

# Penn in the Alps 2023

## Diaries



## August 14

*by Will Reason*

My day began with an early flight into Zürich. I caught the train from the airport to the city's central station and hauled my luggage up a short but steep hill to the Hotel St. Josef. A short while after I had checked into my room and unpacked. Ben, my roommate for the night, entered. We introduced ourselves and chatted for a bit, then left to meet up with Hayden, another Penn-in-the-Alps student with whom Ben had been traveling for the past week or so.

Hayden, Ben, and I took a half-hour walk around Zürich while we waited for more of the group to arrive. We started by climbing up to the roof of the Federal Institute of Technology (ETH), unaware that Reto would be taking us there just an hour or so later. I have no regrets though—the roof provides sweeping views of Lake Zürich and the city's many steeples, so it was well worth seeing twice. We then took the funicular back down the hill and wandered along the river. We came upon a public swimming area in the river that looked remarkably enticing in the summer heat. Evidently, the people of Zürich agreed, as dozens of them were cooling off in the water and sunbathing on the dock.



Figure 1: View of Zurich on my walk from the train station to Hotel St. Josef



Figure 2: The funicular that Hayden, Ben, and I took down the hill from the Federal Institute of Technology (ETH)



We returned to the hotel in time for our group meeting at two o'clock. We all gathered in the lobby and left for our tour of the city. Reto led us up the hill back to the roof of the Federal Institute of Technology. There, all 11 of us plus Reto and Steffi introduced ourselves and welcomed each other to the program. Reto encouraged us to take in the sweeping panorama from the roof and explained that we were at the Federal Institute of Technology, one of the greatest schools in the world for STEM. I remembered reading previously that Albert Einstein was an alum, so I was not surprised to hear that the school had a reputation for academic excellence. Reto also pointed out the University of Zürich next door, another fantastic school with a humanities focus that complements the Federal Institute of Technology. It felt as though we were in Zürich's University City!



Figure 3: The whole group after doing introductions at the Federal Institute of Technology

After Reto outlined the rest of our tour itinerary, we left to explore the Old City, crossing the river via the Rudolf-Brun-Brücke Bridge. We ascended to the old fortification walls of Zürich and Reto regaled us with the long and fascinating history of the city. The historic center of Zürich dates from the Bronze Age, approximately 2,000 BCE. The city is ringed by hills that are the remnants of deposited glacial debris from the most recent ice age. These hills were important strategic positions and have played a key role in Zürich's history.

Reto told us that the Romans took over Zürich in roughly 15 BCE and controlled it until about 400 CE, a fact I found particularly illuminating given that I would spend much of my presentation talking about Roman influence on the Alpine region. After the instability that followed Rome's fall, Charlemagne somewhat reunited Europe, founding the Holy Roman Empire in 800 CE. Charlemagne appointed governors to rule Zürich for him, but this system proved incredibly unpopular with the local people. As a result, the city was eventually run by the abbesses of the Fraumünster Church, making Zürich a remarkable example of women wielding significant political power in the Middle Ages.

After about four centuries of an abbess-led Zürich, Reto told us that the craftsmen's guilds seized power in the city. The guilds began a long feud with Zürich's aristocrats over control of the city, but this power struggle was rendered moot when Napoleon invaded Switzerland as a route into Italy and conquered Zürich. In 1848, the individual cantons (states) were unified into modern Switzerland (though Switzerland dates its founding to 1291, the year they threw out Austria's Habsburg rulers).

Reto then brought our conversation full circle, back to the Federal Institute of Technology. Arnold Escher helped found the Institute, foreseeing a need to train engineers to build rail tunnels through the Alps. As such, Escher also helped finance the first tunnel. Today, a vast collection of tunnels helps giving Switzerland the densest rail network in the world, renowned across Europe for its efficiency and punctuality. (By contrast, German trains have gotten so delayed that the Swiss have banned them from their tunnels).



Figure 4: Roman tombstone seen on our descent from the city walls



Figure 5: St. Peter's Church with a Gothic steeple and Baroque nave

We then visited the historic square Münsterhof, where Zwingli used to preach. The square is surrounded by old guild buildings and the Fraumünster Church, which was the church of the abbesses who ran the city. Fraumünster in Swiss German translates to Women's Minster—it is literally the “church of the women.” Inside the church, we got to take in spectacular stained-glass windows made by Marc Chagall and to descend to a crypt where we could see the church's original foundation and its charter. Between the guilds and the Fraumünster Church, Münsterhof brought to life the history we had been discussing all day.

One final church awaited us: the Grossmünster. Founded by Charlemagne near the site where Zürich's two patron saints were beheaded and martyred by the Romans, it has become an iconic symbol of the city. Grossmünster is another architectural and historical chimera—its Gothic towers are newer than its



Romanesque body. We explored its interior, including its imposing but not exactly classically proportioned statue of Charlemagne, then wandered over Lake Zürich, taking in the view of the opera house and the soaring mountains in the distance. Seeing the peaks we would soon visit brought palpable excitement to our whole group. We relished the hikes and views that awaited us.



Figure 6: Stained glass windows made by Marc Chagall at the Fraumünster Church.

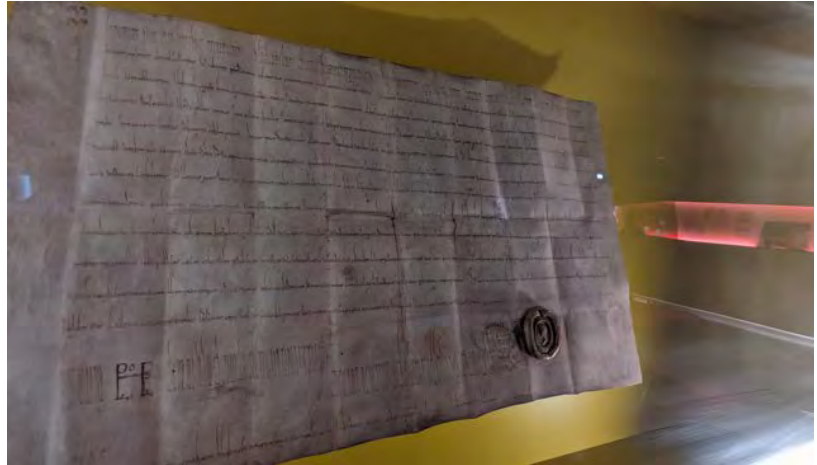


Figure 7: Foundation charter for the Fraumünster Church and Convent, issued by King Louis in 853 CE.



Figure 8: Statue of Charlemagne in the crypt of the Grossmünster Church.

With that though, our Zürich tour was over, and it was time to shop. We went to the Co-op City grocery store to pick up lunch for the next couple days of hiking. I got some Clif Bars and dried fruit, as well as a lovely bar of Lindt dark chocolate to reward myself with after a tough ascent. I went back outside and hung out on a bench to wait for the rest of the group; when they returned, I realized I'd eaten the entire chocolate bar! No matter. There would be plenty of delicious food and dessert to come.

We then paid a visit to the Victorinox flagship store. This delighted my inner child, as I had been obsessed with Swiss Army Knives as a kid — I even dressed in a Swiss Army Knife costume that my dad painstakingly made of cardboard for Halloween one year. The store had a chandelier consisting of hanging pocketknives with an internal light reflecting off them and outwards. Ben bought a Huntsman Swiss Army Knife with his initials engraved and a knife pouch for his grandfather. Meanwhile, Zach got a Crocodile Dundee-style single blade hunting knife, and Hayden got a pocketknife as well.



Figure 9: Entering the Victorinox flagship store, Zach in the foreground.



Figure 10: The first of many delicious meals!

After the Victorinox store, it was time for a lovely dinner in the Old City, where we lingered over dessert and delicious bottles of red wine. We went to bed with a small but enticing sense of the beauty we would soon see, the history we would learn, the food we would savor, and the wine we would, frankly, delight in. One great day was behind us but the best was still to come. (:

## August 15

*by Cypress Kaulbach*

We started our day early at Hotel St. Josef in Zurich. After a restless and hot night, I rose and quickly packed my overflowing suitcase. I had a croissant with ham, cheese, cucumber, and a soft-boiled egg. After breakfast, we headed for the cars and loaded in. We quickly had our first sight of the mountains we'll be exploring for the next 2 weeks. On our drive up we found a dunk radio station that we enjoyed. We stopped at Heidiland, a gas stop located close to where the story of Heidi took place.



Our first official stop was at a lookout spot in which we overlooked the Rhine River, which flows all the way to Holland. The landscape was shaped by the largest landslide in the Alps, which filled the valley with fallen rock. The landslide created a dam which made the Rhine Lake. Another result was a language barrier created by the in-navigable landscape between the Alemannic and Romanish. Overtime, the Rhine Lake carved out an escape route and turned back into the Rhine River. On this lookout we could

also see the Sardona UNESCO World Heritage Site, which is known for its beautiful exhibition of the tectonic processes that geologists queried about for decades. Sardona shows older rock formations sliding horizontally over younger rock formations. The age of the layers of rocks confused scientists as they were "out of order."



