SPRINGS

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PORTRAIT OF AN ARCTIC RESEARCH STATION

Flora Mary Bartlett

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Tarfala Research Station is nestled in the Tarfala Valley in the Arctic north of Sweden. It is accessed by helicopter or on foot. The hike is challenging, dominated by the moraine landscape left behind following glacial retreat, where rock and debris of all sizes scatter down the steep valley walls. The station began as a site for the study of glacial mass and quickly became a place for polar-expedition training. It was officially opened as a research station run by Stockholm University in 1961, focussing on glaciology and geomorphology, and today consists of a mess hall and kitchen, lab and lecture hall, workshop, sleeping quarters, staff quarters, and a sauna. In summertime, when temperatures are comparably mild, Tarfala Research Station is occupied by staff, visiting researchers, and guests, and sometimes hosts university visits with lectures and trips to the glacier. I am one such visitor, in the autumn of 2020, staying at the station for a 10-day pilot study concerning landscapes, science, and photography

Portrait of an Arctic Research Station

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Tarfala Research Station sits at 1,135 metres above sea level. Thick rusted cables tether the buildings to rocks, holding them down against the treacherous winds that rip through the valley. In 1992 Tarfala experienced the Swedish wind-speed record of 81 metres per second, which carried away the sauna.

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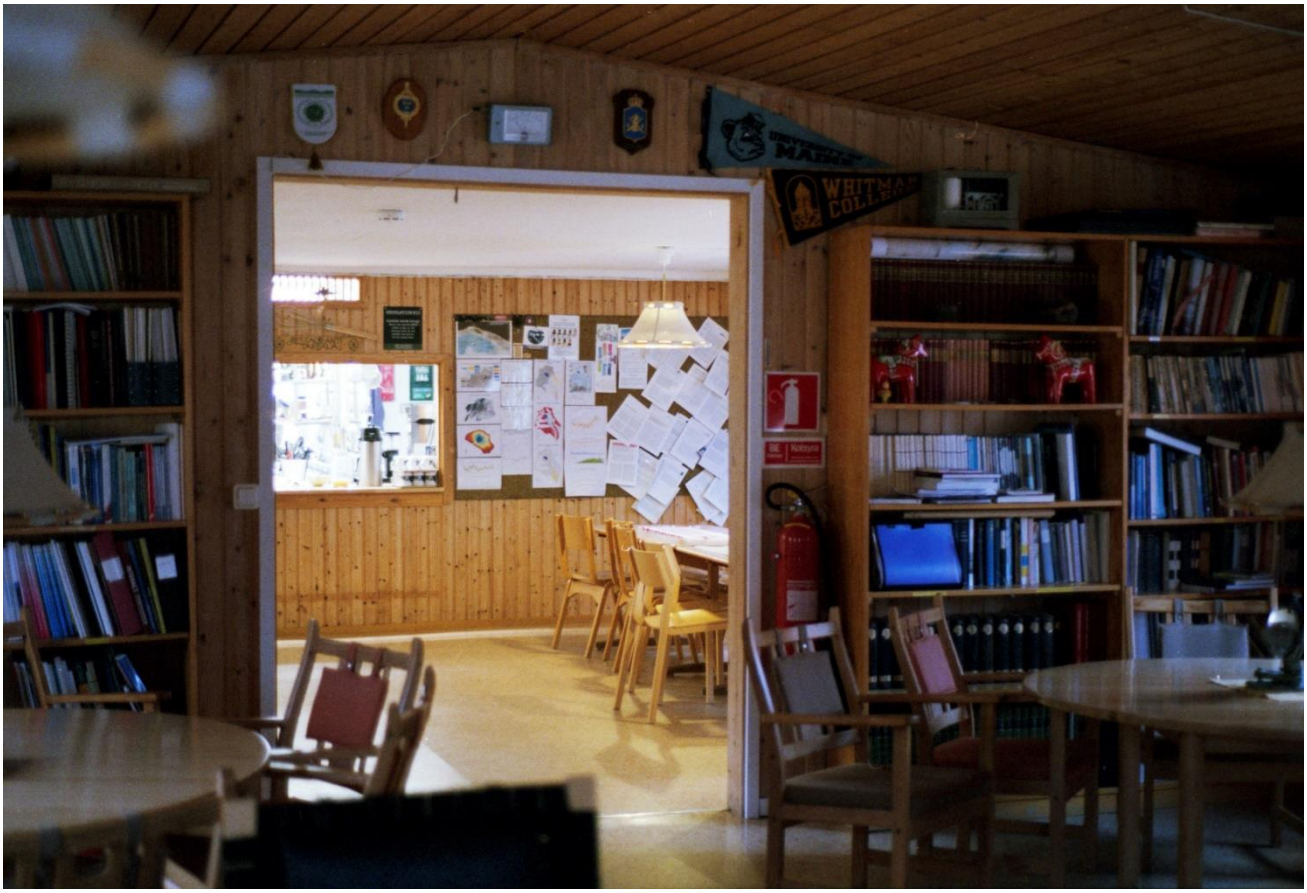

