

KEELADI

AN URBAN SETTLEMENT OF SANGAM AGE
ON THE BANKS OF RIVER VAIGAI



DEPARTMENT OF ARCHAEOLOGY
GOVERNMENT OF TAMIL NADU

First Edition : 2019
Publication No. : 302
No. of Copies : 500

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Published by:

©Department of Archaeology

Government of Tamil Nadu

Chennai – 600 008

Price : ₹.

Front Cover : **Pots In-situ in the trench**

Back Cover : **Exposed ringwell**

Book designed by : Thiru **Kathir Arumugam**

Printed at:

1st Print

#89 (50), General Patters Road (Opp. Sarmani),
Chennai – 600 002, India.





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PREFACE

Archaeology is an endless journey in search of our past. Archaeology as we have known always relies heavily on the tools left behind by our forefathers and the human progress is based on technological development. It is true that those tools were the basis for human existence and modern devices have evolved from these simple stone, wheel and other artefacts invented by our ancestors. Archaeological excavations are no longer a treasure hunt but a search for information and obviously means of answering specific questions. Archaeologists are responsible in classifying and interpreting the artefacts of ancient societies with the evolution of mankind.

Archaeology requires the application of a wide range of skills, from discovery to interpretation of the findings. Exploring new ways of thinking about the past, gathering and maximising knowledge and adopting emerging technologies, will expand the knowledge base, improve interpretation of the past and capture everyone's interest and imagination.

In this endeavour, the Department has taken up a major initiative in adopting various technologies in Keeladi excavation like Unmanned Aerial Vehicle [UAV] Survey, Magnetometer Survey, Ground Penetrating Radar [GPR] Survey, etc to identify the ideal spot for carrying out the systematic archaeological explorations and excavations with the help of reputed institutions like Indian Institute of Geomagnetism, Navi Mumbai, Institute of Remote Sensing, Anna University and Department of Remote Sensing, Bharathidasan University.

Having recognised the significance of multi disciplinary analysis of archaeological findings, it has been decided to collaborate with reputed institutions operating in the fields such as Archaeo-botany, Molecular Biology, Population Genetics, Environmental Archaeology and Linguistic Archaeology.

There has been a renewed interest in Archaeology and Heritage in our State. Hence, there is a huge scope for the study of past, to discover, care for, promote and enjoy our rich and diverse heritage, contributing to our wellbeing and knowledge and conclusively position the history of Tamil Nadu in the global context.

18.09.2019
Chennai

T. Udhayachandran, I.A.S.,
Principal Secretary and Commissioner
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INTRODUCTION

Archaeology as a discipline has developed into several dimensions and can be broadly divided into Pre-Historic Archaeology and Historical Archaeology. Due to recent developments in the study of Archaeology, the ecological changes have also been brought under consideration; separate focus is now given to the study of Environmental Archaeology and Ethno Archaeology which deals with the study of living people and their material culture. Archaeology includes not only excavation but also study of original source materials such as literature, epigraphs, coins and monuments. However, the role of excavation plays a pre-eminent part in identifying such as Mesopotamia, Egypt, Maya and the civilizations of the east like Chinese civilization were exposed mainly through excavations. In India, the excavations carried out in the respective sites uncovered the Palaeolithic, Neolithic, Chalcolithic and Iron Age settlements. Though the history of Tamil Nadu can be traced from Pre-historic period with the discovery of stone tools as accidental findings, it was those proper and systematic excavations in various sites by different agencies that lifted the curtain for understanding the past.

When we talk about Archaeology, it is our duty to remember the great pioneers at this juncture, especially in the excavation area. The work done by both Foreign and Indian Archaeologists, who shaped the field are to be recorded and recognized. The father of Indian Archaeology -Alexander Cunningham, Robert Bruce Foote, Lord Curzon, Sir John Marshall, Sir Mortimer Wheeler and other Indian scholars have done significant work in the field of excavation. The Archaeological Survey

of India as the central body regulates the various activities in the field of Archaeology while at the State level, the State Governments Archaeology Departments, Universities and other private organizations carry out excavations in their respective domain.

In Tamil Nadu, the Archaeological Survey of India, Southern circle; State Department of Archaeology; University of Madras; Tamil University, Thanjavur; Sharma Centre for Heritage Education; Sir Chandra Sekharendra Saraswathi Viswa Maha vidyalaya (Deemed University) Enathur, Kancheepuram and Kerala University have undertaken excavations over the years and contributed significantly to the development of Archaeology in the State.

The excavations are conducted at historically important sites, identified with the help of Archaeological source through exploration by the Department. It has so far excavated 40 sites and unearthed various artefacts of different periods. The excavations carried out at Parikulam, Tiruttangal, Mangudi, Modur, Kovalanpottal, Anamalai, Pallavamedu, Boluvampattu, Panayakulam, Kurumbanmedu, Kannanur, Tirukkivilur, Vasavasamudram, Poompuhar, Thondi, Korkai, Alagankulam and Perur are some of the important sites dating back from Pre-historic to that of Historic period. They have yielded excellent artefacts confirming the location of the ancient capitals, trade centers, and their relationship between South India and North India and between Tamil Nadu and the Roman Empire.

Vaigai River

The Vaigai river and its tributary Suruliyaru taking off from Suruli hills winds its way along Sinnamanur and Madurai and flows eastwards through a number of prosperous townships dating back to the middle ages like Tiruppuvanam, Rajagambhiram, Manamadurai, Partibanur, Paramakkudi and ultimately joins the sea, after feeding the big tanks of Rajasingamangalam and Ramanathapuram big tank, also supplied by it. The showers in the lines during the south-west monsoon and the heavier receipts during the north-east help raise two wet crops, besides plantains, betel in the plains and cardamom on the hill slopes. The Vaigai valley head-reach was the highway for the spices grown in the Western Ghats to be taken to the Townships in the east. The work of Paripadal, one among the eight anthologies of Sangam corpus vividly describes the greatness of this river as many as in eight long poems. The work of Maduraikanchi describes the grandeur of Madurai city.

Early History of Madurai

Madurai is one of the ancient cities in India that enjoyed continuity in the history from Pre-historic times. Due to its cultural prominence, Madurai is described as “The Athens of South India”. It is also well known as a great centre for learning from very early times. As the seat of the Tamil academy called the Sangam, it wielded great influence in the literary and cultural fields. During the glorious rule of Pandyas, Madurai had overseas connections for both commercial and cultural activities.

Some tools were collected by Robert Bruce Foote, on the left bank of the river Vaigai, immediately north of Madurai city and also a single Palaeolithic tool from Aviyur, about 20kms south of Madurai. The archaeological explorations revealed about ten sites belonging to the late stone age and Neolithic antiquities. About 60 sites with megalithic cultural materials have been identified in Madurai district.

The Pandyas and their capital city Madurai were well known to the Ancient Greeks and Romans. Megasthenese, the Greek ambassador of Seleukos Nicator at the court of the Chandra Gupta Maurya (320 B.C.), in these accounts gave a vivid picture of a South Indian Kingdoms. Strabo (C. 25. B.C.) stated that a Pandya king sent an embassy to the Roman Emperor Augustus. Pliny (C. 75 A.D.) mentioned about the Pandya, King Pandya and his capital Madura. Ptolemy (C. 130 A.D.) also referred Madurai as the royal city of the Pandyas.

The Arthasastra of Kautilya, while describing the trade between Northern and Southern India, spoke about the pearls and muslins of the Pandya country. The astronomer Varahamihirar referred the Pandya kingdom in his Brhatsamhita. Kalidasa, the great Sanskrit poet and dramatist referred the Pandya kingdom as one of the provinces visited by Raghu during his tour of conquest.

