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THE BRITISH JOINT SERVICES
GASHERBRUM EXPEDITION 1996
FINAL REPORT

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For Manolo Hernandez

Our companion in arms in the Spanish Military team,
who stayed behind on the mountain.

“Not in silk nor in samite we lie,
Nor in curtained solemnity die,
Amidst women who chatter and cry,
Or children who mumble a prayer.

But we sleep by the ropes of the camp,
And we rise with a shout, and we tramp
With the sun or the moon for a lamp,
And the spray of the wind in our hair.”

J E Flecker
“Hassan”

FOREWARD

by Vice Admiral M G Rutherford CBE

It is a privilege for me to write a few words on the safe return of this highly successful expedition. I write with some sense of relief since I played a part in proposing a change from the original objective of Manaslu, and have been concerned that Gasherbrum I was perhaps too demanding a goal, and the area too challenging for the Junior Team.

Clearly they were not, and I congratulate both the Junior and Senior Teams on their magnificent achievements which do much for the credibility of Service mountaineering. The 1996 expedition is the first in which the Services have climbed an 8,000m peak without oxygen, and the first in which young climbers have been given an opportunity to "sharpen their crampons" in the Himalayas, gaining experience in serious climbing at or near 6,000m. In doing all this the expedition members showed superb team work, commitment and toughness, stemming from excellent leadership and organisation.

The success of this expedition will raise the status of Service mountaineering in a climbing fraternity which was showing signs of scepticism after two large and costly Service expeditions to Everest narrowly failed to reach the summit. The expedition was conducted in a truly text book fashion, and the Gasherbrum success puts the British Services back in the forefront of Himalayan mountaineering. It also highlights the continuing ability of the Services to take on demanding exploits of the highest order, and to carry them through with sound planning, courage, determination and leadership.

Malcolm Rutherford
Chairman, Higher Management Committee.

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THE JOINT SERVICES GASHERBRUM EXPEDITION

POST EXPEDITION REPORT

PART 1 - THE STORY

INTRODUCTION - Colonel Meryon Bridges OBE FRGS
Expedition Leader

The Report

This report covers all the activities of the Joint Services Gasherbrum Expedition 1996. It is in two parts: Part 1 tells the story of what the teams did, and Part 2 provides information on the planning and management of the expedition, which may be of use to planners of future expeditions.

Additionally, a companion volume has been produced independently by the Junior Team, which expands on the detail of their activities, and to which all its members contributed.

Expedition Planning

When, in the summer of 1993, the Joint Services Mountaineering Committee (JSMC) met to propose that a major joint services climbing expedition should be planned for 1995 or 1996, the choice of objectives was wide open. The single Service climbing clubs were invited to put forward suggestions for consideration, and at that stage the AMA proposal of Manaslu was adopted.

The analysis behind its selection was that as the Services had not succeeded in an attempt on an 8,000m peak for nearly twenty years (Everest in '76), there was growing pressure for a successful climb to enhance the credibility of Service mountaineering. For such a climb to have significance, the mountain climbed had itself to be significant, and this militated for choosing one of the fourteen 8,000m peaks. At the same time achievability was a high priority, so that a failed attempt on a hard mountain was not to be contemplated. At this stage also there existed a predilection for climbing a peak in Nepal.

In Oct 93, a Higher Management Committee (HMC) was formed to steer the planning, consisting of the Presidents/Chairmen of the three Service climbing clubs, Vice Admiral MG Rutherford, Air Marshal Sir Roger Austin, and Major General RA Pett, together with Mr Nicholas Luard and the Chairman of the JSMC, Col DV Nicholls. At the same time the leader of the expedition was selected and both myself and the expedition deputy leader joined the HMC. Over the next six months, I developed the analysis and planning further. This highlighted the following points:

- a. High altitude mountaineering has a seriously incestuous streak, in that teams are most often selected from a small core of tried and tested mountaineers, and aspiring newcomers to the Himalayan scene find it hard to get a foot in the door. It was therefore most desirable that this expedition should be so devised as to spread the benefits as widely as possible.

b. The Joint Services Expedition Trust was potentially a major source of funding, but its deed of trust requires that to qualify for funding, expeditions should include a substantial element of scientific work within their programme of activities. Equally it was desirable that the scientific programme should not deflect the team's focus from the primary aim, that of climbing a big mountain.

c. Servicemen have some significant advantages over civilians in the opportunities that they get to take part in expeditions, and it would be commendable to extend the membership of this expedition to a small number of civilians.

d. Further consideration of Manaslu showed that while it met the criteria of achievability and significance, it, and particularly its NE face, constituted an exceedingly dull proposition. The route is essentially a long snow plod, without technical interest, but it does involve a significant level of avalanche hazard.

e. The reasons for concentrating our attention to Nepal had disappeared, in that the incumbent Defence Attache, who was a climber, was due to be short toured.

Accordingly the selection of the peak was reviewed, and of the fourteen, Gasherbrum I (8,067m) seemed to offer a much better compromise. It is a fine peak, aesthetically appealing, and at that stage it had not had a British ascent. It offered a route which posed significant problems of technical interest at above 6,500m. The objectives finally selected for the expedition therefore were:

a. A Main Team of 12 Service personnel would climb Gasherbrum I in the Karakoram in N Pakistan. The climb would be conducted in contemporary lightweight style, using three camps above base, and without using supplementary oxygen.

b. A Junior Team, composed of 8 members who would be under the age of 23, but under the direction of an experienced leader and deputy leader, would carry out a parallel expedition in the same area, aimed at introducing its members to Himalayan mountaineering. This team would consist of two Navy, two Army, two Air Force, and two civilian members.

c. A medical party, consisting of two professional researchers and a leader, would travel with the Main Team, and supervise field studies into the sourcing of medicinal compounds from native herbal resources, and into aspects of acclimatisation and acute mountain sickness (AMS). At the same time the doctor of the Junior Team would use its members as guinea pigs in a separate study into acclimatisation.

d. The expedition would raise a substantial sum of money for a donation to The Prince's Trust, a charity sponsored by HRH The Prince of Wales to create opportunities for young people.

At Annex A are given details of the planning of the expedition, together with a

planning diary covering the period from Oct 93 to departure in May 96. At Annex B is described the system developed and used for planning and then controlling the climbing phase.

In Jul 94 a brochure was printed and fund raising started. At the same time invitations for applications to join the team were published.

Team Selection and Training

The leader pre-selected three further members of the Main Team in order to help in the planning, and to provide him with some support. These were the Deputy Leader, the Equipment member and the Rations Member. All other places were open to application, male or female. Applications were submitted direct to individual Service clubs, whose committees were invited to vet them and to provide initial screening. The clubs then submitted lists of their favoured candidates for the leadership of the Junior Team, and for membership of the Main Team. These lists formed the basis for invitations to attend interview and selection weekends. All potential candidates for the Junior Team were invited to interview as their CVs provided too little information for paper screening, and the numbers of applicants were relatively small. It was notable that there were no female applicants for the Main Team, and the two who put in for the Junior Team were well outside the qualifying age limit.

Interviews were held at Capel Curig over two weekends in Feb/ Mar 95. The pattern was to meet up on Friday evening, climb informally together on Saturday, followed by an obligatory social visit to the pub. Formal interviews by a panel were held on Sunday. The panels were composed of members of the HMC, members of the single Service climbing club committees, and senior members of the team, not exceeding five in all, but ensuring full tri-Service representation.

Selection of the Main Team members was targeted at finding the best climbers available, but with a dispensation which allowed for two of the members to be less experienced, provided that they had sufficient promise. Considerations of rank and Service were largely ignored, though an approximate balance was seen as desirable. Successful candidates had to be competent, compatible and to have climbed previously at high altitude (at least 22,000ft). They also had to indicate commitment, and of having thought through what they were letting themselves in for, what it would entail, and why they wanted to do it. The amateur psychologist on the panel from the RN&RMMC proved to be a daunting interviewer and a source of revelation into some of the characters who came forward! A substantial reserve list was drawn up, and extensive substitution took place over the next twelve months, as selected members withdrew for various reasons.

Selection of the Junior Team was harder and more subjective as there was less evidence to go on. Since the object was to create a group of potential future expedition leaders, and give them the necessary qualifying experience, we sought to identify those with the drive, the ambition, and the initiative to carry on what we started, without at the same time sponsoring complete Prima Donnas. Some candidates came with an impressive array of experience for their age; some had virtually none, but at the same time indicated sufficient promise to justify a place. In

any case, over the next twelve months, the Junior Team was put through an intensive training programme by its leadership, so they were fully prepared by the departure date. The very high quality of the potential Junior Team candidates was encouraging, but it was difficult to maintain a proper balance between officers and other ranks. This largely reflected the problems of getting the word out to young soldiers/sailors/airmen.

Details of the teams, as they took part, are given in Annex C.

Team training consisted of a series of meets held around the UK, four for the Main Team and five for the Junior Team, and of piggy backing onto the Joint Service Alpine Meet at Zermatt in Aug 95. For the UK meets, the generous support of the JSMTTC in allowing us to use the centres was much appreciated. The primary aims of the training for the Main Team and reserves were team building and creating opportunities for briefing and coordination. The Junior Team meets were held independently under the control of that party's leadership, and the training provided was an essential precursor to the expedition.

Fund Raising

The task of fund raising fell primarily to the leader. Notable assistance was provided by Steve Jackson in tapping Navy funds, and by Richard Gammage in tapping very generous support from the RAF, but the bulk of the appeal, from designing and arranging the gratis printing of the brochure onwards, was managed from the one office.

All expedition costs, covering all groups, were funded from one single account, to allow tight fiscal control. The initial fund raising strategy was to seek a single major (commercial) sponsor. After the first fifty applications, it became apparent that such a sponsor was unlikely to be forthcoming, and the net was widened to invite any firm with whom we had a contact and which might consider making a donation of whatever size. At the same time application was made to all the Service charitable funds which might support the venture.

The evidence of the 18 month campaign is that there is very little publicity value left in mountaineering, unless it is conducted at the cutting edge, and/or includes a well known public figure. Therefore a Service team without a well known name, making a climb of a mountain which enjoys no particular notoriety, and by a well established route, held as much appeal for most commercial sponsors as a lorry load of fish after a week in the sun. Having said that, some firms did come forward and gave us very significant support, which was much appreciated. A few firms made contributions in kind or heavily discounted their charges, and attendance at the Camping and Outdoor Leisure Association (COLA) trade bash in Harrogate in Sept 95 allowed us to negotiate the supply of all equipment purchased at trade prices.

Conversely, support was forthcoming from within the whole range of Service charities, and they provided a series of very large and generous cash grants. It would be invidious to name selected sponsors here, but all sponsors are listed in Annex D. Annex D also details the budget and the funding of the expedition. Essentially, of the £125,000 required, approximately 20% was subscribed by the members, 72% came from Service sources, and 8% came from commerce. The vast majority of the

sponsorship was in the form of cash.. We were in the fortunate position of being fully solvent when we left the UK in May 96.

Preparations for Departure

When the Go/ No Go decision date of 1 Dec 95 arrived, the financial position allowed the Go option to be selected. From then on the expedition was in the implementation phase, and all equipment orders and other financial commitments were confirmed. Rations were ordered, travel arrangements made, insurance arranged, and all the plethora of detailed preparatory actions taken.

The relationship between the Main and Junior Team leadership was one which had to be evolved. The outline plan of the Junior Team was predetermined for costing and scheduling purposes, but they were free to develop the detail within that plan, and identify their requirements for equipment and rations. However all the equipment and rations were procured centrally to avoid confusion, since technically we were one expedition. Likewise funds were centrally controlled, travel arrangements covered the whole group, and negotiations with the in-country trek agent were centralised. In the matter of training, the Junior Team was entirely free to do their own thing. Once in Pakistan, they achieved an increasing level of autonomy, up to the point where our ways parted, when they became a separate expedition. The relationship between the expedition leader and the Junior Team leader was crucial in making this arrangement work, as the latter had to endure many minor frustrations in having his arrangements made for him.

The expedition freight was moved in advance direct to Islamabad by civil air freight. We negotiated a very competitive rate per kilo with Atlas Air, and the kit was all ready for collection on our arrival. (Our thanks go to the RAF for bringing it all back for us on a passing flight in August).

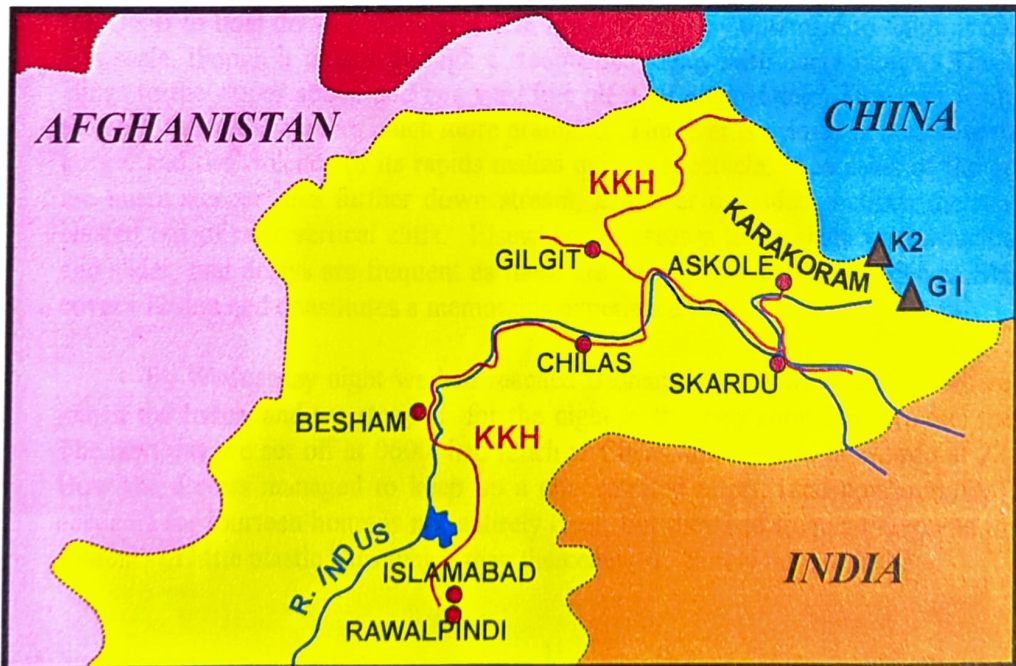
Acting on advice received, an advance party of three, Steve Jackson, Andy Edington and Mark Watson, was dispatched on 21 May. This proved vital to a speedy and successful passage through the arrival formalities in Pakistan, including negotiating customs clearance, the paying/ arrangement of the necessary indemnities for helicopter rescue, environmental protection, etc. and the booking of the formal team brief given to all members by the Ministry of Tourism.

By courtesy of the Commanding Officer of RAF Cranwell, the remainder of the expedition gathered there on the day prior to departure. This allowed for resolution of last minute omissions, and ensured that all members and their gear were delivered to Heathrow at the right terminal and at the right time on 25 May 96.

LOCATION MAP



NORTH EAST PAKISTAN



THE EXPEDITION

PRELIMINARIES - Meryon Bridges

Islamabad

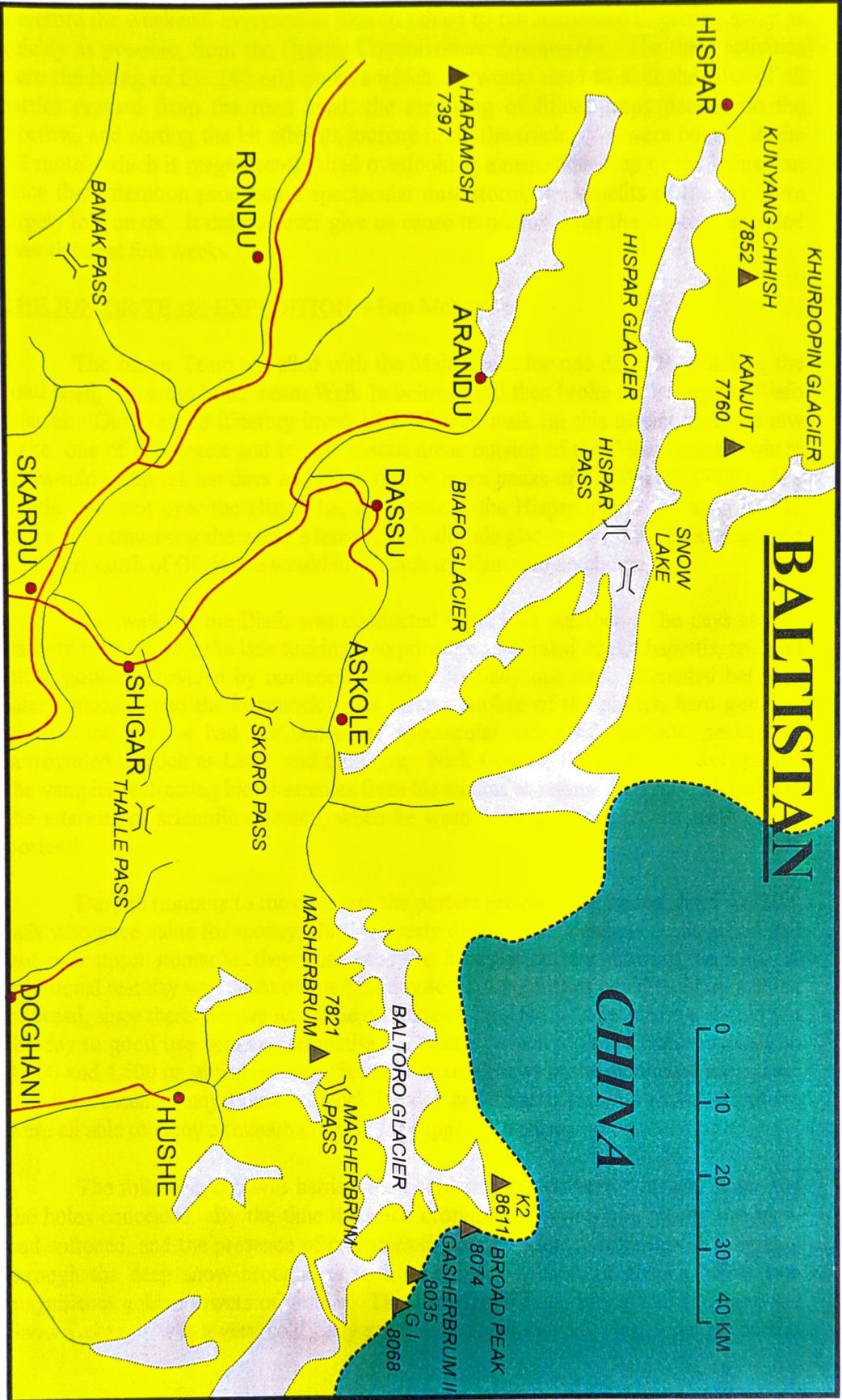
After a seven hour flight, the main party arrived in Islamabad on Sunday morning, and were met by the Defence Attache, Brigadier Digby O'Lone, our Liaison Officer, Captain Syed Aftab of the Pakistan Army, our trek agent, Anchan Ali Mirza, and our advance party. With the help of the DA and our agent, the advance party had done a superb job, and despite the fact that Monday and Tuesday were public holidays (Sunday is a working day in Pakistan), we completed all formalities by Wednesday lunchtime. This was perhaps as well, since by then several members of the team were already suffering from stomach upsets. Activities included the extraction of the freight from Customs, the Ministry of Tourism brief to all main team members, the issue of some centrally procured personal equipment, and last minute shopping and packing. On the Tuesday evening Duncan Penry was dispatched in a local "jingly" truck, so christened because of the elaborate ornamentation, which included a fringe of fine chains suspended from the bumpers back and front. He was selected to ride shotgun for the freight, and the truck would take up to twelve hours longer to reach Skardu than the rest of us. This committed him to a 72 hour trial of heat, dust, noise and somewhat odiferous companions, but I considered it would be good character building for him. Since the characters of the remainder were in excellent shape, we departed in two air conditioned buses the following morning.

