

British Sepu Kangri Expedition 1998

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Final
Report

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Summary

Objectives

To explore the eastern approaches to Sepu Kangri
 To make the first ascent of Sepu Kangri, 6956 m.

The Exploration

During August and September 1998 Charles Clarke and Elliot Robertson made what is thought to be the first journey by Europeans through the eastern Nyangla-Qen-Tanglha Shan. Having travelled from Lhasa by Landcruiser via Nagchu, Shaksan, Rioche and Chamdo, they reached the town of Soka in Pelbar County. They then crossed the Shargung La on foot to enter the range, and a series of further passes to reach the Nagru and Tashilung valleys. These in turn led over the Sa La, a difficult 5500m pass some 8km north-east of Sepu Kangri base camp. Thereafter they crossed the Yam La, a 5600m pass south-west of Base Camp to reach the Yam Chu, the valley leading to the glacial system draining the western side of Sepu Kangri, before meeting the main expedition. This journey has nearly completed the exploration of the Sepu massif. In the valleys north and east of Sepu, there are numerous 6000m peaks, all unclimbed and hitherto unvisited. Kok-Po, a 6200m tower at the head of the Tashilung is particularly impressive. Bad weather dominated the journey. There seems to be no ideal time of year, either for a travel or climbing - earlier in the year (May, June) the passes are often snow-covered; rain is likely in July-August, and the temperature begins to fall sharply after mid-September.

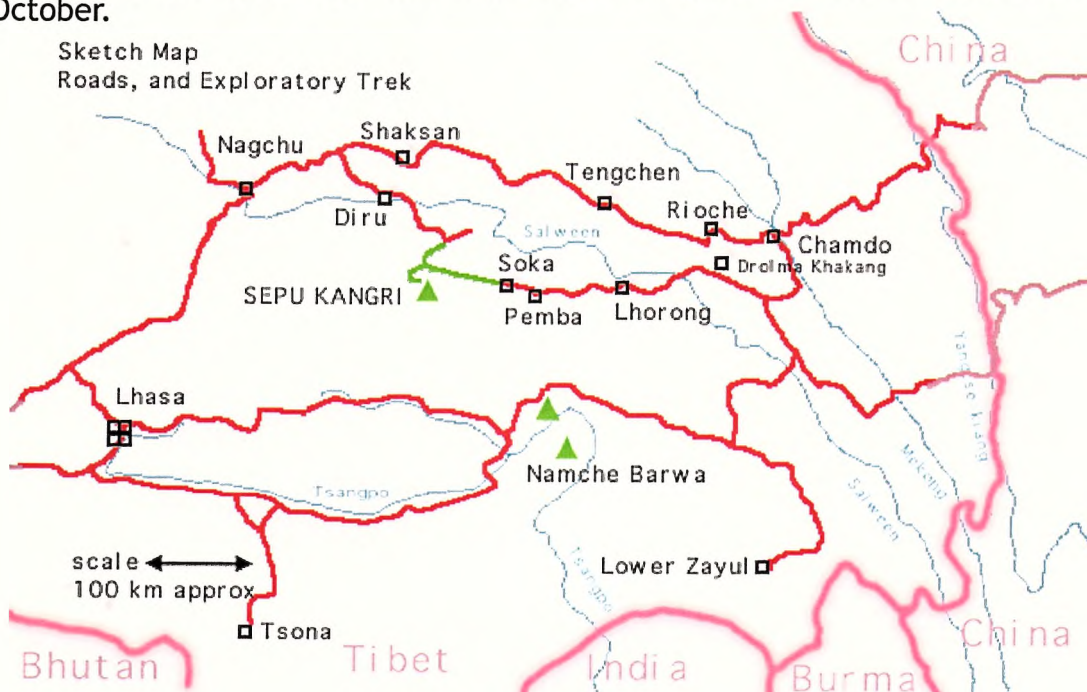
Peaks climbed

Amchhi Inje-ne - 5850m, 1st ascent by Charles Clarke and Victor Saunders on 23 September

Thaga Ri - 5930m, 1st ascent by Graham Little and Scott Muir on 22 September

Seamo Uylmitok (Turquoise Flower) - 6650m, 1st ascent by Graham Little on 10 October.

West Shoulder of Sepu Kangri, 6830 m, 1st ascent by Scott Muir and Victor Saunders on 10 October.



Eastern Approaches to Sepu Kangri

A journey through the Nyangla-Qen-Tangla Shan by Charles Clarke

In a lightweight exploratory journey during the month prior to the main expedition, Elliot Robertson and I set out to try to disentangle the eastern approaches to the Sepu Kangri massif. The previous year, in May 1997, Jim Fotheringham and I had climbed, with some difficulty, the snow slopes on the southern side of the Sa La, the 5500m pass some eight kilometres north-west of Sepu Kangri. Somewhere to the west of this pass, our base camp neighbours had spoken vaguely of 'the Nagru valley'. We had heard elsewhere¹ that Nagru had once been an independent kingdom, about which there were legends of a pastoral idyll - of peace and prosperity. It had once been a land where even wild animals had been tame.

With scanty topographical information (actually, the 1:3,000,000 standard Tibet tourist map)², we decided to approach the Sepu Kangri region via a minor road running east to west from the Chamdo-Bamda highway (Map *). We planned to go by Landcruiser (with a truck carrying fuel) to the town of Pemba, and then travel on foot or on horseback towards Sepu Kangri, and cross the Sa La to reach Base Camp. This would take us through a substantial part of the Nyangla-Qen-Tangla Shan: to our knowledge no westerners had ever made such a journey. The first problem was to reach Chamdo, the capital of Kham, eastern Tibet.

Shortly after arriving in Lhasa on Saturday 8th August, Elliot and I learned from Pasang Choephel, the Tibetan friend from previous years who was to accompany us, that the southern road route towards Chamdo, via Bayi, had been destroyed by a major landslide. The road would remain closed for some months. An alternative route was to approach Chamdo via Nagchu, from the north. This road journey proved to be taxing, alarming and slow - heavy rains, which barely ceased during the four days from Nagchu to Chamdo, had caused frequent mudslides and rockfalls along a road which in the best of conditions would be little better than a deeply rutted farm track. We passed through Shaksan and Tengchen, the historic monastery towns of the plateau and Salween river before reaching the forests of Kham near Rioche, a pretty town with paved streets.

We drove into Chamdo on Saturday 15th August and spent the next morning shopping in the bazaars of this charming regional capital. We then headed south, initially along gorge of the Mekong, to reach the east-west road to Pemba. Though this was a minor dirt road, driving conditions improved. We stopped first at Dro-Lma Lhakang, a remote monastery which was once the seat of the Akong Tunku Rimpoche, Reincarnate Lama, who now presides over Samye Ling Monastery in Eskadalemuir, Scotland. He had left Tibet in troubled times. We had visited Samye Ling before leaving Britain and had an introduction in the form of photographs - the Akong Rimpoche remains revered throughout the region. We were made warmly welcome and were soon granted an audience with the present high lama, received his blessing and made a donation to the monastery. We also lent him the Mobiq satellite telephone to call the Akong Rimpoche, at an hour well before breakfast in Scotland.

After two days, of lengthy if uneventful driving through forests, high plateau, passes and spectacular gorges, we reached Pemba on August 19th, and Soka, a village roadhead nearby. Cloud, which remained the dominant weather pattern throughout, obscured

views of several 6000 metre peaks to the south. At Soka, Lobsang and Tenzing, the cautious but determined drivers of the Landcruiser and Dong Feng fuel truck, returned with their vehicles to Lhasa.

Above Soka lay the Shargung La, a 5000 metre pass which led into the Nyangla-Qen-Tangla Shan. We were helped greatly here, first by the local people. The district leader soon arranged pack horses, and determined fixed rates of pay which held throughout the journey. The horsemen advised us about various routes west towards the Sa La, a pass known to them, though none had crossed it. We also had a photocopy of a large scale, Russian, map³ which proved invaluable. Meanwhile, the Garmin Global Positioning System confirmed our positions, to the nearest few metres if necessary.

We crossed the Shargung La, 5038m on Saturday 22nd August in the first sunshine for several days. Before us lay a spectacular view of the Nyangla-Qen-Tangla Shan. Some 60 kilometres away we could see the ice fang of a western summit of Sepu Kangri. Unclimbed peaks, and, to the world of mountaineering, unknown and un-named summits, lay to the south and west. Sadly, the weather soon deteriorated, and we were barely to see high mountains again before we reached the Sa La.

We descended that night to the village of Tsara Sondu, changed pack horses and turned right up the Keela Pu valley, heading for the Gu Gyu La, the 5265m pass into Nagru, the 'Hidden Kingdom'. Again the weather was dismal, but we had glimpses of the snow peaks on the southern wall of this east-west valley.

As we began to descend the Nagru valley it was clear that the communities were poor, even by Tibetan standards, small and isolated. Our first meeting was with Haka, a widow whose eldest daughter had been killed accidentally by a stone thrown by a relative driving the family's few yaks. Haka knew nothing of the folklore we had heard ourselves. Pasang was so moved by her poverty that he immediately gave her some of his own money. As we descended further, the sparse grazing gave way to birch and willow, and then pine forests of the lower gorge, similar to the valleys further west. The people were reserved, and sometimes we felt, passively hostile, and unhelpful.

The Nagru valley takes a right turn towards the north-east, before flowing into the Salween, the river which drains all the valleys of the northern side of the range. We turned west, up the Tashi Lung valley which is some 30 kilometres long; at its head lies the Sa La. Near the Nagru-Tashi Lung confluence we passed the Channa Monastery. The bridge leading to it had been washed away. The local people told us that many other bridges had been destroyed in the valleys further west, and towards Pengar, in the north. Problems on the main expedition's approach to Base Camp seemed likely.

On 30th August we were heading upwards in cloud at the head of the Tashi Lung, looking for the Sa La. The two moody, monosyllabic horsemen seemed to have no wish to be employed at all; their four sickly horses carried our loads with difficulty. Earlier we had had glimpses of Kok-Po, a magnificent 6000 metre peak on southern wall of the Tashi Lung. As if from nowhere, a cairned track emerged in the mist, and led easily to the Sa La.

On the pass itself, the weather cleared. Elliot began to have his first view of the massive north face of Sepu Kangri and the surrounding peaks. We dropped down, initially on

unpleasant ground, steep scree on ice - entirely unsuitable for laden horses, particularly our own. However, within the hour we were in an alpine meadow in a thick felt *ba*, a nomad tent. Karteh and Tsini, our friends from previous years had been tending yaks there for the summer, and were that very afternoon packing up to move down. We sat by the fire inside, drinking yak butter tea, eating tsampa, meat and *chura*, the pungent yak cheese. The Nagru horsemen sat silently, astonished that anyone might know us in this remote spot.

'They're the first people who have smiled at me for days' said Elliot (who had been a few minutes ahead) 'they just opened their arms and welcomed me. And they didn't even know who I was'.

'And we thought you would never come back this year as you promised,' laughed Karteh, as Pasang and I had followed. Tsini, his wife who had been gravely ill during our 1997 expedition, was smiling, and fit and well. Even the guard dog wagged its tail, I thought.

The Western Approach to Sepu Kangri

I was to introduce Elliot to many friendly faces up and down the Sa valley. We were soon told that all bridges north, on the main approach march had been washed away in the torrential rains of the summer. Whilst this needed investigation, we also wanted to explore the western approach to Sepu Kangri, at the head of the Yam Chu, and if possible complete an anticlockwise circuit of the mountain. The latter plan would soon become an empty dream.

We first asked Pasang, an accomplished horseman, if he would ride with Jayang, our friend Kharteh's nephew, to Jiali, the village south of Sepu Kangri which Chris Bonington and I had visited in 1996. It might just be possible, we thought to divert the main expedition's approach march, if the southern road was open. Meanwhile Elliot, and I with Pu, a local yak herder, followed Pasang on foot, from the Sepu Base Camp beside the sacred lake towards the Yam La 5600m. Pu was sufficiently ill equipped for the violent snowstorm on the pass for us to doubt our decision to cross it at all. However, we were soon in the Yam Chu, in fairer weather, and by climbing again to 5000m were able to see into the western cwm of Sepu Kangri. Whilst an approach by the expedition from the Yam Glacier was out of the question, it appeared that the high western cwm could be reached from the 'Fotheringham Ridge⁴' of 1997. With digital camera images and video we would soon be able to show this to the climbing team in some detail.

