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BRITISH THALAY SAGAR EXPEDITION 1990

GHARWAL HIMALAYAS, INDIA

1990

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628

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SUMMARY

A British team attempted the unclimbed south face of Thalay Sagar (6904m) in the Gharwal Himalayas of India during October 1990. The team was composed of 4 climbers and 4 trekkers. Several members had experience in the Himalayas, Peru and Yosemite Valley. The mountain has rarely been approached from the south, but no major problems were encountered in siting base camp and travelling up the Phating Glacier to establish advanced base camp at 4500m.

A rock buttress was climbed to camp 1 at 5500m with some fixed ropes. Camp 2 was at 6250m on the snow slope below the granite headwall. The base of the headwall was reached at 6400m with all necessary equipment and supplies, including porta-ledges for Alpine-style climbing of the remainder of the mountain. A storm at this point led to a retreat to camp 1 and further attempts were restricted by lack of time and decreasing temperatures.

Several treks were undertaken towards Kedarnath and rock peaks to the east of the Phating Glacier were observed.

A geological reconnaissance of the area was completed and rock samples were sent to Oxford University, contributing to research on the Himalayas.

The weather was mostly settled with sunny mornings and cloudy afternoons with light snow showers. Two heavy snow falls and one storm occurred during the trip. There were some heavy showers on the walk-in.