To Skardu

The drive to Skardu initially heads north west across country to join the valley of the Indus, which it then follows up the famed Karakoram Highway (KKH) for over 400km. South of Gilgit, a right turn takes the military built road eastwards for 170km through the Indus gorge to Skardu.

Where the road joins the Indus, the river is wide enough and deep enough for the QE II to float down it sideways! For most of the way upstream to Gilgit it retains this scale, though it passes through a steep sided valley with many rapids. The road clings to the slopes above and is a very fine piece of engineering. However from the turn off, the road becomes much more dramatic. The river is penned in a narrow rocky gorge, and the violence of its rapids makes quite a spectacle. The sides of the gorge are much steeper than further down stream, and over extended sections the road is blasted out of near vertical cliffs. Elsewhere, it crosses loose shaly rock which slips and slides, and delays are frequent as these are cleared. Overall, the drive to Skardu covers 720km and constitutes a memorable experience.

By Wednesday night we had reached Besham, a short way up from where we joined the Indus, and we stopped for the night in the very comfortable motel there. The next day we set off at 0600, had lunch at Chilas, and arrived in Skardu at 2200. How the drivers managed to keep up a concentrated effort, (and concentration was needed!) for fourteen hours is not entirely clear, but they had frequent recourse to the contents of little plastic bags which they then chewed. Surely not Hashish?



Skardu

Our stay in Skardu was restricted to one day. Despite it being Friday, and therefore the weekend, everyone in Skardu rallied to our assistance in getting away as quickly as possible, from the Deputy Commissioner downwards. The main activities were the hiring of the 240 odd porters which we would need to shift the gear of all parties onward from the road head, the arranging of fifteen jeeps needed on the morrow, and sorting the kit after its journey up in the truck. We were housed in the K2 motel, which is magnificently sited overlooking a majestic sweep of the Indus, but since that afternoon produced a spectacular dust storm, the benefits of the site were largely lost on us. It did however give us cause to ponder what the weather intended over the next few weeks.

THE JUNIOR TEAM EXPEDITION - Ben McInnes

The Junior Team travelled with the Main Team for one day after reaching the road head, (See the Main Team Walk In below), and then broke off left up the Biafo Glacier. Our planned itinerary involved a 35 mile walk up this glacier to the Snow Lake, one of the largest and remote glacial areas outside of the Polar regions, where we would camp for ten days and climb one or more peaks of 6,100m (20,000ft). We would then exit over the Hispar La, and descend the Hispar glacier for a further 37 miles, thus traversing the world's longest high altitude glacier corridor. Emerging onto the KKH north of Gilgit, we would drive back to Islamabad and home.

Our walk up the Biafo was conducted in brilliant weather. The days started early to beat the sun, the lads tucking into porridge and boiled eggs, chapattis, tea, and other goodies provided by our cook, Rasoul. Initially our track alternated between lateral moraine and the hummocky rock strewn surface of the glacier, hard going in either case but we had the benefit of spectacular views of the wild peaks that surrounded us such as Latok and the Ogre. Nick Cruden, the civilian doctor, played the vampire, extracting blood samples from his victims at regular intervals, allegedly in the interests of scientific research, when he wasn't trying to extract the teeth of the porters!

Despite rumours to the contrary, the porters proved to be honest, hard working lads who gave value for money. In these early days, as the members acclimatised and got over upset stomachs, they were happy to have the porters showing the way. A traditional rest day was taken on the fifth day so that the porters could build up a stock of bread, since thereafter we would be camping on ice. Richard decided we should put the day to good use with an acclimatisation "walk", which took the team variously to 4,000 and 4,500 m, giving us magnificent panoramic views of the mountains around us. On the descent, Andy Edington, Nick Cruden and I harvested wild rhubarb, and we were all able to enjoy a rhubarb crumble for supper as a change of diet.

The following day was harder, the boulders being covered with wet snow and the holes concealed. By the time the track dropped down onto the glacier the snow had softened, and the presence of crevasses forced the team to rope up. A long slog through the deep snow brought us to a campsite just short of Napina below two magnificent golden towers of granite. The next day, 9 June, brought us finally to the Snow Lake. It was a very cold early start, and we all moved roped together on this

day, as there were crevasses everywhere. As the sun illuminated the Snow Lake peaks ahead of us, the lads started to think the day's work was nearly over. Little did we realise how vast this country is, and how deceptive was the apparent nearness of those summits. The increasing heat of the sun sapped everyone's energy, and the tired porters had to be urged along. Eventually the site of Base Camp was defined as the farthest point to which they were prepared to go to that day. Camp was pitched on the snow between the Hispar La and the northern end of the Sim Gang Glacier. It was a dramatic spot dominated by Baintha Brakk (The Ogre) on one side, and three Towers of Paine lookalikes on the other. We had reached 4,800m.

During the next day we shook out and planned the next few days activities. Richard would take half the group, including Ian, Jon, Lee and Paul, while Andy would take John, Nick, Nigel and myself. Richard's party was very keen to take advantage of the good going afforded by the night's cold, and so they got away at 2230 that evening. Out team moved off at around 0300 next morning.

11 Jun saw us on our first climb. The other team's objective was what we believed to be a first ascent of a 5,800m (19,000ft) peak across the Snow Lake from our camp. Its west ridge apparently offered them a delightful mixed route, with an exposed grade II/III traverse near the top. The team climbed very well, the long days of training now showing in their slick rope work and confident movement. It was a long day but acclimatisation was not a problem, and they named the peak in honour of our guide, Ali Muhammed Jangjungpa.

We headed further north to Cornice Peak, and that afternoon we pitched camp below it. Early the next morning we made an attempt on the mountain, reaching over 5,500m before deep soft snow threatened us with avalanches as the day warmed up, and Andy took the decision that we should withdraw. After a rest in our camp that afternoon, we returned to Base in the cool of evening. Meanwhile Richard and Ian had used the afternoon to climb a 300m ridge adjacent to the Hispar La. Again an interesting route which gave them 4 hours of very enjoyable climbing at around Grade II. The remainder of Richard's team put their feet up.

On the night of 12 Jun we were all back in Base, and the weather began to show signs of breaking up. Following a rest day on the 13th, the 14th was the first day of an extended bad spell. A brief sortie by Nick and Richard gave them some fun on another nearby ridge, while the rest of us reviewed the situation from their sleeping bags. Andy, Jon, Ian and I put in a short rock climb on the 15th, but the weather was getting worse all the time, and now we were regularly having to turn out to dig out the tents. It was decided that the best plan would be to cut our losses and cross the Hispar La early, before the weather closed it, and we could then take advantage of any improvement by climbing peaks along the Hispar glacier. Accordingly Richard sent off two of our camp staff to recall the porters from their camp further down the Biafo.

The weather continued utterly foul, and the porters turned up on 17 Jun. However one of them, Rassul, had taken a serious fall down a crevasse on the way up, variously reported as between 20 and 40 m. He was lucky to be alive, but he was in a bad way, and Nick diagnosed a possible fractured skull and hip, with severe bruising and lacerations. It was particularly frustrating as Richard had repeatedly given definite instructions that the porters were to be roped when moving on the glacier. That afternoon he held a council of war to discuss our next move. It was apparent that

really we had little choice as Rassul was not likely to be in a fit state to cross the La and go all the way down the Hispar glacier. Still it helped the lads to talk it through, and it gave us a chance to make an assessment of Himalayan factors and conditions. A final decision was postponed until tomorrow.

The next morning there was no doubt in anyone's mind. Rassul was seriously ill, and we had to get him to hospital as soon as possible. That meant going back down the Biafo through the blizzard. A couple of feet of new snow had fallen in the night, and conditions were still atrocious. The team really rallied round, spurred on by Lee Johnson's ever ready humour, digging everything out of the snow, and making up heavy loads ready to go. We set off on a compass bearing, the visibility varying between nil and a bit less. The team took turns in breaking trail through the deep snow, supervising and encouraging the porters who were now firmly roped together, and helping with Rassul, who was in severe pain. All the lads did extremely well in this arduous and serious withdrawal, and at about 1700 we reached a camp site just above Napina.

The next day was similar, long and strenuous, but by evening the blizzard had turned to driving rain as we lost altitude. It was a great relief too that Rassul seemed better today, and he managed to get along at a fair pace, although he was still tanked up with pain killers. Route finding through the glacier became difficult in the maze of gulleys and fissures, and some of the party actually abseiled off the glacier to reach the oblation valley beside it where we camped.

It was still raining hard next morning, 20 Jun, as we broke camp and continued our withdrawal. In the 2 ½ weeks since we had passed through here the snow had gone and the green of Spring was pushing up everywhere. However in the prevailing weather we were little inclined to appreciate it. It was not until the following day that the sun at last reappeared, after eight days of continuous precipitation, and we made our way down to Askole. From then on we were more or less in civilisation, and despite many problems with washed out tracks and landslides we reached Skardu on 23 Jun. Rassul was now thankfully on the mend, and we able to get him to Skardu hospital without fear for his life.

Richard's diary reads: "Throughout the retreat I was most impressed with the buoyant morale and high spirits of all the team, their constructive approach to our difficulties, and their maturity and steadiness in coping with very adverse conditions. In a sense they benefited more from the curtailment of our programme, since they had to rely on themselves far more than if they had blindly followed someone else's plan from beginning to end. There is no doubt that as an introduction to the Himalayas, it was a resounding success for the lads who unanimously declared their intention of returning."

THE MAIN TEAM WALK IN - Martin Bazire

We left Skardu by jeep on 1 June. We gathered up the porters as we went along, since they were recruited on a quota basis from various villages, some of which lay on our route. The rough track crossed the Indus, and headed north up the Shigar valley. Although our destination was Askole, we were forced to stop a little over half way there as the track was cut by a landslide. It was good to set up our first camp, and

Right

The Walk in
Porters approaching Concordia
and Gasherbrum IV



Below

Bad Weather in Base Camp
Steve Hunt and Steve Jackson



for the Main and Junior Teams to be free to establish their separate identities.

I've noticed that medical people seem to have a sadistic streak, for every study seems necessarily to involve some element of discomfort for the subjects. In this case we were required to record all quantities of fluid either imbibed or excreted, but more seriously, we had to be weighed, mother naked, every morning before any other activity of the day. While relatively painless at lower altitudes, this was no fun at all in dawn starts as it grew colder, though predictably it provided a source of amusement. As a medic, Steve Jackson supervised these sessions, and the girls were banned. We were subjected to this from Day 1.

Our first day on foot took us two hours up the track to a village from where the track continued again unbroken. Three jeeps were cut off on this section, and these were hired to ferry us onward. The track here was particularly hazardous: it cut across cliffs of rotten rock and mud; it wound round hairpin bends so tight that three and five point turns were necessary to negotiate them: it inched over great slips of loose sand which went down for hundreds of feet below. The drivers were superb, but it was a relief to reach the second road head to Thongol at 3,000m (10,000ft). This was the last campsite we shared with the Junior Team, and their Sirdar, who was a great character, let off rockets by way of celebration.

The next day we passed through Askole, an extensive but impoverished village of flat roofed, single storey, mud houses. Though the women were brightly dressed, the living there was dismal. When temperatures hit minus 35 or even minus 40 degrees Celsius, survival is only possible for the inhabitants in winter by sleeping with their animals in semi underground cellars, and living off food gathered during the short summer. Public sanitation is unknown. It constituted the last permanent human habitation we would see for many weeks. The Junior Team made their camp that night just short of the Biafo Glacier, while after exchanging good wishes for success with them, the Main Team and Medical Party went on to Korophon, which means Big Rock - there's nothing else there! That evening we had an hour or two of heavy rain which damped down the dust and temporarily our spirits, but it proved to be the only bad weather we had in the whole walk in.

We followed the valley of the Braldu river, and were lucky to be able to ford its tributary, the Dumordo. Despite the hideously cold water and its impact on the delicate parts of our anatomy, it saved us having to use the wire rope crossing further upstream. The scenery was harsh. A brown valley contained between brown mountains, flanked with walls of rock and mud and surmounted by snow capped peaks. These became higher as we continued eastwards. On the fifth day we reached Paiju (meaning "salt"), where we rested for a day. This assisted our acclimatisation, but it was primarily for the porters' benefit, so that they could bake a stock of bread before walking up the Baltoro Glacier where fuel was scarce. They butchered a Dzo (a cow/yak cross) and enjoyed a square meal, which gave rise to an evening sing song. It went on half the night but was curiously melodic and haunting.

From Paiju, a long day up the Baltoro brought us to Urdokas. The lunch break at Liligo was very welcome, and as the day was stiflingly hot, but it was characterised by the fantastic spectacle of the Baltoro spires: the Trango Peaks, the Cathedral, Uli Biaho, the Muztagh Tower, and far up the glacier, Broad Peak and Gasherbrum IV.

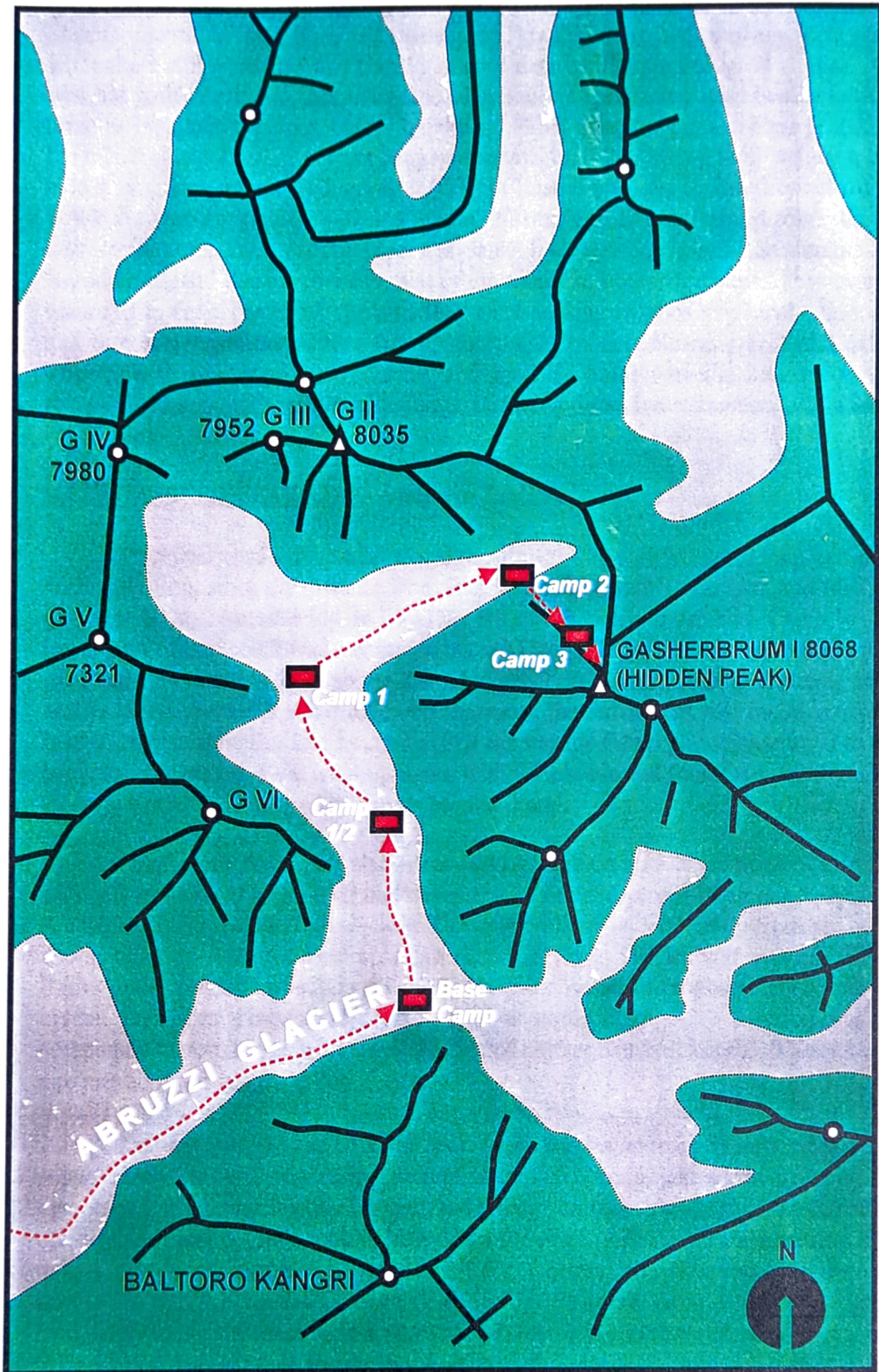
We were approaching the giants now. At Urdokas the mess tent failed to materialise, so we dined al fresco - but who cared in such a setting!

Our daily starts became steadily earlier in order to beat the worst of the sun on the glacier. We got into the swing of packing up the tents quickly in the morning cold, not omitting our daily weighing, so that the porters could get away. Our diet on the walk in was based on local produce. Breakfasts were simple, sometimes just tea and cereals. Lunch stops provided more variety of sustenance, but usually followed a tinned fish and biscuits format, while the evening meals consisted of soup, a main course of vegetable curries with rice and dahl, and finished off with tinned fruit, jelly and coffee or tea. About this time a run started on our stock of chocolate bars, of which we had enough to feed an army.

From Urdokas we walked to Goro, another reasonable plod, but the next day up through Concordia to Shaking was harder. In the glorious weather we were able to take in the tremendous views. The sight of K2 dominating the whole valley above Concordia was breathtaking, and it gave us a buzz just to be amongst such fabled peaks, even though, true to its other name of Hidden Peak, our own objective remained concealed behind lesser summits. From Concordia, in the heat of midday we ploughed through the soft snow south eastward up the Upper Baltoro glacier, negotiating melt streams with some difficulty. The porter carrying the mess tent fell in one and was lucky not to be swept away. That he was rescued minus the poles was to cause us some problems with the tent over the next few weeks.

On 10 June, after turning east again up the Abruzzi glacier, we arrived at Base Camp, at 5,000m, two days ahead of the original planned date. The porters were paid off, and they departed with a cheer. Base Camp was pitched on a moraine, and it was surrounded by gorgeous peaks: Baltoro Kangri (the Golden Throne) rose massive to our south, while southwest lay the elegant and gracefully fluted peak of Chogolisa (Bride Peak). However our immediate attention was drawn inexorably to the huge west wall of Gasherbrum I which rose to the east of the camp, beyond the icefall of the South Gasherbrum Glacier. This glacier was to form our access to the mountain.

Our first day was given over to sorting out the Base Camp. Though we were the first expedition of the season attempting Gasherbrum I, there was a US team already at work on Gasherbrum II but using the same base camp site, and as up to ten further expeditions were expected to arrive over the next few weeks, we selected a favourable site for ourselves. The mess tent was set up, with Larry Foden effectively jury rigging the poles, while the cook's tent next door was masterminded by our cook, Mohammed Ali and his assistant Ali Khan. Any hill billy would have been proud of the result. Food and equipment were sorted into stacks ready for use, and the rear link radio set up. Speed was not of the essence, since at this altitude breathlessness beset any who moved too rapidly, in our relatively unacclimatised state. On the following morning the medical party left us to return down the valley, but not before a final weighing of each member in minus 10 degrees C! We were now able to turn our undivided attention to climbing the mountain.



BRITISH SERVICES GASHERBRUM EXPEDITION 

0 1 2 3 4 5 KM



THE MEDICAL PARTY - Sheena Perrett

The Medical Party travelled with the Main Party to Base Camp. On the way, Sheena identified local flora and investigated traditional remedies of the local people, while there still were any, and Carol gathered data for the physiological studies. Carol was not to be envied in that every morning she was presented with twelve bottles of urine to sample in the dawn before breakfast! What thoughts her activities provoked in the minds of our Muslim porters beggars the imagination. After a final weighing of the naked victims in minus 10 degrees at 0530 in Base Camp, on 12 Jun they set off back down the Baltoro glacier, with our guide, Nusrat, and five porters in tow. On their way to Skardu, they encountered the same bad weather which the Junior Team experienced, and this led to wash outs of the track, and other hold ups. However they managed to collect samples of plants they were seeking to trace medicinal compounds, and they were entertained to a trip up to Khaplu to visit Nusrat's ancestral palace. They flew to Islamabad from Skardu, and travelled home with the Junior Team. At Annex E are some of their initial findings, including definitive statements of the aims of the studies.

