Iron objects form an important part of the Megalithic culture in India. It is interesting to know more about these objects as they throw useful light on the technical achievements of the people who built the Megalithic burials.

During the last century Meadows Taylor, Mackenzie, Turner, and by the beginning of this century Alexander Rea studied the Megalithic burials specially in South India. After 1945, Scholars like Krishnaswami, Deo, Banerjee, Gururaj Rao, Sundara, Subramaniam and Leshniek have studied the Megalithic culture sites in central and southern parts of our country.

It may be pointed out that from the beginning of the Megalithic Culture iron was associated with it and it has formed an important part of the culture. But the methods used in the production of these iron implements is yet to be studied. This is probably due to the fact that iron objects are often heavily corroded. Many a time, the iron objects are completely oxidised resulting in heavy shapeless mass of iron-oxide.

Besides, more often than not, these corroded objects are extremely fragile. They break down even when
carefully handled. These difficulties have naturally posed problems for undertaking their scientific study. In this thesis, therefore, a modest attempt is made to understand the technical skill attained by the ancient Indian Iron Smith by studying selected representative iron objects excavated from Rajur, Halingali, Hingai, Goudageri-Uchgeri, Komaranahalli, Hallur, Uppalapadu, Chinnamarur and Kadambapur.

Production of iron tools and implements would involve various complex stages such as, mining, roasting, crushing, beneficiation, smelting and finally forging the extracted metal into various useful objects. In an attempt to understand these sequential stages of metallurgy, it is necessary to seek answers to the following questions:

(a) Which were the possible mining areas close to the sites included in this study? How was the ore mined?

(b) How was the ore prepared for smelting? What was the form of an ancient Iron smelting furnace?

(c) What was the smeltery process adopted to produce iron tools and implements from bloomery iron?

Apart from these, a few other interesting questions would also emerge. Broadly these are:
(i) Why is it that some iron objects of the Megalithic period have come down to us with less corrosion and others highly corroded?

(ii) Is there a relationship between the iron objects and other components of the Megalithic burials as far as corrosion is concerned?

(iii) Whether the techniques adopted to produce the iron objects had any drawbacks so that these become a cause for corrosion?

(iv) What was the heat treatment given to iron objects?

(v) Whether meteoritic iron was used during the Megalithic period in India?

(vi) Whether the lamination process was a widespread technique in the Megalithic sites under reference?

(vii) Were the any iron objects cast?

(viii) Were the iron objects forged above recrystallization temperature or below it?

(ix) Whether the iron tool/implement so produced, shows any evidence of (a) production of steel (b) case-hardening (c) carburising.
How were the sharp cutting edges of tools produced, and are there any evidences of hardening the cutting edges by quenching?

Iron objects were known to have been produced at Hallur as early as 1000 B.C. It is important to note that the Megalithic period also forms a part of the cultural sequence at Hallur. In addition to this, the Megalithic sites in Northern Karnataka, especially in the Krishna-Tungabhadra valleys, have yielded iron objects. Most of the objects selected for this technical study, belong to Northern Karnataka.

An attempt to answer the above questions will bring forth an understanding of the technical skill achieved by the ancient iron smiths. Therefore, with a view to understanding the technical skill achieved by the Megalithic people, a scientific study of iron objects belonging to that period was undertaken. Hence this thesis is an attempt to search for answers to some of the above mentioned questions. The work is based mainly on the metallographic study of the objects.

The thesis is divided into the following chapters:

Chapter I: Introduction: general aspects of the Megalithic culture with a reference to its association with iron.
Chapter II: Archaeological background: A brief survey of sites from which the iron objects were selected for this study; state of preservation of iron objects collected and factors that might have influenced the objects to become corroded.

Chapter III: Methodology: A description of various methods used in this study: sampling, analysing, mounting, grounding, polishing, etching, examination under microscope.


Chapter V: Experiments and Results: Metallographic observations on each of the iron object/sample belonging to the different sites; reconstruction of the smithery process adopted to manufacture the tools.

Chapter VI: Conclusions: A summary, outlining the results of the present study and its relevance towards understanding of salient features of Iron Technology during the Megalithic period in peninsular India.