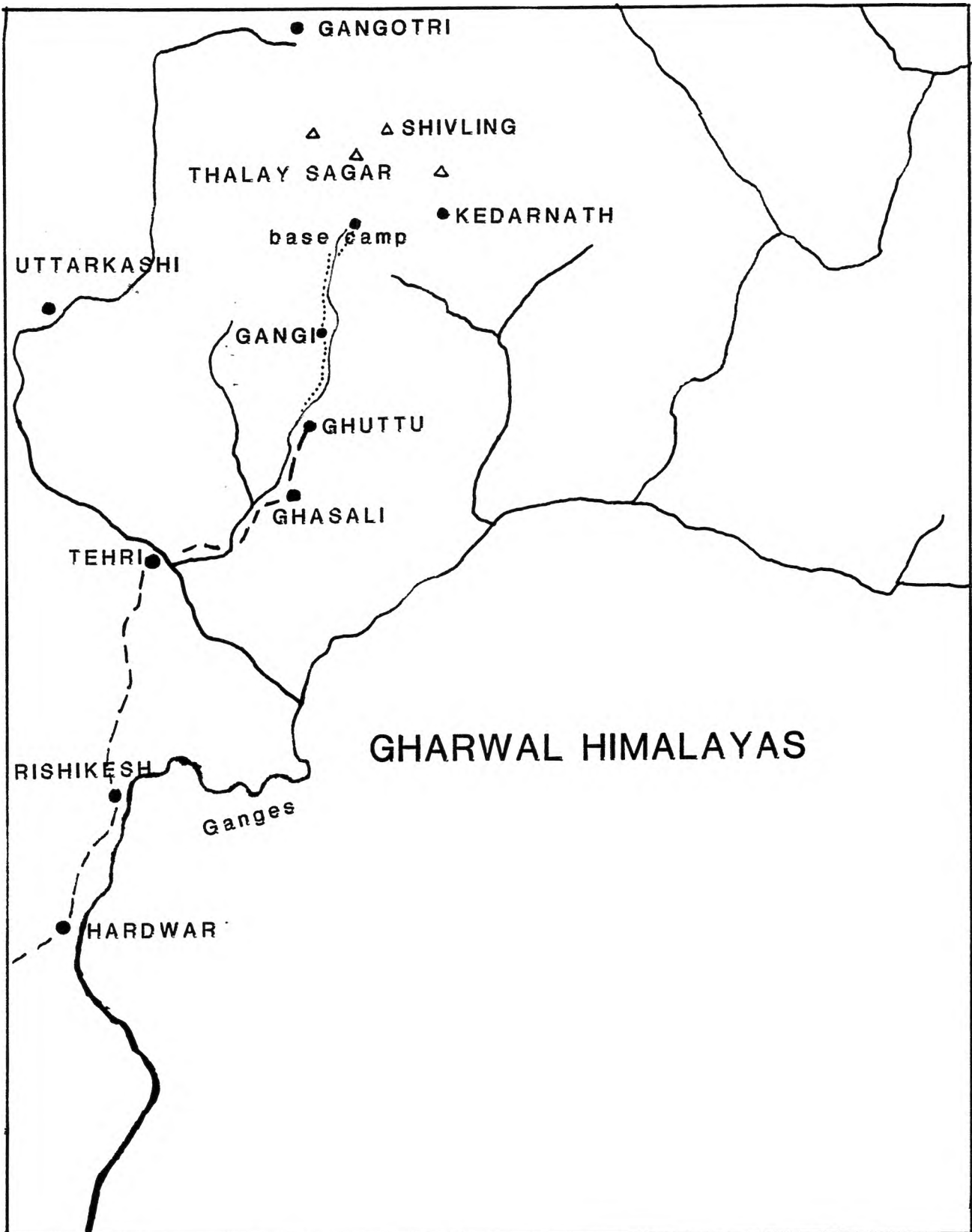
EXPEDITION MEMBERS

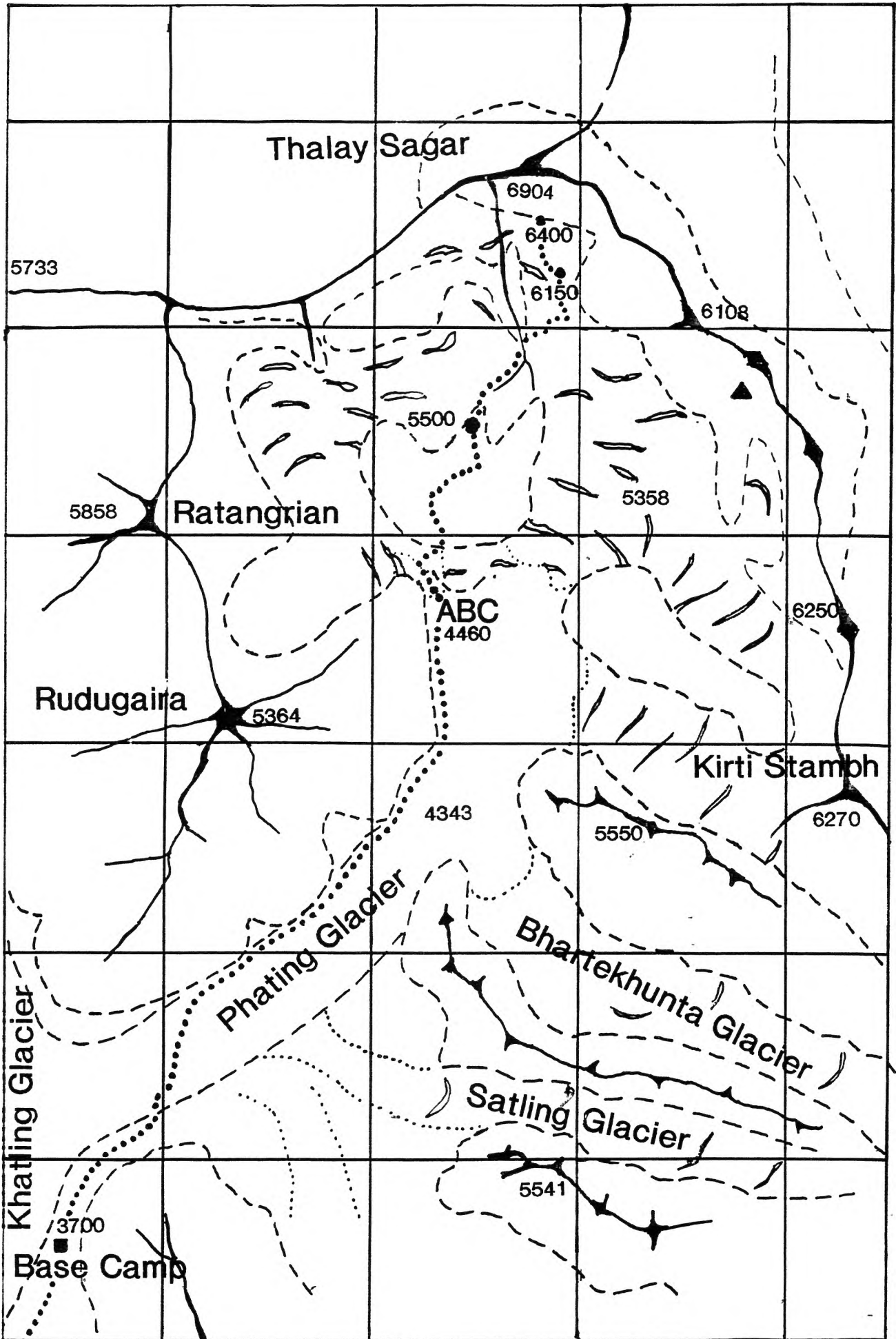
		age	town
climbers:			
Keith Milne (leader)	geologist	35	Aberdeen
Andy Wingfield	civil engineer	29	Stockport
Gordon Scott	geophysicist	27	Aberdeen
Charles French	computer progr.	31	Nottingham
trekkers:			
Martin Elliott	civil servant	29	Doncaster
Jane Worthington	research associate	29	Stockport
Jill Worthington	nurse	27	Derbyshire
Stuart Chapman	farmer	27	Derbyshire

