The following day, I took Kerry and the bags to the railway station where they were emptied into a very large bag, weighed and sent to Brisbane. Kerry said it would be some time before he could work on the bones as he also had other material (from Chillagoe). He thought the many small curved teeth in the deposit were possibly from a rodent - possibly an extinct one but could not say for sure until he could examine them properly. He said the deposits may be from owls or from animals that had fallen down the now sealed shaft. He didn't know how old the bones would be but maybe around 20,000 years.

He said he would know more when he had studied them.

Ten or more years after we had collected that material, after years of waiting and wondering just what that material contained and how old, it was music to my ears to hear from Scott Hocknull that he was working on those bones.

I am so pleased that there has been further study of the bone deposits in the caves area. I am highly delighted about other important discoveries made up to date. It is such exciting work Scott Hocknull is doing and the discoveries he is making. Some of the fossil bones are 500,000 years old and the only Quarternary-aged rainforest fauna in Australia.

If Kerry and I had not rescued that material, and Scott Hocknull as a very keen young volunteer at the museum had not asked and been given permission to sort through the material, I wonder very much if any of these very important discoveries would have been made and whether that large bag of fossils bones would still be sitting on a dusty shelf at the Queensland Museum. Simply because no one was interested in fossil bones from Mount Etna, they weren't thought to be of much importance when compared with research and findings in fossil bones going on elsewhere in Australia. I don't think palaeontologists at the time had any inkling just how old and how important to science these fossil bones would turn out to be.

It is great that some of the remaining material was found and has been stockpiled for future generations to study. The resultant findings will add to our understanding of the past climates and the life forms that prevailed at those periods.

Karst and pseudo-karst features along the Tour du Mont Blanc - the rambles of a frustrated speleo in the European Alps

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The Tour du Mont Blanc (TMB) is a long-distance walking route around the Mont Blanc Massif, passing through France, Italy and Switzerland. The full circuit is 170-190 km long (there are several route variations), involves a total ascent (and descent) of 10,000 to 11,000 metres, and takes most people 12 or 13 days, including one or two rest days. It can be walked in either direction and commenced at any point, but is traditionally walked in an counter-clockwise direction starting at Les Houches, a small ski village on the outskirts of Chamonix in France.

Each day, the scenery along the walk is stunning with views to Mont Blanc and other snow-covered peaks and glaciers. The route traverses tricky scree slopes, precipitous rock faces equipped with steel ladders, alpine meadows full of wildflowers, shady larch and fir forests and, in early summer, remnant snow drifts. The route also goes right past isolated mountain chalets and village cafes that sell freshly brewed coffee, temping patisseries, cake and more substantial fare. And cold beer. It is possible to camp along the route, but accommodation for us was in rustic mountain refuges and comfortable hotels in villages. As delightful as all this was, from a speleological perspective the walk was a little disappointing. There was barely a hint of the spectacular karst scenery that is so typical of many parts of the European Alps. Perhaps in frustration, my eye was drawn instead to a range of pseudo-karst features. The following notes document some of the features that grabbed our attention along the way.

Stage 0. A training/ loosening-up day that commenced with a cog railway trip from Chamonix up to Montenvers, an old hotel overlooking the Mer de Glace (Sea of Ice). This one of the longest glaciers in Europe and near the lower end of the glacier there is an ice cave. However, it is not a natural meltwater outflow cave but a man-made tunnel freshly dug into the glacier for the summer tourist trade. Apparently, a fresh tunnel is dug into the ice each year. Visiting an ice cave can be very spectacular, as everything is bathed in soft blue light transmitted through the ice. However at Montenvers, we became aware that green, red and purple LED lights had been installed to 'enhance' the ice cave experience. Perhaps the LEDs are now required because the surface of the glacier above the cave is covered with opaque tarpaulins in an attempt to reduce the rate of melting over the summer. Needless to say, we skipped the cave visit and walked 17 km back to Chamonix.

Stage 1 (Les Houches to Les Contamines). Nice scenery and spectacular views but disappointingly devoid of karst, pseudo or otherwise.

Stage 2 (Les Contamines to Col de la Croix du Bonhomme). We spent the morning ascending beside the Torrent Bon Nant. A section of the track was along a cobbled road and across a stone bridge that were both built by The Romans. Nearby, the full force of the Bon Nant stream passes through a natural bridge. It is possible to descend a steep track towards the base of the arch, but with all the water, it was not possible to get very close. **(See photo at top of next page)**

Natural bridge over the Torrent Bon Nant

Later in the day, beyond Col du Bonhomme, the track passes over thinly bedded limestone that had minor surface solution features, but there was no sign of any cave development.