The earliest datable Ashoka’s rock edicts Nos. 2 and 13 mention the South Indian Kingdoms viz, Chola, Pandya, Satyaputra and Keralaputra. The contemporary lithic records found at some villages around Madurai (Tamil Brahmi inscriptions) bear references to Madurai city as well as Pandya kings.

Jainism in Madurai

It is stated that Jainism spread to South India by the migration of Jaina followers under the leadership of saint Bhadrababu who settled at Sravana Belagola in Karnataka. Madurai and its surroundings were very suitable for the jains for their secluded life and practices. They selected natural rock shelters for their stay around Madurai. At least fourteen such centers around Madurai were located in which polished rock beds were carved. All these rock caverns have early Tamil (Tamil-Brahmi) inscriptions which may be dated to 500 B.C. to 300 A.D. The earliest among them is at Mankulam village which have five natural caves and six inscriptions.

Archaeological Explorations

It was Dr. K.V. Raman, then at Southern Circle, Archaeological Survey of India in late 1950's undertook systematic village to village survey in Madurai, Tirumangalam, Melur and Periyakulam taluks and reported number of archaeological sites and remains. In 2006 Dr. K. Rajan and his students reported good number of sites along the Vaigai valley particularly in its upper reaches subsequent to the discovery of inscribed hero stones datable to early centuries of Common era at Thathappatti in Dindigul district and Pulimankombai in Theni district

During the course of exploration by Archaeological Survey of India, about 293 sites all along the Vaigai river valley with various forms of antiquarian remains such as urn burials, menhirs, inscriptions, sculptures, hero-stones, habitation mounds etc have been identified and documented. This includes both fresh discoveries and re-visitation of the earlier reported sites which revealed new findings hitherto unreported earlier.

Archaeological Excavations

During the pre-independence era by Alexander Rea had conducted excavation at the urn burial sites of Paravai and Anuppanadi at Madurai hamlet. Later Archaeological Survey of India made the initiative to understand the archaeological potentiality of this region through systematic excavation at T. Kallupatti in the year 1976. The State Archaeology Department conducted excavations at Kovalanpottal (1979-1980), Alagankulam – (1986-1987, 1990-1991, 1992-1993, 1994-1995, 1996-1997, 1997-1998, 2014-2015, 2016-2017) and Mangulam in (2006-2007). Among them the site of Alagankulam located at the ending point of river Vaigai with Bay of Bengal has yielded remarkable evidences of early historic period and identified as a port city of early Pandyas.

Archaeological Excavations at Keeladi

The site Keeladi with the cultural deposit mound extending over a vast area of more than 110 acres, amidst the coconut groves, is located geographically between 9° 51.294'N northern latitude and 78° 11.696'E eastern longitude.

By road, it is 13 km East and South East of Madurai, a Temple city of Tamil Nadu. On the northern side of this potential mound runs the river Vaigai of 2 kms. On the East, exists the village Manalur having its kanmaai (lake) on its northern side and there by forming the north eastern natural water source of the site. Similarly the village Agaram is located on the south eastern side of Keeladi archaeological mound. The western side of the site is engulfed by Kondagai village. All this natural location of adjoining places around this cultural mound provides a natural epithet for the settlement contemporary to the early historical phase of Tamil history.

Previously in the year 2014-2015, 2015-2016, and 2016-17 excavation was conducted for three seasons by the Excavation Branch-Bangalore, Archaeological Survey of India. The fourth and fifth season of excavations were taken up by the Tamil Nadu State Department of Archaeology during 2017-2018 and 2018-2019. In continuation of exposing the hidden treasures and antique of this site, the State Department of Archaeology has been conducting large scale excavation at this site. The Systematic archaeological excavations of the fifth seasons are still in progress.

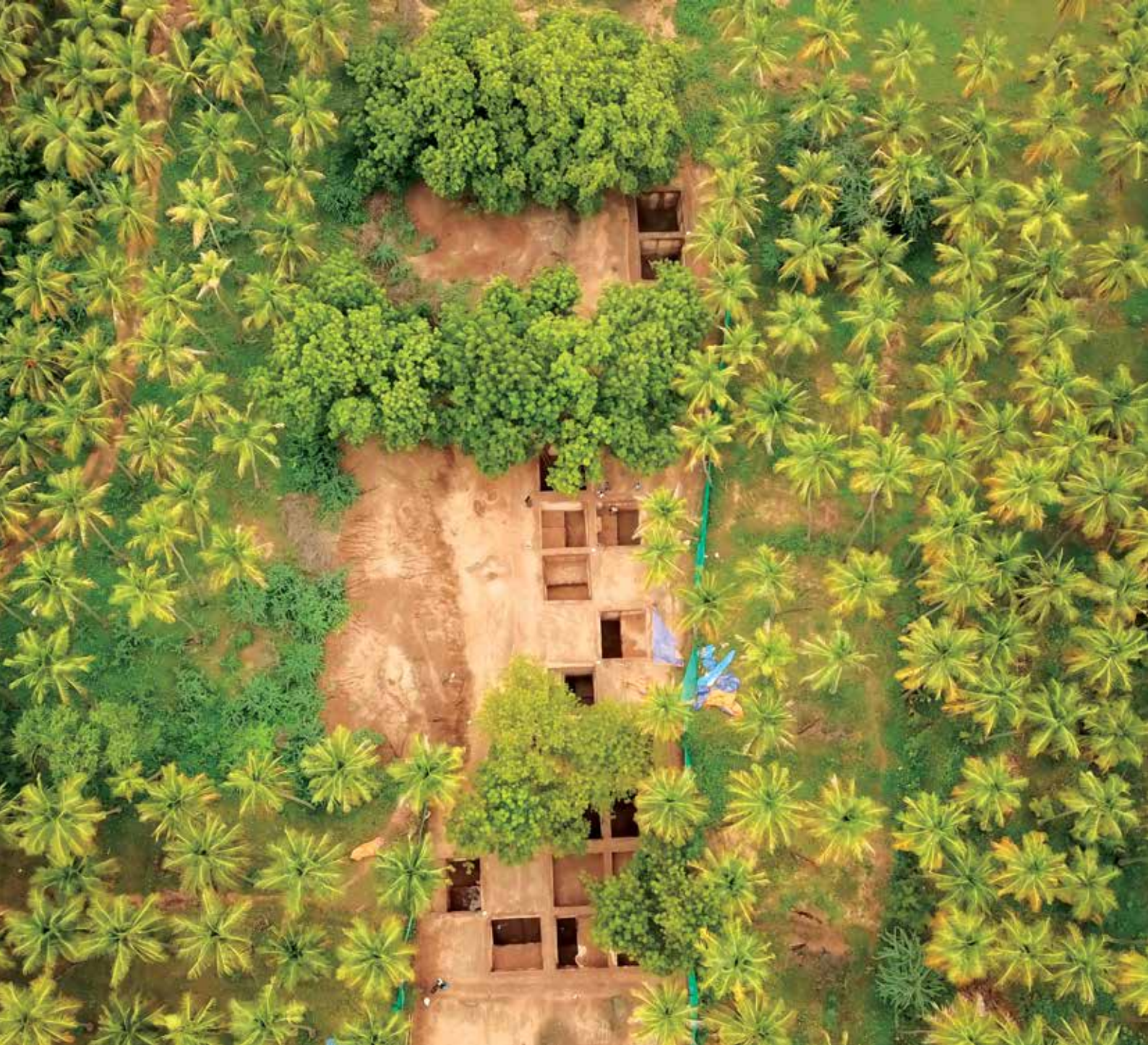
Key Findings – Keeladi Excavation (2017-2018)

Excavation work, during the fourth season had yielded 5820 antiquities with enough cultural traits in the form of structural activity (brick structures, terracotta ring wells, fallen roofing tiles with double holes and deeply finger pressed grooves to draw rain water).