One of the buildings houses the mess hall. Meals and plans are prepared here daily, and guests and staff congregate for traditional Tarfala Sunday pancakes or to sit around the fire. The interiors are shaped by the experiments taking place out in the valley and in the lab, materialising threads of connections between inside and out. A whiteboard hangs beside the door for trip itineraries, detailing the groups who departed for glacier excursions, the safety equipment needed, and when they are expected to be back. A large noticeboard displays the scientific research conducted in the valley, including studies of Tarfala Lake's temperature,[1] bedrock geology,[2] and changes to glacial mass.[3]

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The scientific objectives of the station are also present elsewhere. In the lecture hall instruments perch atop bookshelves, old snowshoes and sledges hang from hooks, large pieces of numbered rock dot the surfaces, and photographs of the different glaciers through history adorn the walls. The images speak to how the valley has been photographed: simultaneously as an object of study and as a scenic landscape to be gazed upon and reproduced in the form of a print, crossing the boundaries between science and art. These prints inspire the way I photograph the glaciers visible from the valley. Drawing inspiration from the Tarfala archive, I continue the tradition of photographing the landscape at a given moment in time.

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The scientific processes at Tarfala focus on the continuous gathering of data by the field assistants, providing ongoing records of the landscape. Beside the kitchen hatch in the mess hall is a stand loaded with test tubes, each containing one portion of instant coffee. A sign urges people to "please bring tubes back!" These tubes are taken on the daily treks up to the glaciers, down to the rushing water of the stream, or on other small trips up the steep slopes surrounding the station to take recordings from weather stations and devices hidden in water flows. Sometimes the test tubes return to the lab containing water samples—part of the river crossing the threshold into the station.

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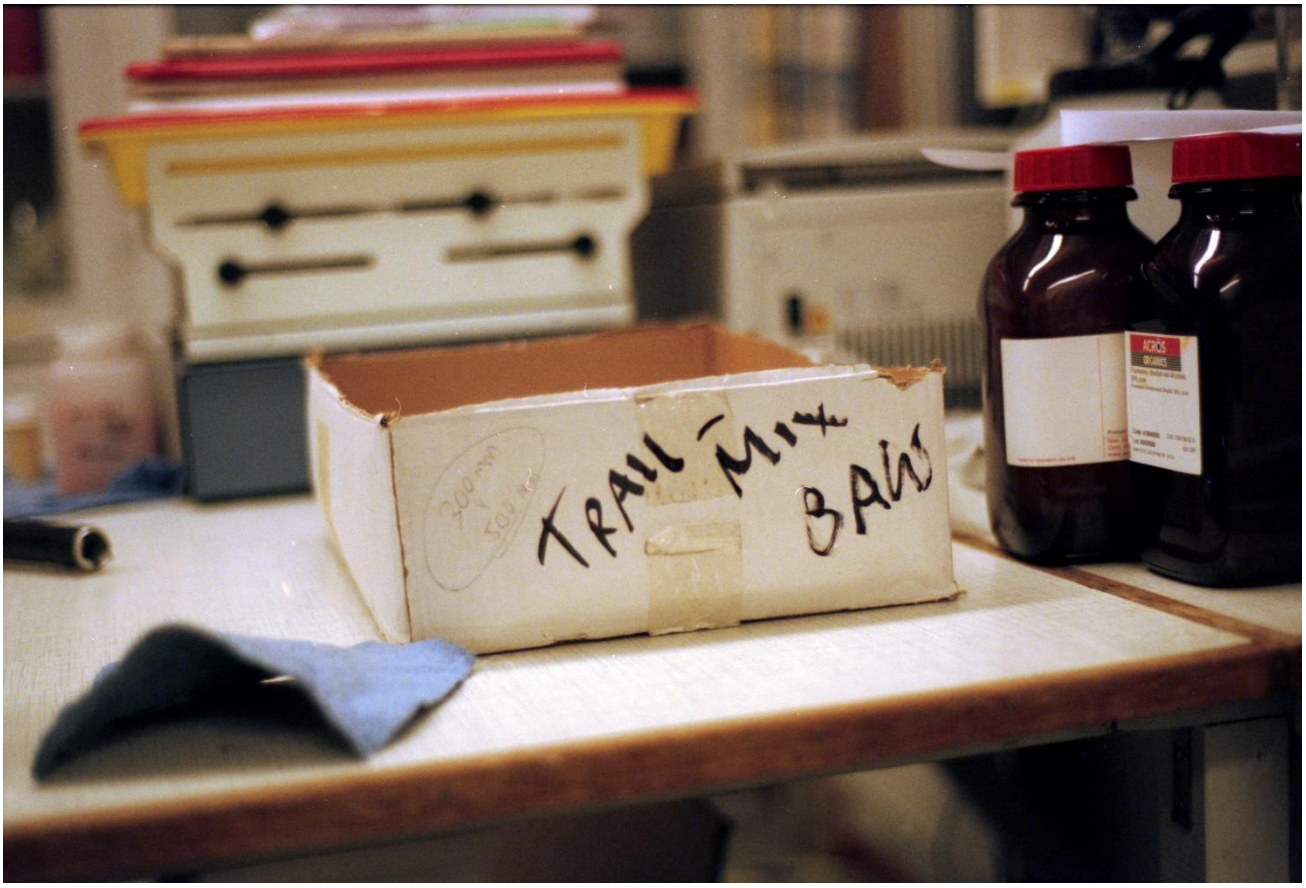

