CRUCIBLE STEEL IN SRI LANKA IN THE FIRST MILLENNIUM AD AND THE EARLY TWENTIETH CENTURY*

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From al-Kindi’s first mention of Sarandibi steel in his treatise ‘On swords and their kinds’ in the 9th Century (Hoyland and Gilmour, 2006) to Ananda Coomaraswamy’s eye-witness account of 1903 describing crucible steelmaking in the southern foothills of the central highlands, the island of Sri Lanka has had a close association with the production of high-carbon steel from both direct smelting and crucible refining processes (Coomaraswamy 1956; Juleff, 1998). Until recently these two sources, al-Kindi and Coomaraswamy, have not only demarcated the upper and lower boundaries of the known history of crucible steel in Sri Lanka, they have also provided the largest body of evidence from which interpretations have been made (for example, Bronson, 1986).

Now, archaeological and ethnographic research carried out in Sri Lanka since the early 1990’s has added substantially to our understanding of the nature of indigenous steel production and the role of Sri Lanka in the making of wootz (Juleff 1998, Wayman and Juleff, 1999). This new evidence takes the form of an assemblage of crucible fragments retrieved from an iron-working site, dated by radiocarbon to the 6th-10th centuries AD, set within a landscape of iron smelting activity in the northern foothills of the central highlands (Juleff 1998). At the other end of the chronological spectrum, it also includes the identification of a number of crucible steelmaking sites in the southern foothills that were known to be operating in the nineteenth and early twentieth centuries, including the location at which crucible steelmaking was demonstrated to Coomaraswamy (Juleff 1998). From this last site valuable ethnographic data has been collected along with fragments of crucible steel ingot. Analysis of the ingot fragments has shown them to be hypereutectoid steels comparable in composition and structure with other wootz steels (Wayman and Juleff 1999).

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The archeological evidence now shows that crucible steelmaking in Sri Lanka was only one component of a complex ferrous metallurgy that was underpinned by the emergence of a highly developed technology which utilised strong monsoon winds to power a uniquely designed linear furnace, which in turn was capable of producing high carbon steels during smelting (Juleff 1996). The new field evidence from Sri Lanka and its review in the light of past and revised interpretations of the documentary evidence in the trade, and distribution of crucible steels and wootz beyond its shores during the Early Islamic (Middle Historic) period, will be of great interest. There is a great need for more archaeological survey of iron-working sites throughout central and southern India and Sri Lanka to identify continuities in shared technological traditions.

References


