				2+	*	pr	0	2	0	:	1+
Peter Storm thermal longjohns	Pb	Pb	3+	3+	*	pr	3	2	0	:	1+
Damart thermal longjohns	Ga	Ga		1+		pr	0	1	0	:	:
Bridgedale longjohns		Cf				pr	0	0	5	:	:
Vests (long-sleeved). Service ECW.		Lf	:	2+		no	10	12	20	-7	:
Madalls woollen	Db	Db		1+	*	no	?	3	0	:	3+
Helly Hansen Lifa thermal	Hd	Hd		5+	*	no	?	7	0	:	1+
Tog 24 thermal	Tc	Tc		2+	*	no	0	3	10	:	1+
Vlioft thermal				1+	*	no	0	1	0	:	1+
Peter Storm thermal	Pb	Pb		3+	*	no	0	4	0	:	1+
Bridgedale		Cf				no	0	0	5	:	:
Shirts. Army flannel		Lf	7+	5+		no	10	10	57	7+	1+
Norwegian army		Bd	6+	3+		no	10	10	0	:	3+
Nevisport woollen		Nd	3+	2+	*	no	10	10	0	1+	-5
Sweaters (zipless). RN woolly-pully		Df	-5	-6		no	20	20	40	-7	-9
Private various				2+		no	0	6	20	1+	-1
Inner jackets.Fibrepile, various			:	5+		no	3	7	8	:	6+
Thermofleece jacket	Me	Me				no	0	0	17	:	:
Thermotex waistcoat	Sa	Sa				no	0	0	4	:	:
Service HoChiMinh quilted jacket		Lf	6+	8+		no	11	12	0	-7	-2
Trials HoChiMinh thinsulate jacket		Sl	:	7+		no	12	12	0	-2	1+
Dacron-filled "duvet" jackets		Ra		5+		no	0	10	0	:	:
Down duvet jackets,various				3+		no	0	2	?	:	5+
Outer jackets.Ventile anorak		Sl	2+		*	no	2	0	0	:	:
Entrant/thInsulate mountain jacket	Ib	Sl	5+	7+	*	no	8 +	3	0	:	5+
Goretex mountain jackets,various				1+	*	no	1	3	?	:	1+
Cerro Torre g'tex/thins. mount.jkt.	Me	Me		3+	*	no	0	10	0	:	-6
Fitzroy Super mountain jacket	Me	Me		1+	*	no	0	2	0	:	1+
Cairngorm mountain jacket	Ib	Ib			*	no	0	0	17	:	:
Durham oiled-cotton jacket	Ba	Ba	1+		*	no	1	0	9	:	:
RN foulweather jacket Mk.3.		Df		-1		no	2 +	0	20	:	1+
Thor neoprene cagoule	Bb	Bb	-2	-5	*	no	10	10	0	:	-7
RM "camwhite" nylon cagoule				7+	*	no	0	5	0	:	8+
Sprayway snipe jackets		Cf			*	no	0	0	11	:	:
Trousers.Ventile trousers		Sl	:	-1		pr	3 +	0	0	:	1+
Canadian army cotton trousers		Lf	5+	6+		pr	20	20	0	-7	1+
Salopettes	Rb	Rb		2+	*	pr	0	5	16	:	3+
Breeches	Pa	Pa	:	3+	*	pr	10	12	0	-7	2+
Breeches		Cf			*	pr	0	0	16	:	:
RN foulweather trousers		Df	:	:		pr	2 +	0	0	:	1+
Thor neoprene overtrousers	Bb	Bb	-1	1+	*	pr	10	12	1	:	:
Entrant overtrousers	Ib	Sl		:	*	pr	4 +	6	0	:	3+
Goretex overtrousers,private				1+		pr	0	1	0	:	3+
Mica overtrousers	Pd	Pd			*	pr	0	0	10	:	:
Strata overtrousers	Me	Me			*	pr	0	0	6	:	:
Service HoChiMinh quilted inners		Lf	3+	7+	*	pr	11	12	0	:	2+
One-piece.Goretex mountain suit		Sl		5+	*	pr	0	1	0	:	7+
Tank-crew cotton overalls		Lf	:	6+		no	10	12	0	-7	2+
RAF aircrew immersion suit		Rd	-2	5+		no	10 +	10 +	16	-7	1+
Fishery protection drysuit	Mg	Mg	2+	1+	*	no	10 +	0 +	0	:	3+
Service OPAO "womble-suit"		Df		:		no	10 +	0	0	:	-3
Lifejacket SC		Ph	7+	4+		no	10 +	0	0	:	2+

ITEM	SOURCE seeApp4H Make	Supp	QUALITY VOTES + Excellent : Satisfact - Poor 1S max 7	OW max10	RGS Report	QUANTITY TAKEN DENOM	1S 10 men	OW 12 men	2S 17 men	QUANTITY VOTES + More needed : Adequate - Too much 1S max 7	OW max 10
Mittens. Service Arctic Outer Mk2		Lf	7+	8+		pr	20	20	0	:	4+
Wintermitts,g'tex/thermofleece	Wd	Sl	-7	-10	*	pr	11	12	0	-7	:
Goretex,various				2+	*	pr	0	2	0	:	3+
Belstaff oiled cotton				3+		pr	0	1	0	:	3+
Bearpaw skidoo driver mitts		Cg		2+		pr	0	4	0	:	:
Service Arctic Inner Mk2		Lf	7+	4+		pr	20	20	0	:	4+
Dachsteins		Lf	2+	7+		pr	10	12	32	-3	4+
Gloves.Service technicians waterproof		Lf	-7	-1		pr	4 +	0 +	0	-7	1+
Damart thermal inners		He	2+	8+		pr	5	10	0	:	9+
RN cotton inners		Ph		3+		pr	0	1	80	:	3+
Silk inners		Ph	:	:		pr	16	32	0	:	2+
Woollen wristlets		Lf	7+	8+		pr	10	12	20	:	7+
Headover. Service tube		Lf	7+	8+		no	10	12	20	:	6+
Balaclava.Madalls woollen balaclava	Db	Db	:	:	*	no	5	10	0	:	2+
RN woollen balaclava		Df	:	-6		no	10	12	1	5+	-5
Woollen balaclavas	Sl	Sl		:	*	no	2	12	0	:	-3
Thermal balaclava		Mc	:	:	*	no	10	10	0	:	1+
Thermofleece balaclava	Me	Me				no	0	0	17	:	:
Silk balaclava				1+		no	0	3	0	:	:
Hats.Peaked cap with earflaps				4+		no	0	2	0	:	3+
Wool "genghis-khan" with earflaps			7+	3+		no	7	7	0	:	2+
Wool "bobble-hat"	Sl	Sl		1+	*	no	0	16	17	:	-3
Sweatband/earband,woollen			1+	7+		no	2	6	0	:	4+
Scarf,Canadian army cotton		Lf	7+	3+		no	10	10	0	:	2+
Facemask,service issue		Sl		6+	*	no	0	12	0	:	5+
Spare mouthpieces for facemasks		Sl		4+	*	no	0	36	0	:	:
Goggles.Uvex ski-goggles (visor)		Rd	-7	-2		pr	8	8	0	-7	-1
Aircrew Mk3 visors goggles		Ph	:			pr	10	0	0	-7	:
Private visor type ski-goggles				1+		pr	0	5	0	:	1+
Service plastic "bra" type goggles		Sl	:	-6		pr	10	12	0	:	-8
RM Arctic meshframe folding goggles		Lf	1+	5+		pr	10	12	0	:	1+
"Goggles 3"	Bc	Bc				pr	0	0	18	:	:
Sunglasses.Glacier glasses	Bc	Bc				pr	0	0	19	:	:
Polaroid specs		Rd	:	:		pr	8	12	0	:	2+
Other sunglasses				7+		pr	0	5	0	:	5+
Boots.Dolomites (leather)		Rd	:	5+	*	pr	10	12	17	:	-1
Service trials "Ski-march",leather		Sl		-1		pr	0	12	0	:	-3
Spyda		Bb			*	pr	0	0	13	:	:
Valluga Light,double plastic outer	Kc	Va	5+		*	pr	10	0	0	:	:
Valluga Lt.Extrem " " "	Kc	Va		-7	*	pr	0	10	0	:	:
Ultra Extrem, " " "	Kc			2+		pr	0	1	7	:	:
Other double boots,plastic outers				3+		pr	0	3	0	:	5+
Wellington boots,Service Mk4		Ph	-7	:		pr	10 +	0 +	0	:	3+
RAF "moonboots"		Rd				pr	0	0	10	:	:
Mukluk basecamp boots	Mf	Mf		7+	*	pr	0	1	6	:	9+
Service thermal overboots 1		Lf		2+		pr	0	10	0	:	1+
" " " 2 (trials)		Sl		4+		pr	0	4	0	:	6+
Duvet tent bootees		Lf	5+	8+		pr	10	10	0	:	1+
Snowgaiters. Service Arctic Mk2		Lf	1+	2+		pr	16	24	0	:	-1
Downhill ski gaiters			-5	-1		pr	30	40	0	:	-1
SuperYeti gaiters	Bb	Bb	5+	9+	*	pr	10	12	0	-7	6+
Standard Yeti gaiters	Bb	Bb			*	pr	0	0	20	2+	:
Spare rands for yeti gaiters	Bb	Bb		1+	*	pr	10 +	0 +	0	:	-1