Pasang and Jayang returned on 2nd September, saddle sore after a 150 kilometre journey with the news that the Jiali road was blocked. Liaising with Chris in Lhasa on the Mobiq telephone, we gathered, in addition that his application for the southern, alternative approach had been denied. We packed up our meagre camp and headed north, for the Samda Monastery, and the road head at Khinda, familiar ground from previous years.

There were few traces of the previous bridges in the Khinda valley. The river had been in spate, several metres above its usual level, also destroying a substantial track in many places. We were soon to become adept at crossing on single plaited yak hide rope, strung taut between posts on either bank. We reached Khinda village on 5th September. Two days later, camped on the river bank, a cloud of dust to the west heralded the arrival of the fleet of Landcruisers. Minutes later we heard the unaccustomed noise of

vehicles above the roar of the river. Our journey through the Nyangla-Qen-Tangla Shan was truly over.

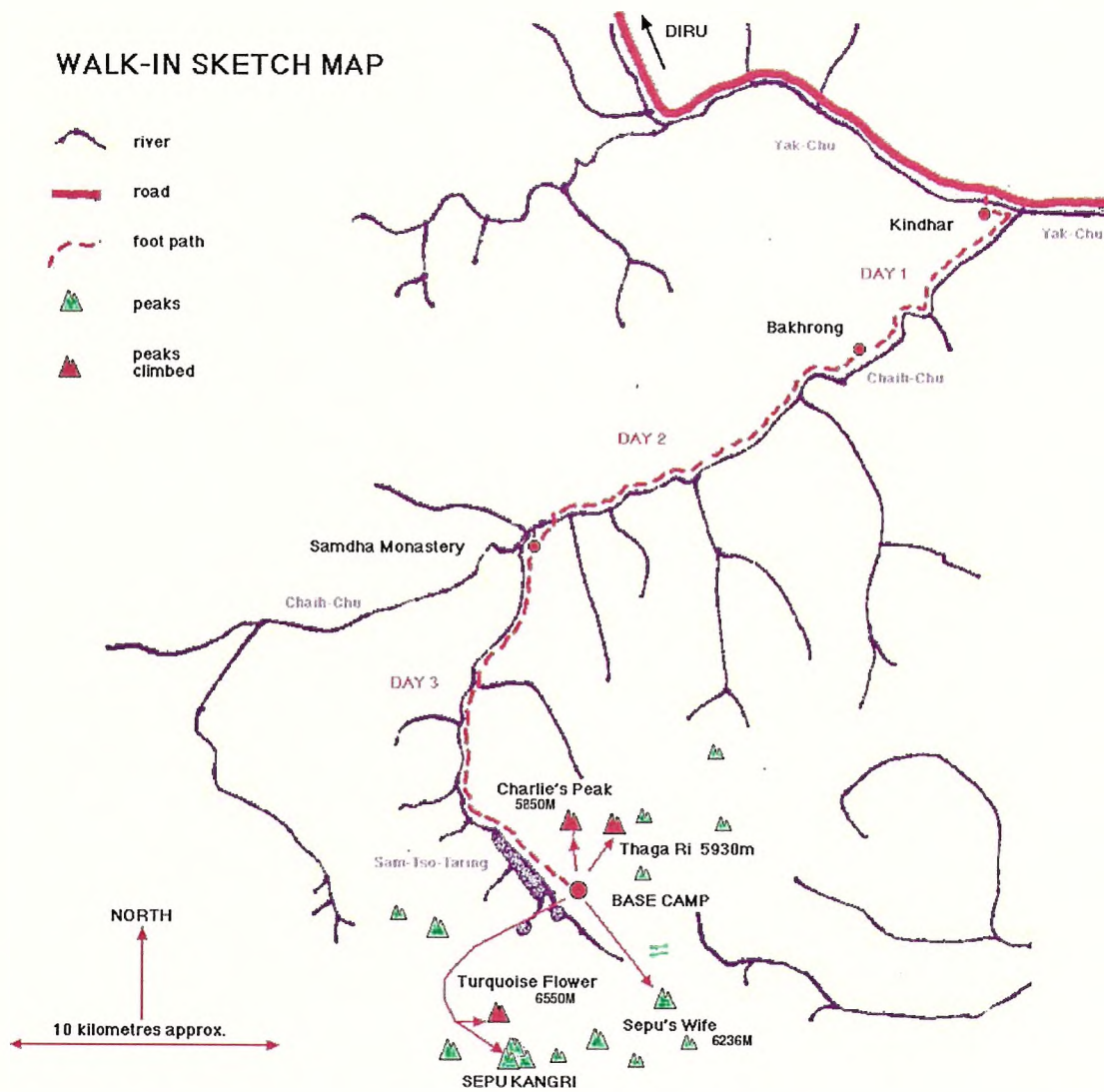
¹ Ma Lihua. *Glimpses of Northern Tibet*. Beijing, Panda Books, 1991. ISBN 7-5071-0800-4/1.74 and 0-8351-2090-2.

² China Tibet Tour Map. ISBN7-80544-291-8/K:280. 1:3,000,000. Chengdu Map Publishing House, 1993

A useful road map, despite scale.

³ Soviet Military Series. 1:200,000 Lharigo 08-46-10, H-46-X and 1:200,000 Pemba, 08-46-11, H-46-X.

Detailed and accurate geographically. All names in Cyrillic, some incorrect.. 1:1,000,000 series also exist.



The 1998 Attempt

by Chris Bonington

Approach

Weather records from the Met. Office in Lhasa indicated that precipitation was lower in Autumn than in Spring and that consequently there would be better weather for climbing. The team therefore decided to make their attempt through September into October, leaving the United Kingdom on 28th August.

We had already been warned via satellite phone by Charlie that the monsoon season had been particularly heavy, that all the bridges on the approach to Sepu Kangri were down and that in many places the path had been swept away. It was invaluable having him and Elliot already there and they came down to meet us at Khinda, at the Roadhead.

It took a day's hard work hauling all the gear over the River Yachu by a steel cable they had stretched across the river at the site of the original bridge. We had arrived at an inconvenient time for the local community since all their yaks were being used to help in the harvesting of the barley and we were warned we'd have to wait for at least a week. After a lot of bargaining we were promised 30 horses, which could at least carry part of our gear up to base camp. Elliot was left in charge of the rear party with Tachei, our liaison officer. It took us three days to reach base camp, involving another hauling session across the river just below the Samde Monastery, this time suspended only by a yak hide rope.

It was very different from Spring '97, when the hills were still parched brown by the bitter winter cold and the Samtso Taring was covered in ice. Now, the hills were green with their light covering of grass, and the holy lake was a brownish-grey, tainted from the glacier streams that flow into it. Our neighbours were out to greet us when we reached base camp. Their warmth and enthusiasm was really touching. It was like coming home. The weather was warm and sunny and we were full of confidence that this time we would climb Sepu Kangri.

Acclimatisation and Recces

We spent the next week making a series of training climbs and recces.

On 18th September Graham and Scott set out to make an attempt on Chomo Mangyal, the Wife of Sepu, but they encountered appalling and very dangerous snow on both the West and North ridges and retreated from about 500 metres below the summit. Meanwhile, Chris, Elliot and Victor set out to make a recce of the Western approach to the mountain. This was the route favoured by Jim Fotheringham, the previous year. On that occasion the team had reached the crest of the ridge linking with Seamo Uylmitok (The Turquoise Flower) but visibility had been bad and the route seemed threatened by seracs. We therefore chose the route up the North Ridge of Seamo Uylmitok.

This year, it was very different. The snow conditions were very much better and we had good visibility. Victor had picked out a good line up onto the ridge, avoiding a long traverse of the ridge itself and on 20th September we reached the end of the ridge, just above the upper Thong Wuk and could see a reasonable route up the glacier into the big basin of the Western Cwm of Sepu Kangri. This seemed the best route.

Graham and Scott made what was almost certainly a first ascent of the snow peak behind base camp on 22nd September, calling it Thaga Ri (5930m) or Saddle Peak, because of its appearance. The local people had no name for it. The following day, Charlie and Victor climbed a neighbouring snow peak, they named Amchhi Inje-ne (5850m).

The First Attempt

Victor, Elliot, Graham, Scott and I set out from our first camp on the Moraine at 5400 metres below the "Fotheringham" Ridge on 28th September. Graham, Scott and Victor had already improved the short length of fixed rope we had placed up a steep little ice gully and across some avalanche-prone snow slopes leading to the crest of the ridge. We were at the end of the ridge by ten in the morning and Scott started trail breaking across and up the glacier leading towards the upper basin. There was some deep snow and some very deep holes to avoid, but by three in the afternoon we had found our way onto the brink of the Western Cwm, after weaving our way round serac walls and along narrow ridges between the moat like crevasses. Although it was still quite early the Glacier bowl collected the heat and we opted to stay there for the nightpitching Camp 2.

The following morning we pressed on up the Cwm, Graham and Scott in the lead. We had a choice of ridge, the North West one, leading towards Seamo Uylmitok, or the West one, bounding the southern aspect of the Cwm. The latter seemed safer, since there was evidence of wind slab avalanches on the other. We established camp just below the crest of the West Ridge at a height of 6530 metres. We were tired but had only just over 400 metres to go to the summit and the route up the ridge looked reasonable.

It started to snow that afternoon but we were not too worried since Charlie had given us a good forecast for the next day from the Met Office at Bracknell. However, it was still snowing the following morning, and continued to do so throughout the day. Graham and Scott dug a snow cave to avoid a third wet night since their single skin tent produced a lot of condensation.

The forecast that evening was less favourable and we began to worry how we were going to get out in a white-out. The next morning it was snowing hard with visibility down to a few metres. We were going to have to retreat while we could. To complicate matters both Scott and Graham had a bout of vomiting, prompted either by fumes in the cave or food poisoning. Understandably, neither were at their strongest. There was a high avalanche risk and we descended into the Cwm, abseiling straight down the Serac Wall in an attempt to reduce this danger. We were lucky to have one break in the clouds to give us a general impression of the direction of descent. Once in the Cwm, Victor led out on a compass bearing.

We managed to reach the site of Camp 2 by midday, left our tents and some food there and continued down past Camp 1, all the way back to base camp, reaching it, very tired at eight o'clock that night. One more day of fine weather would almost certainly have seen us reach the summit.

The Second Attempt

After a week's rest we returned to the fray, setting out from base camp on 8th October. The following morning we climbed the fixed ropes to the crest of the Fotheringham

Ridge. A lot of snow had fallen since our first attempt and progress was very slow. I was going more slowly than the others, still feeling tired from the first attempt. It took us six hours just to reach the end of the 'Fotheringham' Ridge. At this rate we were not going to make Camp 2 that day. In addition it was snowing in gusts. We sat down and discussed what to do. Just before setting out from Europe Victor had suggested we took snow shoes. I had a couple of pairs in my climbing store at home and had added them to my gear. We had managed to buy another pair in Kathmandu. In all my years of climbing, I had never used them, but we had all been impressed by how effective they can be on our descent in the storm at the end of our first attempt, for Victor had brought a pair up with him then.

It was becoming increasingly obvious that they were essential if we were going to make any progress at all. I decided therefore that it would be best if just three, using snow shoes, should press on while two of us should pull back. Since I was going more slowly than the others it made sense for me to drop out, and Elliot, being the least experienced and also because he had not been part of the original climbing team, very generously volunteered to drop out as well.

The other three fitted on their snow shoes and after an emotional farewell, plodded up into the cloud towards the Western Cwm of Sepu Kangri.

Victor and Graham take up the tale:



1st attempt - Elliot and Victor at the end of Fotheringham's Ridge at brink of the Thong Wuk Glacier. Twin summits of the Turquoise Flower, top left.



2nd attempt - Victor, Elliot, Scott and Graham on deep snow approaching the crest of Fotheringham's Ridge on first day.