Thinly bedded limestone with minor solution features; above Col du Bonhomme

Stage 3 (Col de la Croix du Bonhomme to Cabane du Combal). On the slopes below the Refuge at the Col, the track passes through a band of limestone and further on, there were some closed depressions in an area with no obvious outcrop. The depressions gave the impression of being solution dolines, but are more likely to have resulted from mass slope movements, or have formed from glacial moraines.

Closed depression below Col de la Croix du Bonhomme

A further 10 km on, we passed over the Col de la Seigne (2516m) and entered Italy. Some distance below the Col there were outcrops of slabby limestone and through gaps in the clouds, there were glimpses of Les Pyramides Calcaires , a group of limestone peaks rising above the valley.

View to Les Pyramides Calcaires

No karst features could be distinguished on the pyramids, but lower down the valley, near the Rifugio Elisabetta, a stream appeared to emerge from the hillside. Large snow banks made it difficult to see exactly what was going on, but the topo map marked two springs in the area, thus confirming our first sighting of a real karst feature along the TMB.

In this general area there were also several small tunnel entrances and mullock heaps on the slopes above the track. We did not give them a closer look and I have not been able to find out anything more about them. However, there was a reference on the Web to some of the old buildings near Rifugio Elisabetta being miners' huts, suggesting the tunnels may have been old mine workings.

Stage 4 (Cabane du Combal to Cormayeur). A crystal-clear sunny day and there were superb views to the near-vertical southern face of Mont Blanc and its flanking glaciers. However, from a speleo perspective, there was nothing of interest.

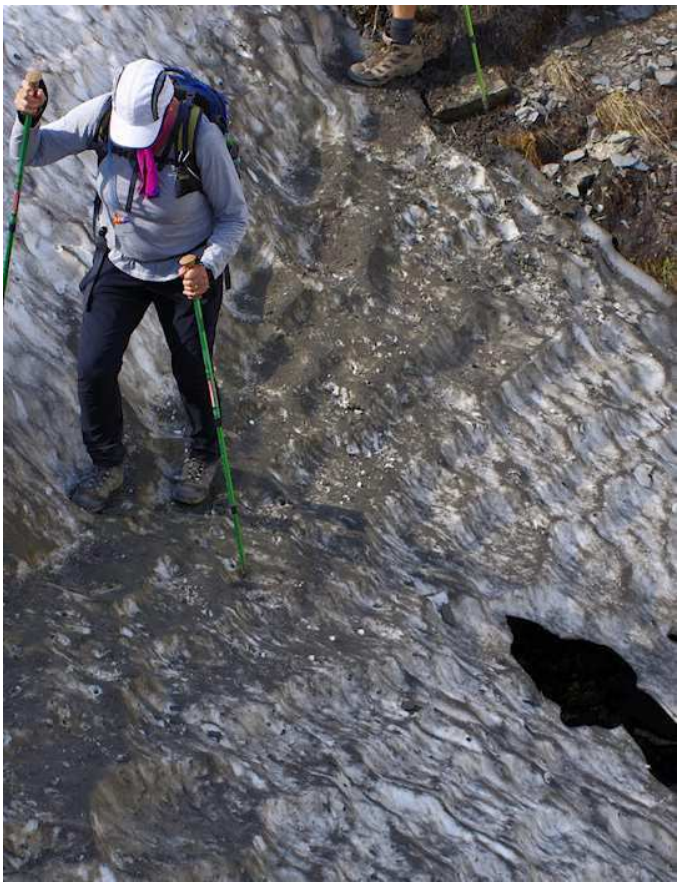
Karst spring near Rifugio Elisabetta

Mont Blanc, at 4409 metres, is the highest point in Western Europe

Stage 5 (Courmayeur to Rifugio Bonatti). Another clear sunny day and once again, there were views to Mont Blanc as well as to the Grandes Jorasses, a range of unbelievably steep and rugged rock towers. Once again, we saw no karst or pseudo karst features.

Stage 6 (Rifugio Bonatti to La Fouly). This stage winds up to the Grand Col Ferret and passes from Italy into Switzerland.