ITEM	SOURCE seeApp4H Make	Supp	QUALITY VOTES + Excellent : Satisfact - Poor 1S max 7	OW max10	RGS Report	QUANTITY TAKEN DENOM	1S 10 men	OW 12 men	2S 17 men	QUANTITY VOTES + More needed : Adequate - Too much 1S max 7	OW max 10
Tents. Antarctic 2-man pyramid	Mb	Mb	7+	9+	*	no	5 +	0 +	0	:	7+
Gresshoppe pyramid		Cd	:	1+	*	no	2 +	0 +	0	:	:
Expedition Special Alu pyramid	Fb	Fb	-1	-9	*	no	3 +	0	0	:	-9
Conquest Snowline box	Td	Td	:	2+	*	no	4 +	0 +	0	:	-1
Nova (or Diamond) dome	Wd	Sl	:	-2	*	no	6 +	0 +	0	:	1+
SuperNova (or SuperDiamond) dome	Wd	Wb	:	1+	*	no	1 +	12 +	2	:	6+
Mountain dome (Improved SuperNova)	Wd	Wb			*	no	0	0	4	:	:
Spare poles for Nova range domes	Wd	Wb	-5	-7	*	sets	6 +	7	0	5+	10+
Maureen dome	Ha	Ha	:	:	*	no	0	1	0	:	:
Phazordome hex	Ua	Ua			*	no	0	0	6?	:	:
Phortress ridge	Pd	Pd	4+	1+	*	no	7 +	0 +	0	4+	-1
Nevisport Bombproof ridge	Nd	Nd	:	2+	*	no	1 +	0 +	0	:	-2
Mark 5 Force 10 three-pole ridge	Va	Va	:	:	*	no	3 +	0 +	0	:	1+
"The Tent" ridge	Ua	Ua			*	no	0	0	4?	:	:
Beaufort ridge	Va	Va	-2	-3	*	no	2	0	0	:	-4
Trials hoop	Sl	Sl		-6		no	0	1	0	:	-3
Closed cell mats.12mm sleeping mat		Lf	7+	1+	*	no	12 +	24 +	20	:	6+
Thermorest sleeping mat		?			*	no	0	0	2?	:	:
4mm rolls for basecamp		Mc	7+	-1		roll	1 +	1 +	2	7+	:
Sleeping bag.Service trials superloft	Sl	Sl	5+	-4		no	10	12	0	:	1+
Gold Phlash	Pd	Pd		:	*	no	0	10	0	:	:
Caravan Thor		Mc	:	-2		no	6	1	0	:	-1
Firebird	Me	Me	1+		*	no	1	0	20	:	:
Polywarm Basecamp hollofil	Pg	Pg	1+	1+		no	1 +	0	0	:	2+
Dolomite	Me	Mc		2+	*	no	0	2	0	:	4+
Buffalo fibrepile		Sk		-1	*	no	0	2	0	:	-2
Bivouac bag.Service goretex		Sl	5+	8+		no	10	12	16	7+	7+
Tyvek (paper)		?	1+	5+	*	no	1 +	1	0	:	9+
Stoves.Optimus 111.B parafin stove	Oa	Ph	2+	9+	*	no	8 +	0 +	0	:	5+
Optimus 111.T multi-fuel stove	Oa	Oa	4+	6+	*	no	2 +	4 +	4	:	4+
Spare burners for stoves	Oa	Oa	:	:	*	no	2 +	0 +	0	:	9+
Spares kits for stoves	Oa	Oa	7+	2+	*	kits	4 +	6 +	10	7+	10+
MSR multifuel stove						no	0	0	0	:	5+
Cooking gear.Messtins		Ph	:	1+		pr	12 +	12 +	0	7+	-4
3-piece nesting set of pots + lids		Lf	7+	6+		sets	6 +	1 +	6	-7	4+
Folding ovens				-1		no	0	2 +	0	:	-4
Pressure cooker		Ph	:	:		no	2 +	0 +	0	:	-1
4-pint kettle		Ph	7+	:		no	2 +	0 +	0	7+	-5
8-pint pot		Ph	7+	:		no	2 +	0 +	1	:	:
7-inch knife		Ph	:	5+		no	4 +	0 +	4	:	1+
Table spoon		Ph	:	:		no	4 +	0 +	2	:	-5
Plier-type tin openers		Ph	:	-4		no	8 +	0 +	0	:	-5
Eating irons.Mug, 1-pint plastic		Ph	7+	-1		no	12	1	16	1+	:
Mug, 1-pint aluminium		Lf	5+	6+		no	12	14	0	:	4+
Desert spoons		Ph	7+	:		no	20	30	40	:	:
Thermosflask.1 pt. steel unbreakable		Lf	7+	10+		no	10	12	16	:	1+
Standard 1-pint flask		Ph				no	0	0	16	:	:
Insulating foam flask carrier		Lf	:	-2		no	10	12	16	:	-6
Plastic screwtop peebottle				6+		no	0	12 +	0	:	4+
Snow-brush ("brush sink snow")	Ad	Ph	7+	6+		no	10 +	8 +	0	:	6+
Sponge		Ph	7+	1+		no	16 +	32 +	20	:	-5
Scotchbrite plastic scouring pads		Ph	7+	1+		shts	40	100	10	:	:
Kimwipe paper towels		Ph	:	3+		roll	50	90	10	:	1+
Nailbrushes		Ph	:	:		no	8 +	0 +	0	:	-3
Detergent		Ph	:	:		bott	2 +	2 +	2	:	-5
Washing powder		Ph	:	:		box	2 +	2 +	0	4+	-7
Soap		Ph	:	:		bars	24 +	24 +	36	4+	-8

ITEM	SOURCE seeApp4H Make	Supp	QUALITY VOTES + Excellent : Satisfact - Poor 1S max 7	OW max10	RGS Report	QUANTITY TAKEN DEN OM	1S 10 men	OW 12 men	2S 17 men	QUANTITY VOTES + More needed : Adequate - Too much 1S max 7	OW max 10
Stores boxes.Plycases,size F		Ph	:	:		no	50 +	0	?	:	5+
Plycases,size H		Ph	:	2+		no	130 +	0	?	:	7+
Plycases,size J		Ph	:	7+		no	30 +	0	?	7+	8+
Plycases,size K		Ph	:	1+		no	10 +	0	?	:	3+
Triwall cardboard boxes,various		Lf	:	1+		no	0	40	?	:	:
Wooden hinge-top "kop" boxes			4+	6+		no	4 +	0 +	0	:	4+
Alloy boxes						no	0	0	2	1+	4+
Metal hinge-top ammunition boxes		He	:	5+		no	2 +	15?+	?	:	5+
Air-portable "Thomas" boxes						no	0	0	0	2+	8+
Watertight plastic barrels	Bf	Bf				no	0	0	20?	:	7+
" screwtop Schermully bottles			3+	10+		no	10 +	10 +	?	:	10+
" plastic boxes	La	La				no	0	0	50	:	:
Polythene bags.Tubing 2 1/2 ft wide		Ph	:	5+		roll	1 +	1	0	7+	3+
Heavy-duty poly sheeting 3 ft wide		Ph	:	3+		roll	1 +	0	0	:	-3
Polybags, large heavy-duty clear		Ph	:	7+		no	500 +	0 +	0	:	5+
" ,black dustbin liners		Ph	-6	6+		no	100	+900	+200	-7	1+
" heavyduty 2 1/2 X 1 1/2 ft		Ph	:	3+		no	500 +	0 +	0	:	3+
" medium green		Ph	:	5+		no	500	+900	+500	:	1+
" small green		Ph	7+	5+		no	800	+800	+100	:	-3
Paper gash-sacks		Re	:	6+		no	50	+200 +	?	:	4+
Plastic 2-gallon bucket		Ph	7+	3+		no	4 +	3 +	10	:	4+
Huts.Triwall cardboard hut 10 X 6 ft	Ld	Rj		1+	*	no	0	1 +	0	:	:
Structaply wooden hut 8 X 8 ft	SJ	SJ			*	no	0	0	1	:	:
RN Hydrographers portable hut						no	0	0	0	:	-2
Fuel.Kerosene (45 gal.drums)	Various		:	4+		drum	4 +	11 +	?	:	1+
Avcat (45 gal.drums)		He	:	-1		drum	5 +	0 +	0	:	:
4-star Gasoline (45 gal.drums)	Various		:	:		drum	8 +	8 +	19?	:	:
5-gallon steel jerrycans		Ph	7+	5+		no	100 +	25 +	?	:	5+
1-gallon steel screwtop cans		Ph	7+	7+		no	10 +	8 +	0	7+	10+
Plastic decanting syphon-pump			:	2+		no	0	1	0	7+	7+
Plastic funnels, large		Ph	:	:		no	4 +	4 +	0	:	1+
" " , small		Ph	:	:		no	6 +	2 +	0	:	:
1-litre "Sigg" bottles		Mc	7+	10+		no	10 +	6 +	?	:	7+
Matches (extra to rations).Safety		Ph	:	2+		doz	64 +	0 +	0	7+	-2
Windproof in cassettes		Ph	:	1+		cass	100	+200 +	0	7+	-7
Metatab stove lighting tablets		Lf	7+	10+		pkts	200	+200	+100	-7	:
Hexamine block stoves		Rh	:	:		stvs	900?	+300?	+400?	-1	-4
Fire-blankets		Ph	:	1+		no	12 +	0 +	0	7+	-7
Lights. Tilley Storm-lights		Ph		9+		no	0	8 +	0	:	5+
Tilley: spare globes		Ph		:		no	0	8 +	0	:	8+
" : spare mantles		Ph		:		no	0	200 +	0	:	:
" : spare vaporisers				1+		no	0	0	0	:	9+
" : spares kits		Mc		:		no	0	12 +	0	:	1+
Candles, standard		Ph	7+	1+		doz	100	+150 +	40	:	-2
" , edible		Lf	7+	4+		doz	33 +	0	0	:	4+
Cyalume lightsticks		Fc	7+	9+	*	no	20	30	0	:	5+
Torches.Service rt.angled waterproof		Ph	:	5+		no	16	16	?	:	1+
Duracell small		Dh		:		no	0	5	0	:	4+
Dyno-pump torch			-2	-1		no	10	0	0	-1	:
Headlamp		Rd	6+	:		no	10	10	?	7+	:
Spare bulbs for headlamps		Rd	:	-2		no	20 +	30	?	:	4+
Batteries. All sorts.	Various			Various	*	doz	153	+133 +	?		Various
Adhesives, tools, WD40, screws,games, etc excluded from this report because of space.					*						

ITEM	SOURCE seeApp4H		QUALITY VOTES + Excellent : Satisfact - Poor		RGS Report	QUANTITY TAKEN				QUANTITY VOTES + More needed : Adequate - Too much	
	Make	Supp	1S max 7	OW max10		DENOM	1S 10 men	OW 12 men	2S 17 men	1S max 7	OW max 10
Rucksacks.Crusader main pack	Bb	Sl	4+	9+	*	no	10 +	12	0	:	3+
Condor main packs	Ka	Ka			*	no	0	0	18	:	:
Service arctic framed pack		Lf	:	-6		no	4 +	0 +	0	:	-2
Delta 45 daysack	Bb	Bb	:	10+	*	no	10 +	6	0	-7	2+
Daysack	Ka	Ka			*	no	0	0	10	:	:
Stuffsacks	Te	Te	:	9+	*	no	20	24	60	7+	8+
Compression sacks	Be	Be			*	no	0	0	16	:	:
Snowshovels.Bulldog full-size		Lf	7+	10+	*	no	6 +	0 +	?	7+	7+
Lightweight full-size	Wc	Wc		-4		no	0	6 +	0	:	3+
Heavyweight, Leith whaling station		He		6+		no	0	5 +	0	:	2+
Norwegian army small, spoon blade		Lf	:	7+		no	4 +	0 +	?	:	9+
Norwegian army small, flat blade		Lf	:	-6		no	2 +	2 +	?	:	4+
Small folding trenching tool	Ya	Ya	-7	:		no	4 +	0 +	0	7+	-1
Icesaws.Standard service AT icesaw		Ra	:	3+		no	4 +	0 +	?	:	9+
Woodsaws, modified handles			:	-3		no	4 +	0 +	0	:	-2
Service icesaws (chain cutters!)		Lf	:	-5		no	8 +	2 +	0	-7	-7
Knives.RN seaman's clasp-knife		Df	-7	-3		no	10	10	16	-7	1+
Army issue clasp-knife				3+		no	0	2	?	:	4+
Swiss Army knife			3+	10+		no	3 +	8	?	:	5+
Lanyards		Ph	:	-2		no	30	30	0	-6	-4
Keyrings (zip)		Rd	:	2+		no	50 +	0 +	0	:	-3
Watches, various		Ph	1+	3+		no	11 +	13	16	:	5+
Spare service nylon watch-straps		Ph	:	10+		no	20 +	40 +	20	:	:
Alarm clocks		Ph	-7	-8		no	5 +	3	0	-7	-7
Compass, Silva 15		Rd	:	9+		no	10 +	12 +	20	:	5+
" , survival button		Lf	:	-4		no	10	6	0	:	1+
Altimeter, Thommen		Rd	7+	9+	*	no	6 +	4 +	0	7+	9+
" , Sunnto		Rg	:	-9		no	3 +	0	0	:	-5
Binoculars, various		Ph	:	-4		pr	3 +	1 +	?	7+	4+
Emergency. Plastic whistle		Lf	:	2+		no	10	12	40	:	:
Avalanche cords		Ob	:	-1		no	10	10	0	-7	-5
Pieps II avalanche transceiver		Sd	:	-9	*	no	10 +	2 +	0	:	5+
Avalanche probes				-6		no	0	30	0	:	-2
Personal FA kit (standard "soapdish")		Dc	:	-2	*	no	10	12	17	-7	:
Glacier cream, red (Uvistat better)		Dc	:	-2		tube	?	?	?	:	:
Lipsalve		Dc	7+	8+		tube	20	300	?	:	-4
First aid manual			:	6+		no	10	12	?	:	-1
"Hot Mini" warming pads		Cg		4+	*	no	0	100 +	0	:	:
Bamboo marker wands	Various		7+	5+		no	500	+250	500	7+	5+
Orange minefield tape (or motorway)		Lf	7+	2+		roll	10 +	0 +	0	:	3+
Flags & ensigns, various		Ph	:	3+		no	25 +	16 +	?	:	-2