THE FIRST ASCENT OF SEAMO UYLMITOK (TURQUOISE FLOWER), 6650m by Graham E.Little

Seamo Uylmitok (Turquoise Flower) - The First Ascent

The morning of the 10th of October dawns with an urgent reminder from Victor that I am on brew duty. Under normal circumstances making three cups of tea is not a chore but with a splitting headache, in a cramped ice coated tent and with a temperamental lighter it assumes near impossible proportions. Somehow I get myself together and by the light of my headtorch produce the required hot liquid. Scott, Victor and I are at Camp II, at a height of 6170m, on the west face of Sepu Kangri.

Today we plan to push on up to the snow cave at the site of Camp III (6530m) of our first attempt. Chris and Elliot agreed to turn back yesterday as the deep unconsolidated snow, that masks the mountain, makes progress impossible without snowshoes and we have only three pairs.

Packing sacs and gearing up takes an age and the first slanting rays of the morning sun are already kissing the mountain tops by the time we get moving. I'm out in front, coaxing stiff limbs into trail breaking activity. Even wearing snow shoes, the thin surface crust collapses under my weight, forcing an endless series of high steps until I can pass on the lead with a clear conscience. However, following in the tracks of Scott and Victor is nearly as tiring for me as breaking trail as they are both lighter and shorter in stride!

In consolation for this gruelling activity, a vast panorama is spread behind us, top heavy corniced peaks framing an endless perspective of mountain ranges. A few of the distant peaks hold snow making them distinctive amongst the anonymous grey and brown ridges of the Tibetan Plateau. Ahead is the complex white world of the upper west face of our mountain with its hanging seracs, hidden crevasses and problematic route finding.

Victor hogs the trail breaking, taking some perverse pleasure out of ploughing through the bottomless snow on the steepening slope leading up to Camp III. The parting words of Jim Curran suddenly flash before me.

"Sepu Kangri is only a mountain - loved ones back home are much more important". "Why am I on this dangerous slope", I ask myself. "How much does climbing this mountain really mean to me". A very clear voice inside my head says that to continue is folly.

I tell Victor and Scott of my 'bad vibes'. Victor says that he has sensed my increasing concern but does not consider the slope to be dangerous. Scott agrees with him. It is the parting of the ways. I am particularly sad to leave Scott as we have shared so much of this trip together, from getting close to the top of Chomo Mangyal, 6236m, climbing Thaga Ri, 5939m and enjoying some excellent glacial ice cragging.

As I turn to descend, my eyes fall on the snow dome that forms the western summit of the main Sepu Kangri massif. It is known by the beautiful name of Seamo Uylmitok, the Turquoise Flower. At 6650m it is a significant summit in its own right (to the north it presents an elegant spur, by far the most impressive feature of the massif). As a

parting shot, I wish Scott and Victor the best of luck and mention my newly planned diversion - an ascent of the Turquoise Flower before quitting the mountain!

Being free of the rope and the decision making process of a team of three, gives me renewed energy and I snowshoe across the great snow basin towards the col that separates the Turquoise Flower from the central and highest peak of Sepu Kangri. Avoiding the long gash of a deep crevasse, I swing round to gain the lower slopes. Dumping my sac, I start to climb the south-eastern flank of the Turquoise Flower. I am still wearing snow shoes but carry crampons just in case I should encounter that rare phenomenon firm snow!

Fifty steps at a time is my self-agreed progress with short rests between sessions. Before long, the surface starts to firm up so I exchange snow shoes for crampons. No more sinking, just wonderful kicking and crunching! A mounting wave of sheer pleasure flows through me as all my negative feelings are replaced by positive ones; that unique mountain joy kicking in as I approach the summit.

Suddenly I'm there at the top of the snow dome, the twin rock summit just below. The sacred lake and the tiny splash of colour that is Base Camp are a vertical 1900m below me. I am alone on this summit yet share my wonderment at this flawless perspective, at this moment of perfection. I look over to the bulk of the main peak without envy. If Scott and Victor do climb it I will have lost nothing, for mountaineering is not just about what we do but about what we feel, about the balance between risk and responsibility, about a very personal profundity.

I retrace my steps down the dome with care then cross the basin to the long line of snowshoe imprints that are my escape route. I glance back frequently to watch the slow progress of Scott and Victor - two tiny black figures on a massive meringue of a mountain. At 1700 I lose sight of them.

At Camp II the wind picks up, chasing spirals of powder snow to rest in every hollow. As I eat a lone meal, I'm mesmerised by clouds of ice particles swirling high around Mount Sepu, that turn to dancing flames in the red light of the setting sun.

It is a cold, sleepless night full of longing.

At 1000 on the 11th, when it becomes obvious that Victor and Scott are not descending, I commence a harrowing descent in poor visibility, triggering a series of minor slab avalanches en route. Three hours of intense nervous energy take me to Camp I.

As I follow the scrub covered lateral moraine towards Base Camp, I feel an overwhelming sense of relief. Nearing the hermit's hut, I see him sitting outside gazing up at the clouds whipping across the summit of the Turquoise Flower. He waves to me; I wave back.

Victor's Diary

Oct 13

Second Attempt

by Victor Saunders

Bracknell were right, the storm arrived as predicted and with three days before the yaks arrive, our base camp is in the grip of a snow storm, the wind is driving white horses onto the lake shore, and the wind-power generators are spinning, the one (the Ampair) sweetly as a Porsche 911, and the other (Airwind) as violently as a clapped out Beetle I once used to own.

Seven days ago, on the morning of 8th October we set out as a team of five. The original pairings, Scott Muir and Graham Little, the Hares, and Chris Bonington, Elliot Robertson and myself, the Tortoises, had joined forces for a major, and probably the last, attempt on the mountain.

On the way to Camp 1 we paid our obligatory visit to Zamteng the Hermit whose isolated dwelling guards the approach to the mountain. Zamteng said, rather wisely we all thought, that we would should be aware of avalanches, need to have good weather and above all, need to have good team spirit if we were to return safely from the top of the Sepu Kangri, The Great White Sky God.

He wished us well, and said he'd ask the passing pilgrims to make pujas for us, then returned to his silence and the compelling vistas of the holy valley below the hermitage. We moved on to Camp 1, the chaos of camp cooking and the neurosis of facing the big climb.

The day had begun with snow flurries at base camp, the sun shone briefly on us at the hermitage, thunderstorms and hail followed us up to the camp; we had every sort of weather except a clear view of Sepu Kangri, which even in the clear spells sported a huge cloud cap. The next day too had every kind of weather from indifferent to bad. We had cleared the fixed rope of snow, and had been wading knee deep in the fresh powder when we reached our little dump of food and snow shoes at the end of the Fotheringham Ridge at 11 am. Chris was feeling slow and not fully recovered from our last climb. He dearly wanted us to climb as a group of friends, a single team of five, but it was clear that to have any chance of success, everyone would need snow shoes, and we had only three pairs between us. Chris chose to return with Elliot who elected to accompany him back to base. The parting was emotional, Chris and Elliot hugged each of us warmly, and added their well wishing to those of the hermit and his pilgrims. The next day Elliot, having made the sacrifice in graceful style, had to endure the confines of base camp buried in book and walkman.

Scott, Graham and I ploughed on towards Camp 2. At 1 p.m. the flurries of snow had joined seamlessly into a prolonged storm. This was a little dangerous as I had just fallen into a small crevasse and the next one could be a chasm. Above us tottered unseen seracs. And worse, in the white-out, we had no idea of which direction our wandering route took next. We decided to give it just half an hour before returning to Camp 1. Half an hour later, to the minute, the clouds cleared just enough to show us the way through the ice-cliffs to Camp 2. The sky cleared during the night, and the long predicted Good Spell had begun.

During the dark early hours of the 10th we made excellent progress; our snow shoes were supporting us well as Graham, Scott and I took turns to break trail across the Western Cwm. In three hours we had left a wandering trench which kinked at the Great Central Crevasse, and curved rightwards to the West Ridge.

Dawn brought views we had never seen. "We can see for hundreds of miles!" Scott enthused into his video diary, then pointed his digital camera at the panorama. Nearby Mount Sepu, a cone with a Jacobin cap; in the middle, the long valley leading out to the west; while far away, like clouds on the horizon, hazy peaks, perhaps the Himalayan chain, glimmered in the morning sun.

The white mound of the Turquoise Flower, 6650m, rose above the Western Cwm on our left. But a sight unseen so far lay before us. The summit of Sepu Kangri was free of cloud. We could see the frightening, serac burdened Northwest Face, with the two ridges reaching out to enfold the Western Cwm. There were the Avalanche Slopes leading up to Camp 3, and above that place, the Looming Buttress of the West Shoulder, the U-Shaped Notch, the hump backed West Summit, the House Shaped Serac, the Last Step. We had named all the places in our own minds. These are some of the names I used, Scott and Graham probably had other, more graphic ones.

By 10.30 am the Advance Party, as Scott persisted in naming us in the radio calls to Chris, had reached the worrying slopes below Camp 3. In spite of the deep fresh snow, we had made such good time in snow shoes, that Scott and I had begun secretly to entertain thoughts of turning our journey to Camp 3 into a summit push. But Graham had other ideas.

"What do you think about the snow?"

This is the usual code for expressing deep concern. Scott and I thought the slope was safe, at least this morning. Graham remained unconvinced. He untied, added his best wishes to those of our base camp staff, the film team, the Hermit, his pilgrims, Chris and Elliot, and ploughed back into the Western Cwm, and thence towards the Turquoise Flower. Graham was unhappy about the sub Camp 3 slopes, but he showed an extraordinary bravery that day. Not only did he set off alone to climb a peak of 6650m, but also did so circumnavigating crevasses big enough to chuck aircraft carriers into.

Scott and I ploughed on and up to the snow cave at Camp 3. I felt part of a very strange creature indeed, part Tortoise part Hare, a true Chimera. At Camp 3, We spent just over an hour and a half making tea and digging out the snow hole. So much snow had fallen since our last visit that the entrance was now a metre deeper than before, and the ceiling had sagged alarmingly, provoking horribly claustrophobic thoughts.

It had begun to cloud over by 1.20 pm when Scott and I, having re-hydrated ourselves and excavated the snow hole enough to satisfy our craving for a secure retreat watched Graham, a tiny speck, reach his summit and turn down for Camp 2.

It was 30 odd metres to the crest of the West Ridge above our camp. The Looming Buttress, which seemed an awesome and steep barrier before, proved to have almost perfect cramponning snow. Gone was all the deep soft powder of the Western Cwm, the

West Ridge had been blasted over the past days, the snow was compact and firm, and formed of the wind carved waves that the Inuit call 'Sastrugi'. It was enjoyable, the views were opening out, the snow was good, we were moving fast. This was a perfect day. Scott turned to me and said "I love the mountains!" And he meant it.

Across the top of the Looming Buttress was a smiling gash, a crevasse slice, which we followed in one easy but spectacular pitch, and above that a pair of small basins to the West Ridge. Suddenly we were on the corniced ridge leading to the summit.

"It's like the view from a plane!" said Scott

Below our feet, the south face of Sepu Kangri dropped in one huge ice sheathed cliff to the valley floor bouncing up on the far side with ragged edged horizons topping each other towards Burma and Bhutan. Over all this southern sky battalions of dark clouds were lining up.

The wind, from which we had been protected till now, was battering the South face, vibrating with the force of the impact. Above us, the rest of the ridge was shrouded in the cloud cap, which we finally understood to be a natural product of the fierce wind, it was orographic, lifting up the moist southern air and forcing it to condense out as vapour, the cap was filled with mist and stinging ice driven up the mountain by the wind. As we stood, braced and leaning, the clouds began to arrive, and brought more winds with them. We had been so engrossed we did not sense the impending storm.

It was now 5.30pm. We radioed Chris who said that the Bracknell Weather Centre predicted minor showers this afternoon, and good weather tomorrow. Scott and I needed at least two hours of good visibility to reach the top, and this had now gone. We would have to follow the ridge with some accuracy. To our right overhung the cornice above the south face, to our left, avalanche prone slopes waited at the head of the North West face. There was not much room for error.