BASE CAMP TO CAMP ONE - Meryon Bridges

Received wisdom dictated that a temporary Camp ½ would be required during acclimatisation, since the distance from Base Camp to Camp 1 was 6km and the height gain was 800m. Accordingly on Day One we set off to try to establish Camp ½. The lower part of the icefall was a complex maze of ice cliffs and gullies, but there was not the overt threat that is found in the Khumbu icefall on Everest, with its tottering towers and yawning crevasses. We followed the route the Americans had made, carrying a load of stores, and after 2 ½ hours reached the site for Camp ½. Encouraged by such progress, the next day we went up again with light loads and found we could get right through to Camp 1, where we made a second dump.

On the way down, the glacier revealed its true colours when Mark Watson was suddenly swallowed by an invisible crevasse with the abruptness of an attack by Jaws. A slick recovery by Dan Carroll, John Doyle and others pulled him up from about 20m down, lucky to have received no more than superficial injuries and a severe shock. Rather more careful inspection revealed the lower icefall to be absolutely lethal, with hidden crevasses everywhere, some large enough to engulf a London bus, but completely covered over with snow bridges of indeterminate strength. Thereafter no-one moved in the glacier unroped.

That day was the end of a fine spell which had lasted from Skardu. It started to snow, gently but with frightening determination. No wind, just snow dropping from thick cloud, becoming steadily heavier, and falling continuously. It gave the impression that it could, and possibly would, keep it up for ever. After eight days, during which only a couple of carries were made in thick weather, the situation was becoming serious, in that we were on the verge of losing the route through the lower glacier completely under the mass of new snow. Once lost, it could have taken at least a week to find a new way through the maze.

Accordingly on 21 Jun a slightly desperate sortie was made to Camp ½. It was still snowing as Steve Hunt, John Doyle, Andy Hughes and myself broke trail, wearing some snow shoes we had bought from the American team, now on their way home. Dan Carroll, Steve Willson and Mark Watson followed later, carrying loads of equipment. At times the snow was waist deep, and route finding was very difficult. The marker flags had mostly disappeared, and everything looked different. It took us seven hours to retrace the route to Camp ½, which was now buried under 1½ metres of snow. Only some skis planted beside the tent showed us where it was. Half an hour was given to digging it out and a further three hours to the descent, leaving us pretty bushed.

Almost miraculously the next day proved to be the first of seven fine days, and while the weather took a couple of hours making up its mind to be fine, we made up ours to move up and occupy Camp ½, having a well marked trail ready for use. The first brick of four, Martin Bazire, Duncan Penry, Larry Foden and Martin Hallett, therefore moved up mid morning. Their initial task the following day was to reopen the trail up to Camp 1, while the rest of us carried loads up from below. In this we succeeded, bringing up enough to establish the camp. This day saw the first use of skis between Camp ½ and Camp 1, something which immediately became the standard both for upward and downward runs. Skiing down through the glacier was exhilarating and cut the descent time to Camp ½ from nearly an hour to about 12 minutes. With the whole trail now remade, the first brick moved up to Camp 1 on 24 Jun, and thereafter Camp ½ was not occupied again.

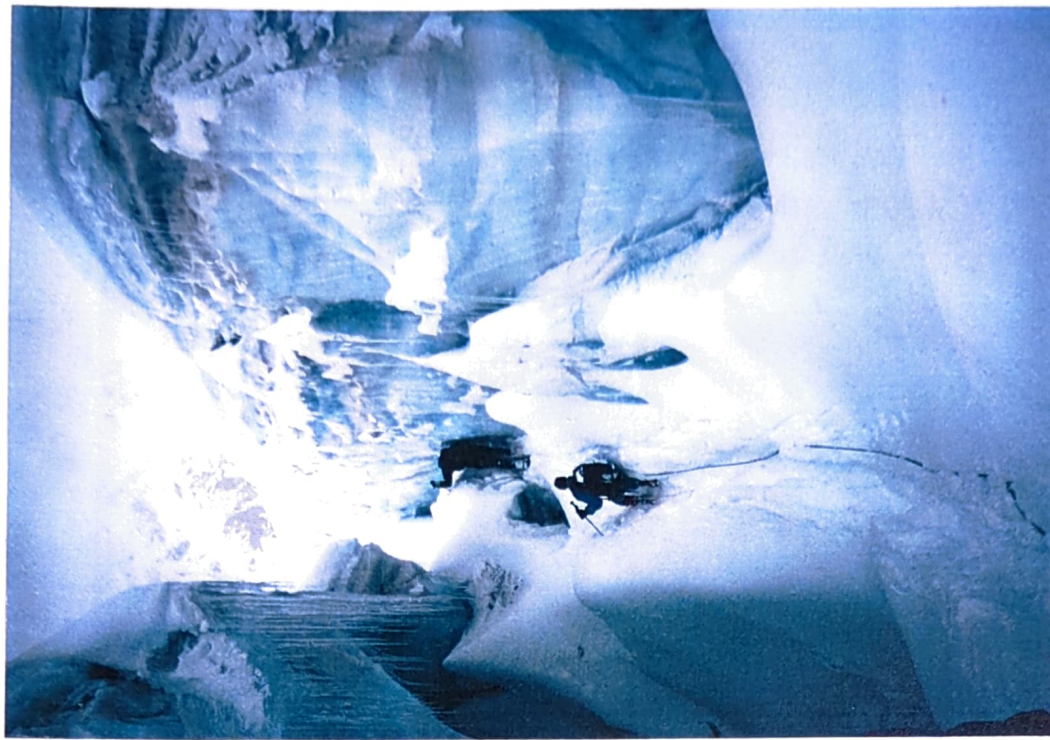
We found that we could carry up to Camp 1 from Base in just over four hours, returning in under three, provided an early start was made to avoid the sun. The heat rapidly became unbearable after about nine o'clock, and this necessitated a call at 0130, breakfast of spiced porridge and tea at 0200, and departure by 0230. At that hour the glacier was dark and wrapped in a frozen silence. The surrounding peaks stood in black silhouette against the blaze of a million brilliant stars. By the light of a head torch, it was a joy to climb up in the still cold air, crampon points creaking on the crisp snow, mentally ticking off the bizarrely christened features of the icefall: the Conductor, the Fairway, the Gnome and the Gulley. Slowly the stars gave way to a ghostly pre-dawn glow, and then the first golden rays would strike the pure snowy summit of Chogolisa over one's left shoulder. Up ahead the dramatic rock clad summit of G IV would rise slowly over the skyline, also now bathed in gold, its ramparts devised to resist assault from any direction. And so up the long slopes of the upper section of the icefall to Camp 1, arriving with the sun. After a pause, the brief freedom of the schuss down to Camp ½, plunging back into the shadow of G I, was always a pleasure, later to be enhanced by the sight of the members of other expeditions toiling up the slope, later risers than we! And so back to Base camp, and a day of blazing sunshine, preceding another early start.

CAMP ONE TO CAMP TWO - Steve Jackson

When the first team moved up from Camp ½ to Camp 1, Steve Jackson changed over with Larry Foden, who returned to Base Camp. Camp 1 was located at 5,800m in a most dramatic cwm, surrounded by the six Gasherbrum peaks, of which two are above the 8,000m threshold, and two more are only just below it. Such a dense concentration of extremely high peaks is unique, as is the camp site. One arm of



Base Camp
The South Gasherbrum Glacier Icefall
and the West Face of Gasherbrum I



The Lower Icefall
Andy Hughes and Mark Watson



Gasherbrum I from camp I

The Gasherbrum La (Camp II) is on the left, with the upper icefall below it. The route above Camp II follows the left hand skyline. Camp III is below the shoulder.



In the Upper Icefall
Martin Hallet and Duncan Penry

the cwm led upwards towards G IV, while the other led eastwards towards a col between G I and G II. The task of the Camp 1 party was to make a route to Camp 2 through the complex jumble of an upper icefall which flowed down from the col, and find a suitable site for Camp 2 at a height of about 6400m. A deadline for completion by 30 June was set if the expedition was not to fall seriously behind schedule.

The route to the icefall crossed a large, featureless plain which gently gained height towards the bottom of the fall at 6000m. A few flagged bamboo wands were still in place from some previous expedition, but we decided it was necessary to augment these. This proved to be a wise move as one return journey in desperately poor visibility and driving snow could well have become an epic without the guidance of these wands.

A daily routine was soon established, similar to that at Base Camp. Set the alarm for half past midnight. Wake up and wait for it to go off. Light the gas lantern. Check the other pair are awake. Check the weather. Flash up the stove and melt snow for a breakfast of porridge and coffee, both with lots of sugar. Emerge reluctantly from warm dry sleeping bag and get dressed. Inner layer, middle layer, top layer, hat, inner gloves, thin socks, thick socks, vapour barrier socks, inner boots, outer boots, wind suit, gaiters, outer gloves. Exit the tent. Have a crap (no fun if there's a wind!). Harness on, snow shoes or skis on, rope up - depart at about 0200.

The journey to the bottom of the icefall passed through the Camp 1 used for climbing G II after about 40 minutes and then gained height less strenuously for the next 2 hours. At the bottom of the icefall a dump was established for ice tools and crampons, which replaced the snow shoes and skis for the much steeper ascent of the ice-fall. The route followed an obvious nearby ramp running from R to L until it petered out about ½ way to the col. Route finding from this point was problematical and the team spent a number of days following false trails and exploring blind alleys before Duncan finally unlocked the key to the col. The route crossed a couple of snow bridges which needed fixed ropes and then delicately threaded its way through a complex series of crevasses, into which everyone fell at one time or another.

It was with great relief that on 29 June Martin Bazire could report at the scheduled noon radio call to Base Camp that Camp 2 was established. By then the team was getting pretty weary. The second team of Dan Carroll, John Doyle, Steve Willson and Mark Watson had arrived in Camp 1 that day, ready to occupy Camp 2, and together we made a further run on 30 June with stores for the camp. The weather was by then vile again with heavy snow fall, and so the next day, Meryon called us all back down to Base camp until it should improve a bit. This avoided consuming stores at altitude, and allowed both teams to rest in the relative comfort of Base Camp.

CAMP TWO TO CAMP THREE - Steve Willson

Nestled in the Gasherbrum La, Camp 2 had been ideally located by the team working from Camp 1. To the north the massive shoulder of Gasherbrum East filled the sky. To the south loomed the north face of Gasherbrum I, with its wind scoured ridges and dark towers. Camp 2 was first occupied by Dan Carroll, Mark Watson, John Doyle and Steve Willson on the 2nd July. Our task was to climb and fix the 700m of the Japanese Couloir, thus giving access to the site for the final

camp, Camp 3, and the summit pyramid.

On the 3rd July we carried out the first foray up the route. From the camp a short rising traverse led to the bottom of the couloir. From there we climbed the right hand side of the broad gully. The weather deteriorated rapidly as the morning went on and after 300m the constant sloughs of fresh snow and high winds forced us to abandon work for the day, leaving 200m of rope fixed on the 55 degree slope.

On the following day the weather was not much improved, but the wind had dropped sufficiently to make it possible to proceed. Once again we broke the trail through the steep unconsolidated snow to our previous high point. From there John and Dan continued the climb, securing a 100m section of our 8mm fixed rope up and around a rock step that capped the tapering gully, so providing a safe line of retreat. In the meantime Mark and Steve backed up the lower ropes by placing dead men at intervals in the open snow fields. That day too was cut short as the conditions deteriorated.

Over the next three days the weather closed in and heavy snow fell, preventing any progress in the couloir. On the 8th July the skies finally cleared. The pressure was now on to make Camp 3 as our summit party was already moving up the mountain, along with two Spanish climbers. We decided to try and push the route through to Camp 3 that day, carrying as much as we could of the rope we required to fix the route, and the equipment to install the camp. Initially the going was hard. On the lower slopes the ropes were buried and all sign of our earlier tracks had been obliterated. Above the rock step the going was better, though steeper, and with the help of old fixings John made quick progress. The rest of us following with the heavy loads.

We were halted about 150m above the rock step by a steep rocky couloir that veered to the right. John put in an impressive lead and fixed a rope at the top of the difficulties in this gully, but by now we were all beginning to question the direction of the route and it's increasing difficulty. We followed John to the top of the fixed rope and then belayed him on a 100m rope as he recce'd ahead. The ground he was now on was 75 degree snow covered rock and not surprisingly his confidence in his choice of line faltered. A Chinese parliament was held to discuss the situation, since from our new vantage point we could see a couloir to our left, 250m across an adjacent snow field, that fitted the route description. That had to be it! We found that we had been climbing off route for the last 150m, but John managed to traverse across onto the snow field and fix a rope. Leaving all the Camp 3 kit at our new high point we retreated to Camp 2 exhausted.

On arrival there we found Steve Hunt and Andy Hughes had arrived, along with the Spanish team of Ignacci and Juan. That night we discussed options, and it was decided that John and Dan would accompany Steve and Andy to Camp 3, and if, after finishing the route they had sufficient reserves of energy, they would seek the leader's agreement to stay and make a summit bid with them. Mark and I would stay in Camp 2 and act as a back up team. Early the next morning John and Dan led off, followed an hour later by the others. Later still that morning Alan Hinkes also passed through the camp on his way up to Camp 3.



Above

Camp II
The track leading up to the
Japanese Couloir is just
visible beyond

Right

In the Japanese Couloir
John Doyle leading the first
rock band.



CAMP THREE TO THE SUMMIT - John Doyle

At last we woke to a fine day. It was 4am on the morning of the 9th July, our seventh day at Camp 2. The sun was just rising over the Gasherbrum La, the sky was clear and finally the wind had dropped. Things were looking up.

The plan was for Dan and myself to leave an hour before the others to enable us to secure the last of the fixed rope to Camp 3 so Andy and Steve would be able to ascend quickly and more easily. As we reached the bottom of the fixed rope it felt strange to look up the couloir and for the first time be able to see up into the depths of the mountain without the swirling cloud and constant spindrift avalanches of previous days.

We soon reached our previous high point and headed off up and left across a large open snow field that ran across the middle of the couloir. The snow was much better today: we were no longer sinking in waist deep and it felt much more stable. 150 metres of rope found a secure anchor and I signalled it was OK to ascend the rope. By now the others had caught us up along with the two Spanish members, Ignacci and Juan. We were some 200 metres from Camp 3, but it didn't take long to fix our remaining 150 metres of rope, which left us just short of our target. The final 50 metres to Camp 3 (7100m) were once again through waist deep unconsolidated snow. However we all arrived safely after 10 hours hard work.

The six of us now erected three tents and settled down to an afternoon of rest, eating and drinking. We had no sleeping bags, only one-piece down suits, our intention being to rest until 11pm and then head off for the summit, hopefully arriving early next morning.

I managed to sleep a while, being woken by Dan at 10pm. Time for a quick brew before heading off. An hour later and the six of us were ready to leave. Conditions seemed perfect, cold and clear, although the lack of any moon would make for a dark night. Ignacci led off and we soon slipped into autodrive as we slowly edged our way up the snow field above Camp 3, heading towards the col at 7400 metres. Ignacci was doing a good job out front but Juan had dropped back quite a lot leaving the five of us together. From the col the ground pushed us right into a steep snow couloir of about 50 to 55 degrees but gave us excellent névé to climb on. This was followed for 200 metres of slow steady climbing to a well earned rest at its top. As the four of us stopped for our first rest since leaving Camp 3, the sun appeared to give a welcome warming. It was now 4am and we'd been on the move for 5 hours.

A short break, then onwards and upwards, the sun's rays injecting new life into tired bones. The snow slope now opened out and we got our first clear view of the deceptively close summit. To our horror the upper slopes proved to be in stark contrast to those lower down. We were back to deep loose snow as encountered earlier which would prove exhausting as we pushed on up the final 400 metres. Now bunched up, we would each in turn push out ten paces then slump over ice axes gasping for what little oxygen there was, a short rest and a quick change out in front and on again. Slowly but surely we edged on, eating

Right

In the Japanese Couloir
The second rock band



Below

The Summit of
Gasherbrum I
10 July 1996
Andy Hughes, Steve Hunt,
Dan Carroll, and John Doyle



away at the ever steepening final slopes. Finally an abrupt end as we broke the crest of the summit ridge we found ourselves practically at its peak. It was 0910 hours on the 10th July 96, and the four of us huddled together, congratulations and photographs all around.

We sat for no more than 15 minutes taking in the spectacular views of K2, Broad Peak and the other Gasherbrums until a dramatic increase in the ferocity of the wind became a bit too uncomfortable. All of us were aware of how quickly the weather can change in this environment, with quite serious consequences, so it was time to descend.

It was only while descending that I realised how steep the last few hundred metres to the summit had really been and with the prospect of a few thousand feet fall, caution would be needed. This was emphasised when Andy tried a bit of glissading only to tumble for 100 feet before coming to rest at a small shoulder.

The new day had given the mountain a different feel from the cold darkness experienced on the ascent, and although the wind was still strong and tired limbs were starting to take over, the uncertainty had now passed. We knew the route and the ground we had to cover back to Camp 3. It was just a matter of taking it one step at a time. Which is just how it went until a lost crampon forced me to descend 500 feet much quicker than I would of liked. Still no harm done we were all safely back at Camp 3 by 1pm to be met by a fifth member of our team, Mark Watson, who would be making his own summit bid with two more Spanish the next day.

After sufficient rest all that was left to do was to abseil back down the fixed ropes to Camp 2 and a warm welcome from the rest of the team.

It was then 8pm and we had been on the go for 21 hours. A Good Day!

AFTERMATH - Meryon Bridges

The following night Mark Watson made a summit attempt in the company of two more members of the Spanish team, Alphonso and Manolo. Mark was forced to turn back at around 7,500m as his feet were freezing. Alphonso and Manolo went on to the summit, but like John, they took a fall on the way down, in which Manolo suffered an injury to his back. They managed to reach Camp 3 safely but were pinned down there by bad weather for eight days, somehow surviving on remnants of food and gas scavenged from other tents. Tragically, when descending the couloir on the eighth day, they pulled on an old fixed rope which broke, precipitating a second fall in which Manolo was killed.

Our team had now exhausted its resources, and we stripped out our camps as this eight day period of bad weather swept in, clearing the mountain in safety. There followed a long wait as the porters arrived, and then a quick and enjoyable exit over the Gondogoro La to Hushe.

The expedition was over with startling suddenness. The top half of the mountain, above Camp 2, had been climbed so quickly that one was left with a sense almost of having missed something! The summit was reached on the 28th day of climbing, though we had lost six of those days completely to bad weather. The climb was carried out without supplementary oxygen, and the performance of all of the team, but particularly of the summit four, was magnificent. It was a rare privilege to lead such a party, and to enjoy the success of reaching the summit of one of the world's fourteen 8,000m peaks.

PLANNING THE EXPEDITION - Meryon Bridges

Introduction

This annex outlines the macro planning of the expedition. Below are given the basic planning parameters which were used in deciding the objectives, and at Appendix 1 to this Annex is an outline planning diary covering this period. This appendix in effect provides an Aide Memoire of the main actions likely to require the attention of anyone planning a similar expedition.

In this case the expedition leader was appointed in Oct 93, and this was in effect the start date for planning, since the leader was given almost total autonomy in planning, subject to the approval of the Higher Management Committee (HMC).

