

METALLURGY AS PRACTISED IN ANCIENT INDIA

A two day seminar was organised in Madras on June 24th and 25th 1988 on the theme Metallurgy as practised in Ancient Times , the seminar was organised jointly by the Madras Metallurgical Society, Madras Museum and the Department of Archaeology of the Government of Tamil Nadu. The seminar was inaugurated by the industrialist Shri.R.Rathnam who wondered whether there is something in our ancient practices the famous iron pillar at Delhi for instance that we are missing to avail a simpler solution to the present day corrosion problem .

There was a broad range of topics covered by the speakers. Some papers were a routine survey of data available regarding ancient metallurgy from published technical literature or even literary evidence. A large number of papers dealt with corrosion, conservation and restoration of metal antiques these hardly fall within the scope of the seminar. It would have been far more interesting if some attention had been paid to traditional methods of conservation the way in which metal objects (like bronze icons in our temples) are preserved without damage for hundreds of years and what we can learn from them. A suggestion along these lines was indeed made by Dr.Nagasamy in his valedictory address.

The more interesting presentations were from those scholars working on archeometallurgy; Prof. K.T.M.Hegde (M.S.University of Baroda) reported the work of his group regarding Zinc Metallurgy in the Zawana area of Rajasthan. Excavations carried out in the site over the last few years have revealed that Zinc was being produced here by the distillation process in a metallic form. Till recently modern scholarship believed that metallic Zinc was first produced when William Champion introduced the distillation per descendum process in 1746 in Bristol. The Zawana excavations have revealed that the mining and production of Zinc has been in progress in the area at least since the 1st century B.C. Hence from the very ancient times Brass was being produced in India by mixing metallic Zinc with Copper (this gives greater control over composition) while it was being produced elsewhere in the world by the cementation process (i.e reduction of Zinc ore in the presence of Copper this gives inferior quality Brass) till the late 18th century.

Thelma Lowe (University of California, Berkeley, U.S.A.) presented results of her investigation on the nature of the crucible used in producing ingots of the famous Wootz Steel . She has been investigating the fired crucible segments and ingots from heaps of the debris of the industry in Konasamudram village of the Nizamabad District of Andhra Pradesh. She described how the crucible made of rice husk and clay was an excellent material for the production of Wootz. This technique of production seems to have given the ancient steel makers independent control over grain size and carbon content which even today remain the two critical factors in determining the steel quality.

An interesting feature of the seminar was the presence and participation of Shri.Devasenapathi (of Swamimalai in Tamil Nadu) who is a renowned sculptor of metal Icons. The Sthapati demonstrated the traditional method of making icons by the Madhu Ucchistha Vidhana (equivalent to the Cire Perdue the so called Lost wax process) to the audience. In addition there was an imaginative session in which a dialogue took place between the Sthapati and a modern metallurgist Shri Ranganathan (of Hyderabad) who specialises in casting metal statues. In this session the two of them outlined their respective methods of casting images. The exchange was moderated by Dr.Gopal of the Madras Metallurgical Society who made the session lively and absorbing by his thought provoking and imaginative questions.

Dr.Nagasamy (Director of Archaeology, Tamil Nadu) presented to the audience the case of the The London Nataraja . This icon which was stolen from a temple in Thanjavur district was traced in London a few years ago. Subsequently the Tamil Nadu Government staked a claim to it and a judgement was given in its favour. A startling sidelight to this lecture which was a sort of an anticlimax came later. A member of the audience wanted to know if there was any truth in the rumours that a large number of our temples are even now being deprived of their icons which are finding their way abroad and that what we have left are only dummies. Far from any clarification or

reassurance on this issue, the chairman of the session disallowed the question because of its sensitive nature prompted by high officials of the Department of Archaeology! A distinguished archaeologist who was present at the seminar later on shared his misgivings on this matter with this author. He said that it has been noted for the past several years that even small museums abroad (Second and third rate museums) seem to be continuously acquiring several high quality bronzes and icons to Indian origin. This is indeed a matter that needs to be looked into very urgently and corrective measures taken.

Scattered throughout the seminar from the inaugural address of Dr.V.S.Arunachalam (Scientific Advisor to the Ministry of Defence) to several presentations that came later were statements emphasizing the need for a study of the traditional techniques of metal work and metallurgy, since they are of interest not only as history or art but also from the point of view of what we can learn from them today. Some specific suggestions were also made from the audience, such as the institution of awards and honours to distinguished traditional practitioners; creation of avenues by which the faculty and students with background in modern metallurgy can study with traditional scholars and artisans, survey, compilation and publication of the source works on Indian metallurgy (such as texts on Rasa Sastra etc) to cite only a few of them. However, the meeting concluded without any direction or action plan in this area. In this respect it was perhaps similar to several earlier meetings. For instance, twenty five years ago in 1963, when the National Metallurgical Laboratory convened a meeting on The Delhi Iron Pillar , many similar sentiments were expressed And we seem to have hardly progressed in our understanding of our traditional practices of metallurgy and have done nothing to assess their current day implications or potential. Still, there has perhaps been a general change in our situation, which renders this line of thinking more acceptable today. It may be hoped that we can now work towards a more concrete plan of action in this area.

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