Antiquities like few pieces of golden ornaments, broken portions, copper objects, iron implements, terracotta gamesmen (chessman), hop scotches, ear ornaments, spindle whorls, figurines and portions besides beads of terracotta, glass, semi-precious stones (agate, carnelian, crystal, etc.). Popular ceramic types like finer variety of Black and Red ware, Black ware, Black Polished ware, Red ware, Rouletted ware, few pieces of Arretines were also found.

There are also enough numbers of graffiti sherds of both pre and post firing nature. A good number of Tamil Brahmi sherds also have been unearthed. All these finds clearly indicate the cultural richness of the ancient civilization of the Tamils of this region having its close proximity to the temple city Madurai. Hence it becomes essential to continue to probe such cultural hidden treasures of Keeladi site in future and reveal the cultural wealth of the ancient Tamil society.





► *Keeladi Excavation Site - Aerial View*

A TURNING POINT IN THE CULTURAL HISTORIOGRAPHY OF SANGAM AGE

In order to reaffirm the antiquity of Tamils in the World arena, the Tamil Nadu State Archaeology Department has placed the artefacts recovered from the Keeladi excavation for regressive scientific analysis and for AMS [Accelerator Mass Spectrometry] dating. The results received from the reputed laboratories are placed before the team of experts for their academic scrutiny. The comments and suggestions of the experts are consolidated and the same is being placed before the public for their understanding and appreciation.

KEELADI

2600 YEARS OLD CULTURE

The six carbon samples collected by the Department of Archaeology, Government of Tamil Nadu, from the fourth season (2018) of excavations at Keeladi were sent to Beta Analytic Lab, Florida, USA for AMS dating and the reports have been received. The dates of all six samples fall between the 6th century BCE and 3rd century BCE. The sample collected at the depth of 353 cm goes back to end of the 6th century BCE and another at the depth of 200 cm goes back to early 3rd century BCE. As there is a considerable deposit below the dated layer and also above the layers, the Keeladi cultural deposit could be safely dated between 6th century BCE and 1st century CE.

2



BETA Beta Analytic		My Results		Stacking Tool		Submit New Sample Set		Samples Tracking		English		User Profile			
SUBMITTER #1386	CLIENT	ANALYST/REPORT	REF. SAMPLE/CONTRACT	ANALYST/REPORT	BETA No.	SUBMITTER No.	CONVENTIONAL AGE	CALENDAR CALIBRATION (95.4% PROBABILITY) CLICK TO DOWNLOAD	AMS Sample Location & CN	MATERIAL PRETREATMENT	SERVICES	RECEIVED	REPORT COMPLETED	CSA OR SAG	
✓	NA	189433	VLD-2018/Sample No.5	2140 +/- 30 BP	176.6(±) 253 - 88 cal BC (2153 - 2137 cal BP)	189433	2140 +/- 30 BP	176.6(±) 253 - 88 cal BC (2153 - 2137 cal BP)	13C (‰)	-24.4	ICleaned Material/ Acid/Alkali/Acid	AMS-Standard delivery	Monday, February 26, 2019	Monday, March 18, 2019	<input type="checkbox"/>
✓	NA	189432	VLD-2018/Sample No.5	2190 +/- 30 BP	186.4(±) 291 - 88 cal BC (2110 - 2101 cal BP)	189432	2190 +/- 30 BP	186.4(±) 291 - 88 cal BC (2110 - 2101 cal BP)	13C (‰)	-25.7	ICleaned Material/ Acid/Alkali/Acid	AMS-Standard delivery	Monday, February 26, 2019	Monday, March 18, 2019	<input type="checkbox"/>
✓	NA	189479	VLD-2018/Sample No.4	2190 +/- 30 BP	186.4(±) 291 - 87 cal BC (2110 - 2101 cal BP)	189479	2190 +/- 30 BP	186.4(±) 291 - 87 cal BC (2110 - 2101 cal BP)	13C (‰)	-24.7	ICleaned Material/ Acid/Alkali/Acid	AMS-Standard delivery	Monday, February 26, 2019	Monday, March 18, 2019	<input type="checkbox"/>
✓	NA	189478	VLD-2018/Sample No.3	2170 +/- 30 BP	185.7(±) 288 - 84 cal AD (1944 - 1928 cal BP)	189478	2170 +/- 30 BP	185.7(±) 288 - 84 cal AD (1944 - 1928 cal BP)	13C (‰)	-27.6	ICleaned Material/ Acid/Alkali/Acid	AMS-Standard delivery	Monday, February 26, 2019	Monday, March 18, 2019	<input type="checkbox"/>
✓	NA	189477	VLD-2018/Sample No.2	2250 +/- 30 BP	179.8(±) 338 - 204 cal BC (2277 - 2163 cal BP)	189477	2250 +/- 30 BP	179.8(±) 338 - 204 cal BC (2277 - 2163 cal BP)	13C (‰)	-24.5	ICleaned Material/ Acid/Alkali/Acid	AMS-Standard delivery	Monday, February 26, 2019	Monday, March 18, 2019	<input type="checkbox"/>
✓	NA	189476	VLD-2018/Sample No.1	2520 +/- 30 BP	161.7(±) 691 - 813 cal BC (2600 - 2490 cal BP)	189476	2520 +/- 30 BP	161.7(±) 691 - 813 cal BC (2600 - 2490 cal BP)	13C (‰)	-25.8	ICleaned Material/ Acid/Alkali/Acid	AMS-Standard delivery	Monday, February 26, 2019	Monday, March 18, 2019	<input type="checkbox"/>

After analyzing the AMS dates obtained from Keeladi excavations, Prof.K.Rajan, a noted archaeologist, felt that the recent excavations at Keeladi present strong evidence as well as clear answers to some of the hitherto held hypotheses. It is generally believed that the Early Historic phase of Tamil Nadu began with 3rd century BCE and the second urbanization did not occur in Tamil Nadu. In contrast to this, the occurrence of large scale brick structures and associated artefacts of high economic value unearthed at Keeladi suggest that the second urbanization too happened in Tamil Nadu around 6th century BCE as happened in Gangetic plains.

Likewise, the date of 5th century BCE is considered as the date of Tamil (Tamil-Brahmi) based on radiometric dates recovered from Kodumanal, Alagankulam and Porunthal excavations. But, the recent scientific dates obtained for Keeladi findings pushback the date to another century i.e. 6th century BCE.

The dates for the samples collected from Lower Palaeolithic phase of Attirampakkam go back to 15 lakh years and Middle Palaeolithic phase to 3,85,000 years ago. These dates are obtained through Cosmogenic-Nuclide burial dating methods. In the same way, the Microlithic tools belongs to the following Microlithic/ Mesolithic phase were encountered in Tirunelveli area and also in Vaigai and Gundar river valleys. The Neolithic culture were mostly discovered in Northwestern part of Tamil Nadu, particularly in Dharmapuri, Krishnagiri, Tiruvannamalai and Vellore districts. The next cultural phase of Iron Age

has been dated to 2000 BCE based on the samples recovered from the megalithic monuments of Mangadu and Thelunganur villages of Salem region. The carbon samples collected from Adichchanallur urn burials go back to 8th century BCE.

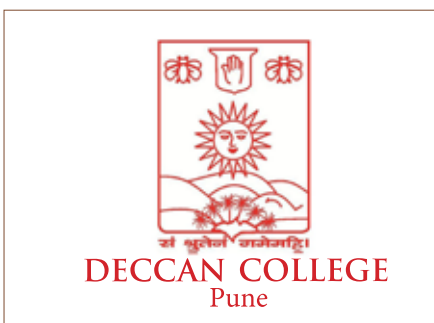
Thus, the recent excavations and the scientific dates clearly suggest that the people were living in Tamil Nadu continuously for the past 15 lakhs years and the Keeladi excavation clearly ascertained that they attained the literacy or learnt the art of writing (Tamil-Brahmi) as early as 6th century BCE during Early Historic period.