Inside the lab, a cardboard box marked "TRAIL MIX BAGS" stands among chemical flasks and rubber gloves. The field assistants responsible for the daily grind of gathering data pack trail mix into these bags to keep their energy up. The bags are the perfect size for trail mix *and* for scientific samples, filling a dual function in containing the energy for the bodies working outside in all weather. From kitchen to lab and from lab to landscape, objects move depending on purpose, and the station is a locus for the exchange of materials both natural and scientific.

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Weather is always closely monitored as part of data gathering—as with the weather station pictured above—but also before any excursion, near or far. Smartphones are drawn out of pockets during dinner to check the prognosis for the following morning, accessing the larger data models that themselves utilise local stations such as this one. The senior staff draw up a tentative plan, which they communicate to the field assistants, usually with the caveat *"weather permitting."* The phones reappear at breakfast, and the plan is further refined to fit the morning weather report. Strong winds mean no flying to the highest glacier.

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Ramona, taking measurements in the drizzle, tells me how rain and wind make the work more satisfying, adding that she always knows the sauna is waiting. After work, researchers and staff congregate there, drowsily recounting the day. Weather acts on the expeditions, moods, sense of achievement, and results of the data collection. It also acts on the house, shaking it in its tethers and howling in the pipes. My boots, soaked from hiking through waterlogged moss, stand by the door to my cabin, dripping onto the mat and bringing damp into the research station.

One of the glaciers is in walking distance of the station. Strict protocol ensures no one goes up there without specific lines of communication and safety equipment. The glaciers are treacherous and dynamic landscapes, with hidden crevasses lurking beneath the rocky surface and formidably fast-changing weather conditions. One day during my stay, I am invited to accompany one of the research engineers, Pia, up the glacier. The first stretch of the ascent is not what I expect. It is not the glassy surface I have seen in paintings, but a stretch of steep and dirty ice covered by rocks of all sizes.

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Suddenly, the rocks and pebbles give way to an expanse of blue, grey, white, and black. The sound of a trickle of water snakes its way up from the cracks in the ice, mixing with the thump of our ice axes and the grating of spikes attached to our boots. Walking becomes far more intentional and laden with risk than I am used to, each step a deliberate act to secure my feet within the crust of something I know to be very, very deep. I try not to think about that. An ache forms in my calves from this new way of stepping across a terrain. Pia goes further than I do. I turn back while I can still see the station far, far below.

The descent is even more hair-raising, as I need to stop gravity from pulling me down the slippery surface of the ice. I swear a few times in frustration and wonder why the station doesn't seem to be getting closer. Some nature writers frame glacial expeditions as a perilous thrill, a dicey conquering of a frontier that they or their subjects have embarked upon.[4] Yet despite only going a fraction of the way, my heart is pounding in relief as I reach the rock again, and my shins are screaming from the steep angles and plodding gait.[5]

Limping back down the slope toward the station, my boots make small wheezing sounds as they squish into the spongy floor of the valley. Not all the data gathering here concerns ice, weather, and water. Some researchers also study life on the ground and the different fungi, mosses, and lichens of the valley.[6] I am delighted to find my favourite plant, *Eriophorum angustifolium*, more commonly known in British English as bog cotton, nestled between the rocks.

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When the research staff get back from their excursions, equipment is replaced and clothing is hung up to dry. The data is recorded and the whiteboard updated with everyone's return. The test tubes, now empty of coffee, are returned to their stand in the kitchen or with their river samples to the lab, and everyone heads to the sauna or the mess hall to warm up and refuel.