ITEM	SOURCE seeApp4H		QUALITY VOTES + Excellent : Satisfact - Poor		RGS Report	QUANTITY TAKEN				QUANTITY VOTES + More needed : Adequate - Too much	
	Make	Supp	1S max 7	OW max10		DENOM	1S 10 men	OW 12 men	2S 17 men	1S max 7	OW max 10
Ropes. 9mm Everdri Kernmantel 45meter		Ob	:	7+	*	no	14 +	0 +	2	:	5+
9mm Everdri Kernmantel 90meter		Ob	:	4+	*	no	6 +	0 +	0	7+	1+
11mm Everdri Kernmantel 45meter		Mc	:	1+		no	2 +	0 +	2	:	:
Viking 11mm hawser-laid 40meter		Ph	:	:		no	10 +	0 +	0	7+	:
500ft pre-stretched fixed ropes		Rd	:	4+		no	4 +	0 +	0	:	2+
Hawser-laid 7mm nylon		Ph	2+	:		metr	200	+100	+200	:	2+
Hawser-laid 5mm nylon prussik line		Ph	:	2+		metr	200	+300	+200	:	4+
5mm Kernmantel prussik line		Mc	:	3+		metr	200 +	0 +	?	7+	6+
3mm braided nylon "para-cord"		Ph	:	4+		metr	200	+200	+ 0	:	4+
Made-up slings & belay-loops		Ra	:	:		no	150 +	50 +	0	:	1+
Climbing tape.Troll 1inch "superblue"	Te	Te	:	8+	*	metr	100 +	0 +	?	:	8+
Elastic Shockcord 15mm		Ph	:	6+		metr	250 +	0 +	0	:	-1
Shockcord 6mm		Lf	:	5+		metr	0 +	50	+200	:	4+
Made-up bungy straps (hook-ends)		Lf	7+	6+		no	30 +	20 +	0	:	8+
(Plus codline & various cordage.)											
Climbing harness.Full body-harness	Te	Te	-1	-2	*	no	3	2	2	:	:
Whillans sit-harness	Te	Te	3+	-3		no	9 +	0 +	15	:	:
(Mk.6 sit-harness (belt +legloops)	Te	Te	:	6+	*	no	2	6	1	:	:
((Europa chest-harness	Te	Te	2+	1+	*	no	4	8	18	:	:
(Freestyle sit-harness(belt+loops)	Te	Te	:	1+	*	no	2	2	0	:	:
Holsters	Te	Te	:	-5	*	no	20	20	7	:	-3
Climbing helmets		Rd	:	:		no	10 +	0 +	10	:	-5
Mountain Pulk Sledges	Sf	Sf	7+	3+	*	no	10 +	0 +	2	:	8+
Skis.RM wooden,cable bindings		Lf		-4		pair	0	30 +	0	:	-7
Dynastar Yeti 180cm ski-mount.skis	DJ	Ed	7+	10+	*	pair	12 +	0 +	0	:	6+
Emery "Altitude Plus" bindings	Eb	Ed	7+	10+	*	pair	12 +	1 +	0	:	9+
Salewa 120cm skis/Silv.bindings				-2		pair	0	1	0	:	-2
Schafer skis/Tyroler bindings	Sb	Sb		-1	*	pair	0	0	12	:	-2
Ski repair outfits		Lf	:	:		no	4 +	4 +	0	:	-1
Spare slip-on ski tips		Lf	:	1+		no	4 +	0 +	0	:	1+
Spares kits for bindings	Eb	Ed	:	-1						:	6+
Skins,Pomoca stick-on		Se	7+	9+	*	pair	12 +	12 +	0	:	8+
Another sort of stick-on	Sb	Sb			*	pair	0	0	15	:	:
Pomoca adhesive for skins		Se	7+	1+	*	tube	10 +	20 +	0	7+	-2
Harscheisen (ski "crampons")	Sb	Sb			*	pair	0	0	15	2+	2+
Metal ski-sticks		Lf	7+	7+	*	pair	16 +	16 +	30	:	7+
Spare baskets for ski-sticks		Lf	:	-1		no	4 +	4 +	0	:	-2
Ski-waxes (+ scrapers etc)	Sl	Sl		:		tubs	0	900 +	0	:	-9
Crampons.Lowes rigid "Footfangs"		Fa	7+	10+	*	pair	10	12	10	:	:
Snowteeth for Footfangs		Ac	7+	6+	*	pair	10	12	10	:	3+
Salewa adjustable (trad. strap-on)		Ra	:	-2		pair	4 +	0 +	10	:	-5
Ice-axes.Service AT wood-shafted		Ra	:	-2		no	1 +	3 +	0	:	-4
Service AT metal-shafted		Ra	-6	-3		no	6 +	2 +	0	:	-3
Stubai "Manaslu"		Ra	7+	5+	*	no	5 +	0 +	0	:	8+
Various personal Iceaxes			:	5+	*	no	0	6	0	:	2+
Super Zero Iceaxes		Ab			*	no	0	0	18	:	:
Icehammers."Terrordactyls"		Rd	:	-2		no	10 +	2 +	0	:	1+
"Curver" Icehammers			3+	2+	*	no	2	0	0	3+	2+
Various other personal Icehammers			:	3+	*	no	1	2	0	:	3+
Chouinard "Alpine"		Cf			*	no	0	0	5	1+	1+
Belays.Deadmen		Ra	:	8+	*	no	10 +	0 +	?	:	8+
Deadboys		Ra	:	-3	*	no	6 +	0 +	0	7+	-3
Snowstakes		Rd	:	:	*	no	6 +	0	0	7+	1+
Icescrews.Long tubular		Rg	:	2+	*	no	21 +	0 +	?	:	2+
" .Short tubular		Ra	:	:	*	no	8 +	0 +	?	:	:
" .Snargs		Rg			*	no	0	0	0	1+	1+
" .Warthogs		Rg	:	1+	*	no	10 +	0 +	?	:	:
Rock pitons, various		Ra	:	:	*	no	24 +	0 +	0	:	1+
Chocks						no	0	0	0	:	:
Hardware.Karabiners, screwgate		Rd	:	3+		no	100 +	0 +	63	:	3+
" , snaplink		Rd	:	:		no	100 +	0 +	0	:	3+
Descendeurs.Figure-of-eight		Rd	:	1+		no	16 +	0 +	10	7+	-4
" .Sticht plates				-1	*	no	0	6	0	:	:
Ascendeurs.Jumars		Ra	7+	6+	*	pair	5 +	0 +	0	7+	4+
" Clogs,with handles		Ra	:	2+	*	pair	2 +	0 +	18	:	3+
" Clogs,without handles		Rd	:	-1	*	pair	8 +	0 +	0	:	:

Appendix 3G. ELECTRICAL EQUIPMENT

by Chris Furse
Peter Stuttard
Ted Atkins
& Jon Beattie

Choice of electrical equipment was one of the more complex problems during preparations. External constraints were: Finance; transport of petrol; possible disembarkation at Palmer Base. Internal problems were: coordination of equipment users; uncertainty about mobility on the Island; late decision on generator set; lack of time to rationalise and prove charging systems.

One team member should be tasked to coordinate all electrical equipment.

1. POWER SUPPLY. It is important to decide early what power unit will be used if any.
Petrol-engined Portable Generator Set. Our Honda weighed about 70 lbs and delivered about 2 Kw at 50HzAC (230 or 115 volts) or DC(24 or 12v). Two (or even one) smaller sets are better, provided each can power the largest single consumer. This range of outputs is useful, but the AC outputs alone would suffice. The Honda ran well initially, but (after several minor defects) a field winding failure put it out of action.
Solar Panels. The Second Summer Party obtained two solar panels on loan from the SAS. These proved excellent for charging the radio batteries.
Wind Generator. The RN Engineering College made a neat one for us, unfortunately damaged by a falling craneload. If petrol is not required for other expedition uses, consider buying a yacht's wind generator, for trickle charging large batteries.
Power Take-offs. Our OMC outboard motors had 12V DC power outputs; so did our Skidoos originally. Custom built, waterproof charger-plus-battery packs are needed to use these, with the engines well loaded, travelling. If large power units are required, a shaft power take-off could be contrived on the Skidoos, even if not an existing option.
Man-powered Generators. The Clansman Radio hand generators were invaluable. A useful "bicycle" generator, useable in tents, could be made for battery charging.

2. CHARGING UNITS AND ACCESSORIES. Typically, these interface equipments were the weak link in several of our systems, due to uncoordinated and uninformed equipment procurement, and lack of prior proving trials. Several capacitors also failed, possibly due to environmental conditions. A single charger unit for each power supply would be worthwhile, with variable outputs to suit all batteries. Take adequate space fuses, fusewire, capacitors, wire, crocodile connectors, extension lead etc. and an electrical toolkit including an Avo Multimeter.

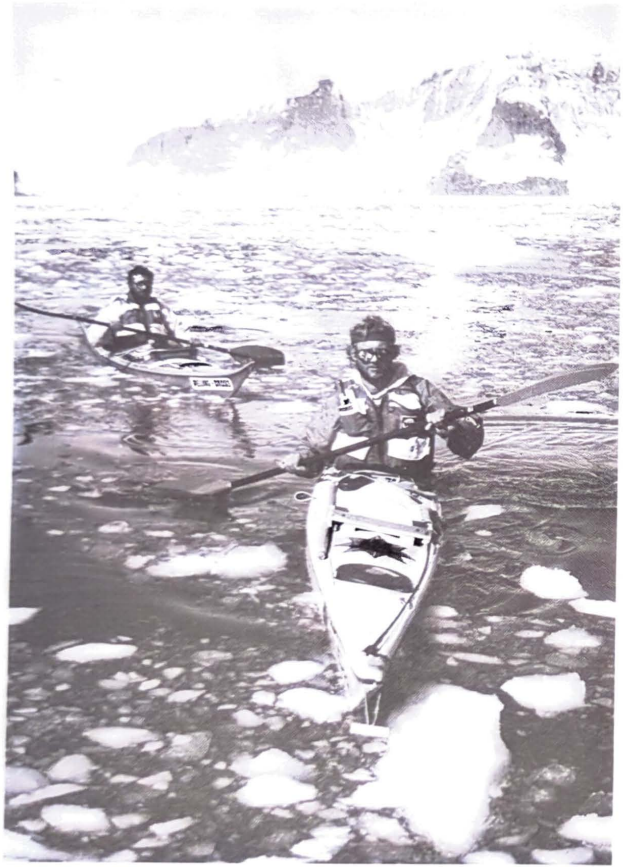
3. BATTERIES. The variety needed grew bewilderingly. Rationalisation is desirable but too difficult; coordinated evolution is best aim.
Rechargeable Batteries. (NICd) were more reliable than their charging units. Spare 1.5v NICd cells or 1.2v aircraft battery cells would be useful to build up battery packs.
Expendable Batteries gave better overall reliability. Below -10C our Duracell alkaline batteries lasted 4-5 times as long as (old? obsolete type?) Service issue batteries, the latter also had inadequate initial output for Uher Tape Recorders, Flash guns and the Reaction Tester. Equipment design must allow for low battery output in low temperatures. Estimate usage realistically: then double it. Duracell strongly recommended.
Dry Storage must be arranged, including transit. Warming batteries (& user units) before actual use improved both performance and life. Lithium batteries were a safety problem and proved unnecessary.