After the lookout, we finished our journey to the hike of the day. We hiked down 400 meters of elevation to a part of the Rhine River to eat lunch. The hike down was very steep and hard on my ankles and knees. On the way down, we saw a helicopter land nearby and when we got to the river for lunch, we



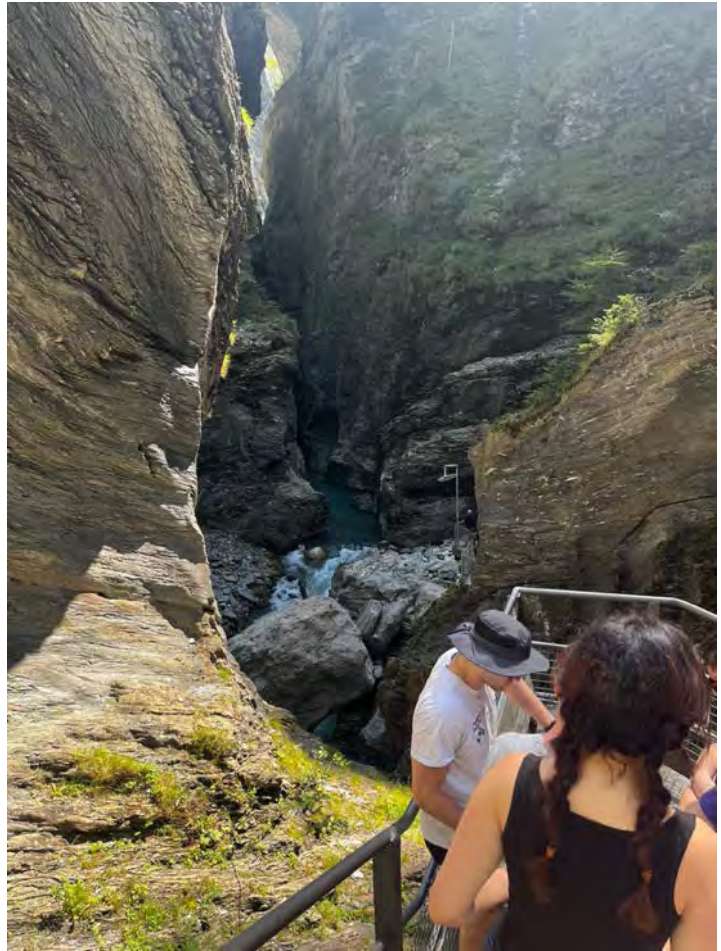
saw the EMTs giving a fallen kayaker CPR. Eventually the helicopter left and the abandoned EMTs row the kayaks back. The cliffs above us are 1200 meters high and we calculate that the Rhine is eroding about 3.5 cm per year. The Rhine River is made up of water from glaciers and is greenish gray due to the sediment suspended in the water. The rocks along the shore are made up of the rocks carried down from upstream. After lunch, we hiked back up the mountain and got in the car to drive back down the mountains.



Our next stop was another gorge, which we hiked down. The gorge was a continuation of the Rhine River and posed an obstacle to travel across due to its extreme depths. The Romans trekked through the gorge skillfully and once bridges were built, the number of travelers increased. Property owners charged tolls for travelers to pass through their land as they passed from Switzerland to Italy.



Next, we traveled to the church of Zillis in which travelers going through the gorge would come to pray. The ceiling of the church tells the story of Christ through painted tiles. We sat and observed the tiles and then some construction men moved their machinery and obstructed our view. After that we left and took our last leg of the trip to Montespluga. We stopped at the border from Switzerland to Italy and observed the fauna as we were now above the tree line.



We made it to Montespluga and filed into our small, pink hotel. After showering off, I went to the local gift shop with Clara and Alexis only to run back in fear of rain. We played cards until dinner. For dinner, we had Pizzoccheri and veal with grapes. I sat next to Hayden and argued about our Philly public rival high schools; Central is obviously better.



After dinner, the students roamed the empty street (singular) and bought a bottle of wine which was not to be drunk until the next night. We went to bed with excitement and hope of what the trip would next hold.





## August 16

*by Hayden Aronoff Keller*

On Day 3, we woke up in Monte Spluga to an amazing view from our hotel. Everyone seemed full of energy and ready for the day despite an exciting night. We drove about 10 minutes by a large dam made by Mussolini in 1931 to begin our hike. Almost immediately, we came across a beautiful view of the River Rivenio. It used to be a major access point for travel and transport through the mountains for the Romans. They carved a road through the cliffs and brought small cars and horses through it. It was used for centuries, even Napoleon's troops used it. One of his generals lost a lot of soldiers on this trail through the Cardinello gorge. It was a beautiful wide trail. Everyone had an easy time with it, which made for a nice pace.



Later on, Professor Gieré showed us a unique conifer, the larch, that is the only type that actually sheds its needles in the winter. The trees turn yellow in the Fall which must be very stunning to see. The needles are surprisingly soft to the touch. We found some wild blueberry bushes, but they were too close to the trail to find any fruit. Not much later, we found raspberries! They were small but sweet and delicious.

Shortly after, we came across a gorgeous but dangerous log bridge overlooking a waterfall. The raspberries were becoming abundant but no blueberries. We ran into a field filled with cows and donkeys, some even on the trail. As explained by Reto they live on communal land ran by the village.





Each year a different shepherd in the village is assigned to take care of the cows. This used to be a shepherd from the village, but in the modern era is usually hired from outside the town.

As we moved closer to the nearby village, we found ourselves below the amazing waterfall we have seen for hours. The water was cold but unfortunately not drinkable due to its proximity to the cows. I found a great spot by the water to lay down. Some of us swam – it was so refreshing. We hung out and listened to music for a while. I could've stayed all day.





After changing and having a quick snack, we continued our hike. We arrived in the small alpine village of Rasdeglia. It was so homey and adorable. We were able to go into the church and Professor Gieré explained the history of the village. Like most villages up here, people live here in the summer to tend their cows. In the winter, the villagers, along with the cows, move down the mountain to warmer temperatures.

Professor Gieré and Steffi left for us to go and pick up the vans, while we continued the hike and explored the nearby village. We ended up doing a full three course Italian meal at a bed and breakfast. It was delicious but due to the language barrier, we ordered way too much food and did not know how to pay. Luckily, they accepted credit card and Ben stepped up to front the bill.

Subsequently, we met back up in the vans and drove to Cascata di Pianazzo for an unbelievable view. Professor Gieré stopped to talk about the falling of big boulders and how the local towns use them to build houses under as a natural refrigerator. Because of this, the houses are naturally cooled so they do not need refrigeration. On the other hand, the types of rockfalls that produced these boulders have been increasing because of climate change. This is because many of these boulders are glued together with ice; and when that melts the boulders fall down the mountain.

After our day trip, we arrived in Chiavenna, where we checked into our hotel. Everyone was tired and needed a rest before dinner. My room had a beautiful balcony with seating and views of the mountains, not to mention a very fancy bathroom. For dinner we went to a beautiful Italian restaurant. Without a hike the next day, we thought it would be enjoyable to explore the town a little bit after dinner. We went to some shops and found a few locals to share a few conversations, perfectly wrapping up another amazing day.



## August 17

*by Zsa Zsa Lafitaga*

Today, we embarked on a delightful journey in Chiavenna, Italy, starting our day with a hearty breakfast at the San Lorenzo Hotel. Chiavenna, a town steeped in history and strategically important, left us in awe with its rich past and stunning landscapes.

As we wandered through the streets, I couldn't help but be captivated by the town's origins. Chiavenna's history can be traced back to the Roman Empire, as the Romans first colonized this region by passing through Chiavenna and on to Monte Spluga. Its location, perched 200 meters above sea level, is characterized by remnants of the ice age, including glacial lakes, valleys, steep-sided mountains, and large chunks of debris.

The very name "Chiavenna" is derived from the Latin word for "key," signifying its crucial role as the gateway to the Alps. In ancient times, Chiavenna served as a hub for trading various raw materials such as soapstone, wine, cheese, cattle, and spring water. The Middle Ages witnessed a social hierarchy within the town, with aristocracy residing in the highest parts, merchants within the fortified area, and the lowest class living outside the protective city walls, exposed to mountain tribe attacks and other dangers.

As we delved into the 19<sup>th</sup> and 20<sup>th</sup> centuries, Chiavenna retained its significance as a center for travel and transport, with soapstone fountains providing a vital energy source. Factories, ingeniously powered by water, thrived in this era. The local homes we encountered, often shared by multiple families today, were once single-family dwellings.