TRACE OF AGRARIAN SOCIETY AND CATTLE REARING

The report on the faunal remains submitted by Deccan College, Post Graduate and Research Institute, Pune provided broad picture on the subsistence pattern of the Early Historic times. The total number of animal skeletal fragments is of 70 samples. The analysis is made under the category of large-sized animals and medium-sized animals due to the nature of specimens recovered from the excavation. Further, the limited nature of the samples restricted our understanding on the nature of species. However, the species such as Cow/Ox (*Bos indicus*), Buffalo (*Bubalus bubalis*), Sheep (*Ovis aries*), Goat (*Capra hircus*), Nilgai (*Boselaphus tragocamelus*), Blackbuck (*Antelope cervicapra*), Wild boar (*Sus scrofa*) and Peacock (*Pavo cristatus*) were identified. Among the species, the cattle predominates the scene with 25%.

If we, put the ox, cow, buffalo and goat together it occupies almost 53%, there by indicating that



► Bones of Bull with hump

they were predominantly cattle raising people.

The presence of antelope to the level of 6.66% and wild boar (1.33%) suggests that they were hardly domesticated. The availability of cut marks in some of the animals like antelope, goat and wild boar suggest that they consumed both goat, boar and antelope.

Thus, the faunal remains recovered from the single season of excavation and the subsequent limited analysis suggest that the people mainly depended on agriculture and cattle rearing. The future analysis of botanical samples such as pollen and phytolith may reveal or substantiate the present findings. The excavation is in progress; therefore, there is a good chance of getting more number of samples.

ANALYSIS OF THE STRUCTURAL REMAINS

5

The samples like bricks, lime-mortar, roof-tiles and the binding materials of the ring well collected from the structural remains were sent to the Vellore Institute of Technology for scientific material analysis. The analysis revealed that every specimen contained elements like silica, lime, ferrous, aluminum and magnesium. The detailed report also furnishes of its constitution and nature. The bricks and roof-tiles contained more than 80% silica mixed with 7% of lime while the lime plaster possessed 97% of lime. In fact, the long survival of these materials with considerable strength and quality is due to the quality of material deployed in the construction activities.



► *Exposed Brick Wall*



► *Brick Walls*

STRUCTURAL ENGINEERING

Two seasons of excavation conducted at Keeladi exposed limited structural activities.. During the second season, a 13 m long wall with 3 courses of bricks was exposed. Bricks of two sizes measuring 38x23x6 cm and 38x26x6 cm respectively were used in the construction.

There is a negligible change in the breadth whereas the length and thickness were similar in size. The well-laid floors, made of fine clay, associated with side brick wall were exposed in some portions of the excavated trench.

The side walls were not raised up to the level of roof. It seems, wooden poles were planted over which roof was erected. There are post-holes at regular interval to suggest that these were meant for planting wooden

poles. Though we could not recover wooden poles due to its perishable nature, the occurrence of iron nails give clues of fastening the poles and rafters. Few quadrants of the trenches met with roof tiles suggestive of the fall of the roof. The roof-tiles contained finger groove impressions meant to drain water and double holes at the top to be tied with rafters similar roof tiles were also recovered from Arokamedu . Such structural activities express the high standards of living during the Sangam Age.

As the excavation is in progress, the future exposures of the structures and their subsequent analysis may reveal further technology involved in the structural engineering skill of the society.

GRAFFITI AND SYMBOLS

Among the available scripts of India, the Indus script is considered to be the earliest one and were 4500 years old. One kind of scripts that survived between the disappearance of Indus script and the emergence of Brahmi script is called as graffiti marks by the scholars. These graffiti marks are the one evolved or transformed from Indus script and served as a precursor for the emergence of Brahmi script. Therefore, these graffiti marks cannot be set aside as mere scratches. Like Indus script, these graffiti marks also could not be deciphered till date.

These graffiti marks were found in Chalcolithic culture as well as in Megalithic culture, particularly on black-and-red ware. These graffiti marks were encountered both in Iron Age megalithic monuments and

associated habitations.

Earlier excavations at Adichchanallur, Korkai, Alagankulam, Kodumanal, Karur, Teriruvelli, Uraiyur, Mangulam, Perur and all other excavated sites of Early Historic Period yielded such type of graffiti inscribed potsherds. Outside India, these marks were recovered from the sites such as Tissamaharama, Kantarodai, Manthai and Rithiyagama of Srilanka. Of the graffiti sherds collected from the sites of the Indian sub-continent, more than 75% of the symbols are traced from Tamil Nadu alone.

The symbols and graffiti are very much suggestive of the symbolic and codified expressions and communication of the megalithic and Iron Age people. In this context, the recovery of 1,001 graffiti sherds from Keeladi excavation recalls the preliminary writing expressions of the Iron Age people.



► *Graffiti and Symbols found in the Black and Red Ware pot sherds*

Tamiḷi [TAMIL-BRAHMI]



▶ ātaṅ

▶ kuviraṅ-āta[ṅ]

As far as Tamil Nadu is concerned, the large number inscribed potsherds available next to graffiti is of the *Tamiḷi* (Tamil-Brahmi) inscribed potsherds. The scholars called the *Tamiḷi* (Tamil-Brahmi) script as Damili or ancient Tamil script. Majority of Early Historic sites excavated so far met with *Tamiḷi* (Tamil-Brahmi) inscribed potsherds and a few of the sites yielded inscribed metal rings.

In Tamil Nadu, nearly 110 cave inscriptions were documented from 32 sites and these inscriptions were deciphered and well documented in the book by 'PADMASRI' Iravatham Mahadevan. At Keeladi, 56 *Tamiḷi* (Tamil-Brahmi) inscribed potsherds were recovered from the excavation conducted by the Tamil Nadu State Department of Archaeology alone.

Some of the inscribed sherds carry the personal names such as kuviraṅ-*atan* and ātaṅ and a few sherds with incomplete personal names carrying one or two letters. In these sherds, the name ātaṅ is inscribed as ātaṅ . In the early phase of *Tamiḷi* (Tamil-Brahmi) there is a diacritical mark to differentiate the long vowel from short vowel. This feature is well explained in the book written by K.Rajan. This feature is observed in vowels. The availability of such features Early Writing System – A Journey from Graffiti to Brahmi in Keeladi inscribed potsherds clearly suggests that the *Tamiḷi* (Tamil-Brahmi) inscribed potsherds found at Keeladi are older in date.

keeladi

8

HIGH LITERACY LEVEL OF THE SANGAM AGE

Tamil-Brahmi letters as part of inscriptions are found engraved on the shoulder portions of the earthen vessels. In general, these letters were inscribed when the pot is in leather condition or were inscribed /engraved after the pot became dry. The letters engraved in leather condition could be made only by the potters at the time of making pots. In the case of Keeladi examples, they were all post-firing in nature and were engraved by the owners after purchasing the pots. The representation of various styles of writing also suggests this view. It clearly suggests that the high literacy level of the contemporary society that survived in 6th century BCE



► *Tamil Brahmi Scripts engraved on Black-and-Red Ware and Red Ware pot sherds*

HANDICRAFTS



► *Compressed Storage Vessel*



► *Black-and-Red Ware Large Bowl*

In total, 17 pottery specimens were sent to the Earth Science Department of Pisa University, Italy through Vellore Institute of Technology for mineral analysis. The samples



were analyzed and the results confirmed that water container and cooking vessels shaped out of locally available raw materials.

Interestingly, it is to be noted that two quadrants of adjacent trenches below the depth of 4 m revealed heaps of potteries of many cart loads. The occurrence of such large quantity clearly suggests that there could have been a pottery making industry at this site.

The Spectroscopic analysis of the Black-and-Red ware sherds of Keeladi revealed that the reason for its black colour

is due to the use of carbon material and for the existence of red colour is due to use and presence of hematite. The potters of Keeladi were familiar with the technique and knew the art of raising the kiln temperature to 1100°C to produce the typical Black-and-Red ware pottery.