The wandlets I had cut at base camp would soon be our only means of navigation. Even with these, we would have serious difficulty returning from the summit in a night time blizzard. I quickly ran a list of names through my mind, people who had failed to do just that. As Scott and I battled with the impulse to go forward and the rationale to turn back, at least till tomorrow, the distance of visibility had shrunk to the distance we could prod our ski pole. There was no choice. We turned down, and then failed to find our next marker wandlet, just 20 metres, a cricket pitch distance away till a momentary lull in the wind brought a thirty second clear spell.

Back in the Snow Cave we were protected from the weather. We were happy, the forecast was good, we knew the way, the route was clearly climbable. We would need six hours to do the return trip from the snow hole. We set our alarm clocks for 2 am, and by the time we had brewed a couple of litres of tea and eaten a handful of Jordan's Crunchy, and pulled on our boots and clothes and harnesses it was 4 am. We stood outside the hole unable to believe what we found. The ridge just above us moaned as the spindrift arced high into the night sky. We went back to the snow hole, as claustrophobic as a deep freeze buried in a cave.

At 8.00 am I crawled out to radio Chris who said the weather today was forecast to be

fine. I felt the blizzard tearing the air to shreds and looked at the radio incredulously. "But it's just like the Cairngorms here!" I said. By 10.30 am Scott was heating his Berghaus Baltoro boots over the stove. I'd been out again, and a certain depression was entering into our mood. We had more brews and ventured out at noon to find there was no change in the weather.

"What is the most important thing in Bridge?"

"I don't know, Scottie, what is?"

"Be bold in your bidding! We should go for it."

So at 2 pm we tried the bold approach, standing in the blizzard on the ridge above the camp, shouting into the wind Scott mouthed the words "Lets get the hell out of here!"

The descent was now beginning to worry us. The sub Camp 3 slope was ready to slide off in one big mass, and as the spindrift settled on it hour by hour it was becoming increasingly unstable.

That night we slept badly, we had hardly eaten, we were running out of things to brew (we had been very enthusiastic in that department, and dehydration was not a problem, though frequent pee stops were becoming one) and the stale air inside our deep freeze was giving us mild but constant headaches. I dreamt a dream of geometrical ghosts. A pair of curiously triangular figures, carrying perhaps, scythes? The first figure was beckoning. I woke with a bitter taste in my mouth, and ghosts in my mind.

By the time we descended on the sub Camp 3 slope, the blizzard had been blowing for 36 hours. The moaning sound it made over the ridge was now a dull roar, a jet turbine noise. The slopes below us were going to be loaded.

"That slope is humungulous, it's just Russian Roulette" said my friend. I knew. I thought that the slope needed another name, the sub Camp 3 slope did not convey what I felt then about it, a more suitable name, at least for me, would be The Slope of Abject Terror. The thought of it gave me asthma, and I pulled a large gasp on my inhaler before ploughing down into it. Scott carried the snow shovel. You cannot dig an avalanche victim out with an ice axe, and fatality is exponentially proportional to burial time. So speed and shovel. My only chance.

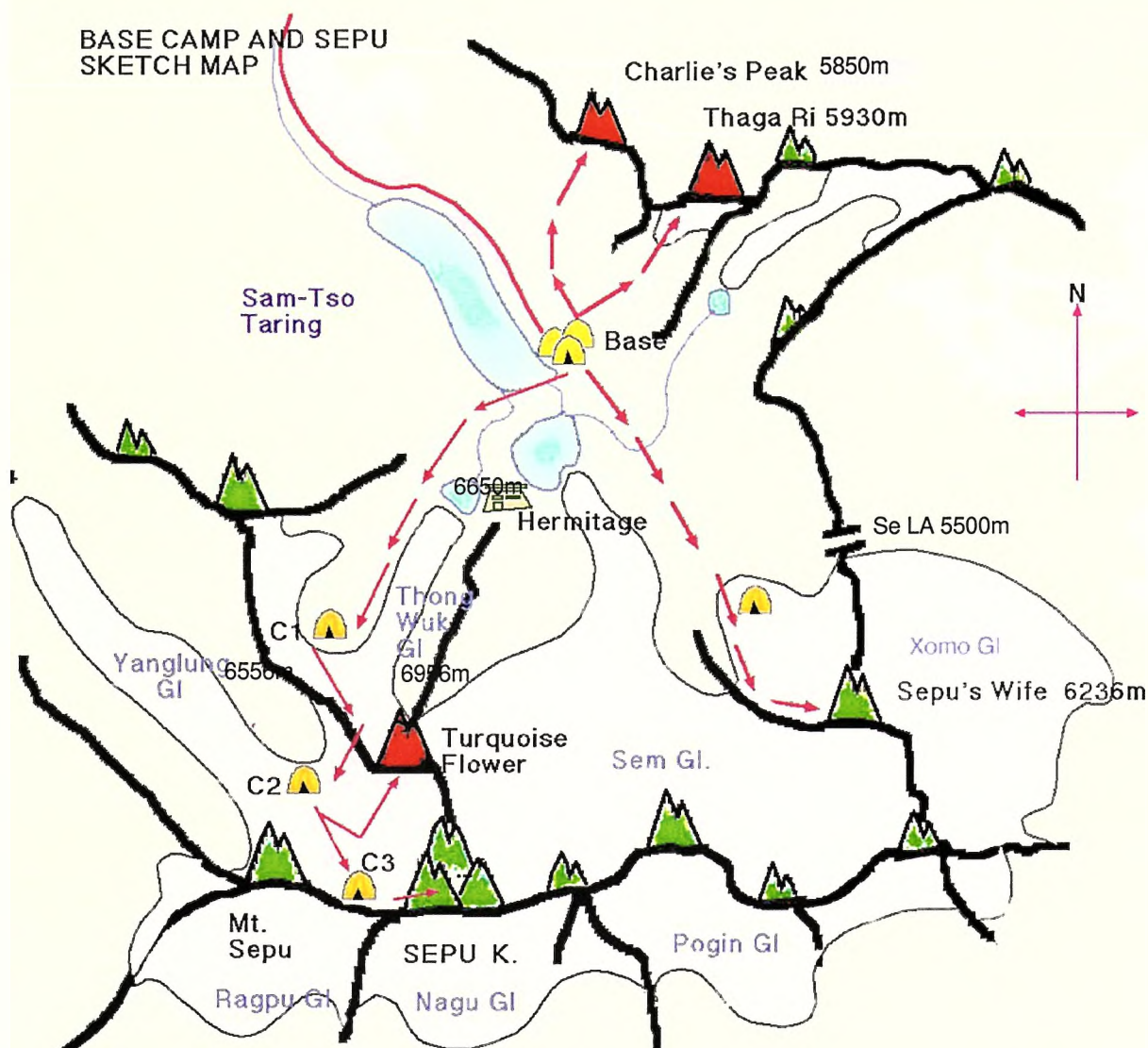
The Slope of Abject Terror curved away like an upside down bowl, after 50 metres it dipped to 45 degrees, the optimum sliding angle and a crevasse appeared on the right. This feature, 3 metres wide and undeterminably deep was our island of safety. Scott and I hoped that it was wide enough to swallow avalanches from above. I kicked a ledge inside and made a safe snowy stance, and strangely, at that moment I sensed one of the triangular ghosts fade away. Scott looked a wee bit disconcerted as I counterbalanced him over the edge of the crevasse. The rest of the Abject Terror, unseen in the white out ran out to the Western Cwm like that 80 metre ski jump thing. Though he tried, he failed to set off the next part of the Slope, and by the time I joined him on the glacier the second geometrical ghost had also faded away.

Our legs were tired and the rest of the day went by like a marathon long after you have hit the wall. Ploughing our trench back to Camp 2, the Corridor, the Fotheringham Ridge, that awful crusty snow down to Camp 1, where Elliot had volunteered to come up

with the Sherpa staff, and help us clear the camp. The news from base was of failing generators and Charlie's windmills finally coming good, and also, the good doctor had been tending to a minor epidemic of tummy bugs. Elliot asked how we were feeling.

"No bother!.. Our bugs are well dead of starvation and altitude sickness!" said Scott.

Our sense of humour was returning, but as we passed under the Hermitage, I found time to stop. Zamteng's flags were fluttering, a white smoke billowed for a second in the breeze; a sign? Can he make black smoke? I asked myself. I sat down on a red granite boulder half buried in the water. The stream trickled like Buddhist bells. I looked up at the storm veiled mountain, and, well, I was happy. Happy to have been so close, and happy to be alive. And happy because, like Scottie, I too love the mountains.



DIARY OF EVENTS

1982

March Chris Bonington and Charles Clarke first see Sepu Kangri from plane flying from Chengdu to Lhasa on their way to the North East Ridge of Everest. At this point they are not aware of its name or significance.

1987

Frank Boothman writes to Chris of a high peak he has identified on Tibetan maps in North East Tibet. Chris identifies this as the peak he saw from the plane.

1989

Chris Bonington and Jim Fotheringham apply to climb Sepu Kangri but have their permission withdrawn a few days before their departure.

1996

August Chris Bonington and Charles Clarke make a reconnaissance of Sepu Kangri, first approaching it from the North and then the South. They decide that the Northern approach gives the best chance of success.

1997

Spring The first climbing expedition to Sepu Kangri. Chris Bonington, Jim Fotheringham, Jim Lowther and John Porter, supported by Charles Clarke, Duncan Sperry (web master) and Jim Curran (filming). They investigated a route round onto the West Face, but opted for the North East Ridge of Seamo Uylmitok, reaching a height of 6050 metres before being beaten by worsening weather.

1998

The Exploration Party

5 August Charles Clarke and Elliot Robertson leave Heathrow with Qatar Airways for Lhasa by Kathmandu on their exploratory trip to investigate the Eastern approaches to Sepu Kangri.

8 August They reach Lhasa

11 August They leave Lhasa for Nagchu (they had hoped to approach the Eastern part of the Nyain-Qen-Tanglha Shan from the south, but the roads were blocked because of a particularly heavy monsoon, so they started by the same route we had followed the previous year.

12 August Shaksan

13 August Tengchen

14 August Rioche

15 August Chamdo

16 August At the turning off main road to south towards Lhorong

17 August After Dro-lma Lhakang Monastery - of the Akong Rimpoche who also has the monastery of Samye Ling, at Eskdalemuir in Scotland.
 18 August After Lhorong

19 August Soka (Roadhead)

20 August Soka

21 August Rainbow camp, below Shargung La (pass)

22 August Tsara Sondu, over Shargung La

23 August Tsara Sondu

24 August Po-Lo-Kageh

25 August Lu-bu-gna

26 August Dorputang

27 August Tashilung valley 1

28 August Tashilung valley 2

29 August Below Sa La (pass)

30 August Arrive Sepu Kangri Base Camp

31 August Sepu Kangri Base Camp

1 Sept Over Yam La into Yam Chu valley

2 Sept Yam Chu valley

3 Sept Samda Gompa

4 Sept Khinda

5 Sept Khinda

6 Sept Khinda

7 Sept Khinda: Main expedition arrive.

Main Expedition

28 August Main expedition, Chris Bonington, Graham Little, Scott Muir and Victor Saunders with the Media team, Martin Beldersen, Jim Curran and Rob Franklin of Northern Films and Greig Cubitt of ITN left Heathrow for Lhasa by Qatar Airways via Kathmandu.