note: all trekkers also have climbing experience



THE THALAY SAGAR TEAM





EXPEDITION DIARY

DAY	DATE	ACTIVITIES
1	15 SEP	flew from London and Aberdeen
2	16	arrived New Delhi
3	17	went to IMF, checked with freight agent
4	18	IMF, freight clearance, buying supplies
5	19	met L.O. and hired bus to Rishikesh
6	20	Rishikesh, arranged bus
7	21	hired bus to Ghuttu
8	22	arranged porters
9	23	walk-in to Reeh
10	24	walk-in to Gangi
11	25	walk-in to Karsoli
12	26	walk-in to Simla
13	27	walk-in to B.C., some barrels higher up
14	28	Phating glacier to ABC, LO leaves for Delhi
15	29	loads to ABC
16	30	rest day at BC
17	1 OCT	loads to ABC
18	2	ABC to 5300m
19	3	ABC to C1 (5500m)
20	4	loads to C1
21	5	rest at BC
22	6	BC to ABC
23	7	ABC to C1
24	8	C1 to 5800m with loads
25	9	C1 to 6000m with loads
26	10	C1 to BC
27	11	rest at BC
28	12	BC to C1 or BC to ABC
29	13	heavy snow fall
30	14	loads from ABC to C1
31	15	loads to C2 (6250m)
32	16	C1 to C2, Gordon to BC with laringitus
33	17	C2 to C3 (6400m) with all equipment, storm
34	18	storm continued, descent to C1
35	19	rest day at C1
36	20	collected equipment from above C1
37	21	C1 to BC with loads
38	22	BC to C1 and back with loads
39	23	rest day at BC
40	24	walk out to Karsoli
41	25	walk out to Gangi
42	26	walk out to Ghuttu
43	27	Ghuttu to Rishikesh
44	28	Rishikesh to Delhi
45	29	visit to Agra and the Taj Mahal
46	30	arranging return freight, saw LO, flight
47	31	arrived London and Aberdeen

NEW DELHI

We met at Heathrow on Saturday the 15th September and flew to New Delhi by Air France, arriving early on Sunday morning. We checked into the Rajdoot hotel and spent most of the day recovering from a hectic week and the jet lag. The Rajdoot Hotel is a 4 star with swimming pool and air conditioning. It proved very comfortable and the food was of a high standard. The cost was about UKL 14 per night.

We went to the IMF on Monday and waited for them to open at 10:00. Things moved slowly and it transpired that there was a shortage of liason officers. We checked that all members of the expedition were listed as climbers, so that the trekkers could go onto the foot of the mountain. We decided to stay at the IMF as it was cheaper and handy to keep pushing for the clearance to be completed. The gas canisters were waiting for us at the IMF, having been sent dangerous cargo by Expedition Freight Ltd., however they were not locked away and could have been taken by another expedition.

We bargained with a truck driver and travelled in the back with all the accompanied baggage to the IMF. Incidentally it is useful to have a map showing the location of the IMF as most taxi drivers do not know where it is.

Gordon and Charlie went to the freight agents for the 600kg of food and equipment we had sent and arranged for customs clearance which took about a day. The freight was delivered the following day. Storage charges were very expensive in the warehouse.

We changed UKL 250 each, mostly at the American Express office.

On Tuesday Andy arranged a bus to Rishikesh, which lies 6 hours north of Delhi at the foot of the Himalayas, for only Rs 2000. We found that the IMF bunkhouse was becoming too hot now that the rain had stopped. We would probably not stay there again. We were dissapointed that the library was closed.

Incidentally, the Indian telephone system is very poor and most business is done in person.

The liason officer was called up 1 hour before we were due to leave on the bus on Wednesday. He was a student who would be joining the army after his exams. and proved ideal for the job of liason officer. He checked his gear that we had provided and luckily the boots fitted.

We then proceeded to Rishikesh, mostly in the dark with the driver overtaking everything in sight from bullcarts to unlit trucks, taking only 7 hours.

RISHIKESH TO BASE CAMP

We were not sure if porters would be available at the roadhead at Ghuttu so we enquired about porter agencies in Rishikesh. We found none, but decided against making a detour to Uttakashi which, being en route to Gangotri, is the main centre for porters and trekking agencies.

We arranged to hire a bus to Ghuttu the next day for Rs 1700. We made an early start and continued on the winding mountain roads to Tehri where we made a surprisingly brief stop to check with the local administrator. He confirmed that porters were available at Ghuttu, but there was no telephone. The journey continued on narrower roads which would not be advisable to travel at night. We came across a 30m long landslide with an almost vertical drop from the road into the river 100m below. We exited the bus and the driver attempted to cross the loose gravel, almost getting stuck half way. He managed to reverse out and we waited for 3 hours while a road gang cleared the slide properly. If the road is clear, it is about 7 hours from Rishikesh to Ghuttu.

At Ghuttu we were approached by the local mountain guide, Chandra Singh, who was able to arrange 46 porters for the following day. Rates were as follows:

low altitude porter-	Rs55 per day
cook	Rs80 per day
mountain guide	Rs130 per day

We eventually agreed on 5 days up and 3 days down. This was more than indicated in the trekking guide and it transpired that 4 days would be appropriate. Mules were hired for food. The food cost Rs2300. We cooked for ourselves on the walk-in using the specially packed walk-in barrels. This is important as you have to pack quickly in the mornings before the porters take their loads.

The path was very good and enabled more than the normal number of km to be covered each day. We camped at a partially built rest house at Reeh, in the school house at Gangi, at a wooden shelter at Karsoli and at Simla. The porters must have been very cold at the last two camps. Heavy rain fell at Kharsoli, a post-monsoon shower. The final day was very short (1 hour!) but we managed to arrange for 18 loads of food, equipment and gas to be carried for 2 hours to the edge of the glacier.

We paid the mountain guide and at last we were on our own to contemplate the mountains. The L.O. left soon after, as he had to take his final exams in Delhi. It was a fine base camp and we soon had the cooking tent up and everything organised.

