numerous people. A scaling pole instead of bolts might be very useful if the personpower is available to carry it. Future expeditions should consider camping in the cave, preferably beyond the zone of freezing. Dry-suited cavers would not have the problem of crawling into wet or frozen wetsuits. To make significant progress upstream I think it will be necessary to use some, if not all of the above-mentioned techniques. The best approach of all would be to find an upper entrance. Maybe this year?

#### Humajalanta, Bolivia

by Tom Miller

The full moon had set and it was dark when the driver woke us up. The fifteen of us that were all that remained of the original fifty passengers climbed the sides of the truck and piled in on top of the bags of grain and cloth stacked in the bed. Sleepily I felt the truck move and begin the long grind up the mountainside to Toro-Toro.

Three long days before I'd left my small house-room in La Paz before the fierce Andean sun rose and started up the Avenida Ejercito, savoring the absence of the omniverous Bolivian taxis and the huge throngs that avalanched through the city by day. Then the trip had crossed the Altiplano in an amalgamation of trains, buses, pickups and trucks until now I was only five miles from my goal.

At each switchback the truck lurched to the edge of the narrow track and seemed to threaten a galloping plunge back into the immense valley of the clear Rio Caine. Only the day before we'd splashed through it, following its long, linear course and dodging the cuestas and hogbacks with the stream. Under a cloudless sky the dry wind scratched its way through the scanty trees.

My companions, nearly all Quechua Indians, kept up the singsong speech that was almost all that remained to them from the Incas. Their faded trousers, petticoats and blouses were of centuries past, customs abandoned as the rest of the nation marched a different road. Many of the women wore little black bowler hats, entirely incongruous with the South American setting, that some smooth-talking gringo seemingly had unloaded nearly a century before and set a fashion persisting to the present.

On the ground lay gray limestone slabs, barren of cover except for a scattered bush or tree. Not even a llama munched the sparse yellow grass. At the last turn the rising sun starkly contrasted the deep gash of a canyon cut into the rock and then we rose over the ridge to view its watershed.

Dry, treeless, barren, the mountainous rim of the valley rose past eleven thousand feet, sweeping upward with every rocky flank etched along the strike of the bedrock, particularly the limestone flatirons that undulated across the mountain faces.

The town of Toro-Toro was creeping from the shadow when we saw it and the little children raised a cry of greeting as the truck rolled

slowly down, across a languid brook and into the village. The bloated carcase of a horse was being dragged out as we rattled in, to stop at the town plaza. Facing the cool, tree-lined square was a stone church as rustic as the adobe houses that bordered the cobbled streets.

Shouldering my Kelty, I found my way to the house of a Professor Gustavo Miranda, whom I was told knew most about the cave I'd come to see.

Two hours later the entire educational system of the district had ground to a halt, but the professor had managed to impress a guide into service for the trip. With most of my luggage remaining at Professor Miranda's house, we set out on a well-worn path to a rise overlooking most of the valley. Far ahead, a half dozen quebradas, sprang from the arid mountains and united before plunging through the canyon gorge to the Caine.

Like tombstones, wedges of weather-sculpted limestone rose manheight from the ground, ghostly remnants of a once greater carbonate covering. We wound among them, pausing in the shade of a rare tree, then conquered the quebradas one by one. My guide, Rene, set a rapid pace that challenged me to keep up, weighed as I was with my caving equipment. The thin air of 9,000 feet seemed to come with difficulty and offered only the thinnest of shelters from the tropical sun.

Much of the area had been prepared for farming, and occasionally we saw a small hut in the far distance. At one knoll a one-room schoolhouse stemmed Rene's furious assault on the trail as he stopped to arrange a return meal for himself with the schoolmaster.

After nearly four miles we crossed into a stream gully and up the far side for another mile, raising small clouds of dust in the powdery brown earth of a ploughed field.

To my left a deep canyon scarred the mountain, reaching down toward us then vanishing as though swallowed by the earth. A few hundred yards farther it was plain that it had indeed been swallowed. A small creek flowed at the bottom, then disappeared into the mouth of a cave, sixty feet in diameter and directly beneath my feet.

This was Humajalanta, the "water from the sky". Rene and I sat by the entrance and ate our meal of tuna and bread, then entered the cave, hopping boulders to the other side of the stream. Here and there graffiti marked the passage of previous explorers. I gave Rene a candle, lit my own carbide lamp and followed him to the shadow line, noticing one date of 1935, the earliest yet. At the darkness he stopped and asked with some trepidation if I had brought any string! I mulled the question over for some while then decided it was time that I assert my authority with all the weight of my vast competence as an American caver behind me! "No," said I, "we don't need such foppishness" - or to that effect - and strode boldly into the jaws of Hell.

Rene's leadership had definitely run out of steam and I began to plot how to ease him out and to continue the exploration unhindered.