In summary, the block allocations of time in the planning phase were:

- | | | |
|----|------------------|---|
| a. | Oct 93 to Jun 94 | Initial planning, fixing objectives, defining the budget.
<u>Milestone:</u> Printing the Brochure, Jul 94. |
| b. | May 94 to Mar 95 | Fund raising, team invitation and identification..
<u>Milestone:</u> Team selection, Mar 95. |
| c. | Mar 95 to Jan 96 | Fund raising, team training, detailed planning, equipment and food procurement
<u>Milestones:</u> Go/ No go decision date, 1 Dec 95.
Funds raised, end Jan 96 |
| d. | Jan 96 to May 96 | Implementation of plans
Detailed co-ordination
<u>Milestone:</u> Expedition departs 25 May 96 |

BASIC PLANNING PARAMETERS

All expeditions have their own unique objectives, but setting out those of this expedition may be useful in providing some ideas. These objectives were evolved over a period, and it is recommended that in this evolutionary process, as many potential sources of ideas as possible are tapped to maximise the opportunities which may be created by such ventures.

Climbing Objective

Since it was twenty years since the Services had had a success in climbing a big mountain, it was of fundamental importance that this expedition should reach its climbing objective. It was also important that this objective should be significant, since

success on an insignificant peak or route would do little to reinstate the credibility of Service climbing. The prime criteria were therefore achievability and significance. Selection of one of the fourteen 8,000m peaks suggested itself as a means of achieving significance, and a review of these indicated Gasherbrum I as an ideal compromise between the easy and dull, and the dramatic and difficult. It lent itself to establishing firm bases at Camps 1 and 2, and going lightweight from there. This would allow a "run away" policy when the weather turned bad, with the possibility of rapidly returning to a previous high point as it improved. The high level of flexibility this offered, together with an Alpine style assault, was attractive, and it proved to be a suitable choice.

Diversification

To maximise the chances of success on an 8,000m peak, proven mountaineers would have to form the core of the main team. Indeed in a 12 man team, the possibility of introducing any more than two relative newcomers could not be entertained.

To avoid perpetuation of the elitism of this approach, the concept of the Junior Team was developed. This would be more than just a trek in parallel with the main climb: it was to be a parallel expedition expressly designed to introduce new members to Himalayan mountaineering. The members of this team were to be under 23 years of age, and it was intended to provide them with a unique opportunity to start their Himalayan experience at this early age. The team was to have separate leadership who would be completely responsible for their expedition, within the confines of common funding and centrally procured food and equipment. This left the main team leader free to concentrate on climbing Gasherbrum once the whole expedition deployed to Pakistan.

The Junior Team's programme, developed in conjunction with its leadership, was designed to involve challenging activity in a remote area and thus promote self reliance, to include an arduous trek, and also the climb of at least one 6,000m peak to provide a focus for the necessary sense of achievement. Above all it was intended to provide experience of involvement in a major Himalayan expedition.

Scientific Programme

The narrowness of the objectives of high altitude mountaineering, and the need for total, single minded, commitment to those objectives in order to be successful, means that as an activity it does not rest easily with elaborate scientific programmes. Nevertheless, it is conditional in the deed of trust of the Joint Services Expedition Trust (JSET) that if expeditions are to be sponsored by the trust, they must include a significant element of scientific work within their plans. The scientific plans for this expedition were designed to minimise the effect of taking the main team's eye off the ball.

The doctor of the Junior Team conducted a research programme of his own, with full formal approval, into aspects of acclimatisation, based on the analysis of blood samples taken from the members throughout their exercise. A Civil Service researcher from the Institute of Naval Medicine travelled with the Main Team, and conducted research into aspects of acute mountain sickness (AMS) and acclimatisation, based on

fluid intake and out take, and variations in body weight of the members during the trek from Islamabad to Base Camp at 5,000m. These results would be tied in with brain scans and psychometric tests conducted before and after the expedition. And finally, a further professional researcher from King's College London was invited to join the team, so as to provide a vehicle for her area of research to be extended into northern Pakistan. This research, part of a world wide programme, involved a study into the medicinal compounds which could be found in the local herbal resources of the area, and which could then be synthesised/adapted for wider use..

Civilian Participation

The granting of duty status to Service personnel, ie. the continuance of pay and all medical indemnity, when taking part in adventurous training, gives them a significant advantage over their civilian counterparts. This is particularly true of younger civilian personnel, committed to starting careers, for whom such opportunities are very rare. In recognition of this, and a desire to maximise the benefits of the trip, two further objectives were added:

- a. Two civilian members would be included in the Junior Team.
- b. The expedition would raise a substantial sum of money for the Prince's Trust. This trust exists specifically to create opportunities for young people, and this seemed completely in line with the aims of the expedition.

CONCLUSIONS

These objectives provided a broad framework for the expedition, which widened the scope of benefit as far as seemed practical, but which at the same time did not generate conflicts of interest or distractions from the primary objectives. In practice they worked very well, and all members of the expedition declared that they had enjoyed the experience. Most particularly significant was the expressed desire of every member of the Junior Team to return to the Himalayas. In the light of this response, and the successful outcome of the expedition, these objectives can generally be considered to have been appropriate.

PLANNING DIARY FOR EXPEDITION PREPARATIONS

Month	Action	Progress	Latest Date	Date Completed
Oct 93	1st HMC Meeting Start developing expedition plan	N/A Initial objective, MANASLU		Oct 93
Jan 94	Revise main objective Continue developing plans Apply for JSET endorsement	Gasherbrum 1 Ongoing Done		4 Mar 94
Mar 94	2nd Meeting of HMC	N/A		25 Mar 94
Apr 94	JSET meet to consider application for endorsement	Granted, conditional on improving scientific content		
May 94	JS DCI published Identify main costs Develop budget Draft brochure Obtain Dipclear in principle	DCI 33/94 Done £135,000 Approved		6 May 94
Jun 94	Fund raising strategy developed	Seek single major sponsor		22 Apr 94
Jul 94	Brochure published 3rd HMC Meeting	N/A		25 Jul 94 26 Jul 94

Aug 94	Fund raising starts Revised scientific plan to JSET	Ongoing Done	Jan 96	
Oct 94	JSET consider revised scientific plan Invite tenders for supply of in-country logistic support Submit application to Berlin Fund	Grant of £1,250 to proceed with planning Himalayan Kingdoms, Karakoram Experience, Trans Asia Services Done		11 Oct 94
Nov 94	4th HMC Meeting	N/A		30 Nov 94
Jan 95	Application to Nuffield Trust	Done. £8,550 expenditure on personal equipment approved 3 Apr		3 Apr 95
Feb 95	Submit application JSET for sponsorship Jnr Team Ldr Selection 5th HMC Meeting	S/L R Gammage selected N/A		27 Feb 95
Mar 95	Team selection (plus reserves) Submit peak application Applications to Service Central Funds Berlin Fund consider application for major grant Publish DCI detailing team selected	Done Done. £1,000 per head, 17 Mar Grant of £12,000, with potential further £8,000 in Nov if needed Draft sent to IPAT		12 Mar 95 14 Mar 95 17 Mar 95
Apr 95	Finalise Log Sp tender Submit ATFA application to Div Refine budget Application to Service climbing clubs for funds Revise fund raising strategy	Himalayan Kingdoms appointed provisionally Done £125,000 Done Seek multiple sponsors		5 May 95 21 Mar 95 12 Apr 95

May 95	6th HMC Meeting JSET meet to consider sponsorship Pay peak royalty Approach commercial marketing firm (MCW)	N/A Grant of £7,000. £10,000 held till Sept pending any further applications. \$7,500 paid. Permission granted 24 May. Done	1 May 95
Jun 95	Clear with DPR Approach airlines for sponsorship Training Meet (Juniors) Agree contract with Log Sp Agency Establish expd bank account	Done. Update progress report Sept Outline of deal with PIA established Wales (Llanrwst) Deferred to Sept Done: Holts/RBS, Farnborough	24 May 95 2 Jun 95 9-11 Jun 10 Jul 95
Jul 95	7th HMC Meeting Plan commercial film Arrange film crew	N/A Meeting held Army Central Fund approved grant of £10,000 RAF Central Fund approved grant of £6,000 Arrangements made and notified by Watson/Gammage	4 Jul 95 4 Jul 95 7 Jul 95 7 Jul 95
Aug 95	JSAM 95 Re-apply to Citibank for funds Apply for MEF endorsement Apply for RGS Endorsement Initiate expd Insurance Appoint Project Officer	Done Done Done Done Maj R McAlister volunteered	22 Jul - 5 Aug 18 Aug 23 Aug 25 Aug 9 Aug 18 Aug
Sept 95	Eighth Meeting of HMC Start planning Food requirement Develop equipment requirement Re-Apply to Berlin Fund for £8K	N/A Done, MB briefed, mix of wet & dry Done. At COLA 95, Harrogate Done	12 Sept 24/25 Sept 6 Sept

<p>Oct 95</p>	<p>Review safety plan Apply for authority to take civilians Review HF comms plot Book Press Launch venue Book return Presentation venue Re-apply to BA for flights</p> <p>Team meet Lake District Review Equipment Reqmt Members subs due by 31 Oct</p>	<p>Done. PAT briefed Done Done. HF with MT only Done. Alpine Club, 16 May Done. RGS, 1 Oct Rejected, (BA supports only RGS recommended expeds) Done.</p>	<p>11 Oct 11 Oct 22 Oct 30 Oct 30 Oct</p> <p>20-22 Oct 22 Oct</p>
<p>Nov 95</p>	<p>Update brief for CDS</p> <p>Plan Trek for HMC/friends Finalise food requirements Notify DPR(A) of progress</p> <p>Develop Casevac plan</p> <p>Team Meet N Wales</p>	<p>Given. Increase PR image Contact CDS Pakistan Done. Costs advertised Done. Discussions opened with DPR(A) and DOI HC requested to advise on system from Helevac to UK Team briefed £8,000 received from Berlin Fund</p>	<p>7 Nov</p>
<p>Dec 95</p>	<p>Ninth meeting of HMC Latest cancellation date Order Equipment Develop PR plan</p> <p>Review mail runner requirement Order food</p>	<p>N/A Done S Jackson attended PR course To develop PR campaign in Jan Film proposals to BBC and Kershaw Productions rejected Done Done</p>	<p>3 Nov</p> <p>4 Dec</p>

Jan 96	1st Winter Meet Ballachulish Start arranging Press launch Book Flights			5-7 Jan
Feb 96	Standby meeting of HMC 2nd Winter Meet Ballachulish Initiate Inoculations Issue medical info/instruction sheet Send Exped arrival proforma to Min of Tourism Check Visa requirement	£3,000 received from DNPTS	Cancelled Issue personal kit purchased Done Done	5 Jan 14 Feb 15-18 Feb
Mar 96	All baggage to Wittering by 15 Mar for packing. Arrange Expedition Insurance Cover	Received £9,000 from RN Funds		16 Feb
Apr 96	Tenth Meeting of HMC Final Packing Arrange UTN Obtain Visas Confirm numbers and freight to agent, incl porters, tpt, etc. Medical Checks at INM (Main Team) Check in-country admin details with agent, eg. Cooks, porter, etc eqpt, movements to Askole,	Hogg Robinson provided most competitive quotation	N/A Arranged via SBC	2 Apr
May 96	Publish final team list (Div) Publish Field Conditions for single pax Brief Project Offr	Noticas, PR, address list, contacts list, final		

	<p>Dispatch Freight by Civair Collect Air Tickets Lunch with CDS Press launch Advance party departs Exped Departs</p>	<p>presentation, guest list, benefactors, etc</p>		<p>15 May 16 May 21 May 25 May</p>

PLANNING THE CLIMB - Meryon Bridges

Introduction

In planning the climb, a system was developed which proved both simple and versatile to use, the latter being essential to allow adaptation to match the vagaries of the weather. The system is based on three forms:- the Climbing Movement Plan (CMP), The Logistic Support Plan (LSP), and the Load Movement Plan (LMP).

When completed, the CMP gives a pictorial representation of all personnel movements on the mountain, while the LMP provides details of the necessary movement of all loads. The LSP is necessary in developing the CMP, and is interactive with it, but is not significant as a day to day reference.

The expedition's original CMP, as prepared for initial planning, is attached, together with its supporting LSP and LMP. Also attached is the CMP which was developed and maintained as the expedition progressed, and this records the actual movements as they took place. This was a living document, used for making forecasts of necessary activity over short term periods, and it was amended and updated as they took place. The original CMP provided the basic parameters within which the actual CMP evolved.

Method

1. CMP

Planning starts with the CMP. Estimates are made of the time it will take to open the route between successive camps, and initially it is assumed that this will be the critical path activity. Parties are allocated to each stage of route making, and the remainder are committed to load carrying in support of the build up of the camps.

Using the original CMP as a reference, it can be seen that in Days 1 to 11, 2 days were allocated to make to route up to Camp ½, 2 days for the route from Camp ½ to Camp 1, and 3 days for the route from Camp 1 to Camp 2. It was planned that different groups would lead over each of the sections Base Camp to Camp 1, and Camp 1 to Camp 2, and therefore the second group had to be moved up in time to acclimatise and take over.

In separate columns, the CMP shows the number of loads carried in to each camp on each day, and the number of man days of occupation of each camp on each day. (In this case, a letter refers to a group of two, ie. one tent's worth, so AB is four pax, and they would deliver 4 loads on a carry).

As the later stages of the climb are approached, it becomes more difficult to assess the need for movement of loads, without having some target quantities of the totals required in each camp. The LSP, used in conjunction with the CMP, allows

these quantities to be assessed.

2. LSP

Whereas the CMP is started from the beginning, ie. The bottom of the climb, the LSP works back from the top. Referring to Days 17 to 26 of the CMP, it can be seen that 4 days were allowed to make the route from Camp 2 to Camp 3 by 4 pax, and that there would be an in load to Camp 3 before moving in the summit teams, which were initially planned as bricks of 4 pax.

On the Camp 3 line, the LSP shows 4 men occupying Camp 3 for 4 days. (One night on the way up, and one night on the way down for each attempt. This was likely to be the highest demand, short of a crisis brought on by bad weather). The camp kits, food, gas and equipment that they would need for these 16 man days was estimated as representing 6 loads. These 6 loads would have to be carried up from Camp 1 to Camp 2, and they were therefore added to the total estimate of the loads required to establish and support Camp 2.

On the Camp 2 line of the LSP are three groups of loads:- those required to make the route from Camp 2 to Camp 3, those required to support the in loading of Camp 3, and those required to support non-effective occupation of Camp 2. This latter covers transit, rest days, etc. The route making loads were assessed at 10, ie. 4 pax spending 4 days (16 man days of food and gas), plus the fixed ropes and hardware they would deploy. The in loading support loads amounted to a further 10 loads, ie. 8 man days of consumables, plus their accommodation. (Where the camp kits are shown is arbitrary, since they are needed to support all activity based on a camp). Finally the non-effective days; this involves a fudge factor, and the total is always much higher than is likely to be assessed. The figure was arrived at by cross referencing the CMP, where the column total shows total occupation of 64 man days. Deduct 16 man days for route making, and 8 man days for in loading, and the non effective total is inescapably 40 man days. This will require 6 loads of food and gas.

The total loads to be carried in to Camp 2 therefore are:

10	for route making above
10	for onward load carrying
6	for non-effective occupation
6	for Camp 3

32 TOTAL (This total must then be added to the needs of Camp 1)

Correlation/ Iteration

There comes a point where neither the CMP nor the LSP can be completed separately, and the information from one is necessary to adjust the other. The right hand column of the LSP gives total man days planned per camp, and this must tally with the total man days in the column totals in the CMP.

Having identified the minimum number of loads required to be in loaded to Camp 2 and Camp 3 in the LSP, the load carrying part of the CMP is developed to ensure these totals are achieved. If the total man days occupation of a camp, as forecast in the CMP, exceeds that allowed for in the LSP, then the LSP Transit/Living figure must be increased to reflect perceived reality, which may in turn increase the required number of loads of consumables. Equally, if the load column total in the CMP is less than that identified in the LSP, then it may be that the route making ceases to be the critical path activity, and a day of load carrying has to be built in to move sufficient stores up to keep pace with anticipated consumption. This is the case on Days 12, 13 & 15, where no forward movement was planned while stocks in Camp 2 were built up. (If the CMP shows a larger total has been achieved than the LSP requires, then a buffer exists which will tide over stocks in bad weather, etc. Eg. 8 loads are available on the CMP for in load to Camp 3, where 6 is the identified minimum requirement).

Thus these documents also allow identification of the drivers at any stage, and advise the leader on whether lead climbing must be deferred, or the movement of climbers up the mountain must be held while stocks are built up. It is unlikely that a balanced result will be arrived at on the first iteration, and 2 or 3 re-workings may be necessary to get all personnel and stores in the right place on time, to minimise nugatory movement to locate groups as required, and to balance in loading with lead climbing.

Refinement

Once a balance between load carrying and lead climbing has been established, the CMP can be used to level the numbers in each camp, so that transitional overload does not occur on one or two nights, requiring extra camp kits.

Colour coding of movement/carrying activity allows for instant recognition, not only of movement types, but it also highlights inefficient, non productive movements for relocation of groups.

Annotations may be made to identify the movement of individuals or groups, and the numbers of loads from the LMP may also be added.

Allowance may be made for planned rest days, but random allocation of days for bad weather introduces too many variables, and will not, in any case, reflect reality.

3. LMP

The LMP is developed once both the CMP and LSP are completed, and details what loads have to be moved between which camps in order to meet the dictates of the CMP.

Loads can be identified by working backwards from the date of installation of a particular camp, starting from the top of the mountain. Thus the six loads for Camp 3, collectively Load 30, must be in loaded to Camp 3 on Day 22. The contents of these six loads is easily defined, and those contents must be in Camp 2 at the latest the day before (Day 21). However to allow for bad weather, etc. disrupting supply from

below, it is safer to move them up earlier, in this case Loads 26 and 27 on Days 18 and 19. The same logic can be applied to all identifiable loads such as camp kits or equipment for a particular section of the route. The consumable loads can then be filled in, always ensuring that sufficient consumables have been moved up both to keep pace with demand and also to provide a reserve stock to allow survival in camps cut off by bad weather.

PLANNING TOOLS IN USE

The CMP was used continuously throughout the climb, with a new one being developed day by day, and various short term shadow versions were produced to plan particular stages when the weather had made a nonsense of the current edition. The maintenance of a working LSP was cursory, and the LMP was used as a check reference but not updated. This to some extent reflected the relative simplicity of managing the resupply of only three camps for a limited period.

The major sources of change to the original planning were weather and over estimation of how much consumables would be required. The short life of Camp ½ had a significant impact, as did the reduction in the occupancy of Camp 3. Comparison of the original CMP with the actual shows that despite the loss of 7 or 8 days completely and 2 partially due to bad weather, the summit was reached on Day 29 as compared with a planned ascent on Day 24.

The main value of the original planning was that it provided the opening parameters for the climb. Thus it was possible to show that the climb could be completed in 28 days, to which an allowance of two weeks was added for bad weather, giving 42 days on the mountain as the planned climb duration. Calculations for the provision of rations and other consumables were based on this information. The other benefit was that in running the actual CMP, it provided outline parameters of the total man days that each camp was likely to have to sustain, and hence quantities of consumables, and this saved reworking both the CMP and LSP in full every time the weather put a spoke in the planning wheel.

The actual numbers of loads carried bear little relation to the original plan, partly because there were errors in the assumed quantity of goods carried per load - fortunately on the plus side. However by keeping a record of the main items that had moved up, and by strictly keeping complete camp kit loads inviolate as they were passed up the mountain until they reached their destination camp, it was quite easy to keep track of the in load and the stock levels in the camps.

CONCLUSIONS

This planning system proved easy to use and allowed constant access to a simple pictorial representation of all planned activity. Had the party been significantly smaller, it would probably have been superfluous due to the simplification of the logistic planning. For a larger party, this or something like it would have been absolutely essential. As a means of developing estimates of duration and consumption, it was an invaluable planning tool of surprising accuracy.