BASE CAMP, ADVANCED BASE CAMP AND CAMP 1

The first day we found a reasonable way down the lateral moraine to the Phating glacier. We crossed the glacier, which is mainly covered in moraine, to the west side and carried light loads up to a flat area of ice where we set ABC below the south face of the mountain at 4460m. Once we knew the route, the trip to ABC took 3 to 4 hours up and 2 to 3 hours down. After another load carry we had a rest day before camping at ABC for the first time.

The next day we climbed up moraine and a broken buttress which proved to be a reasonable line in contrast to the glacier to the right which was steep, riddled with crevasses and threatened by seracs. The second day on the buttress we reached camp 1 at 5550m. The site had been used by an Italian expedition in 1990 and 1986. We had not known of the Italian attempts to join the normal west ridge from the south until we reached India. We fixed 5 ropes on the steeper sections and completed the load carrying before returning to BC, feeling the altitude, but happy with the progress so far.

Martin and Jane had walked up the ridge south of BC and had fine views of Thalay Sagar.

Two days later we were at camp 1. We followed an obvious snow ridge to reach a flat area of the glacier on the right, above the seracs. We made a gear dump at about 5900m, making 2 or 3 carries. The snow varied from good to bad. Andy had a cough and we were all quite tired, so another rest at base camp was essential before committing ourselves to the headwall.

SUMMIT ATTEMPT

On the 12th October we reviewed the gear, food and gas on the mountain and set off for ABC or camp 1. Unfortunately we were delayed by a heavy snowfall of 30 hours. It was hard going carrying the porta-ledges up to camp 1. The next day we climbed up to 6250m and left a rope in place before returning to camp 1. We camped at camp 2 the next day, setting up the porta-ledges from a rock slab. It was awkward and cramped in the tents when they were not suspended vertically.

Jill and Stuart had left base camp to do a trek up to Kedarnath via Ghuttu.

After a cold night we continued by temporarily fixing our 5 ropes to reach the base of the headwall at about 6400m. The weather was deteriorating and by the time we had carried and hauled the very heavy packs up, we were being buffeted by high winds and spindrift. As darkness fell, we erected the porta-ledges. Charlie was feeling the cold and Keith got frostbite on his fingertips, partly due to holes in his gloves which had developed during the day. It is impossible to put up a porta-ledge with mitts on!

We managed to melt a small amount of water using hanging stoves in the tents. By dawn the snow was hitting the face above and then avalanching onto the tents every few minutes. Opening the tent zip caused the tent to start filling with snow. We were becoming like sardines with the pressure of the snow burying the tents. The radio calls to base camp were comforting.

At about 11:00, the storm eased and we decided to go down. This was not an easy decision for us. We did not know how long the storm would last and our sleeping bags were damp. It was very difficult to melt water. Keith also had to consider his frostbite.

It was quite difficult to put on plastic boots and pack sleeping bags and essential kit into the haul bags for the descent. After 100m of abseiling the weather started to improve, but we were too tired to return. The flat area of the glacier was a struggle with snow reaching waist deep. On the descent of the snow ridge, two small slab avalanches were triggered ahead of us. At dusk we descended the 70m of loose rock above camp 1. This had become very tricky with a covering of fresh snow. Gordon had recovered and we met him at camp 1 and rehydrated. The storm was over and we had a good sleep.

The next day was spent recovering and waiting for the snow to consolidate. High winds above 6000m were indicated by the spindrift off the ridges. We had no time or energy for another attempt and the weather had become colder. We decided to end the expedition and clear the equipment from the mountain.

RETURN TO BASE CAMP AND THE ROADHEAD

Jane, Martin and the cook left base camp for the roadhead. They had tried to leave earlier, in time to visit Gangotri, but they had got lost in the storm.

It took one day to retrieve the tents and climbing gear from camp 3. Snow conditions were poor, but the headwall was surprisingly clear of snow and we continued to doubt our original decision to descend, particularly in view of the earlier avalanche danger. Another day was spent ferrying loads down to the bottom of the fixed ropes on the lower buttress. We reached base camp the same evening after a dangerous climb up the loose and snow-covered lateral moraine in the dark with no plastic boots. The snow was still almost down to base camp. Another very heavy carry from ABC saw the mountain clear.

The porters arrived the next day and we cleared base camp so that there was almost no sign of our occupancy. We managed to sell the base camp tent for a nominal sum. There was plenty of spare food to give to the 17 porters. We had asked for 20, so their loads were heavier than expected.

The first day we reached Karsoli, only 4 hours walk for us, but 4 porters were missing by nightfall. We insisted on the guide to go and look for them, for which he had to borrow our headtorch. We did not have the barrel with the cooking equipment, so we put a pan on the fire with the porters. Eventually all the porters arrived. The second and third days went more smoothly with a stop at Gangi. The temperature was very pleasant and the afternoon build-up of cloud was very slight. Jane and Martin had walked out in only two days, but this would be very difficult for the slow porters.

After some argument about a deposit we had already paid to the guide, Chandra Singh, we settled the porters wages. We would probably use a reputable agency next time. We sold most of the barrels, chairs and spare batteries in Ghuttu.