From a distance, the route appeared to be completely snow free. However, along the way we encountered snow banks hidden away in several very steep, north-facing gullies. While the snow banks were of interest because of tunnels that streams had carved into them, they also presented risks to walkers who had to traverse across them. There was a danger of breaking through into a hidden tunnel, or of slipping on the steep slope and sliding into one of the holes that were beginning to open up.



Crossing a tricky snow-filled gully, where there was a risk of breaking through, or slipping into a hole in the snow

In fact, just shortly after we passed this area, a woman did lose her footing, slid into a hole and broke her arm when she hit the rocky creek bed below. Fortunately, her injuries were not more serious and she was promptly evacuated by a mountain rescue helicopter.

Near Rifugio Elena a short time later, we came across a black hole in the ground. It was next to a collapsed cottage and had a well-constructed dome-shaped stone roof partly covered with a layer of turf. It may once have been an underground cellar or perhaps a storage building or animal shelter. Today, its main use seems to be as a toilet and, for that reason, it did not warrant a close inspection.

Perhaps the remains of a cellar but now used as a makeshift toilet!

Stage 7 (La Fouly to Champex). This stage was the highlight of the trip from a speleo perspective, as we saw several entrances and were able to venture into two of them.

As we were about to cross a footbridge over the Torrent du Darbellay, we saw an entrance partly obscured by vegetation.

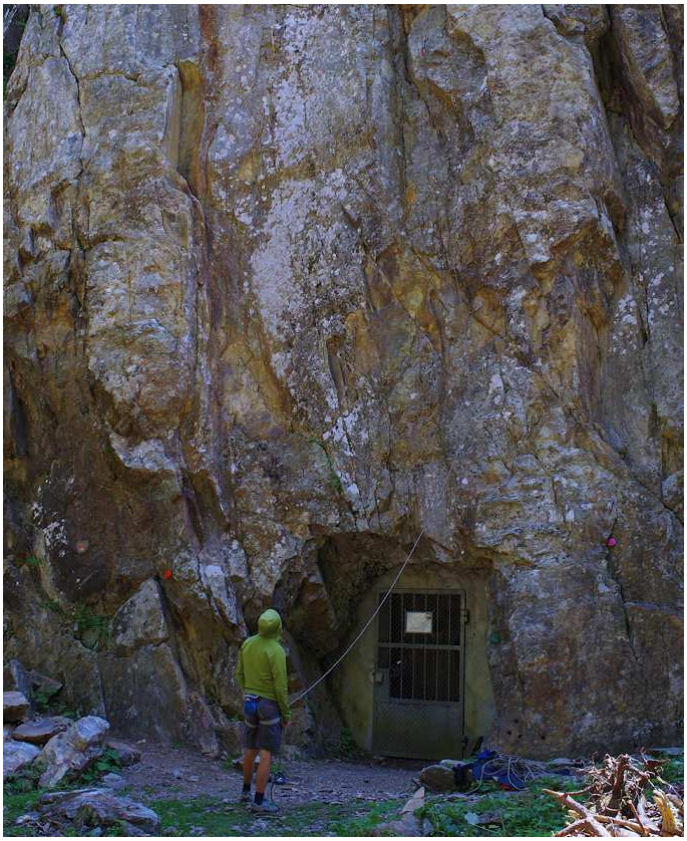
The partly-obscured entrance to the Darbellay slate mine

Using a digital camera and a feeble torch as lights, we ventured in. The small entrance opened into a room about 10 to 15 metres long and several metres high and wide. There was some toilet paper just inside the entrance but further in, everything looked good. At the inner end of the room, we explored two small tunnels each of which was about 10 m long and about 1.5 m high and 1 m wide. All the walls and roof were a dark grey colour, relieved only by thin patches of white and orange flowstone and clusters of short, white calcite straws. **(See picture next page)** At least it looked and felt like a cave!

The workings appeared to be an old slate mine, later confirmed by an interpretive sign a couple of hundred metres further on where there were the remains of stone walls and rusty pieces of metal, including rail tracks. Judging by the size of a huge scree slope of slate fragments in that area, it must have once been a big operation. According to the sign, the mine(s) operated between 1903 and 1955.

Calcite straws and flowstone almost made the Darbellay slate mine feel like a cave

Near Champex, we stopped to watch a pair of climbers on a cliff and noticed a tunnel entrance with a locked iron door close to where one of the climbers was belaying.



A cliff with a door; an entrance to one of the WW II military installations near Champex

A short distance away, a vertical ladder led to another iron door about 15 metres above ground level. As we were to find out later in the day, these were part of a network of more than 50 fortifications in the area that were constructed during World War II as defences against a possible invasion from Italy.