The results of the samples sent to the Pisa University, Italy reveal that the earthen vessels produced by the Keeladi people of Sangam Age had followed the same technique and materials right from 6th century BCE to 2nd century BCE. The same report also states that few pottery samples of 2nd century BCE do contain earth content similar to that of other region thereby suggesting that they exchanged the goods between the neighbouring regions probably through traders, craftsmen and visitors.

10



WEAVING INDUSTRY



► *Spindle Whorls*

Recovery of 10 spindle whorls, 20 sharply pin-pointed bone tip tools used for design creations, hanging stones of the yarn, terracotta spheres, copper needle and earthen vessels to hold liquid clearly attest the various stages of weaving industry from spinning, yarning, looming and weaving, later for dyeing. The archaeological findings of the Excavation Wing of Archaeological Survey of India at this site also confirmed existence of the dyeing industry. So, the occurrence of recent antiquities also attests the existence of weaving industry.



► *Bone Points*

LIFE STYLE OF ANCIENT PEOPLE AT KEELADI

To understand the life style of the Sangam Age society, an approach of reconstructing the history of the land based on the primary sources like epigraphy, numismatics, foreigners' notices, literary works and artefacts become very important.



▶ *Pestle and Mortar*



▶ *Ivory Comb*



▶ *Long narrow necked globular water pot*



▶ *Variety of beads*

The antiquities of Keeladi excavation really reflect the facts of the ancient life style of the society. In fact, agriculture seems to be its prime occupation being supplemented by iron industry, carpentry, pottery making and weaving.

PRECIOUS ORNAMENTS



பொத்தான்
(Button)



வளையம்
(Ring)



தொங்கட்டான்
(Pendent)



ஊசி
(Needle)



மணி
(Bead)



மணி
(Bead)



தகடு
(Plate)

The occurrence of seven gold ornaments, copper articles, beads of gems, more than 4000 beads of semiprecious stones, glass beads, shell bangles, ivory bangle pieces, comb and terracotta objects indicate the cultural richness and economic prosperity.



► Glass Beads

GAMESMEN AND PASTIMES



▶ *Dice*



▶ *Hop Scotchs*



▶ *Gamesmen*

The occurrence of artefacts such as dice, hop scotches and gamesmen, really reflects the pastime activities of the ancient people. Majority of the gamesmen recovered from excavations are of terracotta. In this context, Keeladi yielded 600 hop scotches. Even now the same game is prevalent in Madurai and other regions known as *Pandi or Nondivilayattu*. Dices were also recovered from the site. The occurrence of single and double holed terracotta discs represents that either they were used as wheel of the toy cart or twist disc game pieces. Apart from these, 80 chessmen of similar shape but in different sizes were collected from the excavation.

So, the existence of these game objects posturizes the games and pastime activities of not only of the children, but also of the elders of the ancient society.

COMMERCE

The lengthy coastal stretch of the state really becomes the causative and favourable factors for the Trans-oceanic contacts of the Tamils with other parts of the world. Moreover the favourable atmosphere of anchoring the laden ships near the coastal towns also become supportive reason of busy trade activities of the coastal towns. During the Age of Sangam, the estuaries of the river courses become popular as port towns carry out trade with other minor ports of the Tamil country. At the confluence of Palar, Cauvery, Vaigai and Tamiraparani rivers of the East

Coast emerged with great port cities such as Vasavasamudram, Poompuhar, Alagankulam and Korkai respectively. Similarly on the western coast at the estuary of river Periyar existed the Muziri-pattanam. Due to existence of many port towns on the eastern and western coasts of the erstwhile Tamil country might have promoted the commercial activities of the ancient Tamils with the Occident and Oriental world particularly with South-East Asian countries, Sri Lanka, Egypt, Rome, Greece and China. The commodities like pearl, gemstone, textile, steel, pepper and perfumes were exported to other countries from Tamil Nadu. Similarly, gold, wines and horses were imported from the West.



► *Agate and Carnelian Beads*

15



► *Rouletted ware (Indigenous)*

TERRACOTTA IMAGES

Terracotta is the pioneering art specimens of mankind. This art made up of clay and burnt clay emerged first than that of stone, wood, ivory and metal. This craft doesn't require much of technology of specialized tools for shaping the contours. Just the fingers are enough for its creation. Pre-historic man shaped the stone tools with his hands. Later, to stamp his feelings in the form of rock-art used the same. Thereafter, they attempted the art of image making just

with the fingers. In due course, they learnt the technique of kilning the clay images to the required temperature through experiences. In this regard, considerable numbers of terracotta images were recovered from various excavated sites of Tamil Nadu. They generally represent various forms of human and animal beings, besides gamesmen and children toy objects.



► *Terracotta Figurines*

Of the terracotta objects recovered from Keeladi excavation, 13 are of human images, 3 of animals, more than 650 represent gamesmen and 35 are of ear ornaments. Other than terracotta objects, the site also yielded jewellery pieces of gold and copper. Objects of iron were also recovered. But it is to be noted that this site didn't yield any objects meant for worship so far.

SUMMARY



► Pottery Yard

The artefacts recovered from the Keeladi excavation forced us to re-examine or re-assess the hitherto held views or hypotheses.

Generally, the Age of Sangam is considered between 3rd century BCE and 3rd century CE. But, the available AMS dates obtained for the Keeladi carbon samples push the date of Tamil-Brahmi to 6th century BCE. These scientific dates forced us to re-assess the widely held date of Sangam Age. The AMS dates obtained from Kodumanal and Porunthal pushed the date of Tamil-Brahmi to 5th century BCE. But, the Keeladi AMS dates further pushed the date to a century earlier i.e., 6th century BCE. This is one of the important findings of the Keeladi excavation.

As the high literacy level is well achieved in 6th century BCE, naturally the beginning of historic period in Tamil Nadu goes back to 6th century BCE. The available evidences clearly suggest that the Early Historic period of Tamil Nadu begins in 6th century BCE and the Iron Age begins in 2nd millennium BCE. One should recall the recent AMS dates of 2000 BCE obtained for the samples collected from Iron Age megalithic graves of Mangadu and Thelunganur in Salem region.

It is generally believed that second urbanization observed in Gangetic valley did not occur in Tamil Nadu. But, the Keeladi excavation clearly suggest that the second urbanization too happened in Tamil Nadu in 6th century BCE.