For this size of party it was of great assistance in confirming the status of the in load. When on 28 Jun the plan showed that all necessary stores had been delivered to Camp 1, it seemed inconceivable that this could be the case. However a review of the stocks of consumables and identifiable stores such as camp kits showed that no further uplift from Base Camp would be required.

JS Gasherbrum Expedition
CLIMBING MOVEMENT PLAN (CMP)
(Planned)

Date	Day	BASE CAMP		CAMP ½		CAMP 1		CAMP 2		CAMP 3					
		Ld	Per	Ld	Per	Ld	Per	Ld	Per	Ld	Per				
	1-2		12												
	3		12		12										
	4		8		8	4									
	5		4		4	8									
	6		4		4	8	4								
	7		4		4	4	4								
	8		4			4	4								
	9		4			4	8	4							
	10		4			4	8	4							
	11		4			4	8	4							
	12		8				8	4	4						
	13		4				4	8	4						
	14		4					8							
	15		4				4	8	8						
	16		4				4	4	4						
	17		4				4	4	4	4					
	18		4				4	4	4	4					
	19							8	4	4					
	20							4	4	8					
	21							4		8					
	22							4	4	8	8				
	23							4		4	4				
	24							4		4	4				
	25							4		4	4				
	26							4		4	4				
	27							4		8					
	28							12							
	29		12												
			104		32	40		60	112		40	64		8	16

JS Gasherbrum Expedition
CLIMBING MOVEMENT PLAN (CMP)
(Actual)

Date	Day	BASE CAMP		CAMP ½		CAMP 1		CAMP 2		CAMP 3					
			Per	Ld	Per	Ld	Per	Ld	Per	Ld	Per				
12 Jn	1		12	10 x½											
13 Jn	2		12	2 x ½		8 x½									
14 Jn	3		12	RSP											
15 Jn	4		12	RSP											
16 Jn	5		12			10 x½									
17 Jn	6		12	RSP											
18 Jn	7		12		11 x ¾										
19 Jn	8		12	RSP											
20 Jn	9		12	RSP											
21 Jn	10		12		3										
22 Jn	11		8			4									
23 Jn	12		8			4	8								
24 Jn	13		8				8	4							
25 Jn	14		8				8	4							
26 Jn	15		8				8	4							
27 Jn	16		8					4							
28 Jn	17		4				4	8							
29 Jn	18		4					8	8						
30 Jn	19		12						RSP						
1 Jy	20		12												
2 Jy	21		4					8							
3 Jy	22		1					7	4	4					
4 Jy	23		1					7		4					
5 Jy	24		1					7	RSP	4	RSP				
6 Jy	25		1					7		4	RSP				
7 Jy	26		3					5		4					
8 Jy	27		2					4	4	6					
9 Jy	28		2					4		2	4				
10 Jy	29		2					2	1	7	1				
11 Jy	30		9					3							
			218		17	8		45	86		17	35		4	5

J S GASHERBRUM EXPEDITION 1996
CLIMBING MOVEMENT PLAN (CMP)

(PLANNED)

DATE	DAY	BASE CAMP		CAMP 1/2		CAMP 1		CAMP 2		CAMP 3			
		PERS	LOADS	PERS	LOADS	PERS	LOADS	PERS	LOADS	PERS			
1-2		12	AB										
3		12	ABCDEF 1 →	12									
4		8	AB CDEF 2 →	8	4								
5		4	CD EF 3 →	4	8	AB							
6		4	EF 4 →	4	8	AB CD 5 →	4						
7		4	EF 6 →	4	4	CD AB 7 →	4	4					
8		4	REST DAY EF	/	4	REST DAY 8 →	/	4	CD 9 →				
9		4		(-)	4	AB 10 →	8	4	CD 11 →				
10		4	EF	(-)	4	AB 12 →	8	4	CD 13 →				
11		4	EF	(-)	4	AB 14 →	8	4	CD 15 →				
12		8	EF AB 16 →	(-)	/	AB 17 →	8	4	CD 18 →	4			
13		4	EF			19 →	4	8	CD 20 →	4			
14		4	REST DAY AB	/			/	8	REST DAY CDEF 21 →	/			
15		4	AB			22 →	4	8	EF 23 →	4			
16		4	AB			24 →	4	4	CD 25 →	4	4		
17		4	AB			26 →	4	4	CD 27 →	4	4		
18		4	AB			28 →	4	4	CD 29 →	4	4		
19		/	AB				/	8	CD 30 →	4	4		
20								4	AB CD 31 →	4	4		
21								4	REST DAY	/	8		
22								4	CD 32 →	4	8		
23								4	EF 33 →	/	4		
24								4	CD 34 →	4	4		
25								4	AB 35 →	4	4		
26								4	CD 36 →	4	4		
27								4	AB 37 →	8	4		
28								12	ABCD EF 38 →	(-)	/		
29		12			ABCDEF	(-)	/						
		104		32	40		60	112		40	64	8	16



ROUTE MAKING OR BRICK RELOCATION
WITH BRICK IDENTIFICATION
LOAD CARRY
WITH LOAD NUMBER

58
59

J S GASHERBRUM EXPEDITION 1996
CLIMBING MOVEMENT PLAN (CMP)

(ACTUAL)

DATE	DAY	BASE CAMP		CAMP 1/2		CAMP 1		CAMP 2		CAMP 3			
		PERS	LOADS	PERS	LOADS	PERS	LOADS	PERS	LOADS	PERS			
JUN 1	1	12	A BCDEF →										
3	2	12	B ADEF →	10/2									
4	3	12	C →	2/2									
15	4	12	RSP										
	5	12	F ABCDE →										
17	6	12	RSP										
	7	12	ABCD(-)EF →	11x3/4									
	8	12	RSP										
20	9	12	RSP										
21	10	12	EA(-)F(-) A(-)B →										
22	11	8	CD →	3	4								
23	12	8	ABEF →	(-)	4	CD →							
24	13	8	ABEF →	(-)	/	CD →	8						
	14	8	ABEF →				8	4	CD →				
26	15	8	ABEF →				8	4	CD →				
27	16	8	REST DAY				/	4	REST DAY				
	17	4	AB EF →				4	8	CD →				
29	18	4					/	8	ABCD →				
	19	12				ABCD →			(RSP)	8			
1 JUL	20	12	REST DAY				/						
	21	4	ABCD E →					8					
	22	1	F →	(-)			(PERS)						
3	23	1	EF(-) F(-) →				(PERS)	7	AB CD →	4	4		
	24	1						7		4	AB →		
	25	1						7	RSP CDF(-) →	4	4		
	26	3				D →		5		4	RSP AB →		
	27	2	F(-) →					4	E C(-)F(-) →	4	4		
	28	2						4		4	AB →		
	29	2						2	C(-)F(-) F(-) →	1	7		
	30	9				F(-) →		2		1	7		
	31	12						3	EA B C(-)F(-) →	(-)	(-)		
								(-)	/				
		218		17	8		45	86		17	35	4	5

 ROUTE MAKING OR BRICK RELOCATION
 WITH BRICK IDENTIFICATION
 RSP LOAD CARRY
 RAIN STOPPED PLAY

SUM
AE
TURN
B(-)E

GASHERBRUM LOGISTIC SUPPORT PLAN

ALTITUDE	ROUTE MAKING ABOVE						INLOADING TO NEXT CAMP						TRANSIT/LIVING				TOT LOADS	TOT MAN/DAYS		
	CAMP	Pax No	Days No	Food Rats	Gas Cyl	Eqpt Item	Tot LOADS	Pax No	Days No	Food Rats	Gas Cyl	Eqpt Item	Tot LOADS	Pax No	Days No	Food Rats			Gas Cyl	Tot LOADS
8,067	SUMMIT																			
7,100	3	4	4	16	16	2 Camp Kits	6												6	
						2 Ropes Hardware														
6,400	2	4	4	16	16	700m Fixed Rope Hardware	10	8	1	8	4 Camp Kits	10	4	10	40	40	6	64	26+6	
5,800	1	4	3	12	12	Route Markers	4	4	8	32	4 Camp Kits	13	8	9	72	72	11	116	28+32	
5,400	1/2	4	2	8	8	Route Markers	4	4	6	24	4 Camp Kits	12	4	2	8	8	1	40	17	
5,000	B/c	4	2	8	8	Route Markers														

STANDARD LOADS

- I LOAD ≡ 10 MAN DAYS OF RATIONS
- ≡ 24 GAS CYLINDERS
- ≡ 1/2 CAMP KITS
- ≡ 100 m FIXED ROPE

6	4	2 x CAMPKITS	5	20 x RATS				
	(4)		(4)	24 x GAS				
				30 x MARKERS				
7	6	20 x RATS	7	2 x CAMPKITS				
	(4)	24 x GAS	(4)					
		10 x RATS						
9	8	2 x CAMPKITS	9	20 x RATS				
	(4)	(TO CAMPI)	(4)	24 x GAS				
				30 x MARKERS				
10	10	10 x RATS	11	2 x CAMPKITS				
	(4)	300m x FROPE	(4)	(EX CAMP 1/2)				
		+ FIXINGS						
		(TO CAMPI)						
11	12	30 x RATS	13	30 x RATS				
	(4)	24 x GAS	(4)	32 x GAS				
		(TO CAMPI)						

17	23	2 x CAMPKITS			24	30 x RATS 24 x GAS			
	(4)				(4)				
18	25	12 x GAS			26	20 x RATS			
	(4)	25 x RATS 24 x GAS			(4)	24 x GAS 2 x C ROPES			
19					27	2 x CAMPKITS			
					(4)				
20					28	12 x GAS (SPARE)			
					(4)				
22					29	(SPARE)			
					(4)				
					30	20 x RATS			
					(8)	24 x GAS 2 x CAMPKITS 2 x C ROPES			

DETAILS OF ALL PARTICIPANTS

(Ages at start of Expedition)

MAIN TEAM

1. Colonel Meryon BRIDGES

Royal Engineers, Age 51, Expedition Leader, Married with 3 children..

Has more than 20 years of experience of climbing in the Himalayas, having climbed on HIMACHAL PRADESH in 1973, DHAULAGIRI IV in 1974, EVEREST in 1976, API in 1980 (Deputy Leader), KIRAT CHULI in 1985 (Deputy Leader), and EVEREST W Ridge in 1992 (Deputy Climbing Leader). He has also climbed Mt KENYA and in Greenland and Tasmania.

2. Lieutenant Commander Steve JACKSON

Royal Navy, Age 42, Expedition Deputy Leader, Married with 2 children.

Has extensive Alpine experience and is a member of the Alpine Club. Has led several expeditions to S. America, summiting many of the classic major peaks there. Has also climbed various routes on Mt KILIMANJARO, Mt KENYA, in Norway and in Yosemite.

3. Surgeon Commander Andy HUGHES

Royal Navy, Age 36. Expedition Medical Officer, Main Team Doctor, Married.

He is a very experienced climber, having taken part in expeditions to SASAR KANGRI in 1987, EVEREST in 1988, GYACHUNG KANG in 1990, and EVEREST in 1992. He has also climbed in South America and Yosemite.

4. Major Martin BAZIRE

Royal Logistic Corps, Age 37. Expedition Rations Member, Married 2 children.

He has taken part in three Himalayan expeditions, KIRAT CHULI 1985, SASAR KANGRI (1st ascent of SK IV) 1987, and EVEREST in 1988. He has organised rations on at least three major expeditions.

5. Major Mark WATSON

Parachute Regiment, Age 32. Pre Expedition Training Member, Single.

Holds UEL and JSRL. His experience includes climbs in the UK and the Alps, but he has also climbed Mt COOK and Mt ASPIRING in New Zealand, Mt KENYA, and he

took part in an Australian attempt on DHAULAGIRI in 1993.

6. Major Duncan PENRY

Intelligence Corps, Age 36, Married.

Holds JSMEL(W). Duncan has taken part in seven expeditions to Nepal, and led climbing expeditions to PALDOR and TILICHO Lake, and has also trekked in Zanskar. He climbs at AD+ and has extensive experience of classic routes in the Alps.

7. Flight Lieutenant Steve HUNT

RAF, Age 31. Expedition Equipment Member.

He has climbed Mt COOK and Mt TASMAN in his native New Zealand, and he took part in the 1992 EVEREST expedition.

8. Sergeant Steve WILLSON

Royal Electrical and Mechanical Engineers. Age 29. Expedition Communications Member, Married.

Holds JSRCI. Having climbed many of the classic hard routes in the Alps, Steve was a lead climber on expeditions to Mt MCKINLEY in 1988 and 1990, summiting on both occasions, and in 1992 he reached the summit of ANNAPURNA IV.

9. Sergeant Dan CARROLL

RAF, Age 32, Single.

Holds MIC. Dan is an experienced mountain rescue team leader, and he has climbed many hard routes in the UK and the Alps. His greater ranges experience includes Mt ATHABASCA, Mt MCKINLEY, and DIRAN PEAK in the Karakoram.

10. Corporal Larry FODEN

Royal Marines, Age 27, Single.

Holds RM ML2, and MSI qualifications. He has 5 Arctic winters, and 4 good Alpine seasons behind him, and won an award for rescuing 4 persons from Ben Nevis in a blizzard.

11. Corporal John DOYLE

Royal Marines. Age 31. Deputy Communications Member, Married.

Holds JSRCI. Jon has climbed hard routes all over the UK and in the Alps, and he has also climbed Mt KILIMANJARO. In 1990 he summited during an expedition to the Cassin Ridge of Mt MCKINLEY.

12. Marine Martin HALLETT

Royal Marines, Age 25. Single.

Holds MSI and SPSA qualifications. His experience consists of 4 Alpine seasons, 3 Arctic winters and climbs in Iceland, the Alps and Norway. He also took part in a successful expeditions to Mt McKINLEY and to SMITH ISLAND , Antarctica

JUNIOR TEAM

1. Squadron Leader Richard GAMMAGE

RAF, Age 33, Leader, Junior Team.

Holds full MIC, JSRCI. He has served as Officer Commanding at JSMTTC Tulloch, and climbed extensively in the UK and the Alps. He has led expeditions to Nepal (2 x 20,000ft peaks), to the Andes, the Rockies, Mt KENYA and New Zealand.

2. Major Andy EDINGTON

Royal Engineers, Age 39, Deputy Leader, Junior Team.

Holds JSRCI and JSME(L)W qualifications. Apart from Alpine experience in the Europe, Norway, and New Zealand, Andy was on the 1988 Everest expedition, reaching 8,000m on the North Face. He has led an 8 man expedition to climb PAPSURA in N India, and was deputy leader of a Junior Leaders expedition to Rowaling. He has also climbed Mt KENYA.

3. Second Lieutenant Ian WARREN

The Cheshire Regiment, Age 22. Junior Team Equipment Member

Recently commissioned from RMA Sandhurst, Ian has climbed Mt KILIMANJARO, and has 2 Alpine seasons under his belt.

4. Second Lieutenant Ben McINNES

Royal Electrical and Mechanical Engineers, Age 20. Junior Team Diary Member.

Holds JSME(L) (S). Recently commissioned from RMA Sandhurst, Ben has climbed extensively in the UK and has also a couple of Alpine seasons to his credit, including several 4,000m peaks.

5. Flying Officer Jon HOUGH

RAF, Age 23. Junior Team Training Co-ordinator.

Limited experience thus far, apart from casual rock climbing in the UK, and the training provided on JSAM 95. Has recently gained a JSME(L) (S) qualification.

6. Flight Lieutenant Nigel MORTON

RAF, Age 21. Junior Team Accommodation Member.

Limited experience thus far, apart from some rock climbing in the UK, although he has trekked in the Alps and the Karakoram.

7. Lance Corporal Lee JOHNSON

Royal marines, Age 21. Responsible for Equipment and management of porters in the Junior Team.

Holds JSMEL (S). Has climbed mainly in the UK, summer and winter, but performed very well on JSAM 95.

8. Marine Paul HOPPER

Royal marines, Age 22. Rations Member, Junior Team.

Holds JSMEL (S). Has climbed to E2 standard in the UK. Took part in JT training programme during JSAM 95.

9. Dr Nick CRUDEN

Doctor, Age 23. Junior Team Doctor.

In addition to an attachment with the RAF Kinloss MR team, he has climbed to TD standard in the Alps. He has spent six weeks climbing classic routes in Yosemite and has trekked and worked in Nepal..

10. Mr Jon GILKES

Age 21. Undergraduate, Liverpool University, serving with the UOTC. Junior Team Photography Member

Limited climbing experience in the UK, but promising leadership and initiative characteristics. He has trekked in Northern India.

MEDICAL PARTY

1. Surgeon Lieutenant Debbie KERR

Royal Navy. Team Leader.

Debbie has climbed extensively in the UK and the Alps, and summited on ACONCAGUA during an expedition to S America.

2. Dr Sheena PERRETT

Kings College London, Medical Researcher.

Sheena works on the anti-parasitic properties of traditional medicinal plants. Her group at Kings is searching for new drugs for human tropical diseases such as Onchocerciasis and Lymphatic Filariasis. She has worked on plants from Africa, China, and S America.

Sheena has experience of rock climbing but has never before visited the Himalayas.

3. Dr Carol WINDLE

Research Physiologist, Institute of Naval Medicine. Medical Researcher.

Carol works in a research team aimed at enhancing the operational effectiveness of Royal Navy and Royal Marines Personnel. Past experience includes taking part in Operation Raleigh. Her current area of research is into survival in disabled submarines, - a far cry from the highest mountains in the world!

EXPEDITION FINANCES - Meryon Bridges

General

The expedition was funded by a mix of commercial sponsorship, donations from Service funds, and Members' contributions. These funds were raised by an appeal which was run over an 18 month period, and its success was largely dependant on the very generous support from the Services charitable funds. Details of the budget are given in Appendix 1 to this annex, and at Appendix 2 is a list of all the expedition's sponsors, both commercial and military.

Sponsors

While the bulk of the funds came from the Services, the expedition could not have taken place without the help of our commercial sponsors as well, who gave support in both cash and kind, and for whose help we are deeply grateful. At Appendix 2 to this annex is a list of all sponsors. Some sponsors provided private help to individual members in raising their contribution to the expedition funds. Where known, these are included. Apologies are offered for any omissions.

Budget

The budget was developed on the basis of a competitive tender for the provision of in-country logistic support. Invitations to tender for the service were sent to several UK based agents, who in turn obtained quotations from in country trek operators. The parameters against which the quotation was invited were developed from estimates of the expedition duration and the requirement for portorage. To this quotation were added self generated estimates for international air transport and expenses to be incurred in the UK. Appendix 1 shows both the estimated budget and the actual out-turn.

The most significant deviations from the forecast estimate occurred in the in-country costs, and the provisions for film/printing, and food. Almost all of the hike in in-country costs is attributable to the cost of porters. The number of porters required was seriously under estimated, and at the very high prevailing daily rates set by the government of Pakistan, this represented a large additional cost.

(NOTE: There is an element of approximation in the quoted in-country costs, due to the range of exchange rates obtained. Some expenses were paid in advance by cash transfer. Some were paid to the agent in country in bulk payments, using Sterling. Other payments in-country were made in US dollars, Sterling, or in Rupees which had been obtained by exchange at a variety of outlets and locations. All these transactions attracted different exchange rates, and the resulting mix makes completely precise statement of the expenses nigh impossible).

The savings achieved in the other two items were attributable to the skill of the relevant expedition members in persuading sponsors to shoulder these costs on our behalf, and the generosity of those sponsors.

Income

At Appendix 1 is also given the breakdown of where the major sums of money came from. This is not a totally comprehensive list of donors, but rather indicates the main sources.

In attempting to find commercial sponsors, reference was made to The Guide to Company Giving, and The Major Charities Guide, both published by the Directory of Social Change, and available in public libraries. The former in particular not only lists over a thousand companies and their policies on giving, but also provides excellent advice on the psychology of giving and how to ask for financial support.