4. USER EQUIPMENTS. Our list was probably typical for an expedition.
Expendable Batteries powered torches, cameras, lightmeters, flashguns, calculators and cassette recorders etc, and were also used in packs for Data Logger, Chart Recorder, Digital Thermometer, Infra-red Sensor, Night Vision Aids, EchoSounder & Reaction Tester.
Rechargeable Batteries were fitted in several equipments:
Beaulieu Cine Cameras (unuseable after generator 230v AC control capacitor failure).
Uher Tape Recorders (Satisfactory fallback using Duracell batteries).
Clansman Radios (Satisfactory alternative using Hand Generator).
VHF Walkie-Talkies (Clumsy alternative using DIY battery pack).
Golf II Laser Rangefinder (Unusable after charging unit capacitor failure).
Direct Power off the Generator was used for a few items:
AC or DC Heater for invertebrate extractor (Inferior fallback using Tilley Lamp).
230V AC Centrifuge for blood samples (Inferior fallback using hand centrifuge).
230V AC Soldering Iron (Alternatives were lower capacity battery powered, and spoons heated over the Optimus stoves).
230V AC Lighting necklace (totally unnecessary - warm Tilley Lamps were better).

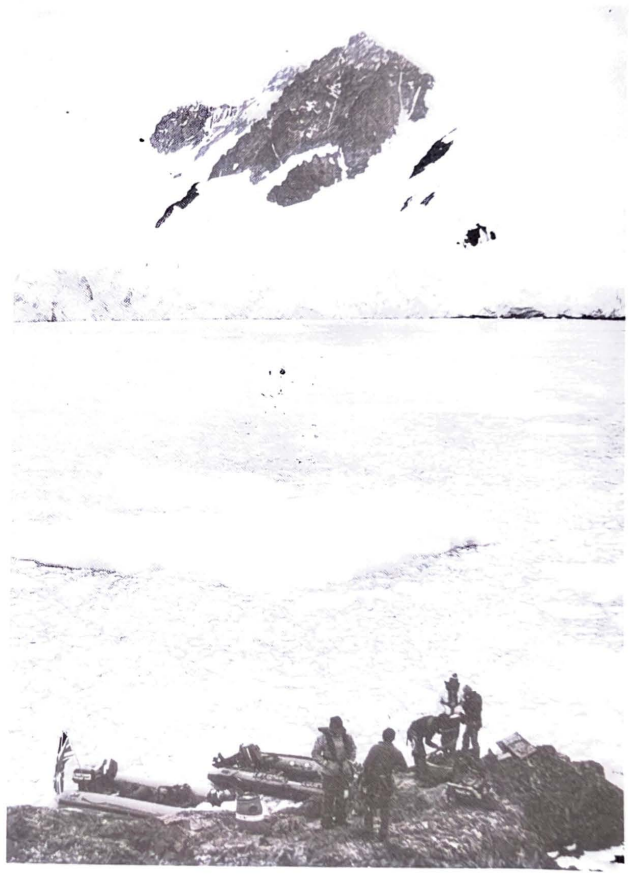
5. ADDITIONAL USER EQUIPMENTS. With a generator set the following would be nice:
Electric Drill for general work. (Makita battery powered drill is alternative).
Hot Air Blower for drying adhesive joints, electrical gear, biological specimens etc, curing GRP, forming plastic boots, hot cutter for ropes and textiles etc. etc.
Arc Welding set for repairs and construction (NB. This would determine generator size!).

Pulk party in October 84 coming up from 'The Precinct.' Behind is 'Cushing Col'.

'The Pepperpot' in October 84. Furse deciding it is time for crampons. Bouquet Bay and Hales Peak behind with the peninsula dimly showing.



Circumnavigation in February 85. Clements and Waghorn in Bouquet Bay. Hales Peak beyond.



Loading the boats on the South East coast.

Appendix 4A. NOTES ON ADMINISTRATION & SUPPORT by Chris Furse.

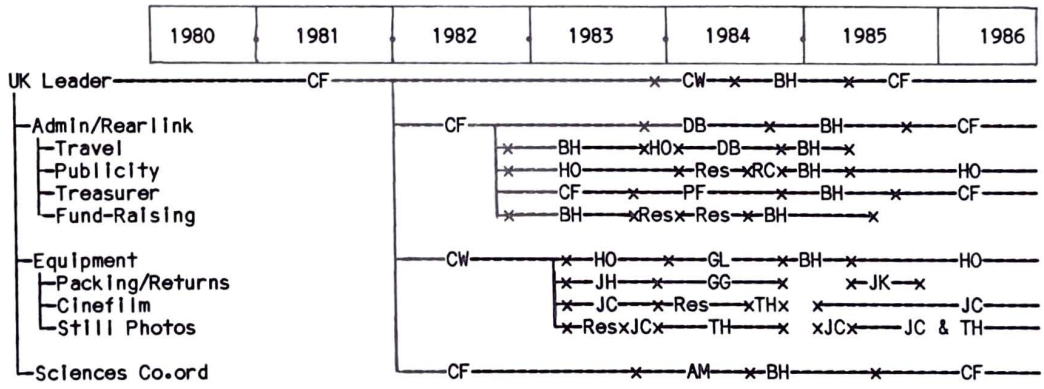
Expedition plans are first assessed by the adventure training authority of the Leader's Service, in this case the Director of Naval PT & Sport, who obtained Endorsement by the Joint Services Expedition Trust. As our official Administrative Authority, DNPTS monitored our progress (through copies of some correspondence and occasional progress summaries), and helped in many other ways.

However a Joint Services Expedition has a position in the Services akin to a needy artist, who is the cousin of a large family. Most of the family are pre-disposed to help him, but none of them have any obligation to do so, and all have their own homes and families to look after. Their response depends upon his personality and approach, and upon their opinions of art in general and his paintings in particular.

This expedition succeeded because of the goodwill, interest and active help of hundreds of organisations and thousands of individuals at home. Appendix 4H lists organisations and independant people who helped us. Regrettably, space prevented naming the many individuals great and small within named organisations, who all played vital parts in our prepartions. Returning from the Island we chose just one person to name here to represent all those other un-named helpers - Mrs Mary Steele, our ever-helpful "Stores Auntie" in PSTO(N) Devonport. My whole team joins in a great big thank you to Mary and to all at home: they made this expedition possible.

Most of the preparatory work was left until the First Summer and Overwinter "squads" were selected, a year before the expedition. At the initial weekend team meet, the workload was spread as widely as possible, making each team member or reserve responsible for at least one specific task. Three coordinators covered respectively Equipment, Sciences, and "the rest" (loosely termed Administration). Communications between virtual strangers of all ranks and widely scattered in over 29 separate units, presented difficulties in coordination. The training periods were each attended by about 70% of team members, improving cohesion in administration.

A long 3-phase expedition without a permanent UK support staff added problems of continuity to those of geographical scatter, and initial unfamiliarity. The Second Summer squad of 23 was selected in September 83. At a weekend meet in October 80% of them met 70% of the First Summer party for the first and only time before the latter flew out. The training fortnight in January 84 enabled 70% of the Second Summer to meet the Winter Party. All administrative tasks had been handed over to the Second Summer party before the Winter Party sailed. Waghorn was fully occupied in his job at BRNC Dartmouth until August 84, and Ball carried the central administrative task for him. Prior to departure Waghorn was seconded to DNPTS for 3 months, a precedent that proved invaluable.



The three phases provided a totally involved Rearlink in Britain. During the Winter phase in particular, Hankinson, Ball and other team members coped with a long breakdown in communications with the Island, which would otherwise have put an unfair load onto official Service authorities.

The First Summer and Winter Parties included very few officers: this concentrated the administrative load on Furse, Hankinson and Oakley, although several other team members did help significantly. The Second Summer preparations were handicapped by a series of 3 Army officers in crucial administrative posts withdrawing from the expedition. From our small sample it would appear that Joint Services Expeditions provide administrative experience that is sorely needed by young ground-fighter officers - all the main administrative tasks fell upon RN and RAF officers plus several very able NCOs.

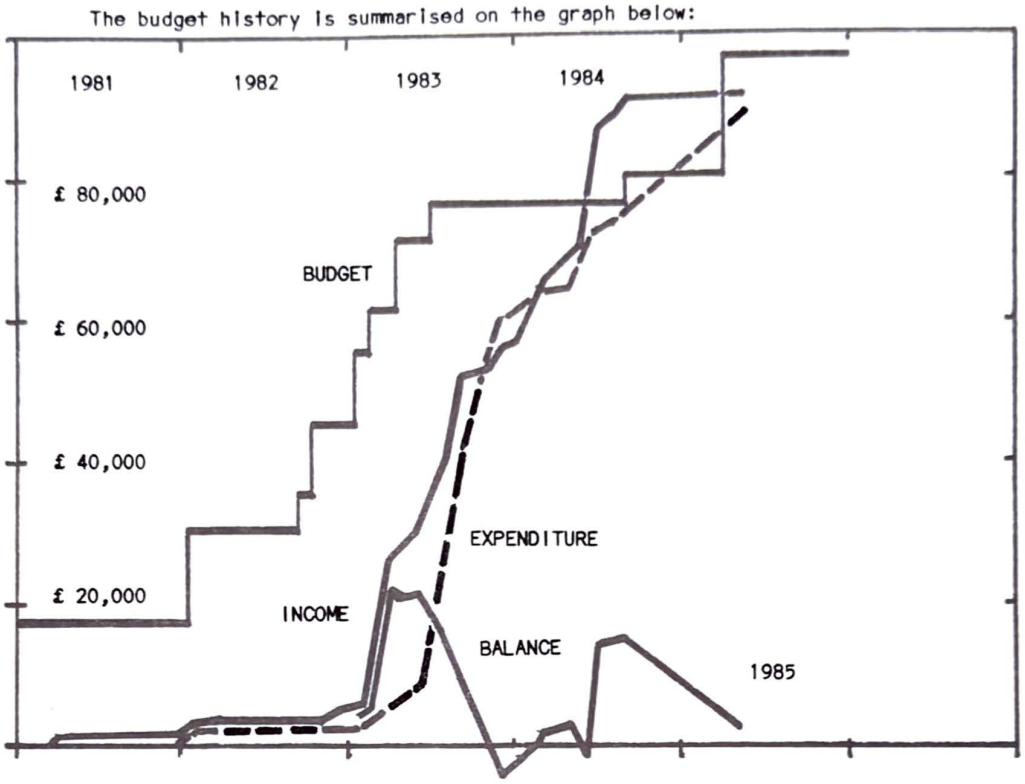
Post-expedition administrative load remains high, in order to ensure thorough publication of results, and return of stores etc. However the load is now more broadly spread, over 35 team members who know what they are talking about, and have all experienced the magic of Antarctic Islands.