- 1 September Reached Lhasa
- 5 September Reach Naqchu (Rob Franklin was ill, had to be left behind in Lhasa and returned to the UK a few days later).
- 6 September Diru
- 7 September Khinda (road head) met up with Charlie and Elliot.
- 10 September All team less Elliot and Tachei the Liaison Officer, set out from Khinder with 30 horses to reach Bakrong. Elliot stayed behind to look after remainder of loads which are to follow.
- 11 September Reach the crossing just below the Samde Monastery and haul all loads across yak hide rope.
- 13 September Reach Base Camp.
- 17 September. Elliot arrives at base camp with rear party
- 18 September Graham and Scott set out for Chomo Mangyal (Sepu's Wife) camping at 5300m below it.
Chris, Victor and Elliot set out on recce of Western approach camping at small pasture at 5080m
- 19 September Graham and Scott attempt Western face and North Ridge of Chomo Mangyal turning back at 5900 metres because of dangerous snow conditions.
Chris, Victor and Elliot reach Moraine Camp (Camp 1) at 5400m.
- 20 September Chris, Victor and Elliot reach crest of Fotheringham's Ridge and follow it to where it joins the Upper Thong Wuk Glacier - 5850m.
- 22 September Graham and Scott climb Thaga Ri - 5930m, to the north of base camp.
- 23 September Victor and Charlie climb Amchhi Inje-ne - 5850m.
- 24 September Graham and Scott with Martin move up to Camp 1.
- 25 September Chris, Victor and Elliot move up to Camp 1
Graham and Scott improve the fixed rope just above Camp 1
- 26 September Chris, Scott and Elliot drop back to Base for more provisions and gear.
Graham and Victor improve camp site
- 27 September Graham and Victor carry to end Fotheringham Ridge and Victor improves fixed rope
Chris Scott and Elliot move back up to Camp 1.
- 28 September All five move to Camp 2 6170 metres

29 September All five move to Camp 3 6530 metres

1 October All five retreat to Base.

3 October Charlie, Jim and Martin walk down to Samde to attend Dance Festival

6 October Charlie, Jim and Martin return to Base

8 October Climbing team of Chris, Victor, Elliot, Graham and Scott move to Camp 1 for second attempt.

9 October Graham, Victor and Scott move up to Camp 2 in appalling snow conditions with the only three pairs of snow shoes. Chris and Elliot drop back down to Base.

10 October Scott and Victor reach the West Shoulder of Sepu Kangri 6830 metres and then return to Camp 3. Graham climbs Seamo Uylmitok - the Turquoise Flower - and returns to Camp 2.

11 October. Scott and Victor make second attempt on main summit but return almost immediately to Camp 3 because of high winds and snow.

Graham returns to Base.

12 October The weather is still bad. Scott and Victor return to Base

16 October Team leave base camp for Roadhead.

20 October Team reach Lhasa

24 October Team reach Kathmandu by air.

25 October Team reach UK by Qatar Airways.



The team l to r Greig Cubitt, Martin Belderson, Pemba, Scott Muir, Jim Curran, Ram, Graham Little, Chris Bonington, Charles Clarke, Elliot Robertson, Pasang, Tachei, various neighbours, Victor Saunders

Climbing Team

Chris Bonington

On his third visit to the mountain that he first saw in 1982.

Graham Little

One of Scotland's most outstanding winter climbers with a long string of first ascents behind him. He has climbed extensively in the World's greater ranges choosing challenging technically difficult peaks in little known areas. He is Marketing Manager to Ordnance Survey, Scotland.

Scott Muir

Just qualified as a teacher in Physical Education, at 22 is already an outstanding climber on rock and ice with two expeditions to his credit. In 1996 he joined Graham Little and Jim Lowther on their bold ascent of the North Face of the Kulu Eiger and in 1997 led an expedition to the Karakoram, making the first ascent of The Throne (5840m).

Victor Saunders

An outstanding all round mountaineer who made the first ascent of The Gold Throne of Spantik in the Karakoram with Mick Fowler in 1987. This still ranks as one of the boldest technical climbs made in the Himalayas. He climbed with Chris on Panch Chuli V in 1992 and works as a mountain guide.

Charles Clarke

A Consultant Neurologist and expert on mountain medicine who has been expedition doctor with Chris on five expeditions including the 1975 Everest South West Face Expedition.

Elliot Robertson

An experienced climber with a strong environmental background, is research assistant and conference organiser for the Mountain Regions Programme of the Environmental Change Unit of Oxford University.

Film Team

Martin Belderson

Director. working for Northern Films.

Jim Curran

climber, film maker and author has made several award winning climbing films including Kongur, K2 Triumph and Tragedy, The Unknown Mountain and most recently filmed and presented a series of climbs for the BBC's 'TRACKS'. Was with us in 1997 as film maker.

Greig Cubitt.

ITN Editor and cameraman, was responsible for sending back regular video reports by satellite.

Nepalese Staff

Ram Tamang

Married with 3 children, living in Kathmandu.

Pemba -

cook From Dimbule, South Sola

Tibetan Support

Tachei

Liaison officer - A climber with Everest experience, he was extremely helpful though spoke no English

Dorge - Interpreter

From Lhasa. Married with one daughter, was our liaison officer in 1997.

Works for CTMA. Studied English at night school and has visited Dahramsala. Has been interpreter and liaison officer for treks and Everest Expeditions.

Pasang

Guide to Clarke and Robertson on their exploratory trip

From Lhasa. Married with two children.

Learned his English in India. Works for TIST. Accompanied Clarke and Bonington on their reconnaissance and was interpreter in 1997.



Our Tibetan Neighbours

Charles Clarke

The settlements of the lake shore are either small houses of stone and wood, a smokey single room, a table and surrounding bunks, or yak hair *ba*-s, strong dark brown tents with a wood and yak dung stove, which are used in summer. We longed to borrow a *ba* for base camp, but these are precious heirlooms.

Most of the six families we already knew well. Karteh, a 35 year old yak herder with his wife Tsimi, her in-laws Orsa and Tsering-Sonam were our immediate neighbours; Tsini had been gravely ill in 1997, and as often happens, I had received the credit for her recovery, somewhat overgenerously. Tsini was now fit, well and elegant, milking and herding yaks, and making *chura*, the yak cheese. Like most local women we met, the burden of manual labour fell upon her shoulders, rather than the male counterparts - or so we felt.

We had old friends in this valley; they made us all welcome. Rancid yak butter tea, an acquired taste, was the usual greeting in every household, soon followed by yoghurt, raw or dried yak meat, and occasionally *momos* (stuffed dumplings). In return the seven families of the valley came freely in and out of camp; we would often find the mess tent occupied by locals, either for the night, or seeking medical advice, or simply to have a look round. We knew almost all by name.

Dorbeh, the widowed stonecarver lived a few hundred metres up the valley, his three children already noticeably larger since 1997. His hunched, shy profile was soon familiar, as he would shuffle into camp, check for any food he thought was going to waste, and leave a *mani* stone. Towards the end of the trip each of us had our own *O-mani-padme-hum* carving.

Minchi, who lived two hours below camp, decided he would come to work for us. Jim Curran commented that Minchi looked as if he had just completed his Harvard PhD, with his long hair, intelligent face and an infectious laugh. The post of kitchen servant seemed somewhat menial for this owner of a substantial house, herds of yak and goats and several horses, but he stayed with us throughout the expedition, leaving only briefly to sort out a crisis at home - his yak herd was attacked by wolves which had come down from valleys even more remote than our own as winter approached.

Pu, his gentle wife Kokor and their six children, seemed to us newcomers, but it was simply that previously we had never visited their home about half an hour west of base, with its commanding view of the lake. Elliot and I had travelled with Pu across the Yam La, when he had shown scant regard for warm clothing, or any bedding in sub-zero temperatures, and his shoes had been several sizes too small for him. We measured up his feet and telephoned the size through to Lhasa; Chris brought trainers which fitted him. In return Pu knitted some yak wool socks for me, and casually one day arrived with a shoulder of lamb, freshly slaughtered.

Meanwhile, around 5000 metres, above the sacred lake, the hermit, Zamteng presided in isolation. He had never left his house, Pasang told us, during his eight year stay beneath Sepu Kangri. Visitors were however frequent, as he delivered spiritual, and medical advice. I was careful always to ascertain what he had said to visiting patients, to avoid unnecessary conflict. The hermit welcomed us, blessed us, and warned us to be careful of the avalanches which he could hear frequently above his perch, a stone house tucked into a grassy hillside above an upper glacial lake.

The hermit had set out to write about the region, gleaned information from old books he had found at Samda monastery. As a gift he gave me a copy of his own text, handwritten on traditional slim rectangular pages. Pasang struggled with the translation, the gist of which was that Sepu Kangri and its passes had been known to generations of Tibetan and Chinese travellers, as far as the records stretch at Samda, - probably for several hundred years.

Whilst we believe we are the first Europeans to visit the Sepu Kangri region itself, Abbé Huc probably passed west to east somewhat south of Sepu Kangri in 1845¹ and Brigadier George Pereira along a similar route east to west in 1921². Ronald Kaulback and John Hanbury Tracy had reached Diru, from as far away as Burma, passing north of the range in 1936³. (Others had had serious difficulties as they penetrated Kham - Rinjhard, a Dutch missionary had disappeared in 1898⁴, and the French explorer Louis Liotard was shot dead in 1940⁵.)

Finally, a day's march down the valley, was Samda itself, the fine Bon monastery believed to have been founded in the seventh century, destroyed by the Mongols and rebuilt in the seventeenth - a common story in this region. Rebuilding continues apace. A massive prayer hall is now complete, and some thirty monks are in residence. In 1996 Chris and I had initially experienced some hostility at Samda, due perhaps to a misunderstanding about our aims (we were suspected of being mineral prospectors). This year we were welcomed as visiting dignitaries, and installed in the apartment reserved for visiting high lamas when we attended the devil dances early in October.

Towards the end of the expedition it became clear how difficult it would be to part from these friends and families whom we had come to know so well. We had, over three years been welcomed into many homes and into the local culture, a rare privilege on any expedition. We had seen and sometimes shared just a little of the difficulty of the harsh existence of the region's people, in a land we too had come to love.

¹ Huc, R-E. *Lamas of the Western Heavens*. Folio Society, 1982.

² Younghusband F. *Peking to Lhasa*. London, Constable, 1925.

³ Kaulback, R. *Salween*. London, Hodder & Stoughton, 1938.

⁴ Sandberg, G. *The Exploration of Tibet. Its History & Particulars from 1523 to 1904*. Calcutta, Thacker, Spink, 1904.

⁵ Guibaud, A. *Tibetan Venture*. London, John Murray, 1947 (+ Oxford University Press Paperback, 1987).



Greig Cubitt of ITN showing the team their rushes on the editing machine.

Telecommunications, Computers, Radios, Filming, News & Video Transmission, Audio

Telecommunications

Charles Clarke

The mobile satellite telephone, e-mail, and the ability to transmit digital still and video images has changed one important aspect of mountaineering and exploration in remote areas: communication with the outside world is potentially instant and global. This brings with it advantages, and various possible problems. The age of the mail runner is now long past.

We developed our own communications systems on Sepu Kangri, basing much of the plans for 1998 on experience gained by Duncan Sperry on the 1997 expedition. We relied in part on computers which we already owned; sponsors (principally British Telecom and Apple Computer Company) supplied other equipment. We were helped greatly by Martin Davidson (Skarda International Communications) and Gerry Taylor (GT Associates), both of whom provided advice and technical expertise.

It is important to define the *purpose* of communications equipment. In our case, the ability to relay information to a wider audience was primarily for our sponsors, via the Sepu Kangri Website run by Rupert Bonington in Cumbria UK, and via ITN news bulletins - and to allow anyone interested to follow our progress. A secondary, very useful role was to provide contact with Lhasa by phone, for example to arrange transport. Thirdly, we were able to contact our families, by phone and e-mail, and in some cases, work. These latter roles sometimes were usually greatly appreciated, but also sometimes generated anxiety. Finally, technical, meteorological (and medical) advice could be sought easily by satellite phone.

The notes below outline how our equipment was organised; it will be appreciated that it was assembled piecemeal, from different sources. An expedition 'starting from scratch' with a larger budget might have a more co-ordinated approach. The corollary of our method was there were, in the event, various back-up systems.

Communications on the March

Elliot Robertson and I travelled some 200 km on foot and horseback through the Nyangla Qen Tangla Shan with:

- 1). a BT Mobiq Satellite Phone¹
- 2). Olympus Camedia C-1400L and 400-L Digital cameras²
- 3). One Toshiba Libretto 50CT Personal Computer - the smallest PC available
- 4). Two Sony PD1P Digital Video Cameras³

We relied exclusively on solar power, provided by:

- 1). One rigid (but folding) 10 watt 12 volt (dedicated) solar panel for the Mobiq, which would sit on a rucksack.
- 2). Three linked flexible Uni-Solar Solar Battery Chargers⁴ delivering 25W at 16.5 volts (max). These are tough (could be sat/slept on); we lashed them to a ski pole and carried them on a rucksack.