KEELADI

2

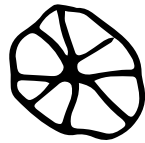
TRACING THE ROOTS OF

FIT

3

TAMIL CULTURE

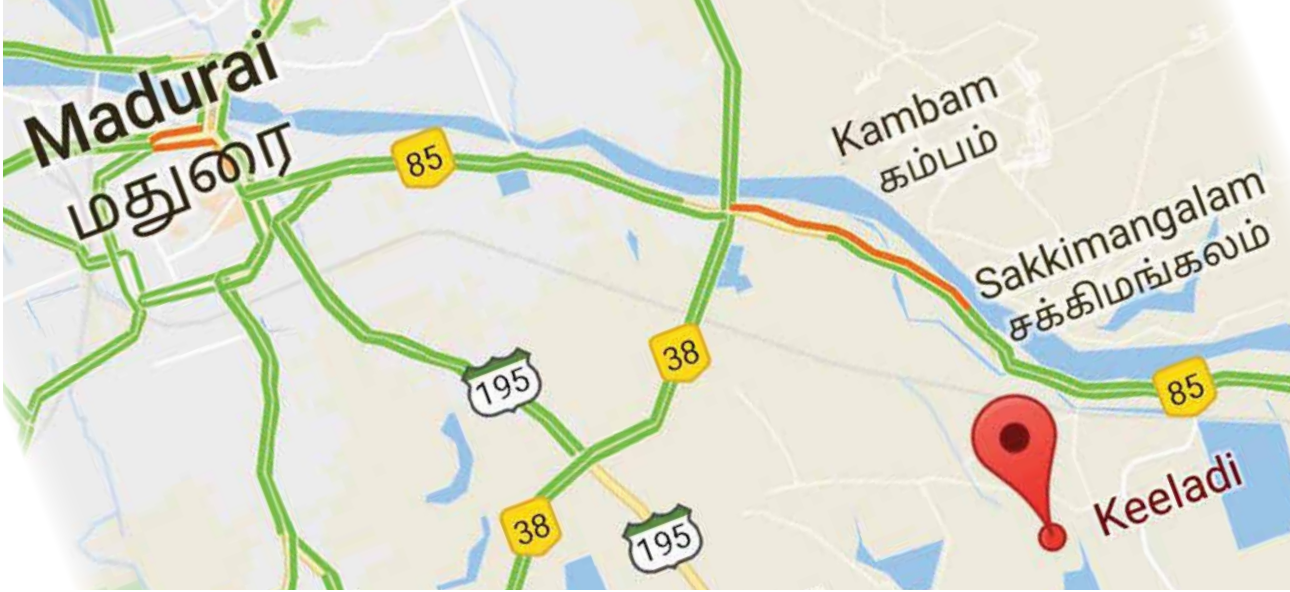
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ANNEXURE

INTRODUCTION

LOCATION



The site Keeladi with the cultural deposit mound extending over a vast area of more than 100 acres, amidst the palm grooves, is located geographically of $9^{\circ} 51' 18.385''$ northern latitude and $78^{\circ} 11' 45.132''$ eastern longitude.

By road, it is 13 km east and south east of Madurai, a Temple city of Tamil Nadu. On the northern side of this potential mound runs the river Vaigai off 2kms. On the east, exists the village Manalur having its kanmaai (lake) on its northern side and there by forming the north eastern natural water source of the site. Similarly the village Agaram is located on the south eastern side of Keeladi archaeological mound. The western side of the site is engulfed by Kondagai and its kanmaai. All these natural location of adjoining places around this cultural mound provides a natural epithet for the settlement contemporary to the early historical phase of Tamil history.

Previously excavation was conducted by Excavation Branch (Bangalore), Archaeological Survey of India at the site

in the year 2014-2015, 2015-2016, and 2016-17. In continuation of exposing the hidden treasures and antique of this site, the State Department of Archaeology has been conducting excavation at this site after getting approval from the CABA.

Accordingly, the archaeological team of the department comprising of the Director, Archaeological officers, Curators, Epigraphists, Technical Assistants, Draughtsman, etc., started the work initially of laying out the exact location of excavation.

During the season totally 11 trenches were laid out, of which 7 in locality 1 and 4 in locality 2. Each trench is divided in to 4 quadrants in order to carry out the excavation work either vertically, horizontally, diagonally, in accordance with the orientation of any structural features. There is a balk of 1 meter width left between the trenches;

TRENCH NO :

A1, NORTH EAST QUADRANT-2

While $\frac{1}{2}$ a meter balk runs across the trenches vertically horizontally so as to divide the trench as 4 equal quadrants.

The trench of locality 1 were fixed on the east of X axis and numbered as A1,A2,A3,A4,A5,A6,A7 While a single trench marked at east of Y axis and numbered YP10,YP9,YP8,YP7. There is also a trench on X axis at the extreme south west of the trenches and numbered as XA7.

Inauguration of actual digging was done by the Director of excavation Dr. R. Sivanantham of the Department, with a team of Archaeologists, trainee supervisors already trained in the field as scholars, to supervise the trenches for day to day recording of the excavation work. Precisely, the site

observation of the antiquities, ceramic tiles insitu the color, content and texture of the unearthed deposit meant for examination was meticulously carried out. Initially, a labor force of 170 daily wage laborers were engaged for carrying out the slow and steady process of conducting the scientific way of excavation and proceed towards the respective cardinal direction of the grid laid out for the season.

In the course of digging, some trenches revealed building activities, few with several disturbances of dumps and pits. While the other trenches revealed the cultural deposit with clear cut stratigraphy and it becomes more appropriate to deal with the progress of excavation of the respective quadrants separately in detail. So, following is the summation of the systematic observations noticed, recorded at the respective quadrant.



TRENCH NO : A1, NORTH EAST QUADRANT- 2

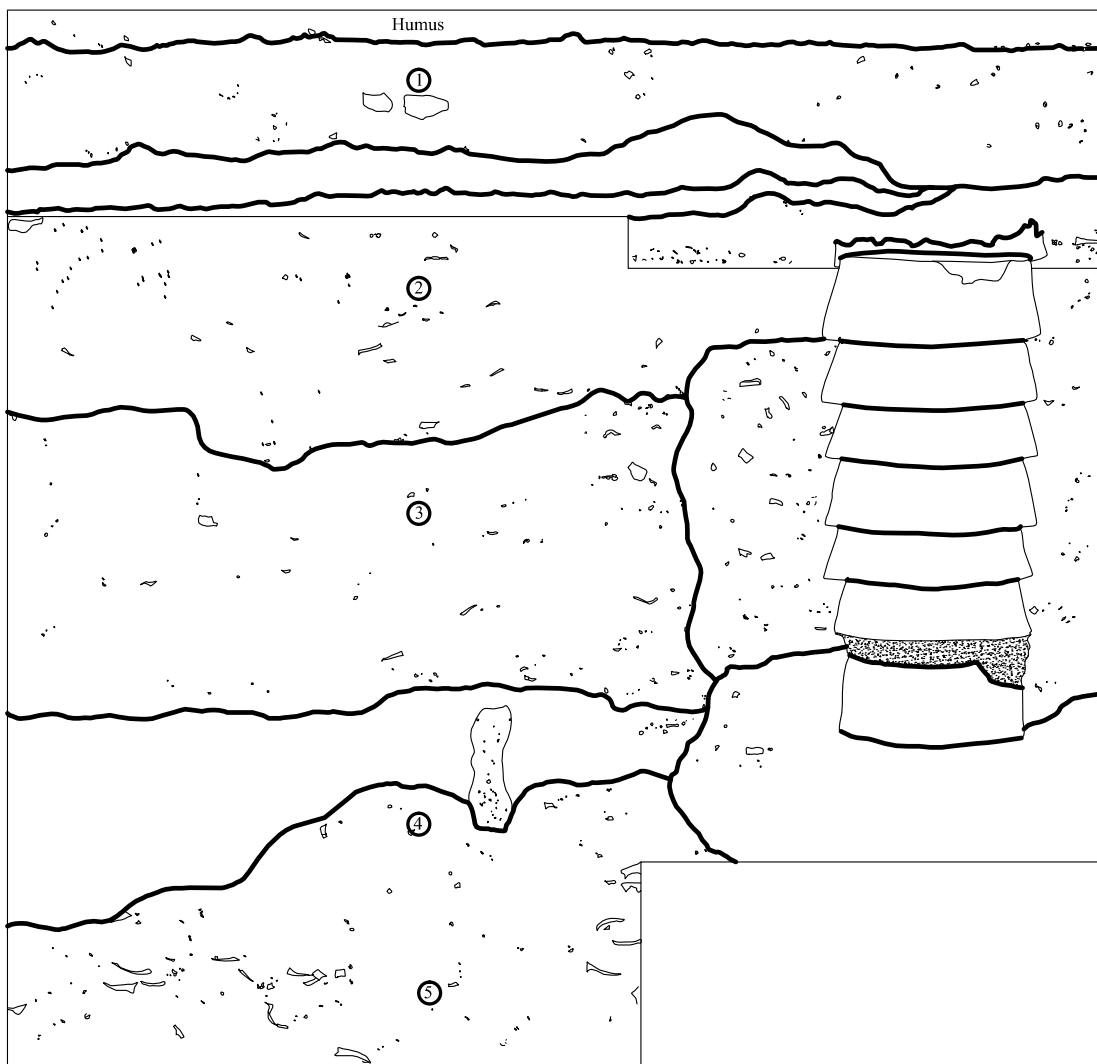


Fig. KLD- Western Section, Q-A1/2

The section of the trenches revealed 4 layers with humus on the top and the natural soil at the lower level. The stratification of the deposit runs uniformly throughout the trenches from humus to layer 4 just above the natural soil all around and visibly recognized by color, content and texture distinct from each other. Humus comprised of fibrous materials mixed with sandy clay deposit to the maximum thickness of 14cm.