RETURN TRAVEL

We rented the local truck to get to Rishikesh and of course shared the load space with a ton of potatoes and half the village. Things were looking doubtful when we stopped with increasing frequency to clear the fuel lines. Eventually, just past Tehri, we decided to unload our gear and hail the first bus to Rishikesh. We only paid the driver Rs 600 instead of Rs1500. Luckily a bus with luggage space on the roof arrived within minutes and we proceeded along the windy road to Rishikesh, arriving just after dark (11 hours from Ghuttu). The bus was packed and would be quite uncomfortable in hot weather. We could have got the local bus from Ghuttu instead of the truck.

We stayed at the Basaar hotel again and had a good meal and shower. Jane and Martin had already arranged a bus hire for the following day for Rs 2800 to Delhi. They had decided to do this because the hotel managers were warning of roadblocks and fighting due to the religious and political situation. They said it was safer to wait until dusk because the road was blocked, but it would be clear later. This may have been an elaborate ploy to keep us in the hotel. We waited until 15:00 and then departed after getting the bus permit sorted out. We arrived at 20:00 and met Jane and Martin in the Rajdoot hotel. Jill and Stuart had already flown to the UK.

The following day we caught the train to Agra (3 hours) to see the Taj Mahal. The final day was spent at the air cargo building arranging to fly 3 barrels via Air France. The airline and an assistant who picked us up were very helpful. This was in contrast to the customs department who initially would not let us export the climbing equipment because we did not have the customs import duty exemption stamped in our passports. It would have been OK if it was just personal effects. We wrote a letter explaining the situation and they let the freight go. A patient approach is needed when dealing with the authorities in India.

We gave a lot of gear to the L.O. because he had done an excellent job and we believed he and his friends would find it extremely useful. Decent gear is not available in shops in India. After having a meal with the L.O., we left for the airport. Gordon and Keith flew onto Aberdeen using an APEX ticket on BA. The others got the train to the Midlands.



THE SOUTH FACE OF THALAY SAGAR



PORTA-LEDGES

AIR TRAVEL AND AIR FREIGHT

Brightways Travels, a London agent for Air France, offered us 8 tickets with a 33kg luggage allowance for UKL385 per person. The seats were secured several months ahead with a booking fee. Full payment was made about a month before flying. The tickets arrived at the second attempt with no other information. The 33kg was put onto the system by Brightways 3 days before travel.

70 gas canisters, mostly 250g size, were obtained directly from Epigas at discount. These were then taken to North Wales for onpass to Expedition Freight Ltd. They packed the gas according to the dangerous cargo regulations and dispatched it to Delhi. When we arrived it was waiting for us at the IMF. The cost was about UKL203. We amalgamated our gas with two other expeditions to reduce handling fees, but this was more trouble than it was worth and involved more risk.

The remainder of the freight, about 600kg, comprised barrels of food and gear. This was sent via Rowco Ltd, a freight agent based in Aberdeen. Gordon's employer, Geoteam UK ltd, and Rowco Ltd generously covered the freight cost of about UKL600. The weight was more than we budgeted and could be reduced by sending less tinned food. The freight arrived a few days before we arrived in Delhi so we had to pay substantial 'storage charges' to the agent Gina and Co (about UKL140). The equipment was cleared through customs after visiting the IMF and obtaining their duty exemption bond. Note that several of the barrels were checked by the customs and then resealed.

The barrels were obtained free from a factory. They had been used for food, including pickles, so they had to be cleaned. They were slightly square and had a capacity of 80 litres. They were ideal for the job.

The return freight was only 90kg. This had to be sent by the same airline as we were flying. Air France were very helpful, but it took all day to get through customs because we had no record of the mountaineering equipment exemption bond in our passports. The cost was UKL1.30 per kg plus handling and customs fees.

PHOTOGRAPHY

Kodak provided our films at their normal expedition discount rate (about 25%).

Most films were Kodachrome slides (64 and 25), with a few Kodacolor 200 print films.

A selection of SLR and compact cameras were used. Pentax SLR cameras were popular, being lighter than average with a good reputation for reliability. Above camp 1, 2 Pentax SLRs and a compact were used.

Two super 8 cine cameras were used:

Nizo Integral 6x zoom, sound, weight 1.7kg with case

Canon 10x zoom, sound, variable record level, weight with case 2.3kg

The Nizo was taken to the high point while the Canon was taken to camp 1. The Canon worked well, even in the cold, but was quite heavy to operate. The Nizo suffered from a very stiff focussing ring and the microphone wires became detached inside the boom for the last 2 films. However it handled very well in the conditions. Two tripods were taken, the lighter one being taken as far as ABC.

For improved quality, the cameras were run at 24 frames per second. This uses more film and battery condition becomes more critical. A total of 35 films were shot (about 3 minutes each) and these will be edited into a sound film lasting about an hour.

Additional sound was recorded with a Tandy stereo cassette recorder model SCP-29. This is the size of a Walkman and was ideal for recording conversations and background sounds. It was taken as far as camp 1.

EQUIPMENT

BASE CAMP

It was decided early in planning the expedition to ensure a reasonable level of comfort at base camp, particularly as the days are short in October.