EXPEDITION BUDGET

FORECAST AND ACTUAL COSTS

	<u>Forecast</u>	<u>Actual</u>
International travel, incl freight	£ 14,000	14,576
In Country Costs (Junior Team)		
• Total	£ 16,600)
In country Costs (Main Team))
• Hotels	£ 2,800)
• Porters	£ 18,800)
• Internal transport)) 71,868
• Trek costs, walk-in food, Cooks,)	£ 10,600)
• Eqpt, etc.))
• Medical Team	£ 3,000)
• Liaison Officer	£ 1,700)
• Other in-country transport costs		3,786
• Insurance	£ 6,000	1,619
• Agent's fees	£ 5,000	5,000
• Peak fee	£ 5,000	8,027
	_____	_____
SUB TOTAL	£ 82,500	104,876
	=====	=====
• Equipment - Expedition £7,200		
- Consumable £5,000 Total	£ 12,200	15,708
• Food	£ 5,000	Nil
• Film/Printing	£ 2,000	30
• Office/Entertainment	£ 4,000	3,466
• Contingencies	£ 10,000	N/A
• Donation to the Prince's Trust (Minimum) £ 5,000		5,000
• Refunds		3,450
• Return of loan to JSMC		3,400
	_____	_____
SUB TOTAL	£ 38,200	31,054
	=====	=====
<u>GRAND TOTAL</u>	<u>£121,700</u>	<u>£135,930</u>

SOURCES OF INCOME

1. Residual from BSEE 92	£ 5,600
2. Contributions from Service funds:	
Berlin Inf Bde Memorial Trust	£20,000
RAF Spec Projects Fund	£12,000
Single Service Central Funds	
Army	£10,000
RAF	£ 6,000
RN	£ 12,000
Adventure Training Funds	
Army	£ 4,100
RAF	£ 3,500
RN	£ 2,635
Joint Service Expedition Trust	£11,500
Nuffield Trust (for equipment)	£ 8,550
Service Climbing Clubs	£ 2,000
RE Funds (Corps & Regiment)	£ 1,512
Ulyssees Trust	£ 750
Other Service contributions	£ 1,033
	<hr/>
	£95,580
3. Members' Contributions	£22,500
4. Commercial Sponsorship	£ 9,620
5. Bank Interest	£ 2,630
	<hr/> <hr/>
<u>TOTAL</u>	<u>£135,930</u>

LIST OF SPONSORS

Commercial Sponsors

The following commercial sponsors generously contributed to the expedition. Support was given as gifts, in cash or in kind, or in discounts, and in some cases were in support of individuals rather than the expedition in general.

AGFA Gavaert
British Aerospace Defence Ltd (Mil Aircraft)
Coopers and Lybrand
Cotswold Camping
Elonex Plc
The Fishmongers' Company
Hunting Aviation
JB Foods Ltd
Lloyds Bank (St James's Branch)
Logica (UK) Ltd
Marlow Ropes
Nellcor Puritan Bennett UK Ltd
Optical Training, Sales & Services
Pakistan International Airways
RAB Equipment
Rover Group
Sara Lee Household and Personal Care
Sutton Photographic Club
Touring Sport/ Rosker Ltd
Travelling Light
Mark Silver Esq
Vickers Defence Systems
Alba Photographic Ltd

In addition, equipment was supplied at trade prices by the following companies:

Berghaus Ltd
Life Support Engineering
Allcord UK
The Mountain Boot Co
Coleman UK
Lowe Alpine Gp
Mycoal Warm Packs Ltd

Military Sponsors

Funds were generously provided from the following known military sources. It may be that some unit/ regimental funds also contributed to sponsor individuals, and that these were not notified to me. Apologies are offered for any omissions.

HRH The Prince of Wales

Joint Services Sources

The Joint Services Mountaineering Committee
The Joint Services Expedition Trust
The Nuffield Trust
The Ulysees Trust

Royal Navy Sources

RN & RM Sports Lottery
RN Fleet Amenities Fund
The Sailors' Fund
DNPTS
45 Commando RM
The RN & RM Mountaineering Club

Army Sources

The Berlin Infantry Brigade Memorial Fund
The Army Central Fund
5 Division
RE Corps Funds
RE Corps Funds BAOR
REME Corps Funds
RLC Corps Funds
The Army Mountaineering Association

RAF Sources

The RAF Special Projects Fund
The RAF Central Funds
RAF Sports Lottery
RAF St Athan
RAF Cranwell
The RAF Mountaineering Association

SCIENTIFIC REPORT

1. Search for New Anti-parasitic Compounds from Medicinal Plants from Pakistan. - Sheena Perrett

The main objective of this project, conducted during the British Services Gasherbrum Expedition, was the discovery of bioactive compounds from local medicinal plants. It is hoped that might make appropriate lead components of new macrofilaricides, ie. Drugs that kill the adult helminths (worms) which cause the human diseases onchocerciasis and lymphatic filariasis.

It is estimated that onchocerciasis affects up to 20 million people world wide, with 350,000 actually blind. Lymphatic filariasis affects more than 80 million people, causing considerable morbidity, including elephantiasis. Despite considerable global pharmaceutical research, there is a consensus that there are no safe and effective drugs for eliminating the adult worms causing these diseases.

To date pharmaceutical investigations directed towards the discovery of a safe and effective macrofilaricide using either metabolites of micro-organisms or *de novo* organic synthesis have failed to deliver a product which fills this gap in our anthelmintic armoury. In the recently published "Report of a WHO Expert Committee on Onchocerciasis Control" an urgent need for new antifilarial drugs was noted, with one main recommendation being "Research on the development of a safe, effective antifilaricidal drug for onchocerciasis should be intensified." The development of the new anti-malarial artemisinin from the plant *Artemisia annua* hopefully provides an indicative precedent that plant metabolites could provide a fruitful source of pharmaceutical novelty in this area.

Though Pakistan possesses an extensive traditional medicinal system, it seems that little research has been carried out with medicinal plants from this area with activity towards helminth parasites. Much work has been carried out at Kings College London on medicinal plants with anti-parasitic activity from China, Africa and South America, though none from Pakistan. The British Services Gasherbrum Expedition provided an excellent opportunity for an experienced worker in the field of anti-parasitic natural compounds to carry out collections of plants in this remote part of the world.

An extensive literature survey was carried out before travelling to Northern Pakistan to determine the kind of traditional remedies used in the region, and also their likely locations. The literature showed that there is a wealth of traditional medicinal plants which are widely used.

Once in Northern Pakistan, a number of plants were collected. Samples of these plants were dried for use in experiments, and others were pressed to aid identification on return to the UK. A number of plants were also purchased in a herbal store in a street market in Rawalpindi.

On return from Pakistan, ethyl acetate extracts of the plants were made. Ethyl acetate was used to extract as many of the compounds as possible from the dried plants. Excess ethyl acetate was removed by means of a rotary vacuum evaporator. These dried extracts were then redissolved and tested against *Caenorhabditis elegans* nematodes and also against *Daphnia*, a small crustacean.

C. elegans is a non-pathogenic soil nematode which is acknowledged to be an excellent model for parasitic nematodes, such as those causing onchocerciasis and lymphatic filariasis, when screening large numbers of compounds or extracts for anti-parasitic activity. *C. elegans* are easy to maintain and test under laboratory conditions.

The water flea, *Daphnia*, was used as a non-target indicator species. Clearly when testing new sources for any kind of biological activity which might ultimately lead to the production of a new drug, it is important to test the selectivity of the activity. That is to ensure that the compounds or extracts are active towards the parasites yet non toxic towards non-target organisms and also mammalian cells. Numerous experiments have shown that there is a strong correlation between toxicity of substances to *Daphnia* and towards mammals. Obviously it is preferable to test compounds on an organism like *Daphnia* than to carry out complex mammalian toxicity studies at a premature stage of investigation.

C. elegans and *Daphnia* assay can give a good indication as to whether a new compound or plant extract might have anti-parasitic activity towards nematodes and also unwanted toxicity.

Preliminary results on the first plants tested amongst those brought back from Pakistan have shown some interesting patterns. The fruits of one plant in particular appear to have nematocidal activity towards *C. elegans*. The plant has been identified as *Sapindus mukorossi*.

Sapindus mukorossi is known in Pakistan as "reetha". The fruits are the part used medicinally and when ripe they consist of a black seed with a reddish brown fleshy covering. The plant is known for a number of different medical effects. It is used as a tonic, expectorant, emetic, and purgative. In China it is also known as a corrective and eliminant remedy, and the bark is ground and macerated in cold water. Praneem polyherbal cream, a spermicidal formulation developed at the National Institute of Immunology, is composed of a purified extract from the dried seeds of an ancient Indian plant *Azadirachta indica*, quinine hydrochloride, and also extract from the pericarp of fruits of the *Sapindus* species.

Chemical analysis of the related plant *Sapindus saponaria* fruits was made by Ribiero *et al.* (1995). The plant was shown to contain a number of saponins - a very interesting class of bioactive compounds. Some of these saponins showed molluscicidal activity against a snail which is one of the intermediate hosts of schistosomiasis.

Only a very primitive analysis of *Sapindus mukorossi* has been carried out so far, and at this stage it is not possible to tell whether the compounds mentioned above are present in the ethyl acetate extract of *S. mukorossi* used in the present study, or indeed

if these might be responsible for some of the bioactivity of the plant.

Much further work is planned for this interesting medicinal plant from Pakistan, and on a number of other plants collected, which have not yet been subjected to analysis. It is expected that at least one scientific publication in a reputable journal will emerge from this research.

2. Physiological Studies on the 1996 Gasherbrum Expedition

Study 1. The Effect of Adding Sodium Chloride to a Carbohydrate Drink on the Hydration Status and Daily Water Turnover of Men Trekking at Altitude. By Carol Windle

Background

Exposure to altitude has been shown to lead to considerable weight loss; this has been attributed to an initial loss of body water and then to subsequent loss of muscle mass.¹ There are several possible explanations for the reduction in body water on exposure to altitude. These include: alterations in the physiological mechanisms for maintaining homeostasis; the increased evaporation of sweat due to the low vapour saturation point may cause climbers not to realise that they are sweating, and therefore not increasing their fluid intake to compensate for this; an increase in the amount of body water loss by respiration, due to increase in ventilation, the reduced vapour saturation point, and the cold. Cold exposure causes peripheral vasoconstriction and consequent diuresis. In addition, cold has a tendency to depress the sensation of thirst.² Vomiting and Diarrhoea are more prevalent at altitude than at sea level and both lead to dehydration.

Dehydration by as little as 2% of body weight is reported to impair exercise performance and that losses in excess of 5% of body weight can decrease the capacity for work by about 30%.³ In the cold environment experienced at the altitude of this expedition, in addition to reducing work capacity, dehydration will predispose individuals to frostbite,⁴ fatigue, exhaustion, and in extreme circumstances, death. The effects of dehydration can seriously compromise the success of such expeditions.

Adding carbohydrate and electrolytes to drinks consumed during and after exercise to improve performance and enhance rehydration has received significant scientific and commercial attention. The addition of carbohydrate to a drink provides additional substrate to produce energy which supplements the body's limited store. Adding salt to water has been shown to enhance rehydration.

Aim

The aim of the study was to determine if the diuresis that is reported to occur on exposure to altitude could be prevented/ reduced by the addition of electrolytes (salt) to the drinking solution taken by climbers. This would determine whether the diuresis is physiologically mediated and hence cannot be defended regardless of drink composition or drinking volume, or whether it is due to factors that are non physiological.

Method

During the trek to Base Camp, six of the 12 climbers drank a carbohydrate drink, and the other six drank a carbohydrate - electrolyte drink (*ad libitum* drinking). Nude body weight for each of the climbers was measured each morning, and a sample of urine was collected from their first morning void and taken back to the UK for analysis. Each climber recorded his urine output and fluid intake daily. Total body water was measured the day before beginning the trek and then on arrival at Base Camp, by using a stable isotope of hydrogen (deuterium oxide).

The samples are currently being analysed at Dundee University.

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Study 2 Does Exposure to Chronic Hypobaric Hypoxia (Altitude Exposure) have Permanent Effects on the Brain? By Carol Windle and Dr M McLeod.

Background

Reductions in mental performance and decision making on exposure to hypobaric hypoxia are well documented. MacFarland^{1,2,3,4} showed as long ago as 1937 that performance on simple and complex physiological tests (arithmetic, writing, memory, perseverance, simple and choice reaction time, and auditory threshold) was impaired at altitudes above 4,700m. At altitudes above 6,700m there is an onset of profound symptoms, with significant mental impairment and lapses of judgement.⁵ Hallucinations have been reported in climbers at extreme altitude: Smythe⁶ reported in his attempted ascent of Everest (8,848m) a feeling of being accompanied by a second person - so much so that he gave food to his imaginary friend.

Protracted hypoxic stress to the central nervous system may have permanent effects. West (1986)⁷ suggested that high altitude climbing without the use of oxygen should be grouped together with boxing as a sport leaving its participants open to brain damage. Studies^{8,9} have demonstrated reductions in memory and neuro-psychological performance (finger tapping test and the Wechler memory scale) following return from expeditions to altitude. Separate studies^{10,11} that have examined the effects of altitude exposure on the physical characteristics of the brain itself support the above findings.

Aim

The aim of this study was to investigate the effects of hypobaric hypoxia (chronic exposure altitude - 40 days at 5,300m or above) on brain function as determined by a brain scan and psychometric testing.

Method

Eight of the twelve climbers had a brain scan immediately before and after the expedition, these being performed by the Nuclear medicine Department at RNH Haslar. The climbers had 550 Mbq of Tc-99m HMPAO injected intravenously into an antecubital vein. This substance is a radio pharmaceutical which penetrates the blood/brain barrier and becomes fixed in cerebral tissue, enabling cerebral perfusion deficits to be imaged. This technique is more sensitive to detecting abnormalities than computerised tomography scans and MRI. (These are the techniques used in previous studies). Additionally the eight climbers undertook a battery of psychometric tests on a computer before and after the expedition. These assessed their manual dexterity, short term memory, decision making and motor speed, perceptual speed and mixed associative memory, and also their higher brain functions.

Assessment of this work is still ongoing. Two climbers had to be retested in November 1996.

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COMMUNICATIONS - Steve Willson and John Doyle

Introduction

1. The communication requirements for the expedition were three fold. There was firstly the Main Team's internal requirements for VHF comms for inter climbing group organisation on the mountain. Secondly the Junior Team requested VHF comms to act as a safety net between their base camp and climbing parties. Finally a HF rear link was originally proposed with the nearest civilisation in Skardu. This was changed on arrival at Skardu, the Pakistan authorities requesting that the link be established between Base Camp and a local Army base on the upper Abruzzi Glacier. From there the rear link would be via the Army radio net to Skardu and Gilgit.

Equipment

2. The following equipment was taken to fill the above requirements.

8 - Cougar PRM insecure VHF sets. (2 for the Junior Team)

2 - 319 HF sets (minus EMU's).

2 - 5m Mast sets.

24- Lithium PRM disposable batteries.

8- Lithium 319 disposable batteries.

3. The communications equipment was kindly provided by 22 SAS Regt, 264 SAS Sig Sqn and SBS Sigs.

Performance

4. VHF - The VHF communications performance was adequate. They provided the required links although the quality of the signal was often poor. This was due to several factors, those being:

a. The shape of the ice fall and the location of Base Camp in relation to Camp 1.

b. The distance between Base Camp and groups on the mountain, up to 6km.

c. Power output of the set (2 watts).

It was found that comms with Base Camp could be improved by extending the antenna of the base set with a 319 antenna leg, in a horizontal plane at right angles to the incoming signal. Once above the ice fall (Camp 1 up) the inter camp comms were good at all times. The life and cold weather performance of the lithium batteries was excellent.

5. HF - The HF link was established at the start of the expedition and operated by the liaison officer at base camp. At the army post the set was operated by the sector commander, after a short period of instruction. The link was used three times daily and provided the expedition with a line of comms off the mountain to the local Army District HQ. Again the lithium batteries performed well.

Recommendations

6. On the basis of the performance of the HF comms on the expedition, I would recommend them for any future trip without change. However the limitation of having to pass all messages through an extended series of Army links is unsatisfactory for calls other than emergency calls for helicopter assistance. The alternative system is a SATCOM, see below. The number of HF batteries required for a six week trip with the same daily usage is 4.

7. The VHF comms could be improved on future trips with the help of the following:

- a. The use of a larger antenna, perhaps of a whip type.
- b. The use of an SMT amplified base camp set. (20 watts)
- c. The purchasing of a civilian VHF system, including a base camp set, powered by a solar charged lead acid battery, and 4 compact adjustable frequency hand sets.

8. The expedition was kindly given the use of a **Marisat Satcom** system brought by the Spanish Military Expedition. This provided direct telephone links at national and international level, and was invaluable for such activities as passing back Sitreps, calling forward porters, etc. Such a system is particularly appropriate to the extreme remoteness of the Karakoram. It was powered by a powerful solar panel and a 12volt lead acid car battery.

Summary:

9. A good communications plan is essential on a large expedition, potentially representing the difference between success and failure. The communications provided at no cost to the British Services Gasherbrum Expedition were successful, if difficult. If a superior form of VHF communications is required for a similar trip the purchase of lightweight civilian style sets is recommended.

RATIONS REPORT - Martin Bazire MBE

The minimum aim of the Rations Member is to keep all expedition members adequately fed at all times; morale, health and fitness must not suffer. Sufficient food must therefore be in the right place at the right time, without incurring waste. Over an extended period, variety is needed in order to provide a balanced diet and to maintain interest in food. The subject of food on BSGE 96 was, as on many expeditions, very topical.

The aim of this report is to record the provision of rations on BSGE 96, with comments and suggestions for the future. Several related areas are also addressed.

PROVISION OF RATIONS

Requirement. The overall number of man-days of rations required on BSGE 96 was a simple mathematical exercise, taking into account the planned days in theatre for the Main Team, Junior Team and the Scientific Party. In the event, the Main Team returned to UK one week early. For all parties, the Trekking Agent undertook to provide all rations to and from respective Base camps. In the case of the Main Team, the Agent also undertook to provide 7 days food at Base Camp.

Provision. It should be noted that only the portion of the ration requirement that was accounted for by Servicemen could be claimed from Service sources. Rations needed at and above both Base Camps were based on operational ration packs (ORP). The balance of man days not accounted for by ORP, and for which rations could be Service provided, were subject to CILOR.

ORP. The range of ORP extends from 4 and 10 man boxes to several types of 24 hour packs; Arctic (dehydrated and, on trial, freeze dried), GS (tinned) and GP (retort pouches).

a. Base Camp. The ORP at Base Camp was 10 man compo. This gave the 2 chefs a convenient basis for catering for 12.

b. Above Base Camp. Rations above Base Camp were based on the 24 hour Arctic packs. GP rations were also requested, but provision depends on availability as well as authority for release, and it is advised that bids are placed at the earliest opportunity.

c. Quantities. The quantities of 10 man and 24 hour ORP were based on the forecast of progress on the mountain as developed by the leader. In addition, it was felt that, while 24 hour rations could be used at Base Camp, 10 man ORP was not suitable above Base Camp.

Supplements. In the past, Service expeditions have been able to apply for supplements on the basis that the rations provided do not provide sufficient calories; a doctor's certificate is required stating that at least 5,500 calories per man per day are needed above the snow line. For BSGE, the Directorate of Food Services Management kindly agreed to fund a range of supplements from the NAAFI catalogue. Comments on these may be found later.

CILOR. CILOR must be claimed within each Service due to disaggregation of budgets. A Service rep is needed to co-ordinate bids on behalf of each Service. The small party enhancement and Arctic supplement were also claimed.

COMMENTS

Quantities. Despite the contract with the Trekking Agent, the Rations Member had to ensure that sufficient rations were physically available for the duration of the expedition. It was difficult to assess the quantities of fresh rations provided, both for the walk-in and at Base Camp. It had been planned to use a small quantity of ORP on the walk-in. A small reserve at Base camp was also needed should there have been a delay to porters for the walk-out. The quantity of ORP taken from UK proved to be on the generous side, but this was felt necessary as there was no opportunity for resupply at Base Camp.