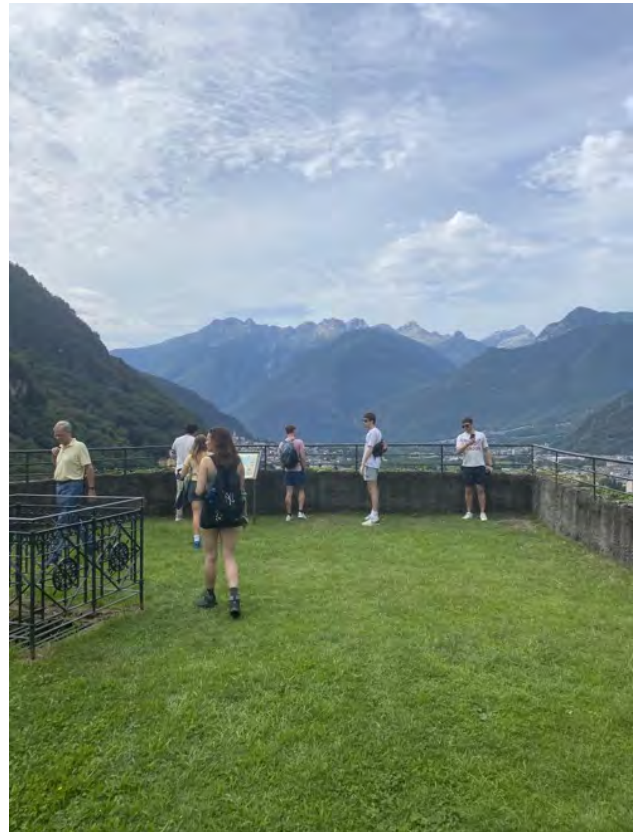






Our exploration led us to man-made ravines crafted by the Romans, a testament to their craftsmanship and resilience. These chiseled-out formations, adorned with archaeological artifacts and a botanical garden, revealed the painstakingly slow process of using scaffolding to reach higher portions of the stone over centuries.

Later in the day, we attended a presentation by Will, who enlightened us about the development of human travel and its impact on political relations, including Hannibal's famous crossing of the Alps. The earliest trading networks within the Alps were established by the people of Hallstatt in Austria, who traded salt and other goods. However, they had to rely on creative engineering to establish overland routes, leaving villages and cities vulnerable to natural disasters. Hannibal's audacious journey into Italy with a troop of elephants left Rome in shambles.



Ben's presentation focused on human settlements in the Alps, highlighting the two farming practices of *Alpwirtschaft* and *Transhumance*. He also discussed the evolution of Alpine architecture, from stilt houses to modern chalets.

After a fulfilling morning of exploration and learning, we enjoyed a delicious lunch, and then marveled at Il Fonte Battesimal, a baptismal font dating back to 1156, adorned with intricately carved soapstone. Our exploration continued with visits to local churches and monasteries, which were remarkably well-preserved, offering a glimpse into Chiavenna's spiritual heritage.





In the afternoon, we embarked on a scavenger hunt to discover soapstone and gelato, strolling through Viale Picchi and Viale Pratogiano. To our delight, a surprise aperitivo awaited us—an Italian pre-meal tradition featuring drinks and snacks—on the terrace overlooking the river that meandered through the valley into Chiavenna.



As the day drew to a close, we gathered for dinner, savoring authentic Italian pizza. Our special guests, Reto and Steffi, added to the warmth and camaraderie of the evening. It was a day filled with history, culture, and delectable cuisine, leaving us with lasting memories of our enchanting visit to Chiavenna, Italy.



## August 18

*by Ignacio Felix-Padilla*

Rise and shine ladies and gentlemen, it is officially day five of our expedition in the Alps and today we start off by leaving Chiavenna. It was an early day today as we had to pack, eat breakfast, and buy our lunch for the next three days before 9 AM. So, I woke up at 7 AM to take a shower and do all those things. Our first drive was a short ten minutes, where Reto showed us a chestnut tree. Believe it or not, the outer shell of this nut is really spiky! The chestnut is a staple food across the lower regions of the Alps and is celebrated annually in the Chestnut Festival.



View from our hotel room.

From there, we went to the Vertemate Franchi Palace, which overlooks much of Chiavenna and the surrounding area. The Vertemate Palace valley is considered to be the heart of Europe, since it connected Italy to Central and Northern Europe. It was built in the 16<sup>th</sup> century by the Della Porta family. The family soon adopted the name Vertemate as that is the area near Lake Como that they were from. This family wanted the palace to be a summer home, so it was built to be completely self-sufficient and a variety of plants such as grapes for wine, vegetables, oranges, lemons, and chestnuts grows all in one place. They did this by utilizing a highly effective irrigation system. While the outside of the palace may not look like much, the inside is incredibly ornate. All the walls and ceilings are highly decorated with pagan gods and different representations of the four seasons.

The main room of the Vertemate Palace was used primarily to host dinners and parties. The palace also had a business room, which was made from wood until the ceiling, where it transitioned to paintings. This was meant to symbolize the combination of Alpine and Italian culture. In this room was the family motto, "Initiative creates power." The next room we were taken to was the main room of the second floor. This room had the most elaborate ceiling in the entire palace. This room was used for private gatherings for the most important people. At some point, the entire Vertemate family was wiped out due to a landslide of massive proportions, so the palace was abandoned. Later in time, a couple from Milan restored the palace. Nowadays, the palace belongs to the town of Chiavenna.



Main dining room in the Vertemate Palace.





Business room of the Vertemate Palace.





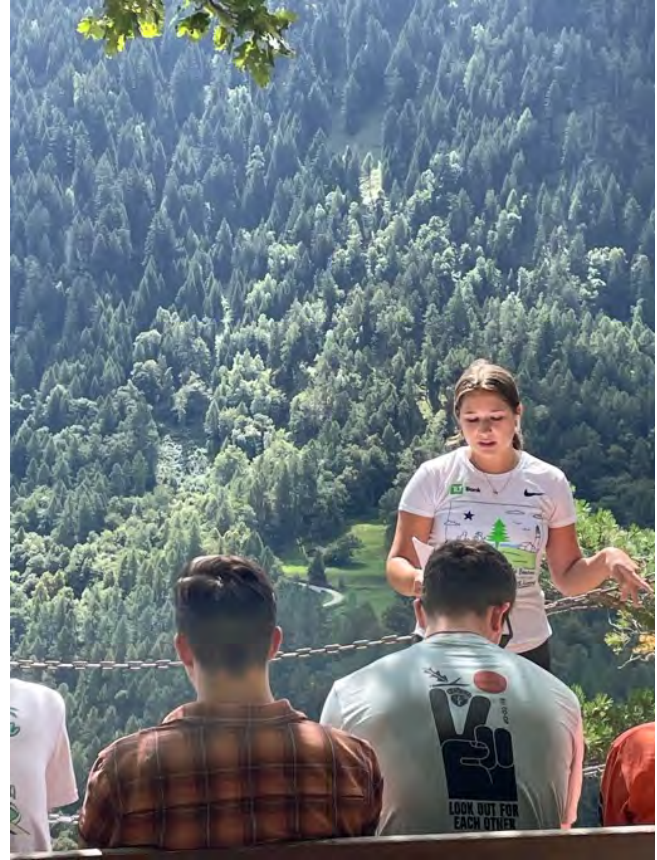
Private dining room of the Vertemate Palace.



After the Vertemate palace, we drove for another half hour to our hiking site. The hike up was around one hour but we stopped halfway to listen to Clara's presentation on the flora, vegetation, and plants of the Alps. Did you know that there are over 8600 species of plants in the Alps? The Alps have six main zones of vegetation: the foothills, deciduous forests, montane, subalpine, alpine, and nival. Throughout the hike, we traversed through the deciduous forest zone and the montane zones. These zones are characterized by many fruit trees and berries. However, with the varied zones of the Alps, there is the grave concern about climate change. By this year, the temperature of the Alps had already increased by two degrees Celsius, compared to the one degree of the rest of the world.



Reto explaining how the town was built.



Clara giving her presentation.

We then continued on our hike up to a village which Steffi accurately referred to as the “Sound of Music” hike since the scenery is eerily similar to the movie. We then sat down a bit outside the town of Soglio and had lunch before listening to Lindsay’s presentation on Alpine architecture. As you can imagine, Alpine architecture has evolved a lot throughout the years given that people have been living in the Alps since the Paleolithic era. The first cabins were made of wood and stone with roofs that hung over the house to help with rain and snow. As humanity moved into the eleventh century, Romanesque architecture is very apparent in the Abbey of Saint-Maurice. During the medieval era, as evidenced by the Castelgrande in Bellinzona, the protection of passages and trade routes was of the utmost



importance. Then the Renaissance came and people built structures such as the Vertemate Palace, which its main purpose was a summer home. A few centuries later brought the Swiss chalets of the Romantic period which started the tourism boom seen in the modern era. These chalets still keep the traditional feel by using wood and stone, but are made for modern convenience and beauty rather than functionality.



Lindsay giving her presentation.

