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Iron Extraction from Bog Iron Ore in Early French Colonial America

Authors : Yves Monette, Brad Loewen, Louise Pothier

Abstract : This study explores the first bog iron ore extraction activities which took place in colonial New France. Archaeological excavations carried on the founding site of Montreal in the last ten years have revealed the remains of Fort Ville-Marie erected in 1642. In a level related to the fort occupation between 1660 and 1680, kilos of scories, a dozen of half-finished iron artefacts and a light yellow clayey ore material have recovered that point to extractive metallurgy activities at the fort. Examples of scories, artefacts and of a possible bog iron ore were submitted to SEM-EDS analysis. The results clearly indicate that iron was extracted from local limonite ores in a bloomery. We discovered that the gangue material could be traced from the ore to the scories. However, some lime silicates and some accessory minerals found in the scories, like barite and celestine for example, were absent from the ore but present in dolomite fragments found in the same archaeological context. The tracing of accessory minerals suggests that the ironmaster introduced a lime flux in the bloomery charge to maximize the separation of the iron ore. Before the introduction of the blast furnace in Western Europe during the first half of the 18th Century, the use of fluxes in iron bloomery was not a common practice.

Keywords : bog iron ore, extractive metallurgy, French colonial America, Montreal, scanning electron microscopy (SEM)
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