10 Man ORP.

Good Points. Well packaged; balanced diet (presumably); familiar.

Bad Points. Awkward waste (tins); weak on breakfast items, "sameness" to the taste of the main meals.

24 Hour Arctic.

Good Points. Drinks packs, instant soups, rice, apple flakes and Kendal mint cake were good. Tissues, scourer and spatula were nice touches. Easy to move and check stock.

Bad Points. Varying quantities of each menu were provided, despite specifically requesting equal numbers; menu C became boring. The rations were surprisingly heavy (see below). Reconstitution of peas and granules required time and care. Confectionery was good in quantity (too much ?) but weak in range; the quality of chocolate was poor and the glucose tablets seldom touched.

Weight. The packaging of ORP, particularly 24 hour rations, adds to the weight, but they can withstand some rough handling. Making up into 25kg porter loads was difficult with the following weights:

10 Man ORP. 14 kg

10 x 24 hour Arctic. 16 kg, some of which had to be broken down.

The relatively heavy weight of Arctic rations is due partly to the confectionery; there appears to be no weight saving despite the dehydrated rations.

Supplements. The supplements were designed to add variety and piquancy to ORP, as well as extra calories. They were used mainly at Base Camp, but some (possibly not enough) were taken up the mountain. Quantities required were difficult to estimate in advance. Nonetheless, of the 1500 extra chocolate bars (Mars, Twix, Topic etc.) taken, at the end of the walk-out there were only seven left!

Good Points. Instant bread mix produced excellent fresh rolls from the collapsible Coleman oven. Cup-a-soups, Ryvita, Krackawheat, Marmite, honey and individual jams made for good snacks. Tomato sauce, brown sauce, Tabasco, mango chutney and pickle added zest to food. Egg noodles were excellent, particularly high up. Refresh drinks made a pleasant change to "screech".

Bad Points. The NAAFI range is not geared to mountaineering expeditions but some 40 items were selected. Bovril was superfluous. Scrambled egg mix and instant custard powder would have been appreciated, despite the Trekking Agent providing some eggs and custard. The sardine tins did not have those natty little openers and the oatmeal Mornflakes were not instant.

RELATED AREAS

Fuel. At Base camp Kerosene was used. It was difficult to control the use of kerosene by the cooks but through ingenuity and care fuel supplies did not run out. It must be clarified in advance what the Trekking Agent undertakes to provide and for how long. Above Base Camp propane-butane cylinders were provided on the basis of one per man per day; this proved generous.

Water. Purification of water must be thought through before the expedition, including provision of puritabs, filters and extra fuel for boiling.

Cooks. We had two excellent cooks, Muhammed Ali and Ali Khan. They worked very hard throughout the expedition to produce a variety of meals as required. They maintained their good humour, musical skills and hospitality to the end.

Health and Hygiene. Environmental conditions during the trek and at Base Camp gave rise to the potential for food poisoning. We were generally healthy at Base Camp although most members suffered gastrointestinal illness soon after arrival in country and again prior to departure. The rations member, amongst others, returned to the UK with enteric illness but the source of any problems could not be pinpointed.

Mess Tent. The layout of a mess tent requires thought. Stools at a minimum are recommended for members. Compo boxes were arranged to form a table.

Daily Routine. The rations member became intimately involved with the daily timings during the walk-in and walk-out as well as the period at Base Camp. There was no need for a dedicated Base Camp Manager.

Vitamin Supplements. The Team Doctor provided vitamin supplements but they were not deemed to be essential.

Porters. There were no undue demands for food or fuel by porters but they were prone to discarding rubbish.

Rubbish. Above Base Camp packaging was burned or discarded down deep crevasses (with the approval of the Liaison Officer). We also carried out quantities of crushed tins, much to the surprise of the authorities in Skardu. Sadly, the final disposal of these tins can only be guessed.

CONCLUSIONS

Lessons. The following are some of the broad lessons:

- a. Start planning early to give plenty of time to bid for rations. Consider the balance between ORP and CILOR carefully; confidence in the Trekking Agent is a factor.
- b. Variety is a key, whether on the trekking phases, at Base camp or on the mountain.
- c. Aim to keep weight and waste to a minimum.

High Altitude (HA) Rations. The 24 hour Arctic pack is not ideal as a HA ration an alternative is advised. Retort pouch and freeze-dried meals should be seriously considered. Suitable food items in a HA ration might include; more instant foodstuffs, including noodles, scrambled egg mix and custard powder. There should be a greater variety of confectionery. The complete ration for one man for one day should weigh no more than 1kg.

All CILOR? The option of deciding on CILOR alone may be tempting to those opposed to Service rations. This may work well in small quantities for the higher altitudes. However, there are some points to note if this policy is adopted:

- a. Packaging. Once the relatively small quantities of individual foodstuffs have been acquired, there is the requirement for packaging. The time and materials needed should be assessed.
- b. Shelf-life. Whereas the elements in ORP are designed to give a long shelf life, standard commercial items may have a surprisingly imminent "best before date". The time between acquisition and consumption must allow for this.

Finally. While some members revelled in the huge weight losses they experienced (due in part, perhaps, to the huge weight gains they had previously made), food was not a showstopper and no malnutrition was experienced. It was a pleasure and an experience to have been apart of this Karakorum kitchen.

ENVIRONMENTAL NOTES - Mark Watson

The influx of several hundred climbers, trekkers and porters into the Karakoram each season poses grave environmental problems. Up until the last ten years, when people first started coming to the area in large numbers, it remained a pristine wilderness, with the local people venturing little higher than the alpine pastures for stock grazing and hunting. There are now three areas where impact is most evident. They are solid waste, human faeces and deforestation.

In the Gasherbrum Base Camp area, as the snow melted, the full extent of the accumulation of rubbish left there by successive expeditions became apparent. Despite the environmental bond system and the increasing level of environmental awareness amongst western climbers, there is a steady increase in the deposits of rubbish. This is mainly due to the complete lack of understanding of basic hygiene and environmental care by the camp staff and porters, and lack of firm enforcement of regulations by the liaison officers and guides. There is therefore clearly a strong responsibility for expedition members to provide supervision and to educate all staff in sound practise. In reality however, cultural differences made this a hard task, and it is evident that some expeditions are indifferent to the mess they leave behind.

The problem is compounded by the emphasis placed on particular areas of pollution by the Ministry of Tourism. There are substantial and specific fines related to leaving behind fixed rope or tents on the mountain, items which in reality have little environmental impact. Conversely there appears to be a far less rigorous approach to the leaving of rubbish, which poisons the environment, and injures wildlife. In our case, the expedition leader was not required to affirm in writing that the all rubbish had been collected, or state how it had been disposed of. In fact we exported three porter loads of crushed food tins from base camp to Skardu, and from the fact that there was no system of disposal set up there it was apparent that this was a fairly unique thing to do.

A devastating example of the locals' attitude to pollution is in the management of human faeces at the heavily used campsites along the Baltoro. The authorities have installed concrete, dry closet latrines in each location. These are an excellent, low cost, low impact solution to the problem. However, the porters, who make up by far the largest sub group of people using the area, will not use them, preferring to defecate in the open, often next to streams, which increases the contamination level of the water supply. At Pajju, I noticed that several porters had actually defecated against the outside wall of the latrine.

Deforestation is another aspect of human impact in which traditional local practice needs to be changed in order to limit irreparable damage to the environment. The porters' habit is to prepare chapattis and tea over an open fire using wood for fuel. Quite simply, the small clumps of willow which cling to the thin soils at the stream junctions along the Braldu River cannot sustain the present demand for firewood. It was encouraging to see some men using kerosene burners, and there were also

attempts to replant in some areas, notably at Paiju. However a more far reaching exercise of control is required over the entire area to preserve the trees and bushes.

Summary

Climbers and trekkers have brought their own problems to this remote wilderness. Education, of both western and local people is part of the solution to ensure sound sustainable practice. The other important initiative required is a governmental issue. Some of the enormous revenue from peak fees needs to be channelled back directly into keeping the visited areas clean, and in reforestation, so that in the long term people will still want to come.

BIRD LIST

As the expedition included one amateur ornithologist, a record was maintained of all birds observed during the trip. Below is a list of those seen during the period in Pakistan. It is in no particular order and by no means exhaustive, since observation was necessarily casual.

House Crow	European Roller
Black Kite	European Bee-eater
Roseringed Parrot	White Breasted Kingfisher
Purple Sunbird	Wallcreeper
Common Myna	Great Rosefinch
Black Drongo	Goldfronted Finch
Griffon Vulture	Rock Bunting
Lesser Kestrel	Brandt's Mountain Finch
White Wagtail (Personata)	Black Redstart
Red Vented Bulbul	Guldenstadt's Redstart
White Cheeked Bulbul	Hoopoe
Swift	Alpine Chough
Alpine Swift	Red Billed Chough
House Swift	Raven
Crag Martin	Golden Oriole
Olivaceous Warbler	Pied Chat
Chiffchaff	Redbreasted Rosefinch
Horned lark	Large Pied Wagtail
Rufous Backed shrike	Blue Rock Thrush

EXPEDITIONS TO PAKISTAN, LESSONS LEARNT - Meryon Bridges

Introduction

In this Annex are given some of the primary lessons which came out of the expedition. These should be seen in the context of this being the first Joint Services climbing expedition to the Karakoram for many years. Thus many of the lessons were the product of a basic lack of familiarity with the country and the terrain, lessons which are well learnt vis a vis Nepal for example. It is intended primarily to provide advice for the planners of subsequent expeditions to the area.

Local Trek Agents

Having no previous knowledge of the trek agencies in Pakistan or their modus operandi, for this expedition I approached several UK based trek/expedition agents for competitive quotations for the provision of logistic support services in country. This in effect involved a Pakistan trek agent subcontracting to a UK office. I would not recommend this approach. There are good and bad trek agents in Pakistan, as there are anywhere. The main big established firms provide an excellent service, but can cost 30% more than those less well known. These include Nazir Sabir, Walji, and Karakoram Experience (a firm based both in Pakistan and the UK). The second tier of agents provide a perfectly adequate service, but the team may be left to unscramble a few small but irritating glitches. Such a one is Karakoram Treks and Tours (which we used). Whether there is real value for money to be had from either of these alternatives is debatable. There are then the smaller operators, such as Muhammed Ali Jangjungpa, who has a very good reputation but whose service is an unknown quantity. Being small, it is possible that the backup service available, such as renegotiating return flight dates on the expedition's behalf, would be disappointing. Generally speaking, you appear to get rather less than what you pay for, but pro rata with the fee charged.

The main benefit in dealing direct with a trek agent in country is that there is a great improvement in the information flow, and the detail of co-ordination achievable. Use of a UK agent leaves gaps which only become apparent on arrival in Pakistan. It also costs an additional overhead for the UK office.

I would recommend any expedition to research local agents' reputation and performance, and strike a deal direct with the one of their choice.

Terrain

The mountains of Pakistan are far more remote than those of Nepal or much of India. Whereas in Nepal the walk in is through populated foothills to a selected mountain, which is essentially part of a single linear feature, in approaching the Karakoram, a party travels through the heart of the mountains for days. These mountains are very arid. The terrain is semi desert, and habitation is sparse. In the

case of an approach up the Baltoro glacier, apart from Army posts, the last human habitation is passed seven days out from Base Camp.

Local Communications.

The significance of this is that local communications from Base Camp are virtually non-existent, a runner having to go 120 miles to Skardu to convey any message, and then return with the answer, making a round trip of up to 14 days, depending on the weather.

For practical purposes, re-supply of local resources such as fresh food or kerosene, unless previously arranged, is not an available option. Equally the summoning of porters at the end of a climb, unless pre-determined, is likely to involve a wait of up to two weeks.

One solution to this problem is the inclusion of a SATCOM in the expedition equipment. While I personally would not advocate such systems for daily rear link communications, they can be very useful in emergency and to pass news of a successful outcome. There is a MARISAT system available which consists of a single brief case sized TX/RX, and this can be powered effectively by a 12v car battery and a suitably powerful solar panel - all highly portable. This gives international coverage, and is less sensitive to local security considerations than a powerful HF system. It is however very expensive to buy, and would ideally be the subject of a sponsorship deal.

The Pakistan Mountaineering Rules call for the provision of a "high powered HF TX/RX". In practice expeditions do not bring these, and their use in an area of high security is seen as undesirable by the military authorities in Pakistan. I would recommend it be omitted, since in case of any emergency requiring helicopter rescue, a runner could reach the nearest Army post, from which one could be summoned by radio, in a relatively short time.

Porterage

Porterage in Pakistan is exceedingly expensive, working out at close to £8.00 per porter per day. It is likely to be the largest single element of the cost of the expedition. Not only are the daily rates of pay very high, but the porters must be provided with basic equipment (which they really need), and also with food. On the longer treks such as to K2, the latter will involve the provision of additional porters to carry food for the load carriers, in some cases representing an increase of 20% on numbers required.

The level of costs calls for vigorous control of weight in both expedition and personal freight. Had the extent of this been realised, the cost of this expedition could probably have been reduced by up to £5,000!

It also greatly eases progress if freight can be prepacked into 25kg loads. There is flexibility of 1-2kg within this limit, but if, when arriving at the road head, there are a dozen 12kg ration boxes, and a dozen personal barrels of 18kg, making up 25kg loads is difficult!

The second advantage of pre-forming the loads is that it allows accurate

forecasting of the numbers of porters required, and hence the cost. There is potential for embarrassment if the ten extra porters found to be needed will cost more than the cash the party has brought with them.

Much has been said of the exploitive nature of the porters on the Baltoro. By treating our porters as part of the team, and being seen to have their interests at heart, we had a very good service from them, and they proved to be loyal and hard working - within the framework of scheduled porter stages that has now become the standard against which they are paid.

Liaison Officers

Any military party travelling to Pakistan inherently carries a status above civilian parties by virtue of the standing of the Army within Pakistani society. This gives the LO of a military team status, and this can be exploited. LOs are potentially very powerful, and can blacken the name of an expedition if they choose to (witness Jonathan Pratt in '94). They are mostly Captains, occasionally Majors, in the Pakistan Army, and it is worth getting and keeping the LO on side. Generally they appear to be keen to fit into their party, and to get on with the visitors.

LOs may wish to climb with the team, but this is the exception. Most are happy to remain at Base Camp. They are however to be provided with a full range of equipment. It is currently Pakistan Army policy that LOs should equip themselves fully from foreign expeditions, so that they can then be deployed on military duty in the mountains on the frontier without further expense. They therefore have an official incentive to acquire as much as possible, and without wishing to imply any dishonesty, it is necessary to establish clearly what kit is issued for retention, and what is for their use only during the expedition.

LOs attend a training course of a couple of weeks prior to being attached to foreign expeditions. The extent of their knowledge and understanding of what an expedition is doing and how it works can be quite limited. Our LO was very keen to contribute and help in all situations involving local people, and genuinely did his best. However his understanding at the outset was indeed limited, and it was therefore necessary for the leader to decide when the LO should be involved in such situations, and when the problem should be left to the agent's representative.

Equipment for Camp Staff

In their present (1993) edition, the mountaineering rules set out the equipment to be provided for LOs and for porters, but not for Camp Staff. These may include a guide, a cook, and a cook's assistant. The guide may or may not remain at base camp throughout the climbing period. (To be negotiated). They may be given cash or equipment, but essentially they need enough to be able to survive at base camp in all weathers, ie. mattress and sleeping bag, warm clothing, waterproofs and trek boots. A break down in communications with our agent led to some problems here.

It must be added that the loyalty of our cook and cook's assistant were outstanding, and they went to great trouble to ensure that the logistics of base camp

gave us no cause for concern. This included trading, on their own initiative, with the staff of other expeditions to avoid any shortages arising in our resources.

Weather Forecasts

The weather in the Karakoram is notoriously unpredictable, and any party should assume that there will be a significant period of bad weather during their stay. Bad weather is often simply snowfall, sometimes heavy, with poor visibility, but without strong winds, at least at lower altitudes. Our experience was that despite the vagueness of the presentation, and the ever present qualification of "Inshallah", the national weather forecast broadcast on Pakistan Radio, as received by the LO on his "trannie", was surprisingly good. If three days of fine weather were forecast, that was what you got. It would only give a forecast for three days in advance, so when a change would come was often not known, but in the absence of anything else, it was enough to plan movements on.

Advance Party

There is a strong case for sending an advance party 4-7 days ahead of the main party. The Ministry of Tourism (Mintour) briefing to all members of a climbing team is a pre-requisite to departure from Islamabad, and must be arranged at least 24hrs in advance. By that time, all in country arrangements must have been made: the LO met and issued with his equipment; the indemnities paid for helicopter rescue and the environmental bond; the insurance of porters arranged; any trek permits or charges arranged/paid, etc. Even with enthusiastic support from the agent, which we had, these take time.

Our advance party departed from the UK on a Tuesday, and the main party arrived in Islamabad on the following Sunday morning, but we were all able to leave on Wednesday, despite the intervening Monday and Tuesday being public holidays, which is entirely attributable to the efficacy of the advance party. (The weekend in Pakistan is Friday/Saturday).

Bureaucracy

The formalities which precede the departure of a team up country are no more exacting than, say, Nepal, but they have to be observed. The Mintour staff were friendly and helpful, but did require complete documentation to be prepared. Most of the work is the responsibility of the agent, and he should be fully familiar with all the requirements. Any team should ensure that the agent adequately prepares their passage, preferably before the team arrives in theatre. This can be aided by ensuring that all necessary paperwork is completed in advance and sent to the agent for processing. Close co-ordination with the agent to establish what is required is essential to quick transit.

Cash Transfer

Unconventional as it seemed to me, popular wisdom is that the easiest way to transfer funds to Pakistan is by hand carrying a substantial wad of notes with the team.

To minimise the size of the wad, and the inherent risk involved, pre-payment of the agent by a mutually agreed transfer mechanism is recommended, and this can also include pre-payment of the porter charges. None the less, it may be appropriate to carry some tens of thousands of pounds. Professional operators regard this as normal.

Money may be changed at banks or other outlets such as hotels and the more substantial shops. Generally US\$ are the most acceptable currency, and a better rate of exchange can be obtained since the Dollar is seen as a more stable currency than Sterling. However, Sterling can also be used.

While the agent's representative will pay the porters on arrival at base camp, the team will be expected to pay a bonus, which would typically be Rs200-300 per porter for a 9 day trek. There is therefore a need for a significant amount of local currency to be taken on the walk in, even though no shops will be encountered to spend it in.

Air Transport/Freight

Two airlines fly direct from the UK to Islamabad, BA and PIA. PIA offer substantial discounts for large parties (c. 25). BA only considers concessions to expeditions specifically recommended to them by the RGS.

There are a number of airfreight operators available. This expedition used Atlas Air and got a rate of £0.89 per kg outward to Islamabad. However note that return air freight rates can be as much as £6 per kg.

The advice received is that no freight should be routed through Karachi, but should go direct to Islamabad. Allegedly loss rates of freight passing through Karachi can be as high as 20%.

Conclusions

While the general outline of the arrangements for expeditions to Pakistan follows very much the same pattern as for expeditions to Nepal (or elsewhere), there are a number of particularly relevant factors. Of these, the most significant are the comparatively extreme remoteness of the mountains, calling for special consideration of communication systems, and the very high cost of portage, with its implications for minimising the loads to be carried.

ref 26430

96/2

A TWENTIETH ANNIVERSARY CELEBRATION

Introduction

At 0910hrs on 10th July 1966, four members of the British Services Gasherbrum Expedition stood on the summit of Gasherbrum I (8,067m) in the Karakoram in North Pakistan. Their arrival there signified a landmark achievement for climbing in the British Forces.

