Regrets at not having brought the stove for a morning brew are lost in the technicalities of traversing the ridge to the summit tower, which looks more difficult the closer we get to its easy angled but totally blank walls.

Were it not for the snow, I think, and were I wearing friction shoes, it would be such a simple slab problem, but as it steepens my crawling knees lose grip on the rock and I slither down to try again in another place. Phil's genius supplies the answer eventually, when I throw my hammer over the top and swarm up the rope to finally stand small, tired and scared on top of our first ever virgin summit.

With Phil next to me we contemplate the view for a full 5 minutes and then we are swarming down into the eye of the storm. Phil is below leading an abseil and I suddenly realize this is probably the last climb we will do together in South America. In the swirling mist I get flashbacks of Alpamayo, Ulta, Illimani and all the other hills we made together, and when I get to his ledge he tells me he's thinking of California. It is the end of the trip after all.

Summary
First ascent: 7 December 1976 The Mummer via the South West Dièdre, Phil Dawson and David Cheesmond, Peruvian and Patagonian Andes Expedition.

A first ascent of Pruppoo-Brukh (c 7000m)

Japanese Railway Workers Karakoram Expedition

'From an untouched glacier to an unclimbed peak'—this had been our dream and was the purpose of our expedition. Our first problem was simply arranging an overseas expedition and, as usual, we encountered difficulties acquiring the necessary funds for the expedition. However, thanks to the kind understanding of the authorities and to the warm help extended by various friends, we could finally leave for Pakistan in May, 1977.

On 23 May, 13 of us arrived at Rawalpindi and stayed there for a week to make all the necessary preparations for the expedition. On 3 June, we flew to Skardu and then proceeded to Kahplu in 5 jeeps. After negotiating the hire of porters for transportation of equipment and food, the expedition started with 84 porters on 9 June towards Chogolisa W Peak (7000m) (temporary name).

At 6.30am, 14 June, the morning calm at Techumi was broken by a loud whistle as the first day of the approach march started. Even the Sirdar and porters had never been in this area before so the valley depths were completely unknown. We proceeded along a narrow track cut in the rock face and running alongside the lateral moraine of the Chogolisa Glacier in an increasingly rarefied atmosphere.

The advance party and the Sirdar decided on the Base Camp site, located in an open space surrounded by low bush with a tiny stream on the E side of the slope and a big moraine rising on the W side. Another stream arising in Afternoon Flat to the N of the Base Camp, flowed from N to S. This area is a part of the Chogolinsa Chimiku grass land and is 4150m high. The advance party arrived here at 11.15am followed by the other team members, high-altitude porters and 84 local porters

62 Namka Peak and Tasa (Chogolisa) glacier (This, next photo and map: Jap Railway Workers Expedition)

63 Pruppoo Brukh

carrying 2300kg of food and equipment. Each porter received payment of 360 Rs and then they all left, going back down the mountain. Next day it snowed and the temperature dropped significantly. The team members gathered in the kitchen tent and spent a leisurely morning. In the afternoon, the mail runner left the Base Camp with 52 letters and a telegram.

On 16 June, the actual climbing activity at last began. A reconnaissance party of 3 climbed over the moraine to the central part of Chogolisa Glacier and established a depot at 4500m, above the crevasse area. Starting the next day, transportation members and 8 high-altitude porters carried the necessary food and equipment to Camp 1 and above. This continued until 30 June. Simultaneously the party worked actively to find a route across the ice-falls and to confirm which mountain we were going to climb.

21 June. Camp 1 was temporarily established on the E side of the ice-fall and the Base Camp was moved up to 4300m, above the moraine. The slopes to the S and W of the new Base Camp were carpeted with beautiful flowers and water was easily available from several nearby streams and ponds.

22 June. Eight porters left and the Camp 1 members' activity started at dawn working from the right-hand side of the ice-fall to fix rope for 500m through the mass of continually opening crevasses and seracs. On the following day, Camp 1 was moved to a new location from which the route across the ice-fall could be seen. At the same time, transportation of food and equipment was carried out by members carrying about 15kg on each shoulder. At this point, we became certain that the peak we were aiming at was the snow-covered dome located on the E side of Camp 1 from which a huge glacier hung down to the SW, with the main ridge to the S having one rock-face and with a short snow-covered ridge to the W. At this stage the route was re-discussed with the leader who came up to Camp 1.