A second hand frame tent and light folding chairs were purchased in the UK and transported out to India. The total cost amounted to UKL160 including portorage which is less than a pound per man-day. This equipment, together with the food, ensured that morale was maintained during periods of bad weather and everyone agreed that the expense was well justified.

Experiences with locally manufactured stoves on previous trips persuaded us to take reliable paraffin stoves from the UK for base camp cooking. All were serviced before leaving and performed faultlessly, despite the over-enthusiastic pumping of the cook. Prestige kindly supplied us with a Rise-n-Time pressure cooker which proved invaluable, halving cooking times and enabling us to cook every type of pulse and potatoes easily.

The Indian paraffin lantern proved to be troublesome, difficult to light and sometimes dim. It is advisable to take a large number of spare mantles, or better still a Tilley lamp!

MOUNTAIN

All cooking above base camp was done using Epigas burners. The "Alpine" stoves were used at ABC and worked very well in the tent alcoves. On the mountain we used "Micro" burners specially installed into Markhill Stormy hanging stoves. These burners have a very powerfull flame and we expected them to be little affected by the wind inside the hanging stove. However, even at sea level, the flame blew out when turned up due to oxygen defficiency. A large number of additional breathing holes were made, but at altitude the slightest wind would cause the flame to "lift off" and go out. However the stoves performed reasonably in the hanging tents. The burner was somewhat incompatible with the tower stove. By coincidence, all three of our stoves became blocked the same day at camp 1. We cleared the jets with a pricker, however this could have been rather a serious situation. We would recommend the "Alpine" burners except when on a very steep wall.

Two types of Epigas cartridge were used: The 250g size contained a mixture of 90% butane and 10% propane, which is very efficient to about -10C. Below this temperature, the 100g size, which has 40% propane is recommended.

All batteries were kindly donated by Kayton Vidor and Ever Ready. There was no detectable difference in performance between the Vidor Powercells and the Ever Ready Gold seals. Both types were used to power the headtorches, Walkmans, radios, loudspeakers and cine cameras, working quite well down to about -10C.

The main items of "big-wall" equipment purchased were two porter ledges together with flysheets. Each was just capable of accomodating two people lying "top to tail", suspended from a single point. The ledges were manufactured by A5 in Arizona and imported by 5.15 in Bristol. The standard of workmanship and design of the ledge was excellent and they were relatively easy to erect. However the pull-over flysheets were totally impractical with no zips or means of securing at the base. Two days were spent installing doors and straps. On the mountain the tents worked well and withstood the harsh conditions including continuous spindrift avalanches.

"Trango" inners were obtained for plastic boots. These enable rock climbing to be done to a high technical grade. Keith did not take normal inners and had no problems with the "Trangos", although they are slightly tighter than normal inners.

The following equipment was carried to the high point:

- 2 full sets of Friends
- 2 sets of wires
- assorted nuts
- 40 pitons
- 3 ice screws
- 2 ice stakes
- bolt kit
- lightweight bolt kit
- off-width device
- skyhooks
- 3 9mm climbing ropes
- 1 9mm static rope
- 1 10mm static rope
- lots of tape and slings

Personal equipment:

- plastic boots with "Trangos" or rock boots
- 2 ice tools
- harness, etriers and butt bag
- jumars

ALTIMETER

A Pretel altimeter was kindly lent to the expedition. These digital altimeters have recently come onto the market and this was a good opportunity to test the instrument. It proved easy to read and very sensitive, changing by 1m increments. However this is academic when daily pressure changes due to the weather are over 25m. The storms did not seem to be predictable from the altimeter, although it may be possible in more experienced hands. Absence of spot heights meant that altitudes were approximate, but it was still very useful to gauge progress. The battery, which is supposed to last 5 years, ran completely flat in spite of the auto-off feature. We did not have a spare 9v battery on the mountain so two 4.5v headtorch batteries were used to power the instrument. This was very fiddly and could only be done in the tent. We have had no feedback from the supplier to date on the battery problem. The altimeter is not waterproof and it could be protected with sealer. The built-in thermometer was slow to respond to changes in temperature, but seemed reasonably accurate.

FOOD

Food is very important for morale and considerable effort was made to provide a varied diet at base camp and on the mountain.

We calculated on 10 people at base camp and 8 people on the mountain or trekking.

BASE CAMP FOOD

Due to the difficulty of locating quality food stores in India, it was decided to freight out much of the base camp food from the UK with the equipment and mountain packs. This consisted mainly of tinned meat, Batchelors group packs, biscuits, cereal cakes and nuts. The staples obtained in Delhi included rice, dahl, potatoes, onions, atta, ghee, oil cornflour and tomato sauces. The base camp food was quite good and many interesting meals were prepared amongst the cook and ourselves. At the end of the trip we had some food left which we gave to the porters. It would have been better to take less UK items and more rice which the porters prefer in any case. If the LO had been at base camp all the time, more of the food would have been used. We had slightly too much dried milk, instant puddings, jam, honey, tinned meat and potatoes.