How does one visualise these exchanges—of people, materials, and knowledge—between station and landscape? In my work as a visual anthropologist I experiment with physical connections between image surface and surroundings through photograms.[7] These have their roots in early cameraless photography in which scientists developed a chemical process allowing surfaces to be photosensitised. The inventor, chemist, and experimental photographer Sir John Herschel developed the cyanotype technique in the 1840s, creating a photosensitive coating that would become a deep Prussian blue when exposed to sunlight.[8] This technique was then used extensively by Victorian biologist Anna Atkins in her documentation of algal forms, as the cyanotypes facilitated the capture of minute details in the specimens she was recording.[9] It is a practice deeply entwined with scientific work and thus seems fitting for a research station. There is even an old photo lab tucked within Tarfala.

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I first experiment with the cyanotype technique in different spaces within the lab. It feels dark and uninspiring inside, so I go out and expose the paper on rocks by the stream, and on the staircase leading up to the lecture room, a kind of borderland between inside and out. I use things found at the station: building materials left on the ground, rocks, scientific equipment, gloves, and maps.

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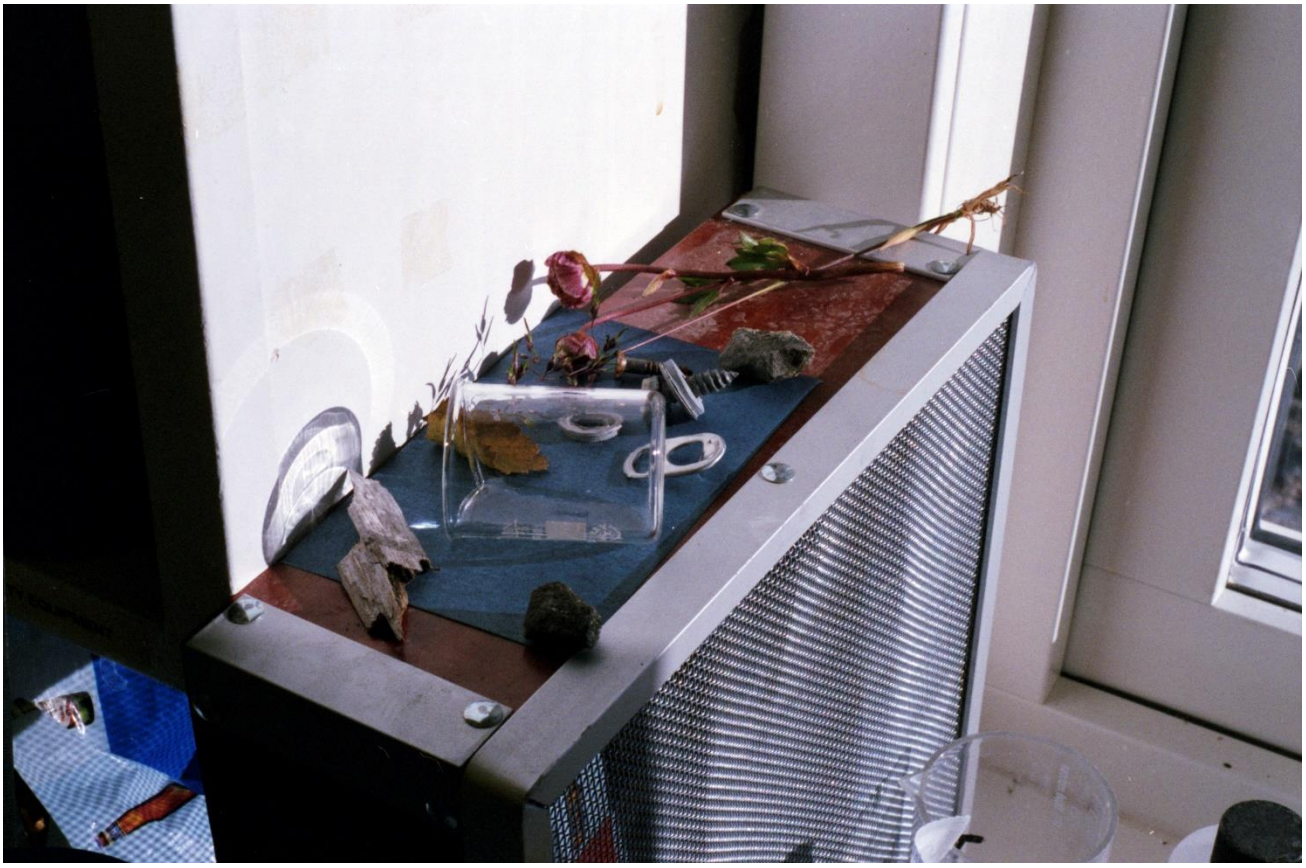