After the presentation, we were given some time to explore the town, and we were able to catch some gorgeous views of the surrounding mountain and even found a sketch of this range. We then hiked back down in a much quicker fashion than the hike up before getting back into the vans to head to our next destination.





After many windy roads we arrived at the top of Valchiavenna and reached the Engadine valley. We soon headed for a glacial lake where we were given an opportunity to swim. We even held our own swim race which Ben won!



The glacial lake we swam in.

After this, we drove all the way to Pontresina, Switzerland and arrived at our hostel. We quickly grabbed dinner and were told to put on a fleece for a surprise. We ended up going to the top of a mountain to watch the sunset and the stars which was such an amazing experience. A few hours later we went to bed to rest up for our big hike the following morning.



## August 19

*by Zach Rudder*

We started the day with another European breakfast consisting of bread, cheese, sliced meat, and yogurt. Luckily, the hostel even had hard boiled eggs, a welcome addition to the standard breakfast lineup. Europe does a lot of things well, but breakfast is certainly not one of them.

To get to where we were starting today's hike, we caught a ride on "The Red Train", which is a UNESCO world heritage site. On the train, we were surprised to see mountain unicycle riders. Yes, you read that right. We joked that they were going to the same trail as us but found out they actually were when we ran into them on top of the mountain later in the day. The trail was pretty rocky, so we were all confused as to how they could make it down on a unicycle, but nonetheless they seemed very determined. We got off the train at the Diavolezza cable car base station and were lucky enough to see an ibex! (Sort of, see Figure 1).



*Figure 1: An Alpine Ibex in the base station of the cable car up to Diavolezza.*

We then took the cable car up the mountain to Diavolezza where we had a great view of numerous peaks, including Piz Bernina which is the tallest peak in the Eastern Alps. There was a map of the skyline on the observation deck, and we observed how the glaciers were significantly smaller than they were in the map posted outside, showing the effects of climate change on the glacier.



We started our hike up to Mount Pers, which consisted of a rocky trail that was steep near the peak. Along the trail, we passed a rocky face where we stopped to learn about the geology there. When we stopped, we were in the nival zone, which is dry and very rocky. Despite the barren appearance, there are still species of plants and animals that can survive in the conditions. Reto informed us how all the rock debris and boulders are completely natural and are due to weathering. When water gets into the fractures in the rocks higher up, it freezes at night and expands since ice needs 9% more volume than water. This causes the fractures to become bigger and bigger until rocks break off and fall down. This is called frost wedging and occurs every night when the temperature drops below freezing. This continues until the rocks become very fine, almost grain like, which takes a very long time.

*Figure 2: Reto giving us a lesson on a rocky face along the trail.*

We also discussed how the UV is very high up there and the white surfaces of the ice and snow reflect the sunlight, a phenomenon known as albedo. This makes it even more important to wear sunscreen and sunglasses. Some people must have missed this part of the lesson, as they got back to the hostel that night and realized they had burnt just about every part of exposed skin. Reto also taught us how the rocks that we were sitting on were formed in Africa about 400 million years ago. There are many places where African rock is above European rock due to the way the plates have moved.

The hike was beautiful and at the top we were able to see multiple glacial lakes. We observed the stark color difference between the lakes where the sediment has not settled yet and where it has set, with the former being a bright blue and the latter a darker blue. Additionally, we all started to notice the oxygen difference at the higher elevation, as we were all out of breath quicker than on previous hikes.



At the peak, we all sat to eat a snack and take in the outstanding views. We were able to see both Italy and Austria in the distance as it was a perfectly clear day.



*Figure 3: The view from the peak of Mount Pers. Figure 4: Everyone at the top of Mount Pers.*

We were on the peak of Mount Pers, also known as The Lost Mountain. We all sat down and listened as Reto gave us a lesson on glaciers. The valley glaciers we could observe from the peak are different than ones in Greenland or Antarctica as they are thinner ice sheets. As glaciers advance, they push huge amounts of debris out in front of them and along their sides. This debris forms the moraines, which look like huge slopes of finely grounded rock leading down into the center of the valley. At the end of an ice age glacier, you have a terminal moraine. Along the side of the glacier, you have the lateral moraines. The size of the glaciers always fluctuates throughout the years, as it was much smaller 2000 years ago, but it is now disappearing much faster than it normally does. Reto explained how it is normal for there to be rivers coming out from underneath the glaciers, but now there are also rivers on top of the ice, further demonstrating how climate change is making the glaciers rapidly melt. A natural phenomenon that can accelerate glacier melting is dust storms. The dust comes from the Sahara and goes over the mountains and turns them a reddish brown, which absorbs more sun light, in turn accelerating melting.



*Figure 5: Reto gives a lesson on glaciers at the top of Mount Pers.*

We then started our hike back down the mountain, and stopped along the way so Zsa Zsa could give her presentation on clouds and precipitation. She taught us about the main factors that form clouds, the different types of clouds, and the clouds that are most common in the Alps. After the presentation we enjoyed a leisurely lunch on the super comfortable, and definitely not sharp and uneven at all, rocks. We then started the walk back, and after encountering an elderly Swiss couple, Reto stopped for conversation. Determined to make it back down the mountain quickly, Ben heroically stepped up and led us back to safety. Although he hiked like Reto, his knowledge on rocks and glaciers was not comparable – he must have skipped that part of the textbook. We enjoyed some refreshments after the cable car ride down, and then hopped back on the train to get to the trailhead for our second hike. We got to sit in the open cars, which gave fantastic views of the mountains and valley.





*Figure 6: The open car of the train.*

On our second hike along the valley, we stopped to discuss how the glacier shaped the valley when it moved. The rocks here are polished from the time when they were under the ice, and scratches on the rocks parallel to the valley can be explained by other rocks scraping the rock when the glacier moves further down the valley or retreated up the valley. We continued the hike in the blistering heat and were thankful when we got closer towards the glacier and the winds became much stronger and colder.

We were able to go onto the actual glacier, but not without some casualties. After Reto effortlessly crossed a rocky river, Ben attempted to follow in his footsteps, however, he quickly realized he was not as nimble-footed and experienced as Reto is. He slipped, and his water bottle fell out of his bag and crashed into the rushing water. Trying to be a hero, Will tried lunging for the bottle, but the only contact

that was made was his knee with a rock, as the powerful water took the water bottle downstream. After finding an easier route onto the glacier, everyone was able to look at the ice up close. When asked to confirm that the ice wouldn't break, Reto comforted us all by saying, "Yea let's hope not." We all made it safely off the glacier and hiked back to the train, a nice path with a slight decline. We took another ride on the beautiful Red Train back to the hostel, where we had a nice family dinner to end the day.



*Figure 7: The Morteratsch Glacier.*



*Figure 8: The view from the Morteratsch Glacier looking down the valley.*



## August 20

*by Lara Al Yafei*

Today was a day filled with breathtaking scenery and eye-opening conversations about the environment. Our journey began with a thrilling ride on a funicular, which took us to the stunning Muottas Muragl. From there, we embarked on a picturesque walk to Lake Muragl, surrounded by the majestic Swiss Alps.

One of the most memorable moments of our day occurred at Lake Muragl when we stumbled upon a pack of cows. It was fascinating to observe their behavior, especially considering their limited interaction with humans. Steffi even mentioned how she could sense the energy of the cows and noticed their protective instincts, particularly towards their adorable baby calves.



Our next stop was the Segantinihütte, a charming cabin and restaurant nestled on Schafberg. Here, Reto shared valuable insights into deforestation and its impact on the region. It was striking to learn about Switzerland's commitment to reforestation by replacing every felled tree with the same type, in stark contrast to practices in Brazil, where deforestation and subsequent eucalyptus plantations for charcoal production are causing significant ecological harm.



Reto also highlighted the challenges posed by climate change, such as the shifting forest line and the importance of trees' defensive mechanisms, like the yellowing of leaves in August and October. He emphasized that land in this region is communal, fostering a collective responsibility for environmental protection. Unlike some places where private landowners can freely cut down forests, here, the community values its natural resources.



The discussion then turned to permafrost and its relevance in a changing climate. Reto explained that permafrost is not occurring at the surface; it can be several layers deep. The active layer, which freezes in winter and melts in summer, is followed by the permafrost layer, which can extend up to 40 meters. Below that, the ground is not frozen, and geothermal heat becomes a factor, with temperatures increasing as one goes deeper underground. This geothermal energy is harnessed by a nearby hotel using heat pumps, providing a sustainable energy source.

We learned how the reduction of permafrost due to rising temperatures has implications, including the release of methane and the destabilization of slopes, potentially leading to landslides. Reto mentioned that most glaciers are predicted to disappear by the end of the century, and we witnessed evidence of the forest line moving upward as a result.



Our journey continued with a visit to the city of Pontresina, where we learned about avalanche safety measures. Reto shared stories from his childhood, recalling avalanches destroying houses. The constant monitoring of avalanche-prone areas and the use of helicopters to transport supplies were essential for the safety of these communities.