FOOD PACKS

180 man-days worth of food packs were prepared. These comprised 40 "heavy" packs (c 1450g), 10 "medium" packs (c1250g), 32 lightweight" packs (c1200g) and 8 "superlight" packs (c850g). The packs were quite appropriate, although naturally some flexibility is needed in how a pack is used, depending on when the day starts and whether people are climbing or resting. Some people ate more freeze dried food than sweet bars and vice versa.

They were packed in the UK which took about 3 days. Tough self sealing bags were used (A4 size). Much of the freeze dried food was obtained from the US. The quality of some of the packs, particularly "Natural High" approaches that of normal food. Each pack costs 4 or 5 dollars, but makes 2 reasonable portions. By contrast, the "Raven" food did not reconstitute properly and tasted bland. The exception was "Raven" mashed potato which was very popular and very light for the amount it makes. The "no cook" freeze dried packs are easily prepared at high altitude by adding the measured amount of water and then placing the bag in the pan of boiling water for 10 minutes of simmering.

Although heavy, a lot of sweet bars were taken for variety. The chocolate was mostly melted until we reached base camp. The "Country Fitness" bars were ideal. "Tesco's" bran biscuits and "Simmer's" expedition savoury biscuits were good for spreads and cheese. Breakfasts normally included "Alpen" or "Hawaiian Crunch". "Vessen" pate was very nice, but froze higher on the mountain. Puddings were included in most of the packs, but the "Raven" varieties were not eaten much. "Hot Crunch" is very good, but needs simmering at altitude.

DRINKS PACKS

The 30 drinks packs were intended to last at least 6 days for 2 people. They comprised 6 coffee, 6 Choc-a-Mint and 18 sugar sachets, 6 tea bags, 2 herbal teas and 12 Drinkmaster (orange etc) . One container of "5-pints" went with each pack for drinks and cereal. This was supplemented by more herbal teas. Even at altitude very little sugar was used on the trip, but it is a good standby if food runs out. Charlie French does not drink tea or coffee and only used Drinkmaster. Normal tea is difficult to make properly at altitude, hence the popularity of the herbal teas. Cuppa Soups were put into the food packs. The ASDA "special" were quite good.

A list of companies who donated food is included in the acknowledgements.

CONTENTS OF FOOD PACKS

HEAVY A N=12

 1450g
 1 HAW. CRUNCH
 2 SAV BISC
 2 CHOC BARS
 6 CEREAL BARS
 1 TIN FISH
 1 HOT CRUNCH PUD
 2 SOUPS*
 1 USA*

HEAVY B N=18

 1400g
 4 ALPEN
 2 SAV BISC
 4 CEREAL BARS
 2 CHOC BARS
 1 CHEESE TUBE
 2 FUDGE
 1 SMASH
 1 RAVEN
 2 SOUPS*
 1 HOT CRUNCH

HEAVY C N=10

 1350g (5 PAIRS)
 1 SAV BISC
 2 CF BARS
 2 CHOC BARS
 4 CEREAL BARS
 1 PEANUTS
 1 RAVEN PUD
 1 HAW CRUNCH
 OR 1 PLUMROSE SAUS
 1 USA*
 2 SOUPS*

LIGHT A N=10

 1200g
 1 HARVEST CRUNCH
 1 PATE
 1 SAV BISC
 2 CF BARS
 1 DEXTRASOL
 2 CHOC BARS
 2 CEREAL BARS
 1 MASH
 1 RAVEN
 1 RAVEN PUD
 2 SOUPS*

LIGHT B N=10

 1200g
 1 CEREAL
 2 SAV BISC W PATE
 2 CF BARS
 1 DEXTRASOL
 4 CHOC BARS
 2 CEREAL BARS
 1 USA*
 1 PUD USA*
 2 SOUPS*

LIGHT C N=12

 1150g
 1 CEREAL
 1 SAV BISC
 2 CF BARS
 4 CEREAL BARS
 2 CHOC BARS
 1 SMOKED CHEESE
 1 USA*
 1 PUD*
 2 SOUPS*
 1 DEXTRASOL*

MEDIUM A N=10

 1250g
 4 ALPEN
 1 PEANUTS
 1 SMOKED CHEESE
 2 CF BARS
 2 CHOC BARS
 2 FUDGE BARS
 2 CEREAL BARS
 2 SMASH
 1 RAVEN
 2 SOUPS*

SUPERLIGHT N=8

 850g
 6 CEREAL BARS
 2 CHOC BARS
 1 SAV BISC
 1 SMOKED CHEESE
 2 TRIPLE BARS
 4 SOUPS (IN)
 1 SMASH
 1 PUD
 1 DEXTRASOL*

MEDICAL

At various times from Rishikesh to camp 1, all members had a cold, cough or headache which was difficult to shake off in spite of liberal use of Paracetamol and cough sweets. This was unrelated to the altitude.

Diarrea affected Charlie and Andy several times. Keith and Gordon were not affected. The others were only mildly affected. This difference seems to be related to the person as the food eaten was very similar.

Charlie got bitten by fleas in Ghuttu and the bites became infected. A course of antibiotics gradually reduced the infection.

Jane was hit by a falling stone and suffered cut fingers and bruised nails. This was strapped up for the remainder of the trip.

