Irons in Japan and the Korean Peninsula Based on Metallurgy

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In Japan the early iron culture from the final phase of the Jomon period to the Yayoi period began at the introduction of iron products of malleable cast iron, iron casting decarbonized steel, and puddling steel with the method of high-temperature reduction which was most likely be adopted in the northeast region of China. Moreover, sponge iron with the method of low-temperature reduction has seldom been found because of hardly been survived; a few specimens and corroded condition cause that they have been found in a very small percentage.

On the other hand, the technology of forge of the Yayoi period is still confined in the undeveloped stage and also in the environment which is called a primitive forge. Firstly, the used iron wares (fragments of the decarbonized-casting iron axes) were reused by polishing them with whetstone, and secondly, as the half-finished goods of a stick and a board as raw materials were proceeded to produce iron wares by cutting, taking fabrication of heat, and at the end polishing with whetstone. Raw materials for forge depend on China until the middle of the Late Yayoi period, but after the middle of the Late Yayoi period there is evidence that they depend on the Korean Peninsula where iron production already started.

Adopting the funnel which serves as a full-scale forge; pounding, shaping, and refining, these procedures began around the first half of the Kofun period, and the beginning of refinement of iron ore and iron sand should wait until the middle of Kofun period. It is not certain when the refinement adopted in the Korean Peninsula began, however, there are some evidences that heated magnetites as raw materials were used in the A and B areas of Sŏkjang-ri Site in the 3th through 5th century, and it is sure that the date will be much earlier. As the successive site, Sachon Iron Mill Site has been excavated; the remains of furnace are round in plan, and this type has been discovered in Hiroshima and Okayama prefectures, which is belonging to the Late Kofun period. However, any large funnels in diameter have not been unearthed in Japan, therefore, there are some arguments whether or not two specimens are similar in type. As to the round furnace in Japan, iron sand and iron ore were adopted simultaneously for raw materials, and adopting the heating method have been inherited.