Appendix 4B

FINANCE.

The Expedition Fund was a Non-Public Fund, subject to audit by DNPTS on behalf of the Joint Services Expedition Trust. The small original budget, prepared when seeking endorsement, increased considerably as extra costs accrued for skidoos and boats. A good momentum of fund raising in 1983 then indicated a surplus, and this was utilised to increase the size of all 3 parties. Forecasting a safe margin with the Rolex Award, a large investment was made in cinefilm equipment. With nearly all the major appropriate funds having already helped us, fund raising was much harder in 1984. The credit balance at the time of writing does not quite meet the known forthcoming expenditures on report printing, photographic processing, and colour illustrations for the book. However we hope that royalties, lecture fees, further NERC funding for Ringe's equipment and sale of expedition equipment will bridge the gap.

The budget history is summarised on the graph below:



Personal Contributions	£ 23,000	General Equipment	£ 41,500
NERC Geology Grant	£ 500	Skidoos & Sledges	£ 14,200
Service Adventure Training Funds	£ 19,200	Cinefilm (nett)	£ 16,500
Service Non Public Funds (1)	£ 18,500	Still photography (nett)	£ 5,500
Civilian Institutions	£ 18,400	Scientific Equipment	£ 2,300
Commercial Sponsors	£ 7,100	Travel Fares	£ 5,100
Individual Sponsors	£ 1,200	Freight Charges	£ 2,000
Fund Raising Activities (2)	£ 3,500	Insurance	£ 700
Bank Interest	£ 1,100	Printing	£ 1,500
Royalties	£ 300	Post, Phone, Miscellaneous	£ 1,500
Equipment Sales	£ 100	Book Colour Subsidy	£ 2,400
Assured Income (at mid May 1985)	£ 92,900	Committed Expenditure (at mid May 1985)	£ 93,200

Note (1). Service Non-Public Funds include central funds such as the "Sailors Fund", plus many grants from Unit and Command Welfare Funds, and contributions from clubs, Messes, and the Royal Marine Association of ex-servicemen.

Note (2). Fund Raising activities include philately, raffles, sponsored runs, sweat shirts tee shirts, postcards, ties etc.

In 1987 the Expedition Fund will be wound up and a final statement of account rendered to DNPTS, with supporting accounts available for audit. Any surplus then remaining would be returned to the Joint Services Expedition Trust. Any deficit would be made up by the leader and team members.

Appendix 4C

PUBLICITY

by Chris Furse & Howard Oakley

One of our aims was to generate good public relations, showing the British Services in an adventurous (and peaceful) role. As well as encouraging good recruits, this will encourage support for future JSEs, providing useful publicity for the commercial organisations who have supplied us, or helped in other ways.

A multi-aim expedition with a scientific bias is not easy to sell to the media and coverage was scant during the first year, without the regular articles we had expected in the Sunday Telegraph. We feel there is scope for one or more national Sunday papers to run an Expeditions Column, (somewhere between the Sports Pages and Travel Pages?) This would provide a considerable boost to expeditions by encouraging commercial sponsorship Apart from the growing public interest in such individualistic, non-competitive "leisure" activities the paper(s) concerned would have priority on coverage of the major stories which are quite liable to arise, since most expeditions have an element of risk.

Many people, in many countries, now know where Brabant Island is, after Clive Waghorn's crevasse fall and rescue. We are now building up a good momentum of post-expedition publicity as noted below. We are always pleased to provide material to all supporting organisations, sponsors and suppliers.

1. COMMERCIAL ADVERTISEMENTS.

Equipment reports are being provided to all suppliers, with endorsements wherever appropriate. Several have already been used.

Colour Processing Laboratories Ltd are marketing brochures and posters etc. using expedition photographs. Several have already been used.

It is hoped that a group of commercial sponsors and suppliers will fund a 1986 calendar of expedition colour photographs.

2. WRITTEN MATERIAL

We know of over 60 newspaper articles that have appeared, including two colour features in the Telegraph Sunday Magazine.

Syndicated Features Ltd are marketing general articles to magazines worldwide, and several have already been published.

Team members have had a few articles published in house magazines. A wide range of magazines are now being approached and we expect over 50 articles to be published eventually, plus several papers in the Scientific press.

This report, and a technical photographic report, are each being distributed to about 1000 addressees. The detailed equipment reports will have only very limited distributions to manufacturers, the RGS, and the SPRI.

Croom Helm will publish "Antarctic Year: Expedition to Brabant Island" in Spring/Summer 1986. I have covered both the expedition and the environment in this richly illustrated book. Three other books on particular aspects are tentatively planned by Atkins (mountain travel), Corbett and Hall (coffee table pictures) and Oakley (cold survival physiology).

3. STILL PHOTOGRAPHY

Over 40 different expedition pictures have already been used to illustrate articles and advertisements. Many more illustrations will be published in magazines over the next year or two.

Colour Processing Laboratories exhibited over two dozen large expedition colourprints at Fotokino Cologne 1984: the CPL display with a 7ft x 4ft Flexiframe boat picture is available through the Leader. Other displays have already been shown by Pelling and Cross and by Nikon and more are planned, including an Olympus Gallery exhibition. Corbett also hopes to arrange a travelling exhibition (in aid of Multiple Sclerosis Research).

Photographs are available from CPL or the three expedition photographers who can be contacted through the leader. Early in 1986 a selection of expedition pictures will be passed to the Topham Picture Library where they will be available for use on a normal commercial basis.

4. LECTURES, PRESENTATIONS AND SHOW STANDS

The first planned public presentation is at the Royal Geographical Society in October 1985: it is hoped that HRH The Prince of Wales will attend. Team members are available to give lectures and presentations, and several have already done so. Organisations can contact local team members through the Leader.

We expect the expedition to feature on several manufacturers stands at the next Harrogate Camping Show, the Earls Court Boat Show and Twickenham Canoe Show and hope that team members can be made available to man some of these stands.

5. RADIO AND SOUND RECORDINGS.

Apart from news items, team members have given over a dozen radio interviews totalling over 2 hours programme time, on national and regional stations including BBC World Service and Radio Canada.

Oakley plans to produce a half hour radio feature from his Winter phase recordings.

6. FILM AND TELEVISION.

The 1984 Rolex Award Film included 10 minutes coverage of this expedition.

Pacesetter Enterprises Ltd are marketing the expeditions cinefilm material. This was of good quality and at the time of writing (April 85) negotiations are in hand with BBC World About Us and with Anglia Survival to produce a 50 minute TV feature. The Expedition and Pacesetters will retain rights for showing abroad, where there is known interest.

The expedition has featured on British TV about two dozen times, plus perhaps 50 news reports during Clive Waghorn's rescue. Coverage abroad has included a 5 minute NBC live broadcast networked in the USA, plus coverage on Belgian and French programmes.

7. MISCELLANEOUS.

Over 2000 expedition philatelic First Day covers have been sold, eliciting widespread interest in Britain, France, Belgium, Italy, Switzerland, Austria, Norway, Sweden, East and West Germany, Czeckoslovakia, USSR, USA, Canada, Japan, Australia, New Zealand, the Falklands, and probably elsewhere as well.

The prestigious Rolex Award for Enterprise made to the expedition in 1984 has been reported worldwide.

Corbett and Hall won a nomination for an Ilford Award in 1984 for a First Summer photograph.

.....

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Any enquiries for publicity should be made to:

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Park View Close,
Wroxall, Ventnor,
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Appendix 4D — HMS ENDURANCE — by Chris Furse

This expedition depended upon the magnificent assistance given by HMS ENDURANCE with her Ships Flight of two Wasp helicopters. Over a span of 5 seasons, under three successive Commanding Officers (Captains Nick Barker, Colin McGregor and Pat McLaren) she provided active support, including the initial photographic reconnaissance in 1980/81, and the landing of food and fuel in 1981/82, as well as the operations in 1983/84/85.

The main tasking priorities for Endurance set by CinC Fleet are: 1. Inspections of bases under the Antarctic Treaty. 2. Hydrographic Survey. 3. Support for BAS. Therefore the ship's help to us depended entirely upon goodwill from the earliest stages - goodwill that could easily be eroded by a dozen team members crowding the accommodation, while our stores crowded the hold. My 3 teams all wish to express their thanks to her Captains, Officers and entire Ship's Companies and Flights, who gave us such cheerful, enthusiastic, and above all efficient, help.

After the announcement in June 1981 that Endurance would be withdrawn from Service in 1982, the credibility of the expedition was kept alive by tenuous fallback plans. It became clear that logistic assistance from BAS or USARP would not be available, following a SCAR Logistics Committee resolution discouraging help to "private" expeditions like this. Nor was it possible to approach the Chilean forces for transport. Charter costs were prohibitive at over £2000 per day, so my ultimate fallback was smaller parties with ultra-light equipment, taking passage in tourist ships to and from Palmer Station, where our food and fuel was already cached.

Then the Argentines invaded the Falklands. Late in 1982 Endurance was reprieved, and the faint hope of mounting this expedition became again reality.

The ships support must be approved in principle beforehand by her operating authority, CinC Fleet. Support must be at minimal cost to operational tasks. So expedition plans must be aligned with the ships overall programme. This requires careful preparatory staffwork with Commanding Officers, and with the Superintendant of Survey Planning in the Hydrographic Department.

Appendix 4E — THE FALKLAND ISLANDS — by Chris Furse

From the early planning stages, Sir Rex Hunt, the High Commissioner for British Antarctic Territories, had given his support to this expedition. He visited Metchnikoff Point on 17 February 1984 to formally open our Sub Post Office there. He and Lady Hunt also extended invitations to the expedition in transit both ways, which were much appreciated.

In 1981/82 the Royal Marines of Naval Party 8901 helped the expedition by local purchase of Kerosene, and handling our rations in transit.

During the expedition itself the much larger garrison than present on the Islands gave us much assistance (particularly the FI Logistic Battalion and Queens Harbour Master, but also many other units). It is important to realise that there is a rapid change-round of Service staffs in Stanley: continuity of contacts is therefore a problem for fringe activities such as Joint Services Expeditions.

Station VPC transmissions were clearly received on Brabant Island, but 2-way Communication was seldom possible. Nevertheless several Winter Party messages were transmitted to VPC, but only a few of these ever reached our Rearlink, which severely handicapped the Second Summer preparations.

The Commander British Forces Falkland Islands has operational control north of the 60S boundary of the Antarctic Treaty Area, and his joint staff control all Servicemen and stores in transit through the Falklands. On return of the Winter Party
General de Labilliere was debriefed by Furse: tentative plans for future small, single-summer, Service mountaineering expeditions to South Georgia, Smith Island and Brabant Island were briefly discussed and preliminary prospectuses were left on file with the Staff Adventure Training Officer.

All three expedition parties found their brief stopovers in the friendly Falklands both enjoyable and useful. After completion of the new Stanley Airport, small, well-planned expeditions to the Antarctic should be easier to organise than ever before. However the final legs by sea will remain a very difficult hurdle, with the possible exception of South Georgia.