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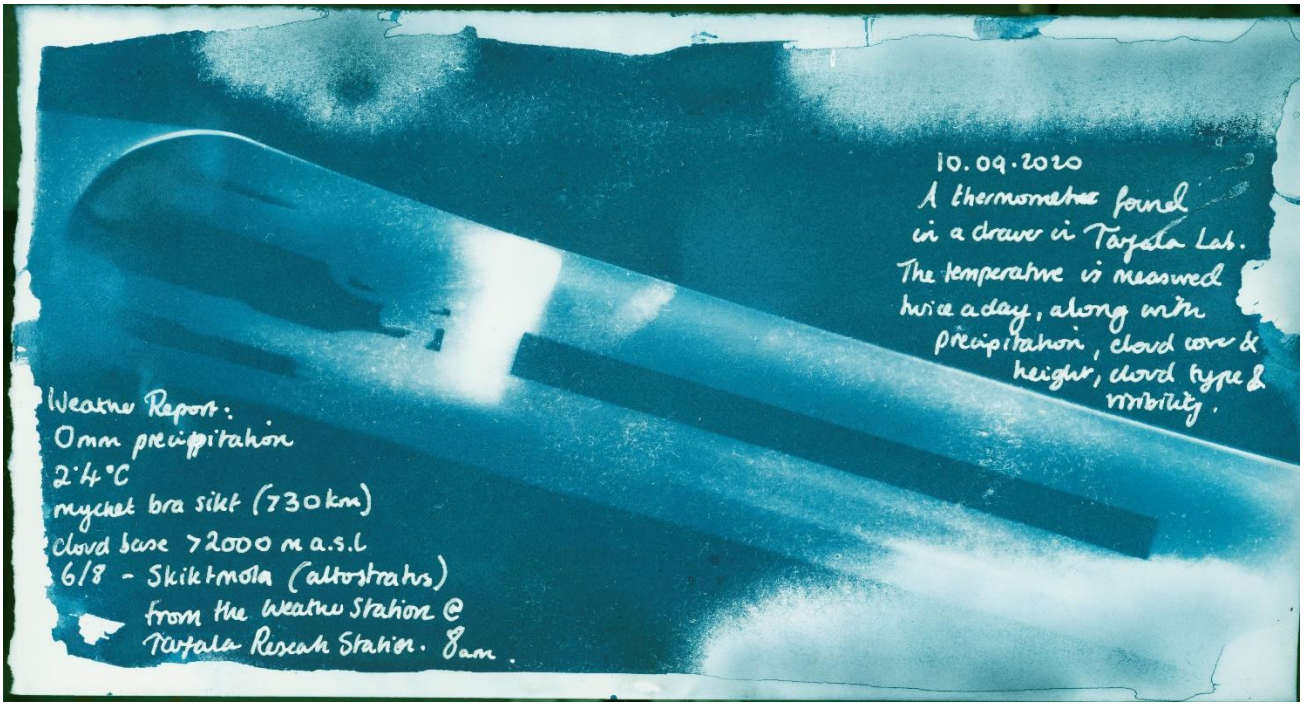