Power delivery from these panels came via:

- 1). A direct lead for the Mobiq (from its panel)
- 2). A Toshiba (In-Car) 12 volt Adaptor (for the Libretto PC)
- 3). A Sony Car Battery Charger DC-V515 Battery charger (for the Sony PD1s - which, oddly, did not have a dedicated 12 volt charger)
- 4). An RCLINE Multi Plus 12 Battery charger for AA cells - an offshoot from model aircraft - (for digital camera AA batteries).

Each lead (we used XLR-4 pin plugs throughout) could also be used in a car cigarette lighter (12V), via an adaptor.

All this equipment (apart from the Mobiq panel) was assembled and adapted by Martin Davidson, of Skarda International Communications⁵. *When the sun shone*, everything worked, reliably.

We maintained satellite telephone communications throughout the journey, and transmitted reports and digital (still) images via e-mail; we were able to charge video and AA batteries. Our problem was that the weather was atrocious, and there was often insufficient solar power for the Libretto PC (and hence downloading e-mail and photos). Also, we would have done better to abandon trying to recharge AA cells - it was so time-consuming - and to use instead lithium AA cells, despite their cost.

Communications at Base Camp

The main equipment at Base included:

- 1). A second Mobiq phone
- 2). Two Apple Powerbook Computers (Bonington)

- 3). One HP Deskjet 340 Printer (Bonington)
- 4). One Canon Bubblejet 130 Printer (Clarke)
- 5). One Toshiba 460CDT Laptop PC (Clarke)
- 6). Multiple cine cameras & batteries (v. Film)
- 7). Four Motorola Visar Radios, & chargers (v. Radios).
- 8). An Olympus Camedia Color Printer P-300E & additional cameras
- 9). News packaging and Video Equipment (v. ITN)

We were thus able to make outgoing telephone calls readily, type/print reports and digital images, use e-mail via the Apples and the Libretto, and download (still) digital images.

Power Supplies

We relied on several sources of power - solar power via a battery pack, ('The Magic Box'), and wind generators, and also, as it turned out, petrol generators which had been brought specifically for news packaging, rather than for general expedition use.

Base Camp Power Unit⁶ ('The Magic Box')

A simpler version of this system had worked well in 1997.

'The Magic Box', a tough plastic case, contained 2 x 12 volt 16Ah Sonnenschein batteries, with, as its designer explained, an 'independent charge control system, and low voltage cut-off'. This weighed some 20kg.

There were, potentially, five power inputs (XLR-4 plugs):

- 1). A static, rigid, 4 x 25 watt 12 volt solar panel array,
- 2). The three (*see*⁴) Uni-Solar Solar Battery Chargers delivering 25W at 16.5 volts (max),
- 3). An Airwind⁷ Generator (3-bladed wind generator) delivering a peak output at MSL of 300 watts,
- 4). An Ampair⁸ 12V (6-bladed wind generator) delivering a peak output at MSL of 100 watts,
- 5). One spare.

Power outputs were:

- 1). Four 12 volt 4-pin XLR sockets (for general use, with various leads - with particular attention to differing polarities),
- 2). Two 24 volt inverters to 5-pin XLR sockets (for two Apple Powerbook Computers),
- 3). One 240 volt 50Hz 200 watt inverter to a standard UK three pin socket.

Sadly, it has to be said that 'The Magic Box' was a source of some frustration. The batteries rarely reached their estimated voltage levels despite prolonged charging. In practice, in over a month we were seldom able to use 'The Box' for more than several hours at a time for the Apple Computers, or the Toshibas, or for more prolonged charging e.g. the Mobiqs. There was rarely sufficient power for the printers. We were unable to charge film batteries, or radio batteries from 'The Box'.

Greig Cubitt, as resident technical expert was unable to fathom an electrical fault, and though Gerry Taylor, the designer and manufacturer was most helpful on the phone, he

was unable to suggest any major remedial actions. Obviously, on any expedition, damage (by yaks, truck & jeep travel, water &c) can wreck almost anything: we had cared for 'The Box' as best we could and there was no sign of damage.

It is difficult to decide quite why 'The Box' was below par; I suspect it *had* been damaged, and also that our multiple demands were simply too much for it. Its general design, from the 1997 prototype seemed satisfactory.

In reality we became very largely dependent upon Greig Cubitt's generosity, petrol and the Honda EX500 generators (v. ITN). These too failed towards the end of the expedition. Had we not had this source of power, many communications/charging activities would have been greatly restricted.

Wind Generators

A generic problem where air density is low, as it is high altitude, is that windspeeds need to be higher than at sea level (MSL) to produce a given power output. The variability of windspeed and possible very high windspeeds in storms also need to be considered into account. Firm anchorages are essential. Generator blades must be inaccessible to children, yaks, horses & goats: spinning blades are potentially lethal. We had given thought to the majority of these issues, but oddly, neither generator manufacturer had mentioned the critical issue of air density.

Ampair 100

This six bladed (usually marine) 12 volt generator has an integral mounting pole and anchor lines. Particular attention in the manual was given to the need for the blades to be well-balanced: those supplied were so. The turbine was exceptionally smooth running. Minimum windspeed for operation was under 10 knots at MSL, and in practice around 20 knots at 4700m. Maximum output power was rated at 100 watts.

In the event the blades turned, on average less than an hour a day. It is difficult to gauge the contribution the Ampair made to battery power, but it must have been small on most days. However, in general terms we would recommend this generator in an expedition setting, if wind generators are to be used at all. It would be worthwhile discussing with the manufacturer whether larger than standard turbine blades could be attached. A voltage regulator was not fitted; this did not appear to be a problem. The bearings had been packed with a low temperature grease before delivery.

Weight (Standard Pole, with box, packing & spare blades) < 15kg.

Airwind Module

This 6kg (some 9kg with spare blades & packing) high output (300 watts) 3-bladed generator had an integral voltage regulator. The unit was supplied with a separate, custom-made pole system in a wooden box. This was perhaps heavier than necessary and increased overall weight to over 35 kg.

Despite being assembled carefully according to the manufacturers' instructions, when the turbine blades rotated, the generator vibrated excessively, loosening repeatedly the substantial ground anchors. Minimum windspeed required to initiate rotation at MSL was given as around 7mph in the manual (and thus we would expect it would require around 15mph at 4700m). However, in practice windspeeds were required for start-up

was well over 20mph, always higher than for the Ampair.

We felt that the Airwind generator supplied was potentially dangerous because of the vibration. We had no way of weighting or re-balancing the blades, which appeared to be of slightly different weights. Swapping blades (with spares supplied) did not seem to help.

Radios

Charles Clarke

We used four Motorola Visar⁹ 'Walkie-Talkie' radios, recharging batteries from the petrol generators. (Had we not had access to the latter, we would barely have been able to use the radios). The Visars worked excellently, even out of line of sight.

Film

Jim Curran

The advent of the mini-digital video camera has changed the concept of expedition filming forever. The traditional 16mm film documentary, however much one might regret its passing, has already become a rare and costly luxury. For both the 1997 and 1998 Sepu Kangri Expeditions we relied on SONY VX1000 cameras, which give TV broadcast quality images, using the small DV video cassettes. The camera bodies were modified to take Sennheiser external microphones. In 1998, over 50 hours of tape were shot, all of which would fit comfortably into a small rucksack - the equivalent in 16mm would barely squeeze into an estate car.

Once on the climb the differences between, say, 'Everest The Hard Way', that milestone in mountain filming, and Sepu Kangri become marked, and readily evident. In the former, any moving footage was a bonus, achieved only at considerable cost by a specialist climbing cameraman, who might, if lucky, bring home a few minutes of real action. In 1975, cameraman Mick Burke's summit attempt - 16mm camera in hand in Peter Boardman's last photograph of him - ended in tragedy, as Mick died in the storm on the summit ridge. Neither he nor his film were ever recovered. In 1975, these shortfalls of action inevitably meant shooting from extreme telephoto long shots or worse, panning still photographs.

In 1998, all the climbers used 'DV-CAMS' as an extension of their own personal equipment, encouraged perhaps by the possibility of nearly immediate exposure on ITN news programmes. SONY PD1-P's and JVC DVX mini-cameras were used, both for personal video diaries and to make a comprehensive record of the climb and activities in high camps. The climbers became an integral part of the film team.

In the event, hours of excellent footage were shot, often in difficult circumstances. Everyone experienced a rapid learning curve: this was due in part at least to the ease with which they could review their efforts on Greig Cubitt's base camp editing suite. From this, virtually finished news items were transmitted directly to London.

Few technical problems were encountered. One of the two VX1000s was unduly sensitive to damp and cold; it took some coaxing on icy mornings. One of the JVCs developed a similar problem - and a tape jammed which could only be removed on return to Britain. The other JVC used high on the mountain was kept warm in a sleeping bag or jacket at all times and had no similar problems.

The Sony PD1s were excellent and gave no trouble.

All the batteries were recharged at base using the Honda EX500 petrol generators. On the final push the team had purpose-made lithium battery packs (made up by Greig Cubitt); each lasted nearly 4 hours.

The contractual arrangements between Northern Fims, ITN and Just Radio allowed all parties to have full access to any recorded material, an important point when editing film for the proposed TV and radio programmes, the details of which are still in hand.

For the principal film-makers, Martin Belderson and Jim Curran, the experience of working in this remote area was immensely rewarding.

Independent Television News: News Packaging & Video Transmission Greig Cubitt

This was the first time ITN had transmitted news items direct from a high altitude mountaineering expedition, with a cameraman/editor as a team member. The ITN equipment consisted of one Sony VX1000 (miniDV) camera with a Panasonic Laptop editor for the news reports. News reports were transmitted to the UK via an Inmarsat B Satellite phone using a high speed data link.

Tapes from the JVCs and VX1000 could be read directly on the laptop editor; SONY DV CAM tapes from the PD1s could not.

The edited video and audio reports were fed to a TOKO, a specialised computer which stores digital images. These were read at standard ISDN 64K and fed to the high speed data port of the Inmarsat B. Transmission took about thirty minutes for every one minute of real time video/audio - *i.e.* usually over an hour of continuous transmission for a single two minute news item.

240 AC mains power (standard UK 3pin socket) was provided by two Honda EX500 two-stroke generators in tandem. These needed high altitude jets (and the knowledge of how to fit them). The generators functioned well initially (delivering 50% MSL power at 4700m, as expected). However both seized towards the end of the trip (probably because of inferior fuel, as judged by carbon deposits). There had also been some difficulty obtaining high octane fuel and two-stroke oil in Lhasa; its quality must remain suspect.

Audio

Charles Clarke

Following the success of the three Radio 4 Magic Mountain programmes produced by Susan Marling of 'Just Radio¹⁰' in 1997, we made a comprehensive audio collection, of personal diaries, communal expedition events, radio calls, and local Tibetan scenes, probably for another series of broadcasts. Audio was also recorded via camera sound tracks.

The contractual arrangements mentioned elsewhere should be noted.

We used 1). A SONY Walkman Professional (standard C-90 tapes)
2). A SONY TCD-D8 DAT-CORDER (DAT tapes).

The latter was found less easy to use than the standard Walkman Professional, but some form of back up is clearly essential.

Lessons for the Future

Charles Clarke

1. Substantial power requirements such as our own require detailed planning, and rigorous testing. For a truly portable system, I suspect that individual solar panels for each item are the most effective, and versatile. This is essentially the system Elliot and I used on our journey, and we were pleased with the results, despite the bad weather.

2. For a static system, it is hard to beat a petrol generator, if high quality fuel can be procured.

3. If solar panels + batteries are to be used, careful and pessimistic estimates of sunshine hours should be made. Simple and robust equipment is essential.

4. Wind generators require wind! Bear in mind that the minimum windspeeds for operation above 4000m are at least double those at sea level. We had erected both our generators on a balmy English summer afternoon, when neither rotated at all. Balanced blades are also clearly essential, and a means of re-balancing them if replacements become necessary. Safety is paramount.