Keith suffered frostbite at camp 3. This was caused by the holes which developed in his woolen gloves during the day of the storm together with handling the porta-ledge poles. Three digits were worst affected half way down the nail. The fingers were warmed in the mouth as soon as the tent was up. Blisters developed after 2 days and care was taken to avoid infection. The skin grew back underneath and after a month they were almost back to normal.

Gordon contracted laryngitis at camp 1 and had a very bad night of difficult breathing. He was able to descend unaided to base camp in one day. Antibiotics were not taken until the diagnosis was made by Jane at base camp. It followed that he was unable to join the summit attempt, but had recovered sufficiently to help clear the mountain.

Everyone acclimatised to the altitude very well, although breathing was still a considerable effort on the mountain. The hardest section was just below camp 1 in terms of acclimatisation. Some loss of appetite was noticed initially at camp 1. The higher people had been on previous trips, the easier they acclimatised. We had just sufficient rest days to avoid exhaustion. This together with a good diet, prevented serious weight loss. We returned to Britain fitter than we left, which is not always the case on expeditions. People chose not to take Diamox, although it was available.

GEOLOGY

The Himalayas were formed by the collision of the continental plates India and Asia. The Indian plate moved northwards and the intervening ocean was consumed underneath the Asian plate. The main mountain building episode was during the Miocene when many of the sediments were heated at high pressure which formed crystalline rocks such as schist and gneiss. These rocks form the bulk of the terrain in the Thalay Sagar area. Igneous rocks, formed from molten rock, intruded the area at several stages. There is an earlier phase of amphibolite intrusion and a later phase of granites after the schists and gneisses had cooled. These granites are quite spectacular, forming the south face of Thalay Sagar and other high cliffs on Meru, Shivling and Bhagarathi. The granites are unusual in that the base of the intrusion can be observed. The Thalay Sagar granite appears to be a giant sill about 500m thick which contains only a few xenoliths (fragments of country rock). This is consistent with intrusion in tensional conditions rather than during the earlier compressional episode.

Samples were collected from along the Khatling Glacier all the way up to the high point at the foot of the granite face. A reconnaissance geological map of the area was produced. The samples were sent to Oxford University to aid a study being conducted by Dr. Mike Searle into the geology of the Himalayas including their rate of uplift at various stages.

ACCOUNTS

INCOME - UK	UKL		totals
Nick Estcourt Award	1000.00		
BMC	800.00		
MEF	800.00		
Kyle MC	20.00		
T Shirt Sales	1659.00		
Geoteam and ROWCO	900.00	=	5179.00 UKL
Members contributions (8)			4860.91 UKL

EXPENDITURE -UK	UKL		
Porta-ledges	400.00		
Climbing equipment	149.45		
Katodyne water filter	130.00		
Radios (3)	567.00		
Base camp tent and chairs	174.91		
Gas canisters and stoves	125.91		
Flights	3080.00		
Gas freight	203.02		
Air freight	900.00		
Peak Fee	434.17		
Insurance	744.00		
Film (including cine)	1105.22		
Food	907.05		
USA freeze dried	188.30		
Misc	172.96		
T Shirts	734.92		
Visas	184.00	=	10200.91 UKL

INCOME - INDIA

Members contributions	3032.92 UKL
Sale of excess food etc	75.00 UKL

EXPENDITURE - INDIA

Accomodation	Rs 24752	
Transport	Rs 9400	
Porters	Rs 20980	
Cook	Rs 2000	
Freight to UK	Rs 10300	
Food and meals	Rs 24038	
Airport tax	Rs 2400	
Equipment	Rs 2500	
Taxis	Rs 3000	
Visit to Agra	Rs 3800	
Misc	Rs 2500	= RSs 105670

exchange rate 34 Rupees to one pound = 3107.94 UKL

TOTAL EXPENDITURE OF EXPEDITION = 13308.85 UKL

TOTAL INCOME (excluding members contributions) = 5254 UKL

ACKNOWLEDGEMENTS

The expedition members are very grateful to the following companies and organisations which provided support.

AWARDS:

Nick Estcourt Award

GRANTS:

Mount Everest Foundation
British Mountaineering Council

SERVICES:

ROWCO International Freight Services Ltd. and Geoteam UK Ltd for the substantial cost of freighting barrels of food and equipment to Delhi.

FOOD:

G.R.Lane Health Products	Vessen Yeast pate and snacks
Country Fitness	oat bars
Mornflake	cereals and porridge
Batchelors	instant soups
Wander Ltd	Choc-a-Mint
John West	Tuna in sauces
Colmans	Sauce Mixes
Dextrasol	sucrose tablets
Drinkmaster	fruit drink sachets
Plumrose	vacuum packed sausages
Simmers	expedition biscuits (discount)

SUPPLIES

Ever Ready	batteries
Kayton Vidor	batteries
United Malt and Grain Distillers	Lochnagar Malt
Campbell Distillers Ltd	Aberlour Malt
Kodak Ltd	film at discount
Outside Shop, Hathersage	equipment at discount
Hawkins	Nitrax walking boots (supplied for Kunyang Kish trip)
Prestige	pressure cooker

HELP AND ADVICE

Rick Allen, Richard Napier, Graham Little, Dick Turnbull, Mike Searle, Expedition Freight, British Mountaineering Council, ROWCO Ltd.

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