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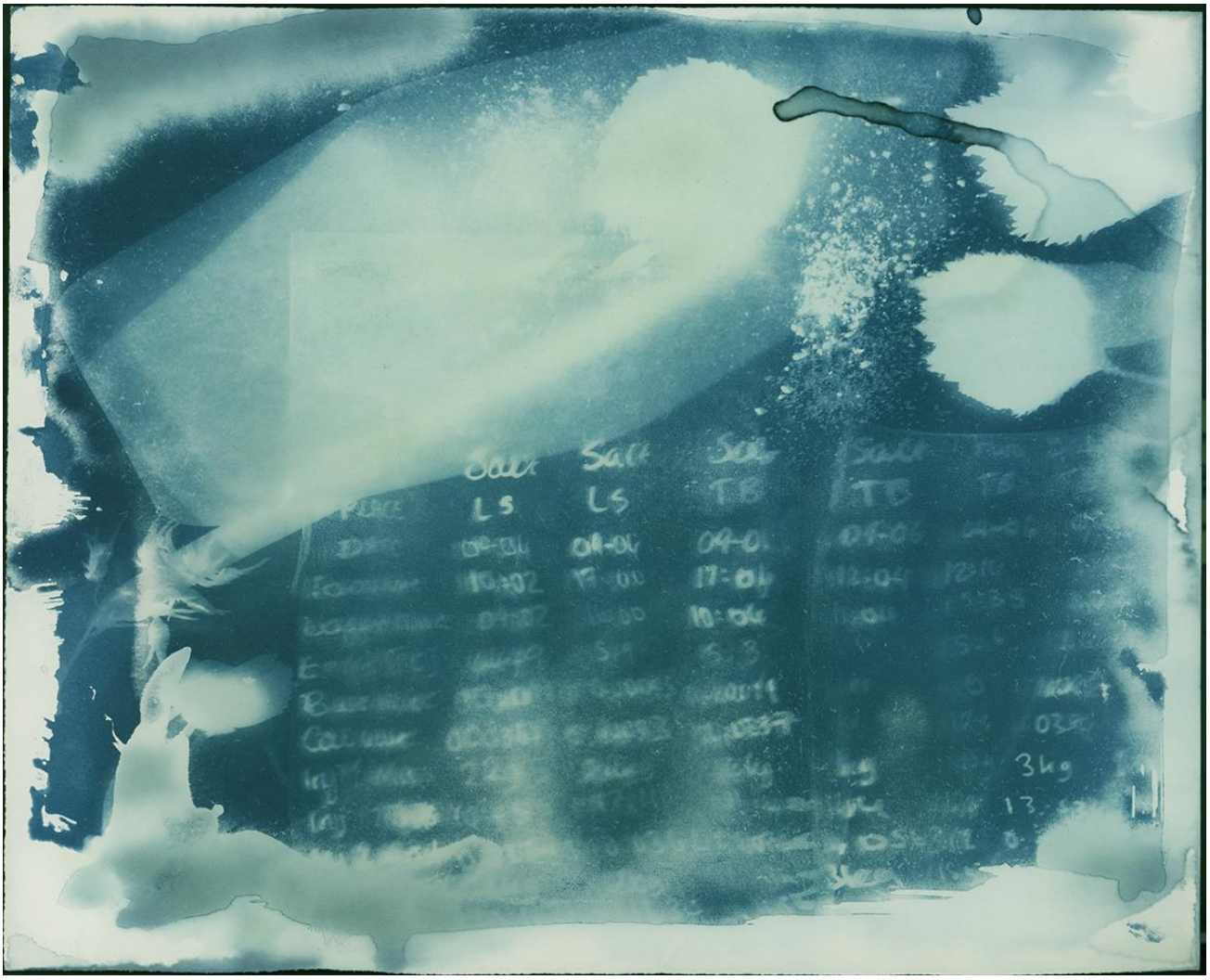

As the weather crosses boundaries between inside and out, agitating the planning and execution of the scientific process, I bring it into the making of these images. Agitation is a term used in photography when photo trays are shaken to spread chemicals across the print surface, and here the wind does the job for me, blowing the chemical across the surface of the paper. Water acts as a fixer for cyanotypes, whereby prints are rinsed after exposure to secure the image from further changes. The rain falls onto the paper to fix the image in its own timeframe. Weather thus becomes an active agent in the making of the prints. After drying, I write directly onto one of the prints to record where and when the print was made, what was going on around me, the scientific invocations of using this method, and the weather report from the day.

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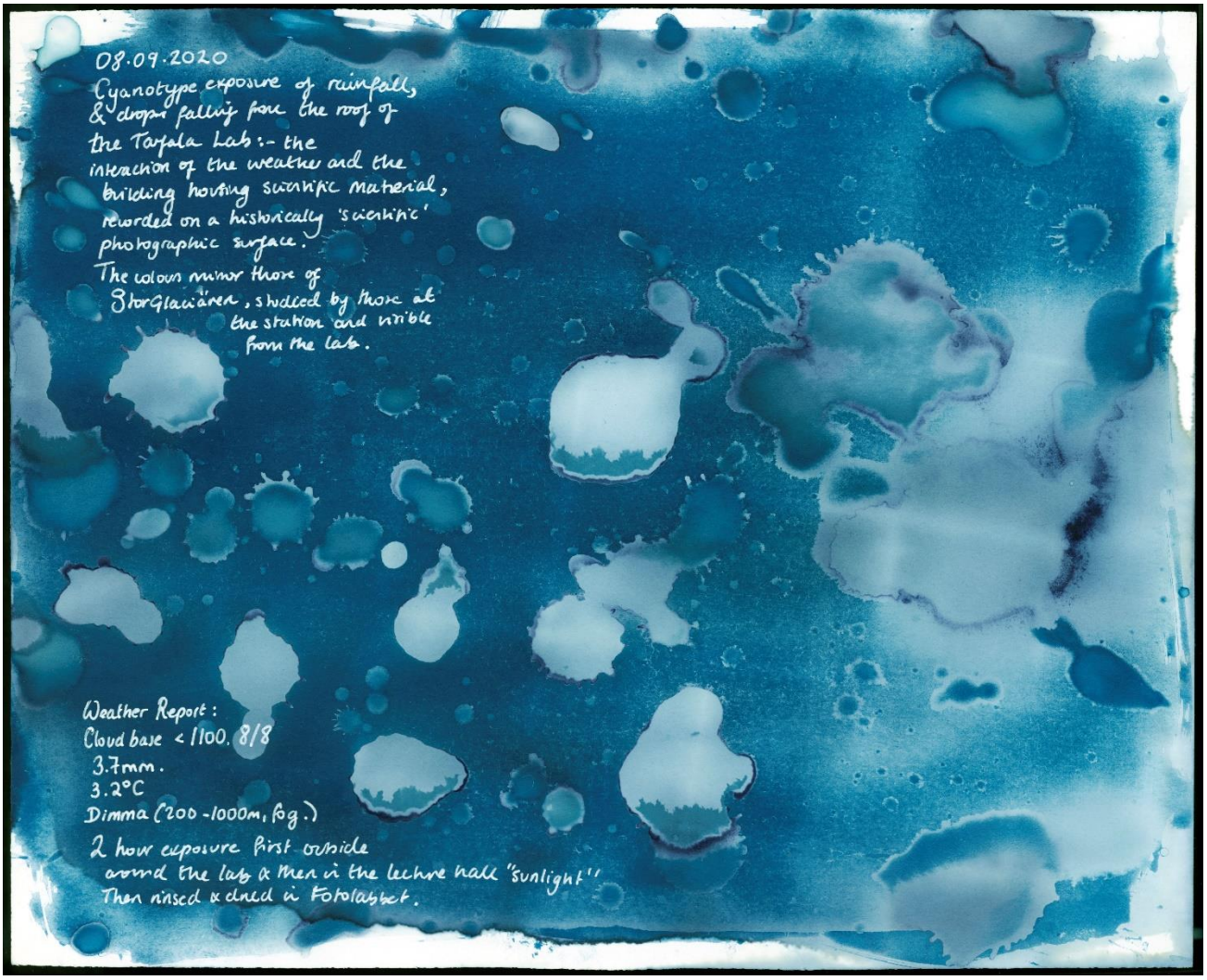