While layer -1 was highly compact due to clay content. The thickness of this layer ranges from 30cm to 66cm. Few large sized

brickbats were found embedded on the southwestern section, while smaller brickbats and potsherds were noticed on the other sections.

Layer-2 also runs all around the trench and the content is loose with ashy powdery clay deposit. In fact the ring well emerged out of this level in 8 courses, probably cut out of lower level of layer-1 and upper level of layer-2 and the same continues till layer-4 was traced at the middle of the trench adjacent to northern section. This layer contains more potsherds

than the upper layer. The diameter and height of ring well measured 93 cm, 30 cm respectively and a thickness of 4 cm at the bottom. The minimum thickness of this layer of 60cm was traced at northeastern quadrant, while the maximum thickness of the layer noticed on the eastern section near the southeastern corner of the quadrant. The ring well extended to a height of 2.02 mts, the rings placed one over the other and found intact. The same gives an indication of the water table at the higher level during the contemporary age. Adjacent the ring well, the clear cut mark of the working pit on the southern as well as on the northern sections was observed. In situ the terracotta rings of the well were found placed to the required level of surface and the gap all around was probably filled with loose earth resemble to a dump like packing due to an admixture of all the materials found from the upper to the lower level of the well.

Layer -3 runs all around the trench with the thickness ranging from 92cm on the eastern section and reaches a maximum thickness of 1.66mts on the northern side adjacent to the ring well. The deposit was semi compact in nature with yellow tinge of clay content, brickbats found embedded here and there besides potsherds. On the eastern section near the northeastern corner of the quadrant a well perforated (bigger holed) broken vessel was also found embedded. The perforated vessel with large pores was uniformly made with equal distance. Each hole measured a diameter of 2cm and the space between them vertically horizontally measured 3cm. The vessel is with a tapering bottom.

It could be surmised that it could have been a jar to hold a night lamp with the mouth placed upside down and making the defused radiating light

of the lamp to glow in all the directions through the holes. This is like modern dim light lamps. In some cases such perforated vessels could have also been used for the purpose of fermentation, wherein the inner side of the perforation area will contain natural strains of the fruits, commodities used for the extraction of liquor which could to be scientifically tested and proved.

There were also indications of such perforated vessel used for filtration of drainage water and to maintain the natural water table without causing much pollution through filtration process done in 3 or 4 stages with similar number of jars kept one over the other containing river sand, coarser sand and smaller pebbles. It is an early concept of water filtration and purification method. So to say, recent method of rain water harvesting done at the concrete building of the metro city recalls the glory of ancient filtration method of the flash water.

Layer – 4 consists of a compact yellowish brown deposit of compact clay slightly mixed with sand. Its minimum thickness of 36cm was traced at the middle of the western section. While the maximum thickness 88cm was noticed on the southern section. It was so clean all around with few brickbats and potsherds found at the lower side of this layer. The western section revealed a post hole vertically of length 40cm and the thickness varying from 8 to 14 cm from bottom to top containing comparatively loose material (sand) and the same gives an indication of a roofing existed above being supported by wooden poles and planks.

Just below this layer, is the dump material of blackish deposit with enough potteries comparatively larger in quantity and its thickness varies from 36 cm on the east and south of the southeast corner and 94 cm at the middle of the western section. More over the deposit of the layer contained more charred bone materials, and the same indicates dumping of the residual, and throw away materials of the kitchen.

TRENCH NO : A1/1



The stratigraphy of the trench from humus to top level of the layer-3 runs all around the trench without much disturbance. Here too, the humus with clay fiber content with a thickness ranging from 3cm to 13cm on the western section exists. It contained mostly of the modern glass bangle pieces and contemporary residual materials.

Layer – 1 with the minimum thickness of 20cm on the western section and maximum thickness of 58cm noticed on the eastern section. It consists of compact clay deposit with few brickbats and sherds interspersed here and there on the section. But for them, the entire section runs so neatly except the middle portion of the western section wherein the roots of Neem tree standing adjacent to it to be so loose. This is followed by layer -2 underneath with some portions not dug out due to the required sloping level of this layer at the east of the revealed stratigraphy mostly of

north and south western section. The thickness of the layer varies from the minimum thickness of 66cm on the western section near the northwestern corner and the maximum at the center of the western section measured 92cm. This was semi compact deposit found at the eastern quadrant of the trench similar to the color and content also exists, except a pit like area found cut and dumped found at the northern section near the northeastern corner consisting of more loose deposit with enough potteries of bigger size, brickbats and stone rubbles.

On the southwestern center point of the quadrant existed a terracotta oven with pinch design impressed all around externally. There is a hole at the center of the rear thickness. One of the unbroken facing edge side contains widen and elevated facade like projection. The hole is meant to leave

enough ventilation along with the gaps between the raised projection knobs of the facade and rear.

The south eastern corner of the trench revealed a separate course of fine clay deposit stretching to a length of 1.18mts on the eastern section and 86cm on the southern section could probably due to dumping of such material utilized for pot making. Similarly the same deposit was also traced on the northeastern quadrant of the trench to a length of 3.5mts of the western section from south to north and extending towards east on the southern section to a length of 1.18mts. The spread of this fine clay found over layer-2 of the trench gives an indication of the raw material stored and used for making potteries. In this context large quantity of pottery collections noticed at the southwestern quadrant - 4 of the trench very well confirms of such

ceramic activity.

The terracotta oven found contemporary to a layer of the deposit with the lower deposit with many carbonious and charcoal materials revealed the deposit to be of much blackish brown in color gives an indication of the kitchen area and hence the adjoining deposit got the stained color of either black or blackish yellowish brown with loose earth. Two rubbing stones were also recovered from this level probably used for floor polishing or ramming the surface.

The oven measured 20cm on the extending arm side while the rear side length is 30 cm. The height of the wall portion is 12cm at the non-knob area and 16cm at the knob area. The thickness of the wall section is 2cm. The façade is of wide, raised and volute at the top, while the rear central projecting knob is almost semicircular in shape. The space between these three knobs gives enough space for ventilation for the flames to uniformly spread heat of the vessel during firing.



