

# ARCHAEOLOGICAL STUDY ON ANCIENT METALLURGY OF NORTH CENTRAL PROVINCE

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## **Introduction**

Anuradhapura is an archaeological site representing a long techno-cultural phase of the country. Its cultural development from simple sedentary settlement to urbanization covers the historical phases such as proto, early & middle history.

Technology is a direct factor causing to village settlement for change its cultural development towards urban and post urban levels. Formulator period of societies getting some push for this by metal technology and hereby it is expecting to discuss the states of early metallurgy in ancient Anuradhapura with special reference to the resources used, furnaces and related technological process, social system etc.

## **Methodology**

The study was mainly based on material cultural data and archaeological field data gathered by excavation, surveys, and literary sources also were used.

## **Discussion**

The basal techno-cultural phase of Anuradhapura is identified to be Mesolithic dated to 3900 B.C (Deraniyagala, 1992, 700), which was a hunter gathers economy. Use of metal

as a substitute for stone industry appears pre historic iron age of 1000 BC (Ibid, 709-29) in Anuradhapura. Since then it can see a technological specialization on iron and copper was first central to urban area and then distributed to the vicinity (Senavirathne, 1994,14). By the excavations done in last five decades some material remains as crucibles, furnaces, clay tubes, metallic objects as well as slag had been found and these industrial remains exemplify the technological aspects in metallurgy as materials used, fuels, furnaces and constructing technology.

At the basal phase, the proto historic communities of Anuradhapura used limonite ( $\text{FeO}(\text{OH}) \cdot n\text{H}_2\text{O}$ ) and hematite ( $\text{Fe}_2\text{O}_3$ ) as common forms of ore on earth surface. These contain some ca. 70% of iron (Ibid,15). Inner city excavation of Anuradhapura produce some facts about copper (Deraniyagala 1992,709, Senavirathne, 1993, B4-3G) and trace element analysis data shows the origin of these copper are Seruwila, located east to Anuradhapura (Senaviratne 1995: 117). The copper oxide at the deposits are a form of magnetite which recorded in 10.4 square km and depth to 10 m (Jayawardena 1982). The first ever

reference to the use of copper coming in chronicles with the story of copper use in the period of king Dutugamunu (Mv.xviii:16),but archaeology data taking this dating back to 6<sup>th</sup> century BC.At the sametime some proto historic copper evidences were recorded along with crucible, furnaces slag from settlementphases at vessagiriya as well (Mendis,2006,46-50; Mendis,2009 20-22).

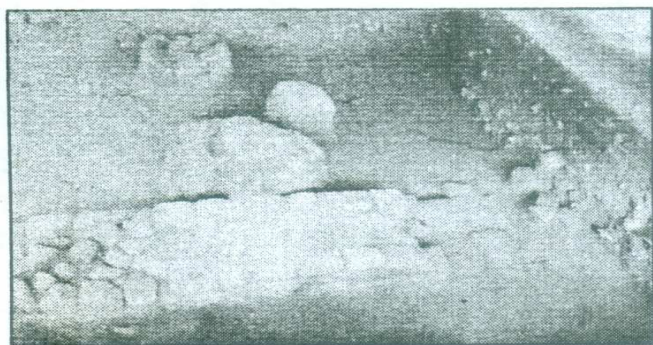
At the early historic phase, the metallurgy of Anuradhapura becomes a special craftsmanship as revealed by early Brahmi Inscription as *Labuatabadhigala,Nettukkanda, Kahatagasdigiliya andVssagiriya*.Texts of these includes some phrases as kabara (iron smith), thabara (copper smith),thopasha (tin smith),taladara (gold smith)the names used for craftsman in contemporary period (IC.Vol. 1 No. 301, 309,350,351).At this phase the eastern part of the Anuradhapura citadelbecomes much popular as a market for metal products which this market was known as MahatabakaNigama (Ez.vol111,no 17).

Crucible and Furness are made by a mixture of termite mounded soil,paddy

clay, straw and husk ash. The round and oval shapesfurnaces build by using this mixture were able to bear a temperature higher as 1200 c - 1500c.Materials as wood charcoal, cow dung, coconut shell and wood of trees as palu(*Manilkarahexandra*),weera (*Drypetessepiaria*) as fuel used in Anuradhapura might use.This metallurgic data could reveal from the basal levels to urban levels of Anuradhapura and its suburbs.

### References

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*Furnaces founded by pre Jetavana Period*