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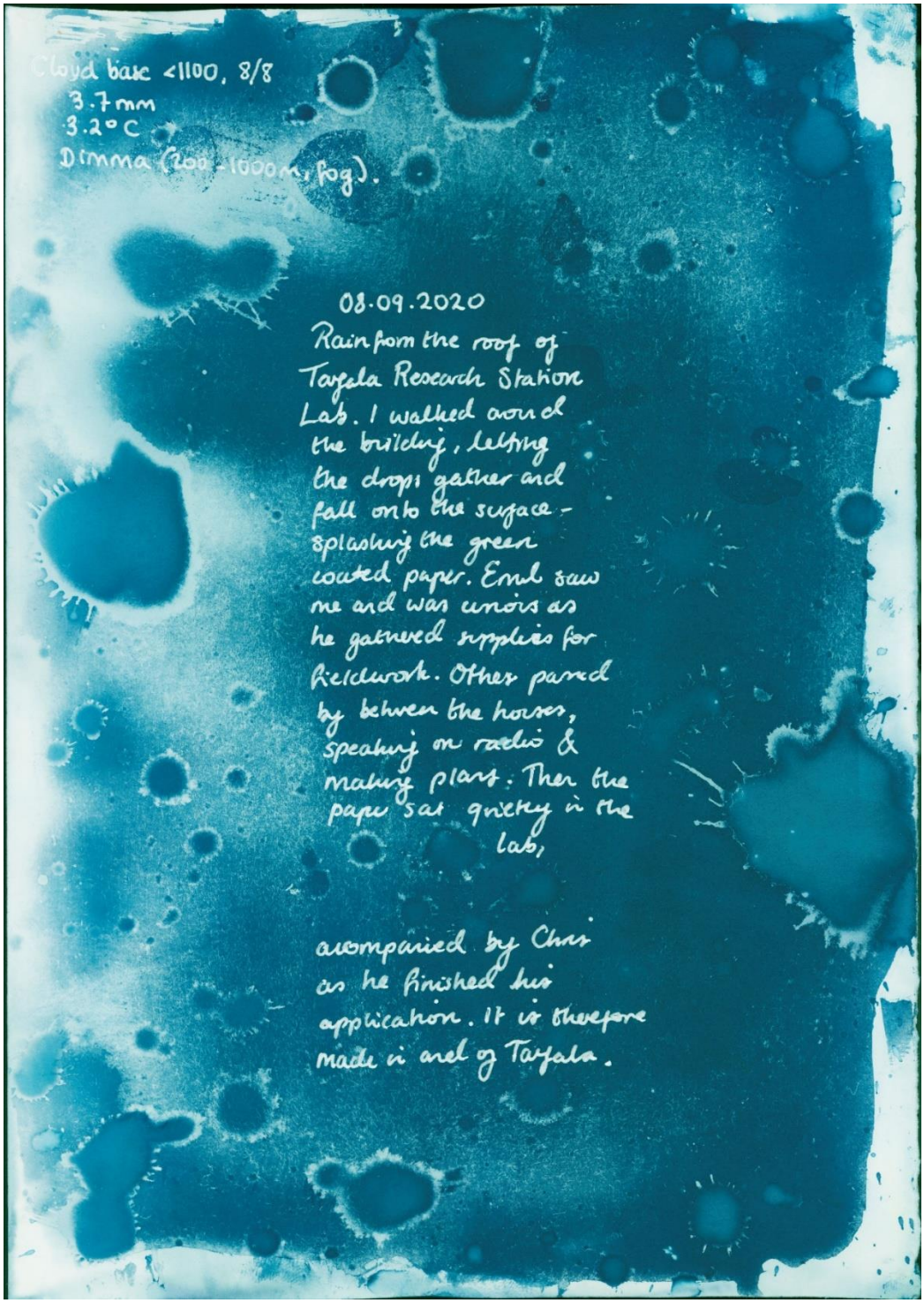