Appendix 4F THE BRITISH ANTARCTIC SURVEY by Chris Furse

During our preparations BAS staff at all levels gave very helpful advice to various expedition team members. The Survey operates with stringent economy: research is increasingly focussed on potential commercial resources - on geology and the marine ecosystem. The efforts of BAS scientists are strictly concentrated upon their own full research programmes. Involvement with a JSE would clearly absorb BAS scientists' professional time, undertaking post-expedition analysis of raw field data and collections by unqualified amateurs. Nevertheless the Director of BAs agreed to consider collaboration with this expedition on specific projects, the criterion being whether or not the resulting information was likely to be worth the BAS effort involved. This rigorous scrutiny proved a very healthy exercise for us. However it introduced a chicken & egg problem - not being able to work up potential projects with BAS scientists before the selfsame projects were approved. This was particularly difficult in the tightening research field of terrestrial biology, and again produced a healthy result - we located many researchers in Universities eager to receive material from the Antarctic and welcoming this opportunity. In the end 15 scientific projects were arranged in collaboration with BAS, out of a total of 81.

Dr Laws, Director of BAS, kindly authorised Faraday Base to transmit 100 word bulletins back from the Island at weekly intervals, for a nominal cost. The radio operators at Faraday (together with those at Signy Island, Rothera and the USARP Palmer Station) were our only regular contact with the outside world. Over the long winter in particular they became familiar voices and indeed friends. We thank all of them for their friendly radio company, and the link with our families and with the expedition in Britain which was so important.

When Evans developed a mild duodenal ulcer late in the winter, assistance was requested for a precautionary medical evacuation. As always BAS responded generously to a call for help, and RRS John Biscoe picked him up from Metchnikoff Point, making him welcome as a passenger for 8 days to their next port of call at Punta Arenas. She also landed Service rations and fuel embarked in Port Stanley, plus very welcome extra gifts of fruit, vegetables and bacon, and some cases of Newcastle Brown. Later, while passing through the Gerlache Strait, she surprised the Dayglo Party with a lightning boat visit, giving them two boxes of fresh fruit and vegetables. Needless to say, all these unfamiliar goodies were demolished with gusto.

A very friendly, but wary and precarious symbiosis exists between BAS and the rare expeditions to the Antarctic. There is a tendency for Service expeditions to promise more than they achieve on the scientific front: this endangers the relationship, and rebounds on subsequent expeditions. (Any such promises are in any case fruitless, as they do not actually help gain support for the expedition). On Brabant Island we did set out to undertake thorough work within our capabilities. We hope that the results from our fieldwork will demonstrate again (like those from two JSEs to Elephant Island), that Joint Service Expeditions can and do provide valuable additional scientific information on Antarctica.

One amusing instance revealed another ingredient in the BAS reaction to outside expeditions. BAS effort had not been approved for analysis of our arthropod samples, so we had made arrangements with Mike Usher of York University. When descriptions by radio suggested that we had discovered a significant new species for Antarctica (an opilioacarid) BAS requested that we should supply our specimens to BAS for first analysis. If the Antarctic were my parish, I too would want a private domain!

The underlying reason for the stiff formal stance taken by BAS toward expeditions to the Antarctic is the possibility of BAS being drawn into a rescue operation, because that would be expensive, and would divert resources from scientific field programmes. This attitude is frustrating to expeditions during their preparations. However it must be appreciated that the resistance is the inseparable obverse of a golden coinage, - the BAS code of conduct in the Antarctic. When real need arises BAS gives unstinted help and it is precisely because of this that expedition plans are viewed critically. The BAS reaction to real need was demonstrated magnificently when Waghorn broke his leg. Ed Murton and his crew in the one remaining BAS Twin Otter flew daily sorties from Rothera (300 miles south) logging over 12 hours flying in appalling conditions: the sound of the Twin Otter overhead in the cloud was a marvellous fillip to Waghorn and Gill's morale, telling them that the others had got through to the radio and help would come. The Twin Otter also dropped a a jerry can of fuel within a rope's length of the tent.

Thank you BAS !

Appendix 4G. RESCUE AND EVACUATION by Chris Furse

During the winter months evacuation would not have been possible. This required a Doctor in the team, and determined the scale of medical and surgical equipment taken. However it did not influence activities on the island - one is equally careful to avoid accidents in summer as in winter. In the two summers, the possibility of evacuation did exist, because ships do pass Brabant Island at intervals. However even at the height of the summer season, several weeks might elapse after an accident happening before evacuation was possible.

In the event one precautionary medical evacuation and two casualy evacuations were effected between November 1984 and March 1985. Fortunately no serious accidents occurred during the midwinter months.

Evans. In July, Evans developed clear symptoms of a mild duodenal ulcer. These worsened in September, and Evans volunteered to remain alone at Metchnikoff Point, in hope of evacuation. In reponse to a radio message requesting a Precautionary Medical Evacuation, BAS agreed that RRS John Biscoe would pick him up en passant, at the beginning or end of November when she was due to pass by. USARP also agreed that the USCG Icebreaker Glacier could uplift him by helicopter in December if John Biscoe had been prevented by bad weather. In the event RRS John Biscoe picked Evans up by boat on 3 November. Evans was landed at Punta Arenas at the ship's next planned call there. Commercial air transport had been arranged by RAF Support Command HQ1 Group Aeromedical Section, in conjuction with the Services Booking Centre and the Defence Attache in Santiago. After arrival in Britain, Evans was examined at Queen Elizabeth Military Hospital, Woolwich: he had recovered and was pronounced fit for duty.

Greenway. In January Greenway fractured his leg while lashing down stores in a storm at "Dayglo Point". He was nursed in the Refuge Hut erected there for several days until one of the expedition's doctors arrived. By chance the Canadian Icebreaker Polar Duke (seconded to USCG, on charter to ITT, for USARP) passed offshore on 31st: Waghorn went out by boat and arranged a pickup when Polar Duke was due to pass by again in a few days. USARP agreed to this and Greenway was put on board. When the ship arrived at Punta Arenas, an RAF Medical Orderly met him; he was X-Rayed in the hospital there and the leg put in plaster. He then returned to Britain by commercial flights, accompanied by the Medical Orderly. Soon after arrival in Britain, he was operated upon at Queen Elizabeth Hospital. The whole evacuation had been remarkably quick, taking only 15 days from the injury to the operation.

Waghorn. After Waghorn had broken his leg on 4th March, a major rescue operation was mounted involving HMS Endurance, RFA Olna, 826 helicopter flight and the BAS Twin Otter from Rothera. The Chileans and USARP also offered to help. The rescue itself is described in the narrative. Endurance was due to pass the island at about that date during her 3rd Work Period; however the other participants in the rescue all undertook unscheduled movements. From the Falklands Waghorn was flown back to Britain, where he was operated on at the RN Hospital Haslar, 16 days after the injury.

Evacuation of Evans and Greenway had been undertaken with negligible deviation by ships when due to pass Brabant Island. Only Waghorn's rescue involved unscheduled operations. Accidents and injuries are rather more likely to occur during an adventurous expedition like this, but accidents are possible even in the comparatively safe conditions of an Antarctic research base as well as on 2 man BAS field trips. The level of professional medical expertise available throughout the expedition was higher than that normally available in either BAS or USARP bases, and the overall medical risks of the expedition roughly corresponded to those at research bases.

We would like to thank all those concerned, for their good humoured, helpful and positive help over these three evacuations.

Appendix 4H. ACKNOWLEDGEMENTS.

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	Pilkington PE Ltd	loan	Night vision aids	
	Plancraft Watersports.		Canoe accessories	
Pe	Plessey Electronic Systems Ltd	loan	PRC 320 radios	
	MV Polar Duke (Icebreaker)			Passage
	Polaroid UK Ltd.	discount	Cameras & film	
	Polar Postal History Society of Great Britain.	Sponsor		
Pf	Polysox Ltd.	free	Stockings	
Pg	Polywarm Products Ltd.		Sleeping bag	
	Commander J.E.Porter RN.	Sponsor		
	Geraldine Prentice.			Support
	Prince of Wales Own Regiment of Yorkshire	Sponsor		
Ph	Principal Supply & Transport Officer (Navy) Devonport		Various	Stores accounting
	Principal Supply & Transport Officer (Navy) Portsmouth.			Packing & freighting.
	Procter & Gamble Ltd.	free	Toothpaste	
	Professional Dental Care Services Ltd.	free	Examination lights.	
	Prontaprint (Various branches).			Printing
	Professor Geoffrey Pugh, Portsmouth Polytechnic			Science
	Mr.& Mrs.Paul Purkiss.	Sponsor		

	Queen Elizabeth Military Hospital,Woolwich.			Treatment
	Queens Lancashire Regiment.	Sponsor		
	Racal Telectronics Ltd.	loan	Walkie-talkies	
	Rank Film Laboratories Ltd.	discount		Film processing
Ra	Regional Ordnance Depot,Thatcham.(A.T.Store).		Mountaineering kit	
	Miss E.J.Robertson.	Sponsor		
	Rodolfo Marsh Base (Chile)			Offer of help.
Rb	Rohan (UK) Ltd.		Breeches	
	Rolba Ltd.		Skidoos	
	Rolex Enterprise Awards	Sponsor		
	Rolex (UK) Ltd.	free	Rolex Oyster watch	
	Rothera Base			All round help
Rc	Rowntree Mackintosh Ltd.	free	Sweets	
	RAF Benson.			Preparations
	RAF Brize Norton, & VC 10 Squadrons.			Air travel
	RAF Cottesmore.	Sponsor		Parent unit
	RAF College Cranwell.			Parent unit
	RAF Germany.	Sponsor		
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Rd	RAF Kinloss	Sponsor	Various	Parent unit
	RAF Leuchars.			Parent unit
	RAF Leuchars Officers Mess.	Sponsor		
	RAF Lyneham, & Hercules Squadrons.			Air travel
	RAF Mountaineering Association.	Sponsor		
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	RAF Odiham.			Preparations
	RAF Ornithological Society.	Sponsor		
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Rj	Royal Engineers, Chattenden		Tri-wall hut prefabrication	
	REME Adventurous & Enterprising Activities Cttee.	Sponsor		
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	RFA Olna			Rescue
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	RM Poole Corporals Club.	Sponsor		
	RM Poole Sergeants Mess.	Sponsor		
	RM Sports Association.	Sponsor		
	RM Stonehouse.			Return stores
	Royal Military College of Science, Shrivenham.	Sponsor		
Rf	Royal Naval Engineering College,Plymouth.		Wind-generator	
	RN Hospital, Haslar.			Treatment
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Rg	RN & RM Mountaineering Association	Sponsor	Climbing gear	
	RN Sailing Association, Medway Branch	Sponsor		
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	RN Stores Depot, Llangennech.		Various	
Rh	RN Victualling Depot, Botley		Rations	Packing
	RRS Bransfield.			Cache muster
Ri	RRS John Biscoe		Goodies	Passage & freight
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	Royal Scottish Museum.		Collecting equipment	
	Russells of Newport.	discount	Sound recording equipment	

