

The Arafune Cold Storage was a natural refrigerator used to store silkworm eggs that was built in a valley in the town of Shimonita in Gunma Prefecture. In the 1870s in Nagano Prefecture, it was discovered by chance that storing silkworm eggs in naturally cold caves and valleys would allow for multiple cocoon rearing cycles in a single year. Naturally cold valleys, like the one in which the Arafune Cold Storage was built, are rare. Even in the summer, when daytime temperatures rise to above 30 degrees Celsius, the air flowing through the valley is just above freezing. This phenomenon is due to the open spaces in the valley's rock. Snow and ice that falls between the rocks is insulated from the spring melt, and when mountain air blows through the valley it is chilled by the unmelted snow. Arafune Cold Storage was built by Niwaya Seitaro (dates unknown), a local silkworm farmer from Shimonita. His son Niwaya Senju (dates unknown) studied sericulture at Takayama-sha and realized the chilly valley from his hometown could be turned into a natural cold storage facility like those in other prefectures. He told his father, who spearheaded construction of the storage buildings. Construction began in 1904, and the facility was in use until 1939. The storage buildings were built into the valley to catch the cold air that flows through the rocks. Wooden walls and roofs were also built on top of the stone foundations, but they no longer remain today. While Arafune Cold Storage existed, it was the largest natural cold storage facility ever built in Japan and could store over a million egg cards. Arafune Cold Storage allowed silkworm farmers to hold three hatching cycles a year, tripling their cocoon production and therefore their silk production.