The importance of the Alps in providing water for irrigation throughout Northern Europe was emphasized. Glaciers act as natural reservoirs, storing water until needed for agriculture and drinking. With the glaciers melting, there are concerns of future water shortages in Europe.

As we concluded our day, we contemplated potential solutions, like ice stupas in Nepal, to store water and mitigate water scarcity issues. Collaborative efforts and environmental consciousness were recurring themes throughout our remarkable journey, leaving us with a renewed appreciation for the natural world.

## August 21

*by Ben Feldman*

We started our day exhausted from the previous day of hiking, but with excitement from an “easy” day of no hiking. I was looking forward to a nice day of rest, driving from Pontresina, Switzerland to Chiareggio, Italy. After breakfast, we went into the town of Pontresina to explore. While we were told that we didn’t need to wear hiking boots as we weren’t hiking, we embarked on a hike up a trail for a great view of Pontresina.

At the top of the trail, we learned about their avalanche/landslide protection systems. Originally, houses and buildings were not allowed to be built in the valley because of the dangers of potential natural disasters, but sometime in the 50’s the laws were relaxed, and houses were being built in these areas especially vulnerable to avalanches. To protect these residents, an impressive structure called the Auffangdämme dam was built with 24/7 monitoring which would provide the town just 5 minutes to evacuate to their shelters located underneath their buildings/homes.



Figure 1: Auffangdämme of Pontresina, Switzerland



Figure 2: Romanesque church in Pontresina, Switzerland

After viewing the Auffangdämme, we hiked back down the trail to look at other features of the town. The next thing we saw was a 12<sup>th</sup>-century Romanesque church that featured frescos on the walls. Unfortunately, we couldn’t go inside due to people touching the frescos and ruining them, but seeing the outside was good enough.



Walking around the village, we were able to see very traditional styles of houses in the Alps that contained some key details that made them distinguishable from others. First, the small windows. The windows were made to be small in order to better insulate the buildings, but that presented a problem with getting light into the houses. This is why many of the houses have concave trimming around the small windows, to allow more light to enter the building. The second, and in my opinion, more interesting aspect was the paintings and engravings that you can see on the outside of the houses. These paintings and engravings must be done by a trained professional and can include pictures of the animals of the region like the ibex, details like the sun, engravings of the family name, or a poem of some significance (usually written in Romansh).



Figure 3: Traditional style of house with Engravings; Pontresina, Switzerland

We then headed out for what we thought was a long car ride to Chiareggio, however, we stopped 5 minutes into the drive to see a beautiful scenic lookout point of Piz Bernina. After getting back into the car we stopped 5 minutes later at Berninahaus for coffee so we could see the inside of a traditional building. The inside of the cafe was done completely in stone pine, a very common tree of the area, and featured chamois pelts on the walls. We ordered espressos, hot chocolate, and an iced latte which confused the waiter.



Figure 4: Lookout of Piz Bernina



Figure 5: Coffee with the group at Berninahaus



Figure 6: Edelweiss Flower



After leaving the restaurant and taking another 5-minute car ride, we stopped once again to learn about the area and hunt for the elusive edelweiss flower. We learned that the area we stopped on was full of calcium-rich rocks which indicated that it was once the continental shelf of an ocean between Africa and Europe. These calcium-rich rocks were perfect conditions for edelweiss flowers, so we began climbing the boulders in search for one. After 15 minutes of searching, Steffi found one and we all came together to see the small and unique flower that is a symbol of the Alps and the national flower of Switzerland.

Getting back into the car for a slightly longer car ride, we stopped once again for lunch by the river and got a small hike in. In this hike in Cavaglia, we explored the Bernina Glaciers which created a park of “glacial potholes”. These glacial potholes were created from glaciers melting. Those glaciers would melt and carry small particles and continually weather away the rock. The small particles mixed with the stream of water would essentially sandblast the rock away in a whirlpool motion which would create a pothole. These would only create potholes in lines perpendicular to the flow of the glacier. After seeing tens of potholes, we stopped for some forest tea made by Grummo, a giant who forages for the ingredients (including edelweiss) in the forest.



Figure 7: Glacial Pothole at the Bernina Glaciers

After the Bernina Glaciers, we drove for a while and took another stop in Poschiavo, Switzerland. Here, the group was left on their own for an hour to explore the town. I was grouped with the boys, and we visited Parrocchia Cattolica S. Vittore Mauro which was a beautiful Gothic church with a Romanesque tower. We also saw an ossarium in the middle of their town. This ossarium was full of skulls and bones which they use because the land is limited and they need it for farming.



Figure 8:  
Ossarium in  
Poschiavo,  
Switzerland

Lastly, we started our final leg of the trip which ended in Chiareggio. After being so exhausted from long days of hiking and a long day of traveling and frequent stops, we were rewarded with a much-needed feast with seemingly bottomless jugs of wine.



## August 22

*by Clara Parker*

On Tuesday morning, we woke up to our first morning in Chiareggio. Though the small Italian town (“town” is an exaggeration) should’ve been a peaceful place to wake up in, we all awoke as nervous balls of energy. Since the beginning of our trip, this day had an ominous cloud over it. Today we would embark on the longest and most difficult hike of the entire trip. Over our delicious dinner the night before, Steffi and Reto debated the safest and most efficient routes which could vary in length from 10 miles to 15 miles. Needless to say, I was fearing for my legs (and already blistering feet).

At 8 AM, my roommates (which consisted of the elite group of Alexis, Hayden, and Ben) and I laced up our hiking boots and made our way into the dining room downstairs. Intending to load up on protein to fuel our long day, we were greeted with a very different breakfast. The spread consisted of white bread, yogurt, various cakes, and cereal. While I’d normally be excited to devour this very European breakfast, I knew that in an hour’s time I’d have to tap into my very limited lunch supply. During breakfast, we attempted to negotiate the terms of a shorter hike, but with no success. An eleven-mile hike was our destiny.

We set out on foot, walking from our hotel to the base of the trail. Fortunately, this part of the walk was flat and gave us all a chance to mentally prepare for the task ahead. Then began our ascent. With Reto in the lead and Steffi bringing up the rear, we all trekked along silently.



Fig. 1: Walking to the trailhead



Fig. 2: Walking amongst the purple flowers

The beginning of the hike took us through a forest of pine and larch. When we were enclosed in the trees like that, I sometimes forgot we were in the Alps. Instead, it felt like a hike at home in the

Appalachians. Soon, however, we emerged from the trees for our first stop and first magnificent view. Near our trail, some cows grazed on the fields. Reto pointed out the shepherd's house to us further up. In the summer, shepherds and their families take their cows up into the mountains to graze while the families live in the small mountain villages. In the winter, they all move back down again.



Fig. 3: Short break on the ascent

After we were all able to catch our breath, we set off again, this time winding up fields of purple flowers with a steeper incline. Fortunately, our next stop wasn't too far away. We all gathered in a little clearing to listen to Hayden's presentation on natural disasters. In the Alps, climate change has increased the number and unpredictability of natural hazards. This can be attributed to increased glacier movement and melt, permafrost melt, and rock movement. These hazards, such as avalanches, landslides, and floods, harm the flora, fauna, and biodiversity of the area. They can also generate immense costs in direct and indirect ways when they damage houses, trails, or ski lodges. The Alpine Climate Board works to prevent and protect against these hazards by increasing disaster response and prediction teams.



Fig. 4: Hayden's Presentation



Following the presentation, we ascended further up the trail, only breaking to eat the wild blueberries along the trail. At about the three-mile mark, we came across a clear river running down the mountain. We filled our water bottles and sat down to rest our legs. It wasn't long before Reto had us back on our feet, though. We were instructed to explore the neighboring riverbed and examine the uniqueness of the rocks. From afar, the rocks looked like normal rocks. However, once I started climbing around, I noticed spotted rocks that looked like they contained smaller rocks within the river bed. When we all came back together, Reto explained that we were walking on igneous rock that formed from hot rock melt that had risen from below Earth's surface. Hot rock is buoyant and therefore, rises to the surface. Before the rock cooled, smaller rocks had fallen into it, giving it the spotted look. Additionally, rocks are composed of different crystals that form when the rock cools. The white spots on the rock are the first crystals that formed in these rocks.



Fig 5: Igneous Rock



Fig. 6: Reto paying the pet tax

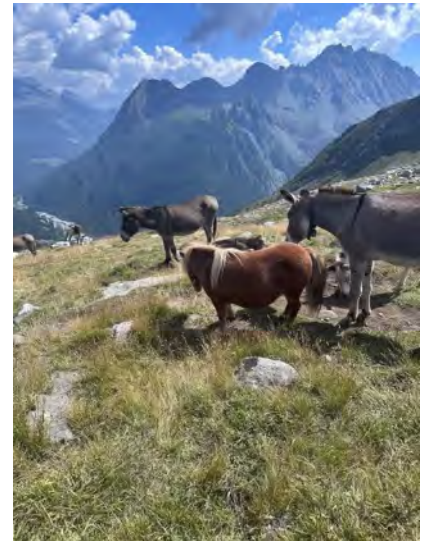


Fig. 7: Small horse

After our rock lesson, we trekked on for the last leg of our ascent. Much to my enjoyment, we encountered some friends on this part of the journey. At least a dozen donkeys and small horses obstructed the path. The best part was that they required pets for us to pass. So, as we each walked by, we gave them a little love. Soon, more of the donkeys crowded us, looking for as many pets as they could get. I don't blame them. They probably don't get much human interaction up on the mountain.