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	Sir Samuel Scott of Yews Trust.	Sponsor		
Sb	Schafer	discount	Skis & bindings	
	School of Military Survey,Hermitage.			Training
	School of Elect. & Mech. Engineering, Bordon.		Sledges	Stores packing
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	Services Sound & Vision Corporation.		Cinecameras	
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	Shaftesbury Marketing Ltd.	free	Wines	
	Shakespeare Ltd.	free	Fishing gear	
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	Mr.Oliver Shepard.			Advice
	Signy Island Base (BAS).			Talk in winter
	Dr.R.Skelton, Fish Laboratories, Pitlochrie			Science
Sd	Ski & Climb International Ltd.	discount	Pieps etc.	
	Dr.Humphrey Smith,Coventry(Lanchester)Polytechnic			Science
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Sj	Structaply Ltd.		Wooden hut	
	Dr.David Sugden, Aberdeen University.			Science
Sk	Survival Aids Ltd.	free	Various	
Sl	Swix Sport AS.	free	Ski waxes	
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Ta	Taylors Eye Witness Ltd.	free	Knives	
	Teachers Whisky Ltd.	free	Teachers Whisky	
	Technique Hair Studio,Sevenoaks,(G.& D.Mills)	Sponsor		
	Telegraph Sunday Magazine.		Film	Publicity
	Captain Allan Thompson RM.			Preparations
Tb	Tirfor Ltd.	free	Winch	
Tc	TOG 24 (Mileta Sports Ltd).	discount	Various	
	Topham Picture Library,Edenbridge.	Sponsor		Photo.library 1986
Td	Touring Sports Ltd. (latest name).	discount	Tents etc	
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Ya	Yachtspeed Industrial Services Ltd.	free	Shovels	
	Yacro Ltd.		Skidoo strops	
	Youth Hostels Association.			Accommodation Chil
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	1 Kings Own Border Regiment.			Preparations
	1 Training Regiment RE.			Parent Unit
	3 Flight Army Air Corps.		Extractor	Parent unit
	3 Royal Tank Regiment.			Parent unit
	3M UK plc.	free	Film	
	4 Armoured Division,HQ Signals.	Sponsor		Parent unit
	17 RSME Squadron Chattenden			Skidoo transport
	35 Engineer Regiment.			Parent unit
3a	36 Engineer Regiment.		Winches	Parent unit
	45 Commando Group			Parent Unit
	74 Engineer Regiment.			
	94 Locating Regiment RA.	Sponsor		
	826 Squadron (SeaKing helicopters).			Rescue

JSE BRABANT ISLAND OFFICIAL REPORT: ADDITIONS and CORRECTIONS.

This report was written by May 1985, but printing took 10 months. The additions and corrections below cover errors and omissions in the report as it stands; no attempt has been made to cover progress since the expedition on scientific analysis etc.

1. NEW OFFICIAL PLACENAMES. The following six names have been approved by the Antarctic Placenames Committee. The unofficial names used in this report should not be used again.

Lanusse Bay.	(instead of "Prince William Bay").
Terrada Point.	(instead of "Dayglo Point").
Larvik Harbour.	(instead of "Patria Bay").
Navy Point.	(between Larvik Harbour and Chirlguano Bay, not named by the expedition).
Cook Summit.	(instead of "Mount Frederick Cook" - it was nice to almost have one!).
Kayak Bay.	(between Hunt and Lecointe Islands, not named during the expedition).

2. MISPLACED OFFICIAL PLACENAMES. Re-examination of the original DOS manuscript map has shown that three official names were misapplied by the expedition:

Roentgen Peak	actually applies to the hill we called "Emery Peak".
Cushing Peak	actually applies to the hill we called "Noddies Hat".
Mount Ehrlich	actually applies to the hill we called "Ben Bangers & Mash". The peak we thought was called Mount Erlich (sic) actually has no name.

3. FUTURE EXPEDITIONS. The following expeditions are now being actively planned:

Hankinson.	1988.	Joint Service Expedition to Ellesmere Island.
Ringe.	1987/88.	Small geological expedition to the Gerlache Strait.
Waghorn.	1988/89.	Canoe the Antarctic Peninsula.

4 MANUSCRIPT AMENDMENTS.

History, page 9, 4th para. Penola did pass Brabant Island, so delete "probably"

Lower photograph opposite p57. Delete de Gerlache and substitute Evans.

Geology, p60, 7th para, last line. Delete 950m and substitute 950 ft.

Meteorology, p64. In column under "Days when Winds over 34 knots recorded"
delete 188 total days and substitute 116,
delete 48% of days and substitute 31%.

Medical, p77. Under Second Summer add "Williams also fractured a bone in his hand in a rockfall at Claude Point on 2nd January".

Tents, p96. At foot of page add the following comment:
"Comparison with the Belgian Antarctic Expedition led by Gaston de Gerlache in 1957/58 demonstrates the major advantage of using tents.
They used a basehut: 440 tons of stores were needed for 17 men for 15 months.
We used tents: 40 tons of stores were needed for 10-17 men for 15 months."

Finance, p110. Under Income amend

	NERC Research Grant	to £ 2,300.
	Equipment Sales	to £ 1,200.
and	Total Income	to £ 95,800.

Under Expenditure amend

	Still Photography	to £ 8,400.
	Insurance	to £ 400.
	Printing	to £ 1,800.
	Book subsidy (3)	to £ 5,200.
and	Total Expenditure	to £ 98,900.

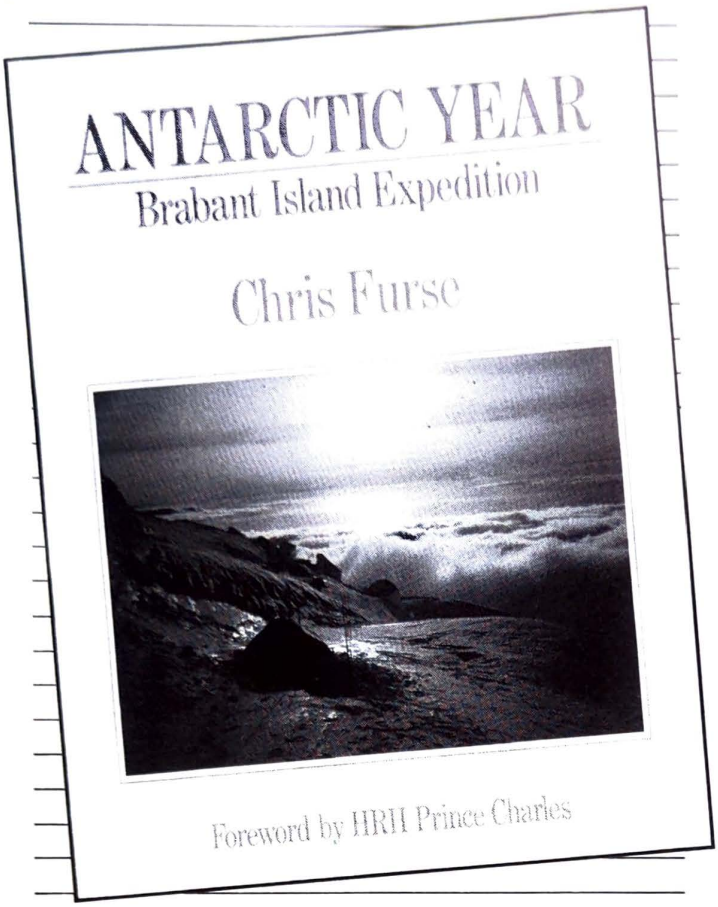
Add "Note (3). Book Royalties will be paid to the Expedition."

Acknowledgements.

p117.	Add:	"British Army of the Rhine - Sponsor".
p118.	Delete:	"Dixon & Watt Ltd - Insurance".
p120.	Add:	"Kenbe Binders - Report binding".
p122.	Add:	"Mrs Barbara Ringe - Sponsor".

18th April 1986.

Hegg Hill,
Smarden,
Kent. TN27.8NX.
England.



ANTARCTIC YEAR:

Brabant Island Expedition

Chris Furse

Foreword by HRH Prince Charles

In December 1983 the fifth Joint Services Expedition to the Antarctic, led by Commander Chris Furse, set sail for Brabant Island. Their aim was to pass a complete year on this island, so wild and inhospitable that it has been visited by humans only three times since its discovery in 1898. This book is their month-by-month account of life on Brabant Island and is an enthralling and stirring story of survival in the harshest of conditions.

The expedition went out to explore the island in every way possible, braving the severe climate and precipitous terrain. Not only did they have over 60 scientific projects to complete, examining the island's geology, and what grows there and what lives on and around the island, they also aimed to climb all the peaks on Brabant and to circumnavigate the island in kayaks. Living in tents and snow-holes throughout, they were to be the first expedition to endure an Antarctic winter without a base hut.

Despite these difficult conditions, Chris Furse writes with immense humour. He describes how they overcame these hardships to survive on a day-to-day basis, and gives a lively account of each team member, their living conditions, diet and ways of coping physically and psychologically. There are also moments of drama, as when the party leader of the second summer expedition fell down a crevasse, breaking his leg.

Over 150 spectacular photographs provide a visually stunning accompaniment to the text, showing both the island's rugged beauty and focusing on its varied flora and fauna. With a foreword by the expedition's patron, HRH Prince Charles, this book is both a gripping account of human endurance and an invaluable survey of a little-known island.

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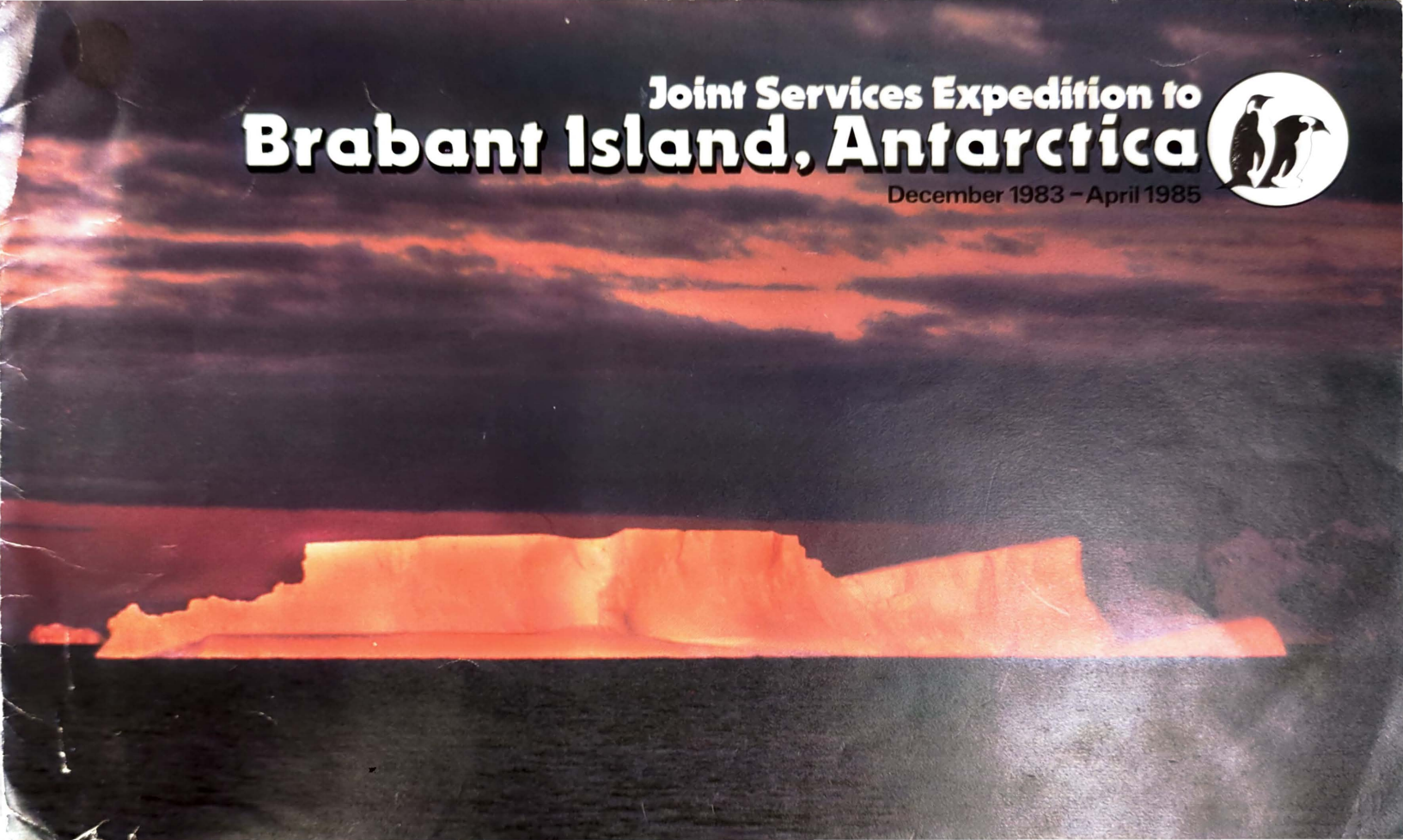