The rock-face going up to the W ridge and hanging glacier obviously was too dangerous at a higher altitude, especially as the glacier was prone to continuous avalanches. The gently sloping plateau area towards the S of the glacier seemed to be the only possible route, although even here there was also a possibility of avalanches at a higher level. However, this plateau did seem quite big. The leader ordered the team members to go up to the main ridge from which most of the local conditions should be seen. All the party felt re-invigorated and carefully extended the fixed rope to 1100m, fighting against the risk of collapse of the seracs and finally reaching the top of the ice-fall.

24 June. In the warm summer sun, the 300m ice-fall was safely negotiated by 12.30 and Camp 2 was temporarily set-up. From there, a route was established along the ice-wall where the risk of avalanche was anticipated. The route taken was through weird-looking crevasses and seracs reaching up to the 5000m level. This was torture for our bodies which were not yet sufficiently adjusted to the altitude. After fixing a rope for 100m along the smooth rock across the avalanche route, the party reached the outwash snow from the glacier and the high plateau came in sight. Unfortunately the plateau was full of hidden crevasses and crossing it was extremely exhausting. Camp 2 was moved to a safe area at 5250m on the 29th. A white peak could be seen to the ENE at this point but it was not certain if this was the 7000m peak we were aiming for or not.

On 2 July, the leader, who had come up to Camp 2, told members to minimize the amount of time spent here and to prepare for the attempt at the summit as soon as possible in order to avoid risk from the frequent avalanches. So everyone

became very busy ferrying the necessary food to the higher camps. At the same time reconnaissance activity continued from Camp 2. On 5 July, the party went over the crest of the glacier and looked at the Vigne Col on the left and gained altitude towards the E. Later Camp 3 was established on the Col. From this point, the Karakoram peaks could be seen running from N to W. The great range of Chogolisa lay to the E and the Concordia ranges were visible in the distance. Our objective lay in front of us to the NW. On 7 July, after the route was made up to the Camp 4 site, all the members assembled at Camp 2. Camp 4 was established on 10 July at 6400m as the attack camp. The final climb to the summit was thus 600m.

12 July. 400 m of rope were fixed along the core of the ice-fall to the summit. At the same time all the necessary food was carried up to Camp 4. The weather looked promising. The leader selected 2 members for the first attempt to the summit and they went to Camp 4 together with one supporting climber and the leader. Another 4 climbers were preparing for the 2nd attempt at Camp 3. Unfortunately one of the initial attack team was taken ill and the attempt was taken over by the 2nd team who were sent up to camp 4.

14 July. (This is a report written by Yajima, a member of the summit party.)

I woke up at 2.30am. The sky was full of stars. Kobayashi and Nakamura were roped together and I was roped with Anji. We left the tent at 4.30am. The first 300m could be covered without belaying. Then we replaced the fixed rope snow-bar and traversed for about 100m towards the right using jumars. The peaks of K2 and Gasherbrum appeared in a delicate shade of pink. We climbed 5m up on ice-blocks then traversed for 60m on the edge of a huge crevasse and crossed a snow-bridge. We fixed a screw piton into a huge ice-wall and climbed up vertically. After 2 pitches, we came across another crevasse which we could jump over. We fixed another screw piton and traversed about 10m to the right on an overhang and reached an ice wall. We climbed up this wall in one pitch then came to the snow-slope which led to the summit. Thick dark clouds started covering the 7000m peaks. The summit ridge consisted of 3 gentle domes and we arrived at the middle one. There was a sheer drop to the SE. At 12.10pm, we took it in turns to stand on the summit (6950m). Gasherbrum, Broad Peak, K2 and Mustagh Tower were all in sight. We called the leader on the radio. The supporting team was already at Camp 4 and congratulated us. We performed a climber's rite, sketched and took some photos of the surrounding ridges and peaks and then climbed up to another peak. After one and half hours at the summit we descended along the fixed ropes and arrived back at Camp 4 at 13.35.