5. We experienced no substantial computer hardware problems. However, computers work sluggishly or not at all in cold conditions, below 5°C. We needed to heat the communications tent each morning.

Some computers (e.g. the Libretto) are said to have an altitude limit of 3000m (a fact we discovered in the manual at 4500m!); this seemed not to be a major problem.

The communications tent fabric was black - a little too dark to see a keyboard clearly within it. Conversely, on the march, we carried 2 x 1m of black cotton material, to cover ourselves and computer screen, otherwise it was impossible to see the VDU in bright sunlight.

6. Various software problems were transient, if irritating.

7. Running complex communications equipment takes inordinate lengths of time, daily, and requires a dedicated expedition member.

8. We had no easy access to our own website - a lengthy downloading time with a slow (2400) baud rate. It would have been preferable to edit the website at base camp, but again this would have been time-consuming.

9. Finally, it goes without saying that rigorous field testing of everything is desirable, but trying to achieve this at sea level, in Britain, in a city, with a full time job by day does pose problems.

We felt that in general our communications, despite some frustration and various pitfalls, were a success. We hope that our sponsors feel that their generosity has been appreciated publicly and that the exercise, both of a website which was followed regularly by several thousand people, and serial ITN news reports was worthwhile.

¹ British Telecom*, Mobiq Customer Care Centre, PO Box 13306, London EC2V 7DH.

² Olympus Optical Co. (UK) Ltd*, 2-8 Honduras Street, London EC1Y OTX.

³ SONY Broadcaster & Professional*, The Heights, Brooklands, Weybridge, Surrey KT13 OXW, UK.

⁴ United Solar Systems Corporation, Troy, MI, USA.

⁵ Martin Davidson*, Skarda International Communications Ltd, 7 Portland Mews, Off D'Arblay Street, London W1V 3FL.

⁶ Gerald Taylor Associates, The Dolls House, Lowick, Berwick upon Tweed, TD15 2TP, UK.

⁷ Southwest Windpower Inc, 2131 N First Street, Flagstaff, Arizona 86004, USA. Supplied at cost by Windsund, Tatham Street, Sunderland SR1 2AG, UK.

⁸ Ampair, PO Box 416, Poole BH12 3LZ, UK.

⁹ Skarda International Communications Ltd*(above, 5).

¹⁰ Just Radio, 11-15 Emerald Street, London WC1N 3QL*.

Many firms and individuals gave time and expertise assembling the Communications Equipment. Those marked * donated or loaned valuable technical equipment free to the expedition.

Brief Review of Equipment Supplied to the Expedition.

by Scott F.Muir

Equipment as Supplied by Lyon Equipment.

Quasar Ice Tools - The ultimate in durability, stability, reliability and sinkability. Every placement is to the hilt. I have used a number of techno ice tools and no others have had the effortless swing and removability of the Quasar. Climbing Steep Ice, here on a Mer de Glace style Glacier has become an obsession with the Quasar as the ice warriors' main weapon.

Grade 8 Mono-points - With the Quasar as the main ice warriors' weapons the Grade 8s become the equivalent. For those who have never used Mono's, these are the Biz'. You will never look back. Superior penetrations coupled with an unsurpassed stable platform are enough to raise everyone by a grade. However, as always monos are less reliable for krud, with the tendency to breakthrough more easily than fangs. These foot tools are a revolution and strongly recommended!

Pulsar Ice Tools - The traditional Charlet style mongers tool. Ideally suited to steep ice and technical mixed ground. No excuse for not looking slightly Paris Catwalkish as you style your way up those hopefully-in-nick Scottish Winter Routes. Hope to see you there!. For those slightly less stylish with the swing, and the tendency to return from a week-ends torquing with cauliflower knuckles, like myself, I strongly recommend the Bent Shaft Pulsar. I ve never had any problems with Charlet, and consistently my first time tool choice for mixed ground.

Super Twelve Crampons - If you are looking for a good all round crampon, the mountaineer's choice has to be these. The points are long enough to be super efficient and stable on ice with good technique and not so long so as to be restrictive for those incipient, rounded Cairngorm breaks. They are super sharp and retain their points well. With easy application to the boot, these crampons are also excellent as general-purpose walking and mountain use. These crampons have formed the main foot tools for our attempts on Sepu Kangri, which in itself presents more mountaineering than technical work. We were using them in conjunction with the Anti-bots supplied by Charlet Moser, in all types of snow none of us had the slightest problems with balling. Much recommended.

Lama Walking Axe - Brilliantly simple with robust head and lightweight shaft. Used exclusively with one walking pole, making a safe and supportive combination. A texturised grip may be useful, as when used on steepish ground there is the tendency to lose grip. This can be easily customised personally. A great general mountaineering tool. 65cm appears to be the most favoured length.

P'tit Loup Third Tool - On ice verging on vertical or gently overhanging the Third Tool makes itself blatantly obvious. It feels far more secure when bashing in drive - ins to have this tool at hand. Also used in conjunction with the Lama Walking Axe one has the versatility to tackle relatively technical ground. Its weight is negligible, yet its use indispensable. Never carried one in the past, but have now added it to my gear freak's rack. Suitable for tight peg placements when in extremis.

Ecrin Rock Helmet - A Helmet that doesn't make you feel too stupid. Light enough to be unnoticeable and well designed to fit perfectly without annoying and frozen strap adjustments when wearing, and not wearing hats etc. Petzl's adjustment system is excellent and without hesitation I've dumped my previous helmet. Just as suited for summer as winter use.

Meteor Rock Helmet - This cycling style helmet may at first impression and first placement upon one's head appear to be and feel like the most embarrassing article ever brought to mountaineering. However, once you have overcome the stigma of even contemplating placing it upon your head in public (for those so self conscious anyway) the helmet seats very well and is so light that there is no excuse for not protecting the head. Ventilation is good even on hot days and adjustment is fast. I would not recommend this helmet for winter climbing as it has at present no head torch attachments and the constant bombardment of ice fragments may partially deform the shell. However, this helmet is perfectly suitable for winter hillwalking where weight and head protection are at a maximum. It would certainly stop head injuries!. The Meteor presents the ultimate in head protection for super lightweight alpine ascents, where head protection and weight are major factors.

Choucas Harness - Fits perfectly over many layers and provides good racking, ease of fitting, even over crampons and is very comfortable with its wide webbing in hanging stance situations.

Beal Ropes - There have been a few times when these superb handling ropes have nearly been tested according to the number of falls stated on the instruction booklet. However, according to a strange quirk of gravity and thus weight distribution, somehow our ice sessions have thankfully ended in success, rather than UIAA rope testing units. We have thus (as genuine fearties) not had the inclination to check the ratings on the booklet personally and take for granted that they speak the truth. Thus I can only report that these 60m (just enough to hang yourself with) Everdry Ropes have so far shed water like a ducks back (consistently), without absorbing water even in slushy snow. On the mountain, single ropes have been used (8mm, 60m Everdry) successfull. They handle well when sheath is icy and knot well. If they continue to shed water, they will be brilliant for typically wet Scottish winter use.

Hardware - The Charlet Moser Screws are excellent, with good biting capabilities, however with the slightly wider wall thickness, more effort is required to turn these in than some screws! Yet, as you reduce this thickness, so you weaken the screw. A very personal decision. If you're strong enough to hang around these are bomber screws, if not Titanium Snappers.

Charlet Moser, Dmm, Black Diamond- Ice Pegs/Talons/Bulldogs or whatever gender they fall into. In extreme circumstances these fit perfectly into the slots that have been previously made by your tools for instant protection. I believe that these are not to be fallen on, un- tested!. I have used them in turf and in cracks where they have far greater insurance cover. Out goes the Warthog; in comes the ice peg. In ice they are desperate to recover with excavation an obligation. It's the second's problems anyway!. These are lifesavers.

Equipment Supplied By Terra Nova Equipment.

**Mountain Quasar
Ultra Hyperspace
Solar
New Prototype Super Geodesic Dome
Assault Tents.**

Terra Nova Tents present the ultimate in reliable, weather resistant tents any of the team have ever used. The combined team usage of Terra Nova tents and their predecessor company Wild Country exceed 40 years of unsurpassed experience. No other tent manufacturer exceeds the quality achieved by Terra Nova.

Equipment Supplied by Bollè Eyewear.

The **Bollè 100's** present the best in mountain eye wear and comfort. The lenses are super clear and the glasses with blinkers hug the face.

The **Bollè Ski Goggles**, **Mountain Goggles**, however are outstanding with very little condensation build up and a huge range of vision. They are super comfortable to wear and magic in a whiteout for discerning shapes, glaciers features and slots. They fit well under a helmet and have been worn above 6600m in Tibet. The team highly recommends these for mountain wear for any outdoorist.

Equipment Supplied by Burton McCall

Sigg Bottles - Simple, sturdy and ideal as a high altitude hot water bottle. With cover, Sigg effectively keeps water from freezing and cooling

Mini Maglites AA size and 'Night Ize' Holder - Brilliant for base camp and multi purpose use. Victor used his as a head torch on the mountain and was well pleased with it.

Swiss Army Knives - With so many attachments, most of which require a degree to use, they are still the best designed and bombproof knives available.

Victorinox Swiss Tool - These were ideal for jobs around base camp, from trying to repair our wind mill to fixing crampons.

Gabel Italian Walking Poles - An equivalent to all poles on the market with a definite similarity and reliability with Leki. The spring tension in the shock absorption system appears to be heavier than Leki and feels much improved in use. These poles have been successfully used to 6600m without jamming or malfunction. Well recommended.

Firejet Windshield - This was invaluable, light, compact and very adaptable, we used it for brewing up in the open, even in high winds and also in the entry to the tent.

Equipment Supplied by Coleman.

Max Xtreme Stove -

Twin Max Xtreme Stove Expedition-

Mini Hanging Lantern -

We used the Max Xtrem stoves on the mountain and found that they functioned well in extreme cold, were easy to light and get going. They were light in weight, very compact but needed careful handling and the attachment between stove and cannister was quite vulnerable.

We only tried out the Twin Max Xtrem Stove, since at base camp we had a large kitchen run by our two Sherpa cooks. It would work well however for an advance base.

The mini hanging lanterns were used by all members of the team in their tents at base camp, providing not only light but also warmth.

Equipment supplied by Cascade

Thermarest Ultra Light Long - Still the nearest comfort to a much needed home bed without bringing a Lilo. Ideal on the mountain and for basecamp. Unsurpassed durability with obvious care (Watch those thorns). Challenging to blow up without fainting at altitude, however once up, forms the epitome of comfort onto which one can collapse gasping for air.

The Therm-a-rest Chairs are the ultimate luxury either for sitting and reading in one's tent or for playing a hand of Bridge.

Other Items

Yale locks - standard locks, all with the same key are invaluable .

Food and Drink

Black Bottle Whisky from Highland Distillers

Our stock of Whisky just lasted the expedition, allowing a dram for everyone each evening while at base camp. It has a lovely mellow flavour and helped maintain morale in the face of bad weather.

Tartex

An excellent spread, popular at base camp and on the mountain.

Natex

A great hot drink favoured by all members of the team as well as being a good spread on bread or chapatti.

Jordans Frusli bars and breakfast cereals

These were used on the mountain. The breakfast cereals were excellent for starting the day with with warm water and milk powder, while the Frusli bars gave a welcome high calory munch during the day.



Scott Muir (L) and Elliot Robertson brewing up on the way to Camp 2 on the first attempt.

Sponsor and Supplier List

We are most grateful to the following for their support.

Main Sponsor

National Express

Supplier Sponsors

Barclaycard

Berghaus

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Sigg

Victorinox

Gaber

Maglite

Fire Jet

Inoxal

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All clothing, rucsacks, Yeti Gaiters and walking boots

Expedition Wager

Water bottles

Swiss army knives, tools and watches

Ski poles

Torches

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Double layer cooker sets

Suppliers

Apple

Black Diamond

Bollé

British Telecom

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Lyon Equipment

Beal

Charlet

Petzel

The Met Office

Olympus

Pasteur Mérieux MSD

The Pharmacy - National Hospital London

RoC UK

Sony Broadcaster and Professional

Computer Equipment-PowerBook G3

Snow shovels and ice screws

Sun glasses and goggles

Loan of BT Mobiq and satellite air time

Therm-a-rests and seats

X.Treme High Performance Gas stoves and lights, Globe Trotter Light weight cooking sets.