In the picturesque village of Champex there were more fortifications and, as an underground artillery fortress was open for inspection later that afternoon, we decided to return for the two-hour tour.

The entrance to the underground artillery fortress at Champex, Switzerland

The fortress (designated Artillery Fortress A46) was completed in 1942 but was upgraded over the years, including to withstand nuclear attack. It was last manned in 1998 but remained classified as a defence secret until it was officially decommissioned in 1999. At that time it was bought by the Pro-Fort Association and opened to the public. As many of its internal features remain intact, it gives some fascinating insights. Unfortunately, photographs were not permitted.

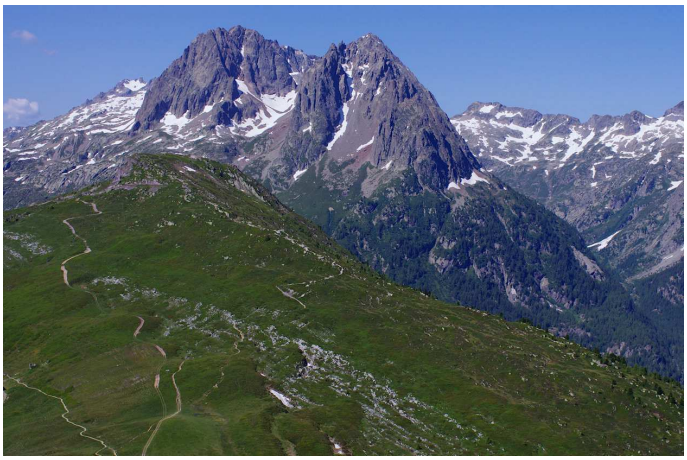
The fort has more than 600 metres of tunnels, initially leading deep into the mountain, but then branching and running parallel to an east-facing cliff face, with eight side branches leading out to the cliff. One of the side passages was an emergency exit, two more were observation posts and the other five were gun emplacements. The huge guns (firing 75mm or 100mm shells) were installed in underground rooms with just the barrel poking out through the cliff face.

Camouflage netting remains in place over the gun barrels and cliff openings. The guns point towards two strategic passes to Italy; the Saint Bernard Pass and the Grand Col Ferret that we had walked over the previous day. Luckily, we were not aware at that time that a huge gun was pointing at us. We were told the guns were last fired in 1986, but at whom was not revealed.

The underground fort had its own power supply (the original diesel engines and generators are still in place), hospital, staff accommodation, workshops, an air filtration system and large artillery, food, water and diesel storage areas. In fact it was fully self-contained and set up to operate with its full complement of 150 soldiers without outside inputs for at least 40 days.

Stages 8 (Champex to Trient) and **Stage 10** (Argentière to La Flégère). No features of interest for a weary speleo.

Stage 9 (Trient to Argentière). On a crisp and sunny morning, we climbed 900m up to the Col de Balme and passed from Swiss mountain scenery, complete with cows, to French mountain scenery, complete with a multitude of ski lifts.



From the Col, we could see a band of limestone near the Col Des Posettes a couple of hundred metres below and walked down to check it out. From a distance the limestone terrain looked promising with closed depressions, small blind valleys and so on. Up close, the rock turned out to be thinly bedded and highly fractured and the few pits we looked at were small and rubble-filled.

At left - View to the limestone band near Col des Posettes

Of more interest in this area were the spectacular views to the Mont Blanc area. Later on, I noticed the topo map marked a feature with a cave symbol and labelled it the Fenêtre de Belle Place. It was about 1.5 km along strike to the northeast of where we had been

At right - There were some small pits in the limestone near Col des Posettes. The main attraction was the spectacular views to Aiguille Verte (left) and Mont Blanc

Stage 11 (La Flégère to Les Houches). The final stage of the walk and for those of us who walked the whole way, it was a long, hot 1500m descent from the day's high point. I was looking forward to a celebratory drink and also checking out a feature I heard about called "Les Caves du Pèle". I immediately thought of Pele, the Hawaiian Goddess of fire and Vulcanism and had visions of exploring a lava cave in the Chamonix area. Alas, Les Caves du Pèle turned out to be a basement wine bar. Now, I have nothing much against such places and it would have been an appropriate place to finish our walk. However, to add to my disappointment, Pèle's underground bar no longer existed, but it still seemed to be a fitting end to this story about the karst and pseudo karst features along the TMB.