Though I would've loved to hang out with them for the rest of the day, my tired body wanted to finish what I *thought* would be the hardest part of the hike. Reto let us all go ahead of him for the next part, telling us to vaguely follow the trail. However, when I looked ahead, I realized the trail was gone. In its place was a bare rock face. It became clear rather quickly that our hiking journey was now going to require climbing on all fours up the rock face. As intimidating as it seemed at first, scaling a rock face was actually really fun! As long as I just didn't look down (story of this trip), I was in good shape. It also helped to see the cabin at the top of the mountain within reach.

Cypress climbed the rock face at what seemed like record speed, reaching the top long before the rest of us. However, over the next twenty minutes, we all trickled in, grateful to have somewhere to sit, eat,

and not hike for a while. The cabin, Rifugio Del Grande Camerini, had a small restaurant in it where some of us ordered ragu, beer, and Sprite (it was a semi-successful attempt to recreate the Radlers which were our signature drink on these hikes). After sipping my homemade Radler, I sat down on the grass to eat my peanut butter sandwich and chocolate. It wasn't the most creative lunch, but after hiking for five hours, anything tasted good. It also didn't hurt that the view of the mountains and glaciers was stunning. I was, however, dismayed to learn that the bathroom in the cabin was Turkish style – a hole in the ground. Since we probably wouldn't have access to a bathroom again for another five or six hours, I had to brave it.

After a relaxing hour of napping, eating, and chatting with the other hikers and workers at the cabin, we were ready (not really) to begin the most dangerous path of the trip. But before we risked our lives, Reto pointed out that while we were standing on European rock, we would soon be standing on African rock and ocean floor during our descent. The different rocks on these mountains can be attributed to seafloor spreading, continental drift, and subduction millions of years ago.



Fig. 8: Climbing down the mountain



Fig. 9: The ridge at the start of our descent

Then the walking began. Even if I was ready to make my way down, my quads most certainly weren't. Unfortunately, I was going to have to depend on them for my survival. Right off the bat, we had to climb backward down a rock face (with the help of Reto and a chain). Then we marched across long grass that proved to be very slippery. I looked up from my feet just in time to see Zach wipe out and roll a little bit down the mountain before catching himself. Zach managed to escape unscathed, but it would not



be the last time someone slipped on the slippery slope. For a while, it seemed we were hiking off-trail, climbing over piles of rock and sliding down grass that could've very well never been walked on by humans. Luckily for us, it was about an hour into falling on our butts that Steffi declared the trail was about to get steep. We all groaned. If what we just slid down wasn't steep, I was going to have to do the next part on my butt. And I, in fact, did just that. At this point, the trail was so narrow that only a single foot width could fit in the deep trench we had to walk down. Legend has it (with Zsa Zsa as witness), that even Reto fell down. Though, he was back on his feet before anyone else could witness the rare moment.



Fig. 10: Slippery grasses



Fig. 11: Resting on our way down



Fig. 12: The slope we walked down



Fig. 13: Dozens of little waterfalls

Finally, after what seemed like an eternity of trying to survive, we all regrouped at the bottom of the slope. Our place of rest looked out over dozens of little rivers of glacier melt flowing down the opposite mountain. Though my whole body ached, sitting there felt surreal. There was even a little nip of Fall in the air. Mentally, I felt amazing.

Once we had all caught up, we sized up the last of our descent (three miles of relatively flat terrain) and set off. Reto eventually let us run ahead of him so we could hopefully shower before dinner back at the hotel. When we reached the main road, Alexis, Cypress, and I couldn't resist stopping for gelato (a little reward). It was by far the best gelato of the entire trip.

When all was said and done, the hike was 11.5 miles and 9.5 hours. It was the longest I had ever walked in my life.



Once everyone had returned to the hotel, showered, and bandaged our new blisters, it was time for the part of the day everyone had been waiting for: dinner. Our first course started us off with spaghetti and marinara sauce. Then we were pleasantly greeted by French fries, Brussels sprouts, and veal (or an omelet for the vegetarians like me). I finished off the meal with a chocolate panna cotta. And of course, we had our fair share of wine. Between the food and exhaustion, it was the best meal of the trip.

By the end of the night, I was so tired it was hard to process the magnitude of what we had hiked that day. Even writing this now, I can't believe how much we accomplished. One thing is for sure though: I certainly felt it the next morning!

Fig. 14: Chocolate panna cotta and wine at the end of the day



## August 23

*by Lindsay Damon*

I started the morning with a delicious breakfast of chocolate cake, yogurt, and cereal from our hotel in Chiareggio. We had a shorter hike planned for the day, since we had just completed our longest and steepest one of the trip. We started the hike by crossing the river that runs alongside the village; along the way, we stopped to talk about serpentinite, the rock that makes up a significant part of the area. It has a green color and a snakeskin-like pattern, and the rock is used for a lot of purposes in the local towns. Along the way, we also saw some trees that curved up towards the sky. Although he wouldn't explain what the significance was, Reto told us to remember them. We then took the trail up to the Rifugio Gerli-Porro, where we sat down and got some drinks – I had a great juice made of peach purée. Afterward, we walked a little further into the valley, where we could see a retreating glacier. There, we sat down to hear Alexis's presentation about the alphorn. She talked about how the instruments are made from the curved trees that we saw earlier, which grow in a unique way due to the steep terrain. She also told us about the history of the instrument, from its original role as a shepherd's tool to a symbol of traditional alpine culture. Afterward, Reto told us about the glacial retreat that has been happening in the valley. We talked about the changes that have happened since the Little Ice Age and the effect that the glacial retreat has had on the area. Reto also told us about dendrochronology, which is the process of dating trees using their rings. Some of the oldest trees in the Alps are in the region, and significant environmental events, such as the eruption of Tambora, are recorded in their rings. On our way back, we stopped at a memorial near the Rifugio. It was a small chapel-like building that had pictures and names of people who had died while hiking the mountains in the area.



Figure 1: Zsa Zsa holding a piece of serpentinite



Figure 2: Curved trees



Figure 3: Rifugio Gerli-Porro



Figure 4: The place where Alexis gave her presentation

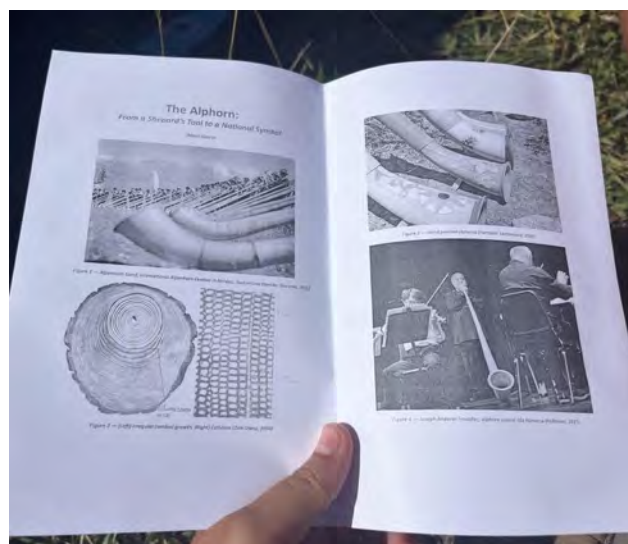


Figure 5: Alexis' handouts about alphorns



Figure 6: An image from the handout about glaciers



Although it was a steep trail back down, we all made it down safely and stopped for lunch near the river. Thankfully, we found a shady spot under some trees and enjoyed the last grocery store meal of the trip. We then returned to the hotel for a short break before getting back in the vans.



On our drive back down from the village, we stopped along the side of the road a few times, where Reto showed us the serpentinite quarries in the area. We were able to see the clear cuts from the rock, which is used for a variety of purposes, such as roof slates, roads, and sidewalks.

We made another stop in the town center of Chiesa in Valmalenco. There was a street market going on at the time, with vendors selling all sorts of items, from jewelry to ceramics to miniature nativities. Zsa Zsa and I stopped at one of the vendors that was selling jewelry; the vendor didn't speak any English and we didn't speak any Italian, so there was a bit of a language barrier. Despite that, though, we both bought pieces of jewelry. I got some beautiful blue earrings, and Zsa Zsa got a bracelet. Afterward, we met up with the rest of the group and spent some time in the center of the town. We walked around some of the other vendors before getting back in the vans on our way to learn about the pot-making traditions of the area.