The JS Gasherbrum Expedition began to form in the egg back in July 1993, when the Joint Services Mountaineering Committee (JSMC) called for individual Service proposals for an objective for the next Joint Services mountaineering expedition, to take place in 1995 or 1996. At that point I got myself involved in the process, volunteered to lead the expedition, and in Oct 93, I was appointed leader. Over the course of the next five months I developed the objectives, with the support and approval of a Higher Management Committee consisting of V Adm Rutherford (President RN&RMMC), AM Sir Roger Austin (President RAFMA), Maj Gen Pett (Chairman AMA), Col (now Brig) Nicholls (Chmn JSMC), and Mr Nicholas Luard.

Planning

By May 94, the plans had congealed as follows:

- a. A Main Team of the best mountaineers that the Services could produce would climb Gasherbrum I. At 8,067m this is the world's 11th highest mountain. The climb was to be made in contemporary Alpine style, without using supplementary oxygen.
- b. A Junior Team of 8 young personnel, all to be under 23 years of age, and led by an experienced leader and deputy leader, would undertake an extremely arduous trek through the longest high altitude glacier corridor in the world, 75 miles at or above 3,000m, and en route they would climb one or more peaks of 6,000m. This team was to consist of 2xRN, 2xArmy, 2xRAF, and 2xCivilians.
- c. A medical research party of three would accompany the expedition main team, and supervise the conduct of studies into aspects of Acute Mountain Sickness (AMS) and acclimatisation, and into sourcing medicinal compounds from native herbal resources in the area.
- d. The expedition would raise a substantial sum of money as a donation to the Prince's Trust, which exists to create opportunities for young people.
- e. The exercise period would be May to Aug 96, and the estimated budget was #125,000.

These plans were encapsulated in a brochure, which was printed in Jul 94, at which point fund raising commenced, and invitations to apply for membership of the various parties were published in a DCI. Team selection took place in Mar 95. Training meets were run over the next 12 months, including piggy backing on the Joint Services Alpine Meet (JSAM) at Zermatt for two weeks in Aug 95. Preparation of detailed plans for, and the procurement of, food, equipment, communications, medical, etc., were also progressed. The expedition left the UK on 25 May 96 by PIA flight for Islamabad.

Concept

The concept behind the plans for the expedition was primarily to spread the benefit of the trip as far as possible. High altitude mountaineering tends to be incestuous, in that in order to maximise the chances of success, teams tend to be selected from amongst proven climbers, thus making the gaining of qualifying experience very difficult for new climbers. By creating the Junior Team, this expedition would deliberately create an opportunity for a new generation of promising young climbers to get initial experience of Himalayan mountaineering. At the same time the Main Team, while taking mainly those who appeared to be most eligible, would also include two less experienced but none the less very promising climbers. If successful, it would also serve to hold out to the Junior Team the continuing prospect of aspiring to mountaineering's ultimate objectives, ie. successful Service expeditions to 8,000m peaks.

The Medical Party's participation would fulfil the requirements of the Joint Services Expedition Trust for scientific work to be included in the expedition's activities, without threatening to take the Main Team's eye off the ball. The inclusion of two civilians, and the donation to The Prince's Trust were representative of a desire to contribute to civil - military relations, and to help young people with perhaps fewer opportunities than ourselves.

Of particular relevance was the fact that the Services had not had a success in attempting to climb an 8,000m peak in 20 years (since Everest 1976), and the credibility of Service climbing had suffered from the failure of some major expeditions in recent years. It was therefore doubly important that the climb of Gasherbrum I should be successful, and that it should be conducted in a contemporary style, involving no oxygen, few camps, and minimal logistic build up.

Transit

Since this was the first major Services expedition to the Karakoram for a long time, it was with relief that the unfamiliar entry and clearance formalities in Islamabad went without a hitch. Indeed, despite public holidays on Monday and Tuesday, we were away up the Karakoram Highway (KKH) in a coach on Wednesday, having arrived on Sunday morning, thanks mainly to the efforts of our three man advance party.

The KKH was built by the Frontier Works Organisation between 1966 and 1978, and is undoubtedly a very impressive piece of engineering as it follows the steep valley of the Indus for several hundred kilometres. However far more impressive is the 170km of road linking the KKH from just south of Gilgit to Skardu. This was built by the Pakistan Army with Chinese labour, and it too follows the Indus, which despite its size is now constrained in a wild and narrow gorge. Extended sections of the road are hollowed out of the near vertical cliffs, or cut across highly unstable slopes of schist and scree. It takes over six hours to cover the distance in a minibus, and the river is crossed just short of Skardu on a 480ft Bailey suspension bridge. We arrived in Skardu at 2200 on the Thursday night, after a second day of 14 hours on the road.

We took a day in Skardu to shake out and recruit the 180 porters required for the Main Team and the 55 required for the Junior Team, and over the next two days we followed a quite outrageously dodgy jeep track to Thongol, two hours short of Askole, borne in ancient Toyota Land Cruisers. From there on walking was the only option. Another two days up the valley took us to Korophon, (Big Rock - there's nothing else there!), which was the parting of the ways. The Junior Team turned sharp left up the Biafo Glacier, while the Main Team continued up the Braldu

valley to the famed Baltoro glacier.

Junior Team Activities

The Junior Team reached their Base Camp in the Snow Lake at the source of the Biafo Glacier on 9 Jun, after a trek through some unbelievably wild and barren country, flanked by jagged peaks such as Latok and The Ogre.

They spent 10 June establishing the camp, and on 11 Jun they took off to the hills in two groups. Group A, under the team leader, Sqn Ldr Richard Gammage, climbed a new route to the top of a 19,000ft peak in some 14 ½ hours, while Group B, under the deputy leader, Maj Andy Edington, carried out a recce of two peaks to the north. The next day this group reached 5,500m on Cornice peak, but were turned back by avalanche danger.

On 13 Jun, although two members managed to climb a 1,000ft ridge at grade 2/3, the weather began to go off. By afternoon it was snowing, and for the next eight days the weather was very bad. On 15 Jun, they summoned their porters back up from further down the Biafo glacier, with the intention of crossing the Hispar La before the snow became too deep to allow the crossing. The plan was that this would give them the run of the peaks down the Hispar glacier when the weather improved. However it was not to be. The porters appeared in dribs and drabs out of a blizzard on 17 Jun, having bivouacked overnight on the glacier. Contrary to express instructions given to the guide, they were unroped, and one of them had taken a bad fall down a crevasse. If he really had fallen the 40m that was claimed, he was lucky to be alive, but he was seriously hurt - possible fractured hip and skull, etc. The young doctor in the Junior Team, Nick Cruden, a medical student in his final year, did an outstanding job in patching this poor bloke up, but there was now no real alternative but to return down the Biafo to Askole.

Over the next three days the team beat a fighting withdrawal through continuing blizzards and waist deep snow. White out conditions prevailed and navigation on the wide open glacier was exceedingly difficult, aggravated by the presence of by now often concealed crevasses. All the members contributed magnificently during the retreat, navigating, supervising the porters, helping the injured one, breaking trail. As they descended to Askole the driving snow turned to cold bitter rain, but there was no let up, and the porters needed as much help as they could be given.

It is a great credit to the team that they got their injured man back to Skardu hospital without a deterioration in his condition, and without any further accident. The fact that the trip had not gone according to plan, and that they had had to extricate themselves from a potentially very serious situation, taught the young members much more than they would have learnt otherwise, and also gave them far more sense of achievement and excitement. On the way out to Skardu they picked up a little girl with a life threatening infection and persuaded her parents to let them take her too to Skardu Hospital, so in all probability two lives were saved by their actions. Their maturity, their steadiness, and their team spirit were remarkable in such a young party, and they and their leaders deserve high praise.

Main Team Climb

Meanwhile the Main Team was able to complete the walk in to its Base Camp in brilliant,

clear weather, allowing us to view the fantastic peaks and spires which flank the valley. Names such as the Trango Tower, the Baltoro Cathedrals, the Mustagh Tower, Masherbrum, and K2 came and went, as dramatic in the flesh as photographs ever made them. There was a significant buzz to be derived simply from finding oneself amongst such fabled peaks.

The fine weather continued for twelve days, most out of character for the Karakoram, which has a reputation for lowering grey skies and recurring snowfall. In nine of those days we walked in to Base Camp, traversing the Baltoro glacier to Concordia, the Upper Baltoro glacier, and the Abruzzi glacier, to the point where, at 5,000m, it is joined by the South Gasherbrum glacier. The tenth day was used to shake out and get set up at Base Camp, and on the last two days of the twelve we made rapid initial progress on the mountain. On the thirteenth day the snowfall began. This was 14 Jun, the same day the Junior Team's trip took on a serious character.

The plan for climbing Gasherbrum allowed for the establishing of a temporary Camp ½, since the position dictated for Camp 1 was 6km distant from, and 800m above, the Base Camp. It was anticipated that this would be too much for members carrying loads to manage until they were fully acclimatised. Camp ½ was therefore located and pitched on Day 1 (12 Jun), but on Day 2 the route was established right through to Camp 1, and a dump of stores was left there.

The route to Camp 1 negotiated the South Gasherbrum icefall all the way, but unlike the overt threat of the Khumbu icefall on Everest, with its tottering towers and yawning crevasses, this icefall was covert and lethal. It was riddled with holes, some of which were large enough to have easily swallowed a London bus, but 95% of them were covered over, even the big ones. Many were totally concealed, and the strength of the snow bridges which spanned them was completely indeterminate. On Day 2 Mark Watson was swallowed by one, and he disappeared as if Jaws had seized him by the legs. He went down about 20m and jammed, and it was only by the mercy of Providence that he was not seriously bent. He was quickly recovered, but this very object lesson had us firmly roped together whenever we moved in the lower part of the glacier thereafter.

From 14 to 20 Jun, the weather remained consistently foul with continuous snowfall, and apart from one sortie to Camp ½ on 18 Jun in deepening snow, we made no progress. By 21 Jun the situation was becoming desperate in that we were now at risk of losing the route through the glacier altogether. This had been pioneered by a US team attempting Gasherbrum II before we arrived, and it had taken them ten days to do it. Once lost, we would have to start again from scratch, and it would take us as long to retrace it. Accordingly on 21 Jun I led a slightly desperate charge through very deep snow, using snow shoes which we had bought from the Americans when they departed. Four of us made trail, and three carried loads up behind us. It took 7 hours to regain Camp ½, a distance previously covered in just over 2 hours. However this was the complicated bit, and above Camp ½, the line of the trail was more obvious. Camp ½ was completely buried, there being 1/2m of snow over the top of the tent. We only found it by virtue of some pairs of skis which were stuck upright in the snow alongside the tent. Half an hour's hard digging cleared it again, and a further 3 hours saw us back down to Base Camp, completely knackered. However the object was achieved, and we left behind a well flagged and well trodden path through the deep snow and the intricacies of the lower icefall.

The timing of this foray was remarkable since, with no prior warning, 22 Jun turned out to be the first of six consecutive fine days. While the weather spent a couple of hours in the

morning making up its mind to be fine, we made up ours to occupy Camp ½. The first brick of four therefore moved up mid morning, taking with them a second tent. The next day they re-broke the trail up to the site of Camp 1, while those in Base Camp carried up a load of stores behind them. This day saw the first use of skis between Camp ½ and Camp 1, something which immediately became the standard both on the upward and downward runs. Skiing down through the glacier was exhilarating, and reduced the descent time to Camp ½ to around 12 minutes. With the trail remade, the first brick moved up to Camp 1 on 24 Jun, and thereafter Camp ½ was not occupied again.

From 25 to 28 Jun, the Camp 1 party recce'd and then established the route forward to Camp 2, while the remainder in loaded stores to Camp 1. Camp 1, sited at the top of the icefall at 5,800m, was located in a most dramatic cwm which had two branches, and which was surrounded by some of the world's most dramatic mountain scenery. Of the six Gasherbrum peaks, two are over 8,000m, and two are fractionally below this threshold. One branch of the cwm led East between G I and G II, while the other led up towards the magnificent rock peak of G IV. The route to Camp 2 followed the eastern branch, gaining height slowly, but slashed by huge crevasses associated with the top of the icefall. Some 4km from Camp 1 the route reached the foot of a second icefall, which dropped 500m sharply down from the saddle between G I and G II. The passage up through this icefall was not overly complicated, but the route finding was delayed by deep snow. On 28 Jun a site for Camp 2 was located on the saddle at 6,400m, and the same day the second brick of four moved up to Camp 1 in renewed heavy snowfall. The following day bricks 1 and 2 in loaded stores to Camp 2, ready for occupation, but the weather was on the way out again, and to conserve stocks on the mountain, all personnel were withdrawn to Base Camp on 30 Jun.

1 Jul was a rest day, but on 2 Jul the weather returned to its earlier good behaviour, and so an early start was made to get everyone back up on the mountain. Because on fine days the radiant heat of the sun made any activity in the icefall unbearable after about 0830hrs, a typical run up to Camp 1 started with a call at 0130hrs. A hasty breakfast of spiced porridge (porridge with cinnamon, cardamom and cloves) and tea preceded an 0230hrs departure, and in good snow conditions, this meant that Camp 1 could be reached before 0700hrs, allowing the carriers to get back to Base Camp by 0900hrs.

On 2 Jul, both the Camp 1 and Camp 2 bricks moved back up to Camp 1. The first summit pair of Andy Hughes and Steve Hunt had by now been identified, and they ran a load of personal gear up to Camp 1 and returned, while Larry Foden and I stripped out Camp ½, bringing down everything that remained there. Excitement was now mounting as a summit bid could be as little as four days away. Everything depended on the weather and the snow conditions which would be found in the Japanese Couloir, - the 700m high obstacle that remained above Camp 2.

The next day the Camp 2 brick moved up and occupied that camp, supported by a second supply run by the Camp 1 brick. At the same time the summit pair moved up in echelon to Camp 1. They were to make one carry to Camp 2, and then spend a second night in Camp 1 for acclimatisation. They would then move up to Camp 2 to be poised to go for the summit as soon as the couloir was secured with fixed rope and Camp 3 located. The plan sought to maximise the acclimatisation of the summit pair, while at the same time minimising their exposure to the debilitating effects of high altitude.

Like many good plans, it didn't work - almost. The couloir proved to be exceedingly difficult and the weather didn't help. Trying to climb upwards on a 50+ degree slope against chest deep snow is an unrewarding pastime. Doing it at altitudes approaching 7,000m takes what little remaining fun there is out of it, and with spindrift filling in your tracks with loose snow as soon as you have made them, complete sense of humour failure is forgivable. In fact sense of humour was preserved by the very strong Camp 2 team, but progress was inevitably very slow. On 4 Jul all efforts were frustrated by the high winds, which reduced visibility to a couple of metres, and that evening the weather deteriorated further, with heavy snowfall overnight and the next day, precluding any activity at Camp 2. 6 Jul was similar, and although the Camp 1 brick brought a load of stores to within 300m below Camp 2, the Camp 2 brick remained holed up as the wind shrieked across the saddle, and the snow streamed down the walls above them. The complete stagnation of activity thus imposed on us when we were psyched up to go for the summit was intensely stressful and frustrating.

7 Jul saw some improvement, and progress was again made in the couloir. The final assault was launched the following day, with the summit pair moving up to Camp 2, while I moved up to Camp 1 to be in close touch with developments. It was intended that Camp 3 would be little more than a resting place and a refuge if required. The summit pair would move up there, supported by the Camp 2 brick, rest and brew from about midday to 2200hrs, and then go for the top. The duration of their stay in Camp 3 on the way down would depend on their state, but ideally they would carry on down to Camp 2. A second pair, drawn from the Camp 2 brick, would then be able to occupy Camp 3 the following night to make an ascent the next day.

At 0600hrs on 9 Jul the Camp 2 brick and the summit pair all moved off up the couloir, carrying sufficient stores for two assault tents to be placed at Camp 3. In fact they still had a lot of very hard work to do at the top end of the couloir, and didn't reach the site of Camp 3, at 7,100m, until around 1330hrs. At that point, two members of the Camp 2 brick, John Doyle and Dan Carroll, requested my approval for them to join the summit pair, since they assessed themselves fit enough to do it, they were in position at Camp 3, and they had a second tent. This was agreed, and so our summit attempt became four strong. I had already agreed that they would climb together with two members of a Spanish military team who were on the mountain, and with whom we had been coordinating our movements for some days. This had the mutual advantage of providing strength in numbers, particularly in respect of breaking trail in the very deep snow on the mountain. At the last minute the six were joined by the British guide, Alan Hinkes, who had appeared at Base Camp on 3 Jul and come up very quickly, courtesy of our route and our fixed ropes. He followed in the trail of the six to the summit the following day, being scarcely acclimatised and needing all the help he could get..

They left for the summit at 2200hrs. There should be no misunderstanding the scale of their achievement over the next 24 hours. For over eleven hours they battled upwards in snow that was loose and often thigh deep. Without oxygen they gasped and gagged in the thin cold air, struggling to get enough to maintain their muscle's output. At times they were ploughing a trench uphill at an angle of over 50 degrees. As dawn came the sun warmed them a little, but a bitter wind from the west strengthened, tearing at them and lashing spindrift in their faces. The physical effort of gaining height in such conditions cannot be equated to any comparable activity at sea level. Without the stamina and psychological commitment to success which is to be found in Olympic standard athletes, the pressure to give up is overpowering. For John and Dan, who had just completed several days of arduous work in the couloir, the effort required was colossal. Despite this they made it, reaching the summit at around 0910hrs. The day was still fine, so they

had a view of the sea of peaks that surrounded them, albeit through blasts of spindrift. The great peaks of the Karakoram; K2, Broad Peak, and the other Gasherbrum summits were ranged about them, while further away Masherbrum and the Mustagh Tower stood out above the mass of lesser peaks and spires.

This was not of course the end of their day. The weather dictated a stay of no more than about 15 minutes, and then they began their descent. At the least they had to come down 1,000m to Camp 3. Ideally, to reach Camp 2, they would have to descend 1,700m. Getting down through the trench they had carved on the way up was tricky, with a persistent risk of catching a crampon and tripping. John Doyle fell for some 500ft a short way below the summit, and there were some other lesser falls. The strengthening wind tore at them, blinding them with spindrift, threatening their balance, filling in the track. The exhilaration of reaching the summit was short lived, and as weariness crept over them, the need for vigilance to avoid a mistake called for more and more reserves of stamina. They reached Camp 3 in safety at about 1500hrs, and rested for an hour before continuing down the Couloir to Camp 2, where they arrived at 2000hrs, after 22 hours of almost continuous extreme effort.

That night one further attempt was launched, in that Mark Watson had moved up to Camp 3 during the morning, and he set off for the top in the company of two other members of the Spanish team. Due to the onset of frostbite in his feet, he turned back at 7,500m, while the Spaniards went on to reach the summit on 11 Jul. Sadly however their success turned abruptly to tragedy. On the way back from the top they had a serious fall, in which one of them, Manolo, was injured. With great difficulty they managed to regain Camp 3, but they were then holed up there for 8 days through a spell of bad weather. Eventually they managed to struggle into the couloir to descend to Camp 2, but on the way down they took hold of an old rotten fixed rope which broke, precipitating them down the steep slope. In the course of this second fall, Manolo was killed, though his team mate, Alphonso, survived with minimal injuries.

With our resource of potential summiters exhausted, we cleared the mountain over the course of the next few days. In reaching the summit, those four broke the twenty year duck on Service climbs of 8,000m peaks. They were the first Service personnel ever to reach an 8,000m summit without oxygen, and they did it in contemporary Alpine style. Deducting days lost for bad weather, we had climbed the mountain in 23 climbing days, (vide Everest '92 in which nine weeks were spent on the mountain), and used three camps above base, (on Everest we used six). The expedition was a resounding success, and this success has done much to reinstate the credibility of Service mountaineering in the wider civilian scene. I cannot praise too highly the commitment and spirit of the team which achieved this splendid result, and I can only hope that it will provide an incentive for further major Service expeditions to the greater ranges in the future.