At first the way lay over and under large blocks of breakdown scattered about. These vanished as the passage grew smaller, to a width of only twenty-five feet and a height of fifteen. In the roof and jammed into walls were sticks, twigs and large logs, solemn reminders that we were only fleeting intruders. Deep, smooth-sided pools occasionally forced us onto side ledges where I had no worry except for the deftness

of Rene's sandaled feet, but we passed without mishap to a prominent fork in the main passage. Here, where the stream poured to our left over a series of high waterfalls, Rene suggested we go right. Soon, this route led to a number of roughly parallel passages of which we followed the largest, eventually to emerge nearly thirty feet up in the ceiling of a large room. By backtracking, we found another way down a conveniently angled slab of breakdown and emerged by the side of a deep green lake. For several hundred feet the ceiling had collapsed, impounding the water of the cave stream which roared into the lake at its head.

We made out way along the bank to a sharp bend in the room, then stopped where the lake met a sheer wall. Ahead the roof rose out of sight in a huge chamber. Clinging to the sides of huge boulders in the lake I managed to cross, then turned to light Rene's path. The floor of the new room proved to be large banks of sand cast into a giant meander bend of the cave. Above the high water mark a sign staked into the soft sand proudly proclaimed in Spanish the "Second Expedition of the Spelunkers of the Club Andino", the largest mountain-climbing group in the country. I had met one of the spelunkers, Wency Vargas Montero, at his house in La Paz and been given a summary of their activities in the cave. These included scuba-diving into new passages downstream and the finding of blind fish and masses of what sounded very much like gyp-sum wool.

The massive room ended in a long arched tunnel that wound among occasional boulders. A profusion of colourful speleothems adorned the previously barren walls. Dunelike, the sandy banks pressed the stream into the rock to the right then guarded it with a rim of saturated sand that quaked like jelly and sucked ominously at my foot that strayed too far.

We stopped in another spacious chamber where the first of the candles I had given Rene finally burned out. Seizing the opportunity, I suggested he might like to leave and within half an hour we were back at the entrance. Thanking him, I was perhaps over-generous in payment-for five hours and ten miles of trouble I gave him the equivalent of seventy-five cents, far more than the going price.

Unfettered at last I plunged back into the cave this time following the wet end of the first fork. The path led high up in a maze of phreatic tubes, some developed with slickensides for walls, the fault scratches still appearing fresh. Eventually I reached the top of the falls into the lake, a twenty foot joyride I declined to accept.

I used the bypass of the time before, crossed the lake again, and soon reached the room where I'd stopped previously. Only a short distance ahead was another fork, this one at the union of a second cave stream from the left. The swollen creek flowed downstream into a sinuous vadose slot, the lower half of which was filled with water. More promising was the spacious upstream fork of this new brook. Unfortunately I had only until the morning to return to Toro-Toro as the truck that provided the sole means of communication with the world outside left early the next morning and was the last for a week.

I decided to concentrate the remaining time upstream and followed the large breakdown passage until it too began to pinch in, and the passage split into wet and dry segments. I followed the larger, dry lead

through several more rooms containing bat colonies, the last a high-ceilinged hall that marked the end. A short distance ahead the passage was a water crawl and all water at 9,000 feet, even in the tropics, is damnably cold.

Outside again, the pervasive blue of an Andean winter was seeping from a June sky. I opened a can of tuna, the only food purchasable in Toro-Toro, and sat down to enjoy the rainbow spectrum of a high sunset in pure air. At 6:30 the last of the sunset dropped below the horizon. The dwindling twilight allowed me to cross several of the quebradas. Then darkness, lying over the land like a poncho, but checked a moment later by the light I planned to use to return the five miles to the village. Heralded by a thin sliver of silver, the moon rose powerfully from the summit of a mountain peak and filled the shadow of the dry gullies with a torrent of light. The rest of the walk back was touched with magic as the trail unwound its whiteness across the valley. Far away on the motionless air rose the barking of a disembodied dog, and the occasional unreal sound of singing and laughing in an Indian hut stole from behind the soft glow of a candle.

Only one house in the village was lit when I reached Toro-Toro. In it were Professor Miranda and his wife. They at once set about cooking a meal and asked me how my trip had gone. That night I slept the sleep of the exhausted on their floor, content and knowing that kindness flourishes wherever you go, even for a caver.

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Ladders are being made at McMaster University to provide for rescue in West Virginia and raise cash for the George Tracey Memorial Fund. These ladders are made to the specifications detailed in the article on ladder making in Canadian Caver, Vol.4, No.2, except that the 5/16" mild steel chain C-links have been replaced with 3/8" high tensile chain, which is at least three times stronger. The ladders cost \$1.00 per foot for thirty feet lengths or longer. For lengths less than thirty feet there is an extra charge of \$2.50. Belays cost \$2.00 basic plus 5 cents per foot of wire. For postal delivery in North America add 10% of the total cost. Please make out your cheque to the George Tracey Memorial Fund; send your money with your order please, attention: Mel Cascoyne, Department of Geology, McMaster University, Hamilton Ontario, L85 4M1, Canada. The Trustees of the fund are sincerely grateful to Greening Donald Ltd., and Slater Steel Ltd., of Hamilton, and Boston Insulated Wire Co. Ltd. and Dow Chemicals of Toronto for their help with materials.

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