14 *Sledging on the ice-cap below Cerro Largo* This and next two photos: C. H. Agnew

15 *Camp at the snout of the Andrée glacier*

Crossing the Hielo Patagonico del Norte

Captain C. H. Agnew

At midday on 11 February 1973, three members of the Joint Services Expedition reached the snout of the Steffen glacier, completing the first N to S crossing of the Hielo Patagonico del Norte. Although this was only a small part of the expedition's primarily scientific programme, it was the first venture into the SW corner of the area.

We were landed in Kelly Inlet, by the Chilean Navy, at the beginning of November 1972 ready to spend five months exploring and working in the region. The inlet, with steep heavily forested cliffs falling into the sea, appeared a very inhospitable place and we took two hours in a rubber dinghy to find even a small bit of flat jungle which could be cleared for a Base Camp. After three days hard work, in rain, a muddy space had been cleared for the tents, small hut and 12 tons of stores. Scientific work now started.

The northern ice-cap of Chile, lying at the same latitude S as Switzerland is N, is 2700 miles square, with snow-fields above 3000 ft from which large heavily crevassed glaciers drop to sea-level, pushing through very thick temperate rain forest. The weather is notorious. The objectives of the expedition were to map the region, to study the glaciology, geology and natural history, to attempt to climb Mount San Valentin (3876 m) and to make the first N to S crossing (Shipton having completed the first W to E crossing in 1963–4 (*AJ 69* 183).

Our first priority was to find a route up to and a suitable camp site on the ice-cap to which HMS *Endurance* could deliver stores by helicopter, during her projected brief visit in early December. Optimistically, I set off with two others to do this in a couple of days. A boat journey to the head of the fjord, a bog, five hours in one mile of jungle and an impossible ice-fall ended this reconnaissance. A couple of days later I tried again using a 'short cut' to the Andrée glacier, which took two days instead of five hours. We spent three days on the glacier, but only succeeded in crossing the two-mile width in nine hours, to find the other side almost impossible. The glaciers of Patagonia are very heavily crevassed, because they are fast moving. When a crevasse opens, the sides immediately ablate away, leaving a very narrow ridge, so a party has either to balance along the ridge or front-point up and down the sides. On the Andrée glacier, the ridges were always at right angles to the line of travel.

Having by trial and error found the route to the snout of the Andrée glacier, we spent seven days clearing a route through the jungle over which it was relatively easy to man-pack loads. After this, I made another attempt to reach the elusive ice-cap. This was a race against time as HMS *Endurance* was almost due. Three of us managed to get to the ice-cap after four days, where we found a

suitable Advanced Base Camp. The route we eventually established was difficult and tortuous, but could be done in times varying from ten hours to three days, depending on the route taken through the ice-fall.

When HMS *Endurance*, the Royal Navy's Antarctic ice-patrol ship, arrived on 8 December, we had the worst weather to date, but despite this her helicopters, flying in snow and gale, moved 4 tons of stores up to the Advanced Base Camp. We then spent the next month carrying a survey line, via six triangulation stations to the ice-cap. The work was hampered by bad weather and made miserable by load carrying, but on Boxing Day we all assembled at the ice-cap camp.

From here we made our attempt on Mount San Valentin, but atrocious weather, and an unprecedented snow-fall, made the ascent impracticable. We sledged to the base of the mountain in four days, climbed 2500 ft into an ice-fall in white out, and then retreated. At the base of the peak we then had a two-day blizzard after which we tried again. This fared little better than the first attempt, as we abandoned it on the upper slopes because of the avalanche danger. We all returned to Advanced Base Camp, from which parties worked until February. At the beginning of this month the expedition evacuated the ice-cap to continue working from the Kelly Inlet on the other glaciers.

Sgt Peter Breadmore, Cpl John Banks and I remained, as we were to make the crossing. Our planned route, over a distance of 120 miles, lay across the ice-cap, down the 'corridor' to the head of the Colonia glacier. From here we were to use a 2200-m col, taken by Shipton in 1965 to gain access to the upper basins of the Steffen glacier. The plan was then to descend to the snout of the glacier before returning by a different route to the Benite glacier, on which the glaciologist was working—and so to the Inlet. In all we were allowing ourselves 28 days for the trip, with the main problem finding the cols if the weather was bad.

Having spent a couple of days helping the others to carry loads down the Andrée glacier, we set off on our journey. It was drizzling hard, but the first two hours to a small dump were relatively painless. Here we collected food, tent and other stores, all of which brought the weight up to 1000 lb. We were almost unable to move the sledge, making very slow and difficult progress in the soggy snow. By 4.00pm, when we camped, we had covered only another two miles. We made a rapid reappraisal of what was essential and dumped over 100 lb.