Friends, Rocks and Dead Men

Loan of GPS 12

Black BottleWhisky

Design and supply of Solar Panels and Power suite

Internet service provider

Frusli Bars & breakfast cereals

Tartex Paté & Natex Spread

Fixed and dynamic rope.

Karabiners, ice tools, crampons and ice screws

Crash hats, harnesses and head torches

Daily weather Forecasts

Camedia 400, 800,1400 Digital cameras & Colour printer

Immunisations

Drug Supplies

Sun Protection

PD1 P DV Cams

Skarda International Communications

Terra Nova

Vicom

Winsund, Wind and Solar Energy Systems

Yale

Grant aid

Mount Everest Foundation

British Mountaineering Council

National Hospital Neurology & Neurosurgery Development Foundation & Supporters

Duncan Sperry

Eric Parkin

Sue Skinner

David Ward

Loan of VHF Radios, Technical expertise

Loan of tents

BBS software

Wind mill

Padlocks

Travel

Qatar Airways

Himalayan Kingdoms

Himalayan Expeditions

China Tibet Mountaineering Association

Tibet International Sports Travel

Support

Jim Lowther

Louise Wilson & Margaret Trinder

Frances Daltrey & Alison Lancaster

Rupert Bonington & Paul Batey

Ann Tilley

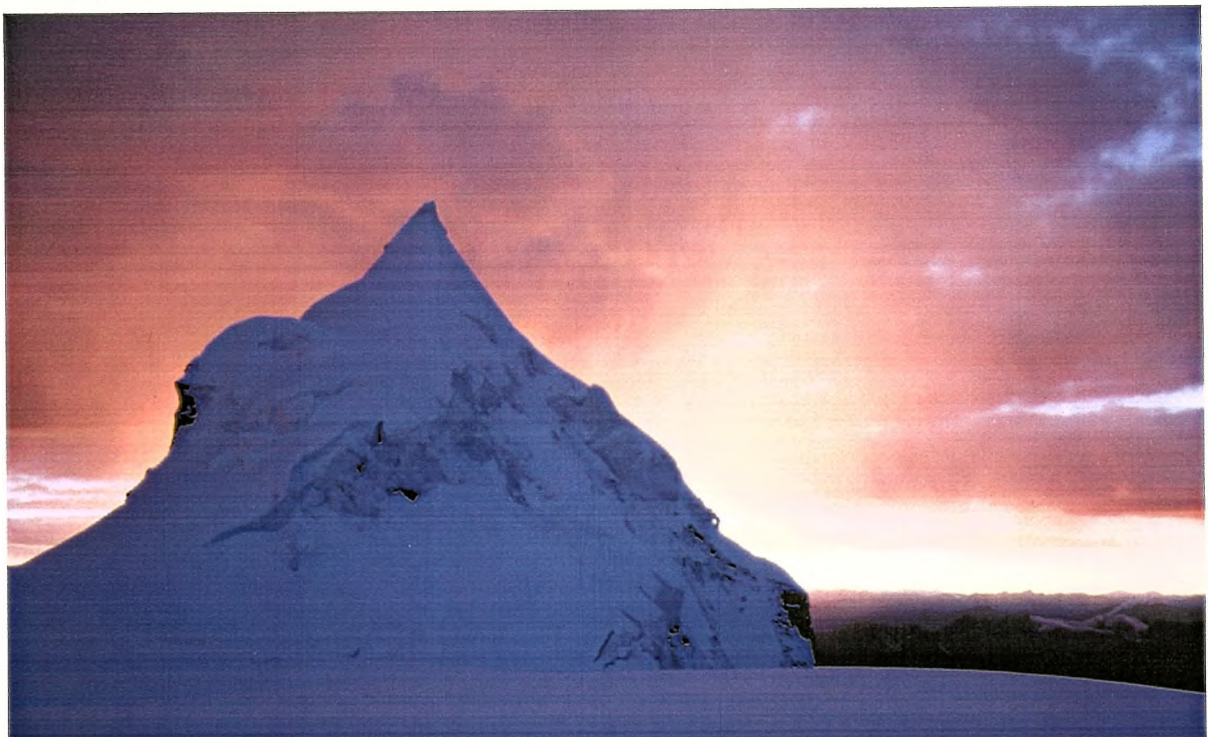
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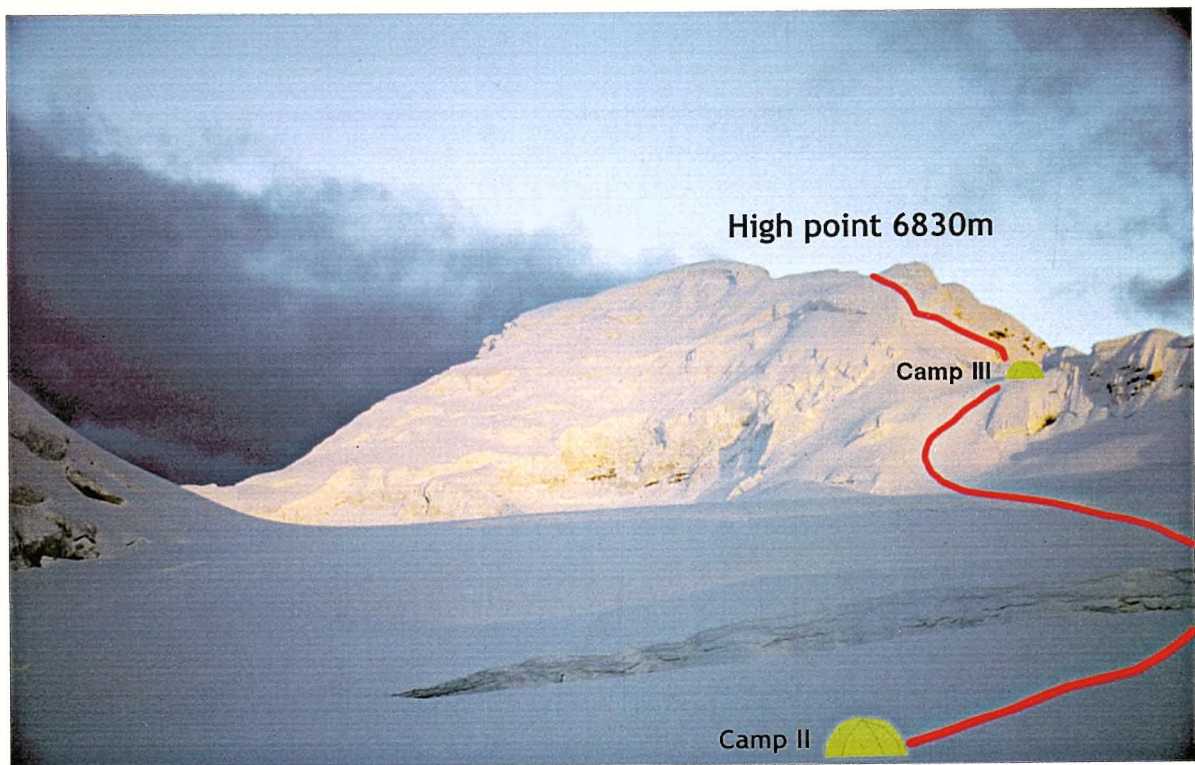
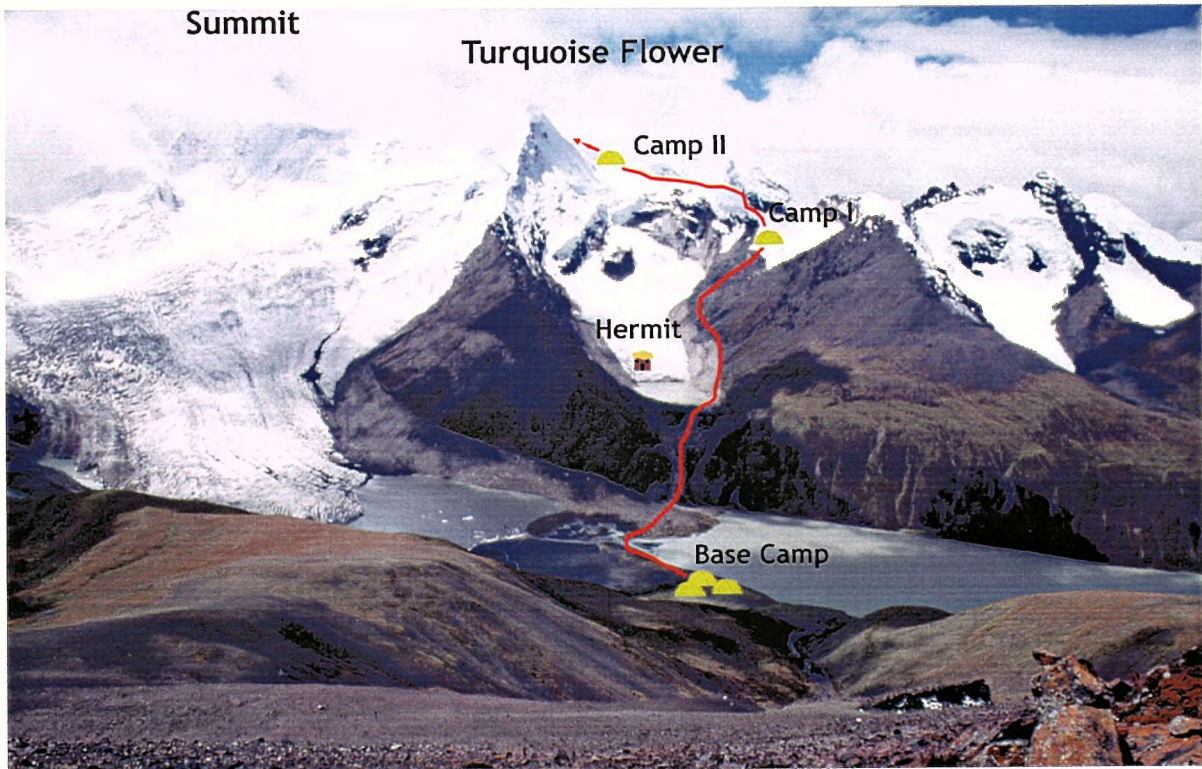
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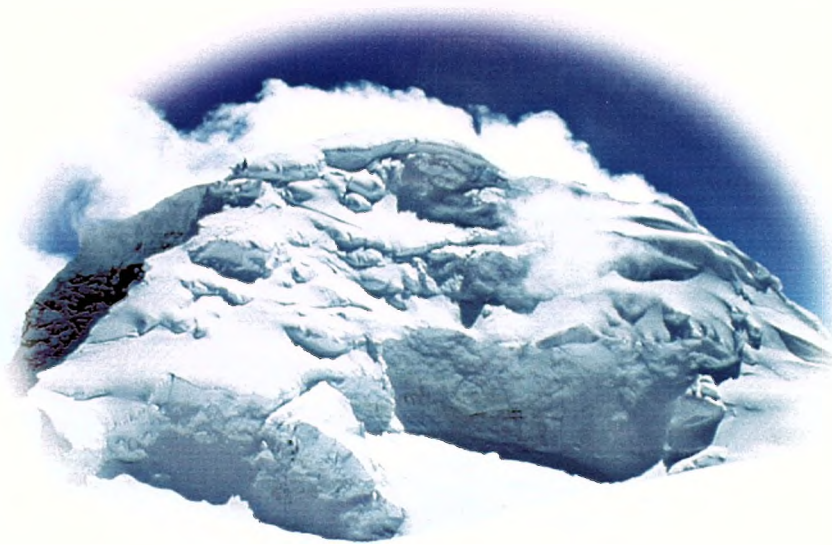
Secretarial for Charles Clarke



Mount Sepu at sunset from Camp 2.

Route Topo's





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