Making photographs was from its inception a scientific practice, and has been integral to species documentation and expeditions in the name of scientific discovery. These photograms combine elements of natural science, photography, and visual anthropology—three intersecting disciplines. They are situated records of scientifically informed experimental practice, evoking the disciplinary methodologies of anthropology through fieldnotes written directly onto images along with weather reports and scientific data from the station. Beyond the visual records shot on 35 mm film, these pieces are a record of this place and the material exchanges I witnessed; indeed, these interactions played a role in the image making itself. The prints are therefore made both in and of Tarfala.

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Notes

[1] Nina Kirchner, Jan Weckström, Joachim Jansen, Frederik Schenk, Jamie Barnett, Annika Granebeck, et al., "Water Temperature, Mixing, and Ice Phenology in the Arctic-Alpine Lake Darfáljávri (Lake Tarfala), Northern Sweden," *Arctic, Antarctic, and Alpine Research* 56, no. 1 (2024): 2287704, https://doi.org/10.1080/15230430.2023.2287704; Nina Kirchner, Jakob Kuttenkeuler, Gunhild Rosqvist, Marnie Hancke, Annika Graneback, Jan Weckström, et al., "A First Continuous Three-Year Temperature Record from the Dimictic Arctic-Alpine Lake Tarfala, Northern Sweden," *Arctic, Antarctic, and Alpine Research* 53, no. 1 (2021): 69–79, https://doi.org/10.1080/15230430.2021.1886577.

[2] Graham B. Baird, *On the Bedrock Geology of the Tarfala Valley: Preliminary Results of 2003 and 2004 Fieldwork* [Tarfala Research Station Annual Report 2004] (Tarfala Research Station, 2003), 1–5.

[3] Per Holmlund, Wibjörn Karlén, and Håkan Grudd, "Fifty Years of Mass Balance and Glacier Front Observations at the Tarfala Research Station," *Geografiska Annaler: Series A, Physical Geography* 78, no. 2–3 (1996): 105–14, https://doi.org/10.1080/04353676.1996.11880456.

[4] Robert Macfarlane, *Mountains of the Mind: A History of a Fascination* (Granta, 2009).

[5] I truly have no desire to do this again and start considering a project on forests instead.

[6] Wibjörn Karlén and Jessica L. Black, "Estimates of Lichen Growth-Rate in Northern Sweden," *Geografiska Annaler: Series A, Physical Geography* 84, no. 3–4 (2002): 225–32, https://doi.org/10.1111/j.0435-3676.2002.00177.x; Claudia Coleine, Laura Selbmann, Stefano Ventura, Luigi Paolo D'Acqui, Silvano Onofri, and Laura Zucconi, "Fungal Biodiversity in the Alpine Tarfala Valley," *Microorganisms* 3, no. 4 (2015): 612–24, https://doi.org/10.3390/microorganisms3040612.

[7] Flora Mary Bartlett, "In Galleries and Beer Cans: Experimental Photography in Explorations of Northern Swedish Landscapes," *Visual Anthropology Review* 37, no. 1 (2021): 164–92, https://doi.org/10.1111/var.12236; Flora Mary Bartlett, "Alternative Photography as an Ethnographic Method," *Brief Encounters* 2, no. 1 (2018): 93–102, https://doi.org/10.24134/be.v2i1.104.

[8] See Mary Warner Marien, *Photography: A Cultural History* (Laurence King Publishing, 2006).

[9] Paige Hirschey, "Rhapsodies in Blue: Anna Atkins' Cyanotypes," *Public Domain Review*, 6 December 2023, https://publicdomainreview.org/essay/anna-atkins-cyanotypes/.

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