Figure 7: A serpentinite quarry



Figure 8: Lara at a street vendor in Chiesa in Valmalenco



Figure 9: The earrings I got from the street market

We first met up with Carmen, one of Reto's geologist friends from grad school, and her husband Diego. They both help to support the museums in the area, which focus on preserving the geologic history of the region. They took us to an area with historic workshops that were used for making pots using the potstone (or soapstone) that is so common in the region. We started by examining and learning about the stone, and then we were able to go inside the workshop. Since the workshop was so small, we had to go in small groups of 4-5. Because of that, I sat under an umbrella for a while with Zach, Clara, and Will; during that time, some of the locals brought us water and iced tea! It was such a hot day, so we really appreciated it. After a little bit, we were able to go inside the workshop with Reto and Carmen. Carmen (translated by Reto, since she doesn't speak English) told us about how workers used to use water power to make the pots. The workshops were built right next to a stream, and the water was channeled into the workshop to help spin the stones. A worker would sit in a seat facing the stone and carve it while it spun, creating a set of nesting pots. Then, it was lined with pieces of copper to prevent it from expanding while heated. It was really interesting to see how this process would have worked, and one of the guides gave us a demonstration of the copper lining.



Figure 10: Looking at potstone at the workshops



After leaving the workshop, we took a much-needed gelato break at a bar/gelateria nearby. I got a combination of stracciatella (cream with chocolate pieces) and frutti di bosco, which translates to “fruits of the forest” and was a delicious berry combination.

We then headed to the Museo e Miniera della Bagnada (Museum and Mine of Bagnada), where we were learning about the mining practices of the area. The museum took us through different rooms with an explanatory video about the different types of rocks that were mined: serpentinite, asbestos, talc, and soapstone. The museum was a very sensory experience, with videos projected on to the walls and different types of rocks available for us to touch.

Afterward, we returned to the hotel for a great dinner. I had pizzoccheri for our first course and a cheese plate with vegetables for the main meal. For dessert, I had chocolate semifreddo, which was a half-frozen chocolate pudding dusted with cocoa powder. Most of us finished off the night sitting outside the hotel together. Clara and I stargazed for a while, and we both saw some good shooting stars. After a while, we returned to the hotel for our last night in Chiareggio.





Figure 11: Pizzoccheri for an appetizer; cheese plate and vegetables as main course



Figure 12: All of us sitting at dinner

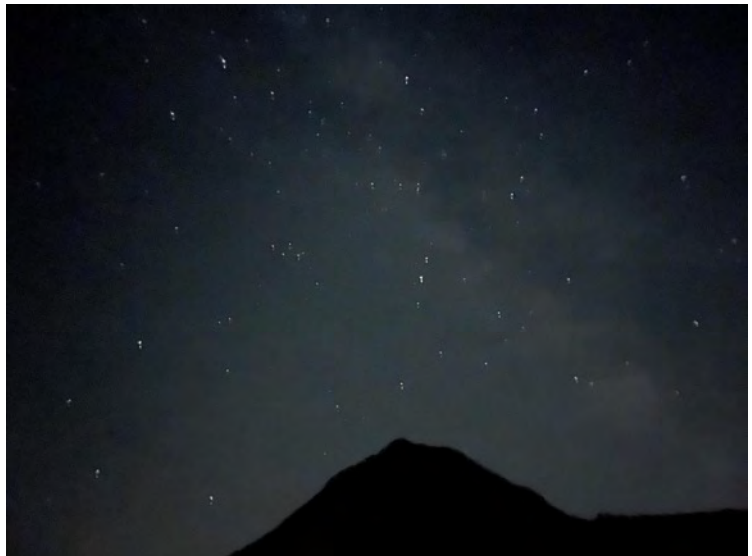


Figure 13: Stargazing later that night

## August 24

*by Alexis Garcia*

After wrapping up the final hike the day before, the group concluded its three-night stay at Hotel Chiareggio and embarked on a well-deserved, relatively relaxing travel day from Chiareggio, Italy to Bellinzona, Switzerland. There were no presentations planned to be given on this particular day, but our time was to be filled with a plethora of stops consisting of town exploration and stone quarry activities. Though collectively the group was sad to have completed the hiking portion of the trip, the agenda for the day included a visit to a once-active mine that had been talked about for several days now, and the group was excited for the visit. Before then though, the first stop of the day was in a small town just about a half hour drive outside Chiareggio called Lanzada. Here is where the group visited the mineral museum — Museo Mineralogico della Valmalenco — and where Diego and Carmen live.

With nearly 300 varying species of minerals discovered in this Alpine valley, it is no surprise that the museum's wall contained some of the most eye-catching mineral formations I have ever seen. Ranging from properties such as magnetic, to fluorescent, to vibrant in color, many of the minerals and large crystal formations inside valued at several thousands of dollars. Carmen showed a picture on her phone of a particular green crystal once housed by the museum, which was sold at a mineral showcase in Las Vegas for over \$70,000.

It turns out, though, that it wasn't until more recently that the communities of miners in the Alps began to value the minerals and crystals found in the mine the way they are today. Before, the precious minerals were destroyed in order to get to the "more valuable" asbestos that would encase them. Prior, only asbestos was viewed as worth mining for, and all other minerals were invaluable and essentially became collateral damage. It was particularly amazing to see the varying colors and forms each mineral could assume.



Following the trip to the mineral museum, the group traveled to a neighboring coffee shop up the street for a classic Italian morning coffee break. As we were getting our drinks, the bells from the town chapel nearby began to sound off for several minutes — which Carmen indicated to us signaled a funeral. If they were quieter bells going off, this was to indicate the top of the hour. But due to the longer nature of the bells sounding, and the "odd" time of them going off, they must be associated with a more significant ceremony or celebration being held at the chapel. In the smaller mountainous communities such as Lanzada, it was typical for the city to revolve around the sounding of the church bells. They would indicate the time, special ceremonies, or potentially even emergencies. This relationship with the bells and their tolls is still evident in many of the cities visited throughout this trip including Valmalenco, Piuro, Chiavenna, Montespulga, etc.

Figure 1 — The bell tower of the church sounding during the coffee break



After the coffee break wrapped up, it was time for the group to visit the mine. The main vessel of caves the group visited initiated with the purpose of mining for asbestos or pot stone (pot creation was how many local citizens made their livelihoods, thus the mine's deep importance in the Alps community), but some other smaller caves off in the distance were visible — which we learned were started by crystal hunters mining for the precious minerals seen in the museum earlier in the day. Inside the mine, there were nine levels of talc veins. The lowermost levels would often fill with water due to the dampness. Due to the extreme wet conditions, the water collected in the mines would constantly need to be pumped, and mining was mostly done in the winter when the water was less persistent. This dampness was evident even when simply walking through the veins — droplets of water would occasionally catch someone's hard hat as they went past. Inside the veins and covering the main walkways, there were rails for railway carts, but the carts were pushed out and into the mine by hand. The rails were slightly sloped downwards, towards the entrance in order to make them easier to push. It was not until the late

40s in which the first mechanical instrumentation began to be of use in the mines. Pumps using high water pressures would act as picks and strongly shoot out to create holes in the rock. Without an elevator, or any other electronic devices to aid in the movement of materials, this means that all heavy materials found in the mine were carried by hand and with manual labor. The heavy metal doors, wooden carts, and even mounds of scrap debris were all carried on the backs of workers. Furthermore, the mines ran without the expert help from geologists or other scientists — miners simply employed their own intuition when making critical decisions. Only the skilled miners would set off the sticks of dynamite, and would have to do so with precision. Multiple wicks would be lit at once, and the crew would then need to quickly vacate the cave before they went off, but keep listening for the correct number of explosions to go off.



Figure 2 — The entrance to the mine of Valmalenco

The layering of the talc in the veins seemed to follow a vertical nature. Due to this and its low density/softness, it is very prone to falling down if not mined correctly. When walking about the mine and the land surrounding it, one would also notice that there were no mine tailings. This is due to the fact that huge holes created by miners were filled with waste from other veins — an efficient method to reduce waste and save space. Upon entering one of the veins, a small space was carved into the wall where a shrine honoring Saint Barbara was placed. From Carmen the group learned that Saint Barbara is viewed as a protector and celebrated in mining communities every December 4<sup>th</sup>.



In terms of the chain of command, we were informed that the women would carry the heavy material to and from the caves. They would hike the tough terrain everyday, carrying heavy loads of material and debris on their backs and heads — to and from the mine. They would persevere through all types of tough weather conditions. The young children also play an important role, as they would rummage through large piles of scrap rock, filing away at them using bigger sharp rocks or metal picks to collect leftover asbestos — living a childhood much different, and more grueling, than the one I experienced.

Figure 3 — Railway tracks inside the mine of Valmalenco.





Figure 4 (Left) — Example of mechanical instrumentation used inside the mine.

