

From Smelting to Sorting

Nittōho Tatara smelts steel three times each winter. The photographs on this panel depict each stage of the process.

First, piles of logs are burned, and the ashes are pounded with long rods. This creates a dense layer of carbon-rich matter that helps to keep moisture from entering the furnace (photos 1–2). Next, the clay furnace is constructed and fitted with bamboo pipes that connect the furnace to the bellows, then fired dry (photos 3–8).

Once the clay has dried, three days of smelting begin. Working nonstop, the *murage* (foreman) and his crew add iron sand and charcoal to the furnace roughly every 30 minutes (photos 9–11). As the furnace's internal temperature rises, waste material (slag) drains out through channels at the base and is cleared away by workers (photos 12–13). Meanwhile, the *murage* regularly observes the progress inside the furnace through small holes near the air pipes and judges how much iron sand and charcoal to add next.

On the morning of the fourth day, the furnace is demolished, and the still-glowing lump of smelted metal (*kerā*) is dragged out to cool (photos 14–15). The *kerā* contains a mixture of different grades of iron and steel, so workers use drop hammers and other tools to break it into smaller pieces (photos 16–19). The final step is to separate and sort the metal into different grades, which requires special expertise (photo 20).