The next day was fine, with no cloud or wind. It was almost a pleasure to bowl along with the sledge running easily. We were pulling a 12-ft Nansen, from a fan formation with the sledge loaded with the Arctic pyramid tent and other stores. The sledge proved a great success even in soggy snow, except when doing violent manoeuvres in a crevassed area and then it would not turn easily.

It took three days to reach the foot of the 2200-m col we had to cross to gain the upper corries of the Steffen glacier. I knew there was a col; I had air photographs on which there were at least two possibilities, but I had no idea of the exact location. I was hoping for a clearance in the weather, so that we could

16 *Camp below Cerro Arenales on the upper reaches of the Steffen glacier*

at least get a bearing on the col. We were very lucky and the good weather continued, allowing us to cross without difficulty.

We had to pull the sledge up 2000 ft of steep terrain under a line of hanging séracs. This we did, throwing something off every time the sledge became immobile. We tried a long pulley system without success, then had to back-pack up in relays. By night time, after eleven and a half hours, we had everything on the very windy col, where we camped.

From here our intention was to climb Cerro Arenales by a rapid push up a new route. We studied the terrain, looked at the map and set off for the obvious col, which would lead to the upper glacier of the mountain. Unfortunately, when we reached the col we found the other side an 1800-ft sheer drop to the glacier. We would have to go round and up to another glacier. We returned to move our camp for another attempt the next day.

A depression moved in during the night, so we gave up the idea, and sledged off down the glacier in heavy rain. It was a long descent from 2200 m to 1100 m through two very large ice-falls. Negotiating the lower one was very tricky in the nil visibility, with some very large and long crevasses which forced us two miles across the glacier before we could find a way through to the lower snows. Here we camped near the ablation line, ready to move to the final camp site.

This we did the next morning, eventually camping on rock twelve miles from the snout at 1000 m. Our tent was precariously perched on a small platform we built above the glacier. We tried to call HMS *Endurance* on our small radio but failed, although it worked on our return from the snout. We had a small army set with us, primarily for safety, but as it was on the ice-cap, I, the radio operator, also had to carry it down.

From this site it took three days to reach the snout of the Steffen glacier. We walked down the dry ice, getting involved in the normal ice-falls, crevasses and pinnacles until on the first evening we camped on the far side. Another day and we were within walking distance of the snout, which we planned to visit and return from in a day. The last day was a great joy as we could walk on the scrub beside the ice; a very welcome change from the glacier. The green was marvellous, we saw deer, birds and finally our goal, the snout. As we reached the end a condor swept over to greet our arrival and stayed until we left its domain.

At the snout we built the inevitable cairn in which I left the usual message, before walking back to our camp. From here we returned in one day to the sledge.

The return journey was almost as exciting as the outward, as we had to negotiate new ground. The first problem was to find the place to drop into the Benito glacier, as we knew the head walls to be very steep. We found a place on the second day, which involved lowering the sledge 500 ft over the bergschrund. We used the normal mountain rescue techniques with karabiner brakes and skis as anchorages. Needless to say the sledge almost broke into the schrund and the anchors began to pull out. We descended the Benito glacier for two days with very heavy loads and crossed over the final dry ice to the camp at the snout. The glaciologist had been working here, but the camp was deserted with none of the food on which we had been gambling.

To get to the Kelly Inlet from here involved going through three miles of a gorse-like shrub, then crossing a 100-m wide glacier torrent on which the expedition had set up a boat ferry, but the boat was on the other side and I had to swim across to get it. Our troubles were not over, as the final mud flats, usually a walk, were covered by a very high spring tide and we had to wade knee-deep for three quarters of a mile. That night we were back with the others, having a good meal of tinned food.

So ended the first N to S crossing, a nineteen-day sledge journey covering 120 miles. It was only possible, and only done so quickly, because we were very lucky with the weather, which stayed relatively good throughout. Back in Base Camp, the expedition had a final month to wind up before HMS *Endurance* arrived to evacuate us. We spent the time on one or other of the glaciers, or working in the inlet.

The Hielo Patagonico del Norte is a wonderful place, with potentially some fine climbing. We were unlucky with the weather when we could have climbed and so have only one first ascent to our credit, but nevertheless the expedition was scientifically a success.

Members: Captain C. H. Agnew of Lochnaw yr, RHF (leader); Lt C S Gobey, RN; Lt M P N Sessions, RN; Surg-Lt A. D. L. Hoppe, RN; REA2 N. Francis, RN; Capt T. J. Zorijack, RE; Lt S. M. B. Harron, RAEC; Sgt P. D. Breadmore, APTC; Sgt J. T. Brewer, RAF; Cpl J. W. D. Banks, RAF; J/T L. W. Skelson, RAF.