

## Otani Refinery Site

Round holes, unnaturally smooth flat surfaces, and deep diagonal crevices are visible along the moss-covered rock walls here. These marks of human hands are all that remains of a silver refinery that was a key part of the highly specialized economy that centered around the Iwami Ginzan Silver Mine. The refinery is thought to have been operated from the mid-1700s under the supervision of the magistrate appointed by the Tokugawa shogunate (1603–1867) to oversee the silver mine. The holes held roof beams, while the flattened rocks may have been workbenches. The crevices were made by miners digging directly into the hillside to reach silver veins, which in this area were often very close to the surface.

Refineries such as this one were vital to the production of large quantities of high-quality silver. Ore brought here from the mine was first crushed by workers who then sifted through the resulting stones to isolate the parts containing silver. These were then processed using the *haifuki* (cupellation) method of refining. *Haifuki* involves smelting copper-containing silver ore together with lead. The silver binds to the lead, forming an alloy. This alloy is then placed on a bed of ash and heated to as high as 850° C, with bellows used to keep the mixture oxidized. The other elements of the alloy eventually melt and are absorbed by the ash, leaving only pure silver. Byproducts of this process have been discovered throughout the Otani site.

Once refined here, the silver began its long journey to the government's coffers. It was carried down to the magistrate's office in the town of Omori, where it was weighed to determine its purity and its quantity recorded. The silver was then transported overland to the port at Onomichi and from there by sea to Osaka and Edo (present-day Tokyo).