Figure 5 (Above) — Zsazsa, Cypress, and I posing in our hard hats after leaving the mine.



Figure 6 — Shrine to Saint Barbara.



Figure 7 — “Movie theater” inside the mine.

After an eye-opening morning at the once highly dangerous mine, the group made the long drive to Lake Como and the city of Menaggio — a much different feel than the smaller, mountainous villages visited earlier in the trip. The climate felt more tropical with higher humidity, greater heat, and even the presence of palm trees. Additionally, it was significantly larger and busier than the less touristy spots visited such as Chiavenna or Pontresina. The group split for shopping, exploring, and a much-needed gelato break overlooking the water to escape the bearing sun. Next up was the final drive to Bellinzona, where upon arrival the group's tiredness had seemed to catch up with everyone.



Figure 8 — Lake Como

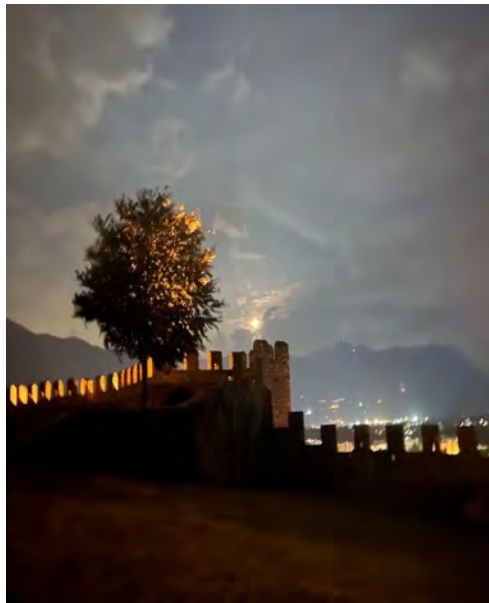


Figure 9 — Sketch of a lonely tree inside the walls of Castelgrande Castle.



Following yet another immaculate dinner of pizza in Bellinzona, the group made a surprise visit to one of the three historic castles in the city — the Castelgrande Castle. To my surprise, the castle was open to the public with little entrance regulations compared to what one may encounter when attempting to



visit a historic site or museum in the United States. This made the castle very easy to navigate and explore. It was situated on a rocky hill, a prime location for looking out over the entire valley of Ticino and to keep watch for intruding parties or enemies. Though much time and history have passed — granting significant changes to the look of the castle — the part of the castle the group explored possessed a simple architecture: plain stone steps, little landscaping, barren walls. The three castles, defensive wall, and ramparts of the market in the town of Bellinzona are all classified as UNESCO World Heritage Sites.

Sipping on Reto’s “mountain juice” and overlooking the city on a calm, yet breezy evening, the group enjoyed their time at the castle and chatted the night away. It was a bittersweet moment to look out over the stunning valley and realize the trip that once felt like it would never end (in a good way) now only had two nights left. But how many can say they’ve enjoyed a glass of Genepi Bernina atop a Swiss castle?



Figure 10 — The palm trees of Menaggio.



Figure 11 — The overlooking view of the valley from Castelgrande Castle.

## August 25

*by Will Reason*



Figure 1: Morning sunlight on Montebello Castle

After stashing our bags and eating a short breakfast at the hotel, we all met outside and walked up a long stone staircase to Montebello Castle, the second highest in Bellinzona. The ramparts gleamed with the light of the morning sun. Reto launched into a talk on the history of Bellinzona. We learned that the hill on which the Castel Grande (the lowest of the town's three castles) is situated has been inhabited for the last 12,000 years. Bellinzona has been an important strategic city for much of that time, owing to its position in the Ticino Valley which leads to the Gotthard Pass, today the most important crossing point of the Alps. Montebello Castle meanwhile, dates from the 13th to the 15th centuries CE. The highest castle in the city, Sasso Corbaro, was built in a single year in 1478, after the city's Milanese rulers were defeated by rock-wielding farmers and peasants. The rulers felt forced to fortify Bellinzona more extensively and thus built the castle. But shortly after that, the Milanese had to retreat from Bellinzona entirely. As a result, it eventually became part of the Swiss Federation, rather than Italy.

We turned to our final two presentations, delivered by Cypress and Lara. Cypress presented on Simone de Beauvoir, which the philosophy major in me greatly appreciated. Cypress' presentation was a perfect example of the transformative power that the Alps can have on the mind and the soul. She told us that de Beauvoir came to the Alps to escape mental anguish she was feeling about her open relationship with fellow philosopher John-Paul Sartre. Hiking alone in the Alps provided her with an emotional outlet. Cypress drew on the work of philosopher Perry Zurn, who argues that there are four main types of walks: political, philosophical, environmental, and spiritual. (These categories can also exist in combination). Cypress showed how de Beauvoir engaged in all of these at various times in her life. The Alps proved a crucial friend to her, and she published her first book after a week-long walk through them



that helped her rethink some of her key ideas. Cypress then had us complete an exercise in which we discussed our own experiences hiking through the Alps and considered which of the four walks we had taken. It was powerful to hear everyone share the memories and new perspectives they would take home to Philadelphia from this trip.

Lara had the honor of closing out our presentations for the trip and did so adeptly with a presentation called “Exploring the Alps through Paintings, Literature, and Music.” She showed us two paintings that capture much about the Alps. First, Philip James de Loutherbourg’s 1803 painting “An Avalanche in the Alps” depicts the Alps as a home of the natural sublime, a key subject of the Romantic movement that the Alps helped inspire. Second, Lara showed us the 1801 painting “Napoleon Crossing the Alps” which demonstrated again the symbolic power of the Alps in human history. In the corner of the painting, Hannibal’s name is written on a rock, a solemn nod to his famous crossing in the Second Punic War and to Napoleon’s aspirations for eternal military glory. Lara then discussed literature. She showed how Mary Shelley’s *Frankenstein* used the Alps as a setting and a symbol of the Romantic sublime and how the mountains inspired the poet Lord Byron to write “Above me are the Alps.” Finally, we were treated to a discussion of how the Alpine landscape has inspired musicians throughout history, from traditional folk music to legendary composer Franz Schubert. We listened for a few minutes to one of Schubert’s pieces, which managed to capture the soaring peaks and plummeting valleys of the Alps through its instrumentation. After these presentations, Reto concluded the academic portion of our trip with a moving monologue on what the Alps meant to him and to people throughout history.



We then explored the city individually. I visited the Chiesa Collegiata with Zach, Ben, Hayden, and Ignacio, which had stunning interior design and artwork. We then lingered over a long lunch (where we ran into Steffi!) and coordinated with the girls to buy much-deserved thank you gifts for Reto and Steffi. After a little bit of shopping around, we found a cheese knife in an outdoor goods store, with a serrated edge shaped to resemble some of the major peaks of the Swiss Alps. The moment we saw it, we knew it was the perfect gift for Reto. We sent a photo to our group chat and everyone loved the idea. Meanwhile, the girls found a beautiful pair of earrings and a sketchbook for Steffi, a fitting present given all the journaling and drawing she enjoys doing on the trail.

Figure 2: The spectacular interior of Chiesa Collegiata

We returned to the hotel and gathered our bags for the long, scenic drive back to Zürich. Steffi and I rocked out to classic rock in the front of the Mercedes the whole way, which kept things tolerable when we hit rush hour traffic outside the city. After checking back into the St. Josef’s Hotel, we walked to

dinner. Enroute, we ran into a wedding party highlighted by two alpenhornists, a real treat considering we had enjoyed a presentation on the alpenhorn a couple days prior. We dined at Tibits, one of the first vegetarian restaurants in the Western world and a personal favorite of Reto's. The dishes were creative, varied, and exploding with flavor, so much so that all of the meat eaters on the trip (myself included) were thanking Reto for his choice. At the end of dinner, we presented Reto and Steffi with their gifts, which they both graciously accepted. Zsa Zsa and Lara then were kind enough to present everyone on the trip with a personalized award and souvenir, based on humorous contributions each person had made. I was the proud recipient of the "Most likely to scale the van during lunch and claim it's tier one" award, a reference to my penchant for rock scrambling and rating climbs according to their class in the Yosemite Decimal System. I received a key chain with a cute wooden wild boar to signify the award.



Figure 3: Farewell dinner at Tibits

After dinner, we all said a bittersweet farewell to Reto and headed back to the hotel. We went out to the street festival around 11, where we met up with Steffi and danced for several hours. I don't remember exactly how late we were out, but it was late enough that I got back to the hotel and had to head straight to the airport. It seemed fitting to squeeze every last minute of fun out of a trip that had brought us all so much: new friendships, new knowledge, and breathtaking adventures in one of the world's most stunning landscapes. I'll close with gratitude for that fact. **From the bottom of my heart, thank you to the Alps and thank you to everyone who shared them with me.**

Figure 4: Cheesesteaks for sale at the street festival in Zürich!