15 July. Following the leader's instructions in the stormy weather which began at midnight, the summit party descended from Camp 4 to Camp 3 where they joined the Camp 3 members. They then broke camp and carried the sick member down to Camp 2. After struggling in fresh snow against hidden crevasses and with the constant risk of avalanche, they finally arrived at Camp 2 at 17.30. They were all completely exhausted.

By the 19th, the route was re-established across the ice-fall, and the doctor was sent up to Camp 2. The 2nd attempt was then started by Narita, Osawa and Kida under much more arduous conditions.

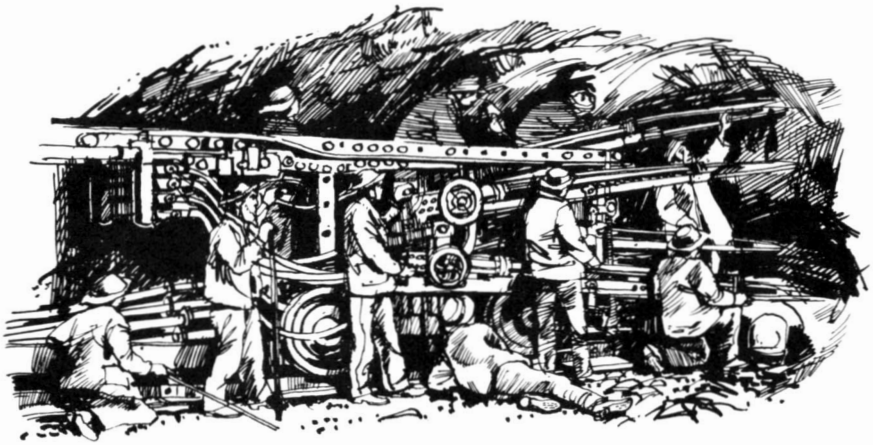
On the 22nd, the team left Camp 3 at 1.30am. The route was already well known by then. They gained altitude smoothly and reached the summit at 14.45 with no difficulty. However, the weather was not very promising, so they hurried down after taking some photos, arriving back at Camp 3 at 20.30.

On the same day, the leader and one member left the Base Camp for reconnaissance of the Chubugerdabusa Vesuten Glacier while 2 other members left for the Carupatoriwan Glacier. Climbing was concluded on 24 July on the return of the 2 reconnaissance teams to Base Camp.

In conclusion, we would like to point out that some of the peaks and glaciers are called by different names by local people, such as Chogolisa is called Chogolinsa and Trinity Peak is called Tasa. We took the opportunity to name the peak we climbed (which was temporarily called Chogolisa West Peak) Pruppoo-Brukh, (a mountain which has 3 important meanings) and the necessary procedures have been taken with the Pakistan Government authorities.

Members

Leader H. Akiyama (Electrical engineer), Second leader H. Miyahara (Engine man), K. Nakamura (Electrical engineer), M. Yajima (Service man), H. Narita (Conductor), M. Osawa (Electrical engineer), S. Kobayashi (Engine man), T. Nakamura (Electrical inspector), T. Mori (Electrical inspector), Y. Hosoki (Service man), A. Kida (Passenger service man), S. Anji (Passenger service man), T. Matsumura (Chiba University Hospital), M. Ratif (Liaison Officer).



65 The 'Perforatrice' at work in the Mont Cenis (This and next 6 drawings: P. Sharp)

Tunnels through the Alps

Paul Sharp

The Alps stretch across southern Europe in 3 main sections, the Western, Central and Eastern Alps. They occupy much of Switzerland and include the Bernese Alps, the Pennine Alps to the south of the Rhone Valley, and to the E, the Adula, Todi, Bernina and Rhaetian Alps. Further E is the Tirol and Austria. They form a barrier across the centre of Europe, isolating the N from the warmer S, keeping apart ancient cultures, giving individuality to northern Gothic and southern Classicism, allowing them to mix only with reluctance, delaying the surge northward of the Rennaissance.

However, they have never been entirely impassable. Well-known routes have existed since the dawn of humankind, usable as a rule only in the summer. The lowest pass is the Brenner, between Italy and Austria, which divides the Tirol. It is 1370m high and was used by the Romans and the travellers of the Middle Ages. A