Joint Services Expedition to
Brabant Island, Antarctica
December 1983 – April 1985

Joint Services Expedition to Brabant Island

Patron: His Royal Highness the Prince of Wales
Approved by the Royal Geographical Society

Leader: Commander Chris Furse
Royal Navy

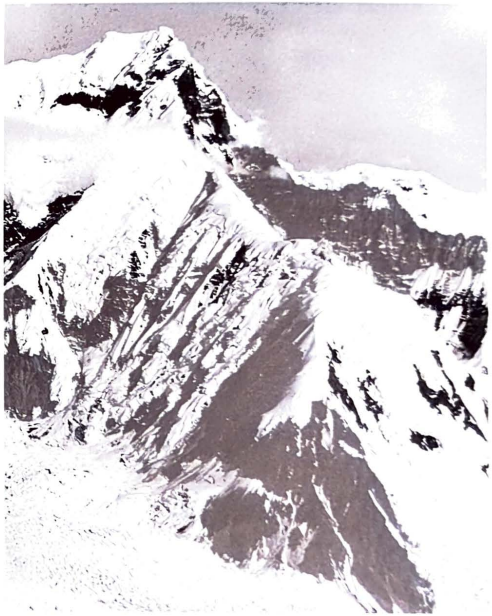
Team members during training in Norway.

This is the fifth Joint Services Expedition to the Antarctic, the third within the Antarctic Treaty area. All have been organised and led by Naval Officers.

Like the leader's two expeditions to the Elephant Island Group, this one will be devoted to scientific work. However there is a strong element of adventure and unavoidable danger due to the precipitous terrain and harsh climate. The expedition is in three phases, with three teams of 8–16 men relieving each other in the field. We hope this will not be the last in a long Naval tradition of Antarctic exploration.

Introduction

This is an "old-fashioned" expedition to explore in all senses a remote and wild island. Our aim is the first scientific exploration of Brabant Island to describe the island's rocks and landforms, what grows there, and what lives on and around the island. However, adventure and danger will go hand in hand with science: we will make the *first ascents* of all peaks on Brabant (none has been climbed), and plan to circumnavigate the island in kayaks during the Second Summer provided finance and logistics allow – the most southerly canoeing yet undertaken. To reach the island we must carry 15 tons of stores on shuttle journeys totalling over 1870 miles by Skidoo and sledge and over 620 miles by Avon and Lifeguard 5-metre inflatable boats. We will be living in tents and snowholes throughout – the first Antarctic expedition planning to Overwinter without a base hut.



Mount Parry 8,300 ft

Humann Point – The landing point on Brabant Island and main camp site

Aims

1 Geological survey and research to determine the geological history of Brabant Island, the keystone to the opening of Bransfield and Gerlache Straits (National Environmental Research Council funded research studentship supervised by Professor Baker at Nottingham).
2 Feeding studies on Crabeater Seals in winter (International Biomass Programme).
3 By field observations, collections and subsequent analysis to determine and describe the fauna (birds, seals and terrestial invertebrates) and flora of Brabant Island.
4 Subsidiary studies and collections in the above disciplines plus periglacial landforms, glaciology, fish, marine invertebrates and parasites.
5 Physiological research on survival – the first objective study into cold habituation and acclimatisation over such a long period without a base hut.
6 Meteorological records and local topographic mapping to support above.
7 The First Ascents of all peaks on Brabant Island.
8 Circumnavigation of Brabant Island in kayaks (Second Summer).
9 Comparative endurance trials of tents etc, leading to Endorsements promoting all proven food material and equipment.

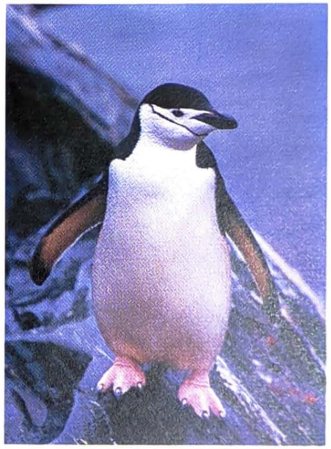
Previous Exploration

The Belgian Antarctic Expedition, led by Adrien de Gerlache, made the first landing in 1898. A party of five (including Roald Amundsen first setting foot in Antarctica) spent five nights ashore. Theirs were the first tents recorded in Antarctica; subsequently the crew of the Belgica were the first to survive an Antarctic winter. It is appropriate that the first Antarctic expedition planning to overwinter in tents will be to Brabant Island. We will build a cairn with a plaque commemorating their first landing as an Historic Monument above Buls Bay. Francois de Gerlache, grandson of Adrien and now serving in NATO, is a member of this expedition. Every year ships pass by through Gerlache Strait, but Brabant is so inhospitable that only three subsequent landings are recorded:

1955/56	One-day boat landing by a British Antarctic Survey geologist.
1957	Survey Station briefly established on Lagrange Peak by helicopter for Hunting Aerosurveys.
1973/74	One-day geological reconnaissance by helicopter from the Chilean ship AP Piloto Pardo.

1898 de Gerlache, Danco, Amundsen, Cook and Arctowski

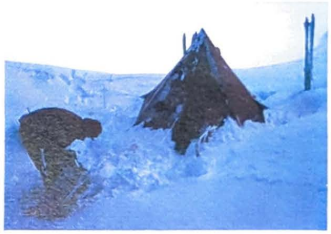
Climbing in the Maritime Antarctic



Chinstrap Penguin

Photos from JSE Elephant Island 1976/77

Climbing camp

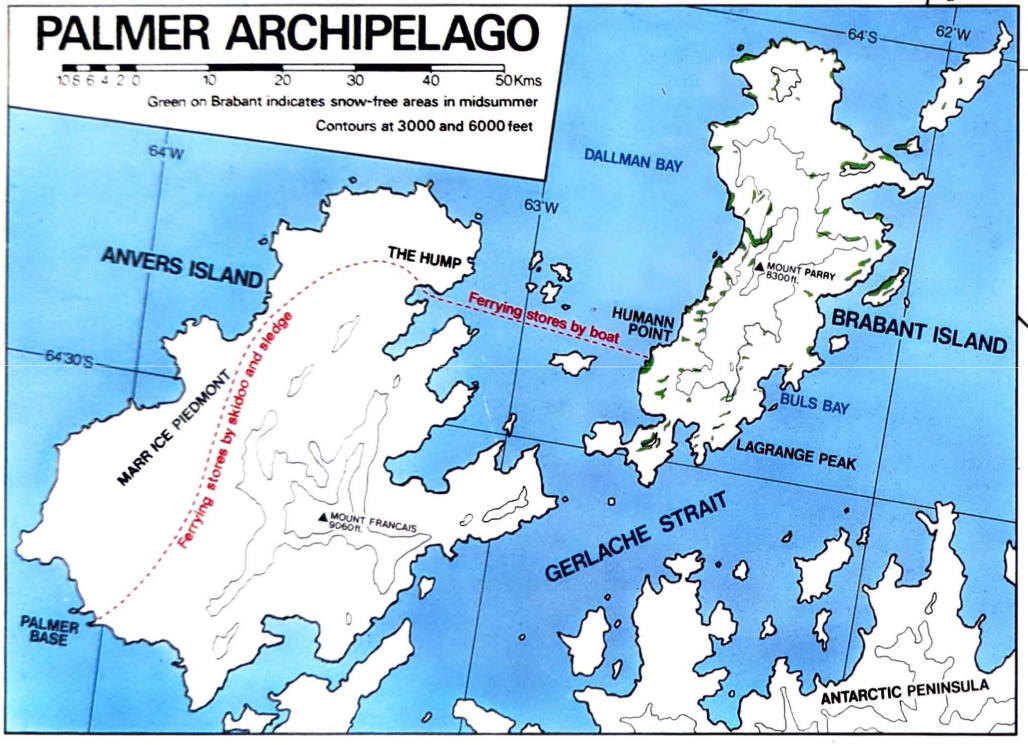


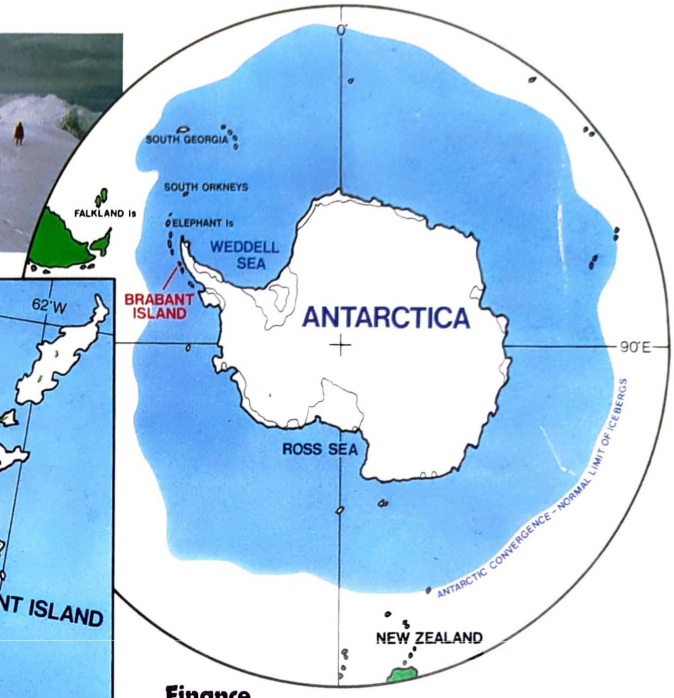
Snowhole – Security in a blizzard

Brabant Island

Anvers Island, Brabant and smaller islands form the Palmer Archipelago lying off the west coast of the Antarctic Peninsula at 64° South. Brabant is 37½ miles long, with mountain ranges rising over 8000 ft, and almost entirely covered by ice and snow. The climate is hostile: temperatures range from +10°C to −40°C with monthly means between freezing and −20°C; winds often exceed Hurricane Force 12. The surrounding seas teem with seals, penguins and other birds though there are fewer whales now. Icebergs litter the sea all year round, and pack ice invests the islands in winter.

A rare clear day on Pardo Ridge





Finance

This is a very economical expedition because standard Service equipment and routine Service transport is available. However the team members have to finance a budget to £71,000 to cover non-Service equipment and other costs. A third of this is coming from team members pockets: the balance is being sought by widespread appeals. Several generous grants have been received and the breadth of moral support is very encouraging. But a substantial sum still requires to be raised by June 1984. Sponsorship will be greatly appreciated and will be acknowledged in the expedition's reports. Sponsors will receive regular newsletters throughout. Enquiries will be welcomed by the leader or by John Spencer.

Designed & prepared by CGP(N) London