Confusing the Crucible Steel Issue

Illustration

Anna Feuerbach

- It is commonly repeated in the literature that crucible Damascus steel was only produced in India and Sri Lanka, from so-called wootz ingots...
  Rethinking “Damascus” Steel"

Wootz was the output, not the input

- Depending on the crucible charge, the ingot could be hypoeutectoid (below 0.8% carbon) or hypereutectoid (between 0.8% and 2% carbon)
  2006

That I doubt. Melting of 0.8 % carbon steel needs almost 1500 ^{o}C (2732 ^{o}F); lower concentrations need even higher temperatures. At least the *early* crucible steel maker were not likely to have attained this kind of temperature for prolonged periods of time

- The process of forge welding involves heating the iron or steel to at least 1300 °C and then hammering (forging) separate pieces together to form a single piece.
  2005

1300 °C cannot be attained in a smiths' hearth nor is a temperature that high needed for normal fire welding. However, sine there are also reports that wootz cannot be fire welded at presumbaly normal high temperatures, Anna might be right for fire -welding wootz.

- Anosov gave three blades to James Murchison, a British Naturalist who was exploring in Russia. The author discovered, in a letter written to Faraday by Roderick Impey Murchison (James, 1996, letter 1432), that Anosov sent a sword to Faraday in appreciation of Faraday's research. The sword has been located in the Faraday Museum, Royal Institution, London. The tip of the blade does indeed show a fine Damascus pattern but *the remainder of the blade appears to have been cleaned but not re-etched, and therefore, the pattern is not visible*. On the back edge of the sword there is engraved, in Russian, "From Anosov to Faraday 1842 Zlataoust". The British Geological Survey in Keyworth, England houses a second blade belonging to Murchison. The location of the third sword is unknown. Feuerbach thesis

Srinivasan

Past observers of the manufacture of wootz steel in India have commented on the process of carburisation of iron to steel in crucibles where a batch of closed crucibles with the low carbon iron charge were stacked in a large furnace and fired in a long 14-24 hour cycle at high temperatures up to 1200 °C in a strongly reducing atmosphere (Percy 1860-1880: 773-6).
Three different types of crucible processes have been described by nineteenth century travellers varying from region to region, i.e. the **Deccani** or Hyderabad process, the **Mysore** process and the **Tamil Nadu** process. In the Tamil Nadu process and the Mysore process, the charge consisted of wrought iron produced separately which was then stacked in closed crucibles and carburised in a large furnace (Verhoeven 1987). But while the Mysore process charged the wrought iron with carbonaceous matter, Wood's (1893) observations on crucible processes in Salem and Arcot districts in **Tamil Nadu** suggest that only iron was charged and the crucible containing the ingot was not fast cooled in water as in the **Mysore** process (Bronson 1986). The **Deccani** process was renowned for the best quality wootz (Bronson 1986) and the process followed here was not of carburisation of a wrought iron bloom but of **fusion** of two separate pieces of cast iron (i.e., highcarbon iron) and an iron bloom (low-carbon iron) (Voysey 1837: 247) so producing a homogenous alloy of intermediate composition (Bronson 1986: 43; Rao 1970). The known sites of crucible steel production in South India, i.e. at Konasamudram and Gatihosahalli, date from at least the late medieval period, 16th century. But, although these may be earlier, systematic excavations have not been carried out to determine their antiquity. The existing research on wootz steel at these sites has been more concerned with metallurgical re-construction of the wootz process based on surface finds. The investigation presented here is also from surface finds
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Source: All over the Internet

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