TRENCH NO : A3/2

The dig of the trench at a depth of 4.08 mts revealed few larger portions of terracotta rings of the well as continuation of over topped dump material. Further digging at the same level of the trench started exposing the lower terracotta rings of the well. As such the excavation was carried out in order to trace its lower most level of erection. In total 5 terracotta rings of the well noticed besides few large pieces of the crumbled portions of the upper rings. Each ring approximately measured 62cm in diameter and slanting height measured 32 to 38cm with a thickness of 2 to 3cm from its lower point to the top and the total height of the ring well measured 2.20 mts. It is quite interesting to observe

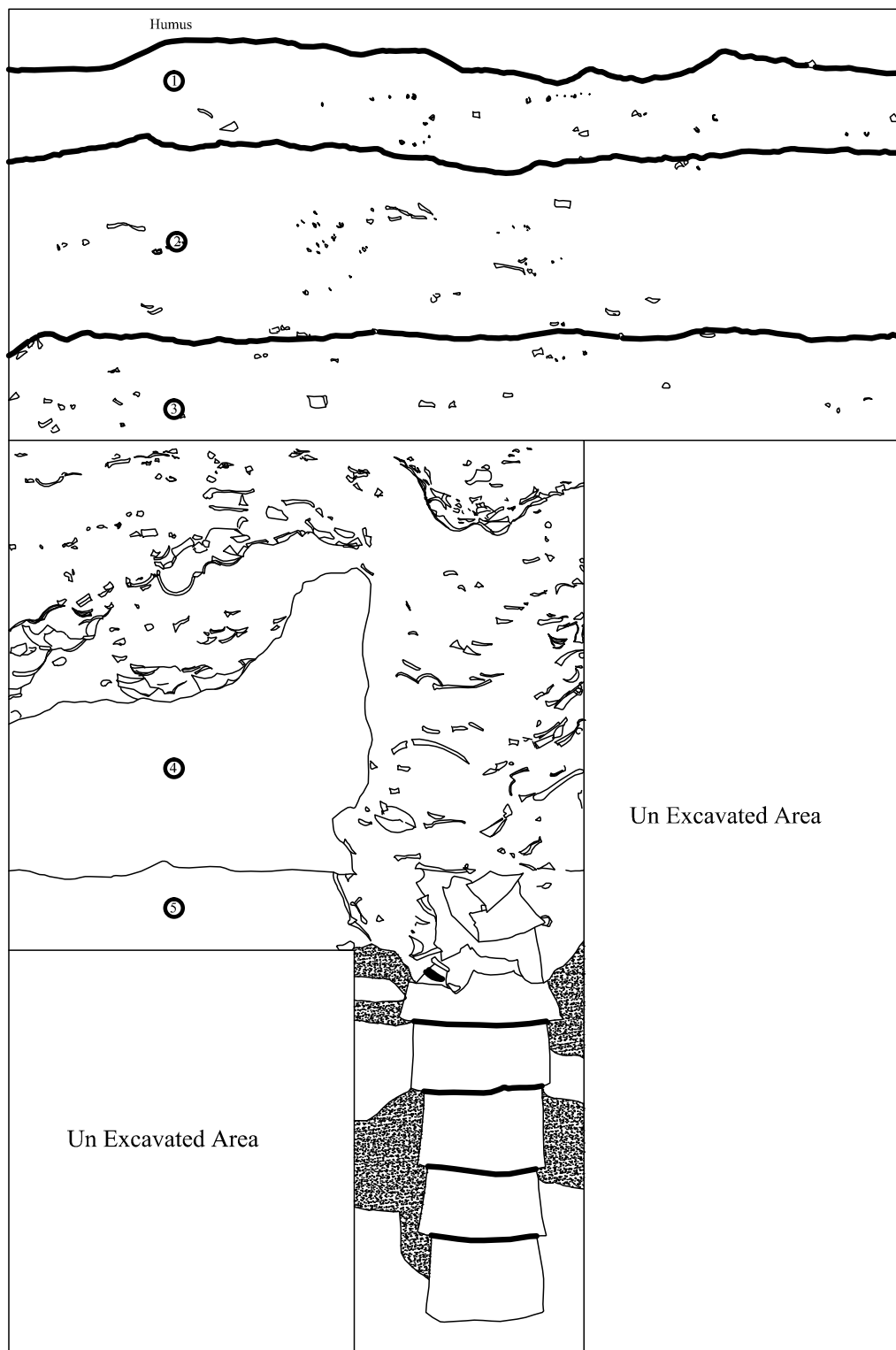


Fig. KLD- Northern Section, Q-A3/2

that they have been perfectly erected within the sandy deposit seems to be the natural soil of the area and more

over the river sand considered as a good sign of water table having its close proximity to river Vaigai on the north of this cultural mound.

In fact, the top portion was completely filled and packed with cart load of ceramic tiles and to everyone's surprise an almost full shape like Black and red ware vessel was found embedded.

The clear cut marks vertically on the western end was suggestive of the dig at a later period and dumped with such huge amount of discarded potsherds. Rest of that level running correspondingly on the northwest, south and east was of high compact yellowish gritty clay sterile deposit with few sherds and brickbats. The large pieces found over the lower rings in full shapes indicate the crumbled nature of the upper rings of the well probably crushed due to heavy loading and dumping of the unwanted materials thrown in to the well due to its non-utility.

The trenches laid in locality-2 namely YP10, YP9, YP8 and YP7 also runs in north south orientation and each of them divided in to 4 quadrants, so as to facilitate the excavation work and trace the orientation of any structural remains. In this context every trench was opened for archaeological examination and they unearth the vestiges with proper recording and documentation at various stage. Following is the narration of excavation work, trench wise with detailed description of stratigraphy and deposit. The stratigraphy of the deposit of this quadrant A2/4 also revealed the same kind of deposit as noticed in other trenches. But with slight variation at some portion of

layer 1 from the surface the stratigraphy comprised of humus, layers 1 to 6 found accumulated one over the other to a depth of 3.75 mts. The top most deposit namely the humus runs all around the trench with a minimum thickness of 12cm at a meter away north of eastern section and maximum of 32cm observed at the south eastern corner of the quadrant. This contains much of fibrous material and at some point's modern material like glass bangle pieces noticed.

Layer-1 succeeds immediately the humus at a lower level with a minimum thickness of 21cm on the western section and the north western corner of the quadrant of the same section. It is compact in nature with reddish yellow brown color containing few potsherds and tiny pieces of brickbats found noticed all around. In continuation of this layer exists layer-2 with the thickness ranging from 8cm to 1.65 mts. This stratum is of loose nature, comparatively ashy in color with powdery deposit contain more quantity of potsherds and few brickbats.

Layer-3 also running uniformly throughout with a minimum thickness of 4cm noticed at the middle of the western section and the maximum deposit of 1 meter recognized as the continuation of this stratum on the eastern section near the north eastern corner of the quadrant.

Layer-4 was somewhat complex of the existence due to semi compact deposit found in between the center of the layer stretching from major portion of northern, eastern, southern and some portion of western sections. In fact it contains more of loose earth with much ashy and carbonious material found mixed with enough quantity of potsherds and brickbats. And immediately succeeding this deposit of the layer continued the highly compact clay sterile deposit reached at a depth of 4.30mts from humus. The natural soil emerged at this depth continues further below with river sand.

TRENCH NO : A3/2

This quadrant also revealed 5 layers below the humus deposit running all around with much disturbance at the lower level particularly on the western, northern and eastern sections as noticed in other trenches with the same kind of content and texture. Its minimum thickness of 14cm was observed on the southern section at the southeastern corner while the maximum thickness of 32cm traced near the northwestern corner of the southern section. Immediately layer-1 succeeded with compact reddish brown clay deposit with its minimum thickness of 38cm at north eastern corner of the quadrant and the maximum thickness of 68cm noticed on the western section near the southwest corner of the quadrant. Few brickbats and a thin course of loose sandy clay at the top of the layer running on the southern end portion of western section said to be of varied content of this compact layer.

Layer-2 runs immediately just below all around with loose ashy powdery deposit containing sherds and tiny pieces of brickbats. Its minimum thickness of 56cm was observed on the southern section near the southwest corner and the maximum thickness of 92cm noticed at the middle of northern section. At some point the content seems to be powdery due to tiny shreds of pottery.

Layer-3 revealed its minimum thickness of 13cm on the western section near the southwestern corner of the quadrant while the middle of the southern section exposed the maximum thickness of 75cm. The color of the soil yellowish brown mixed was with enough of potsherds and few brickbats, roof tiles, amidst few bones noticed here and there. In fact the lower portion of this layer particularly on the west, north, and eastern sections constitute the heavy dumped material related to the filling material of the discarded well located at a depth of 1.74mts found accumulated over the collapsed ring

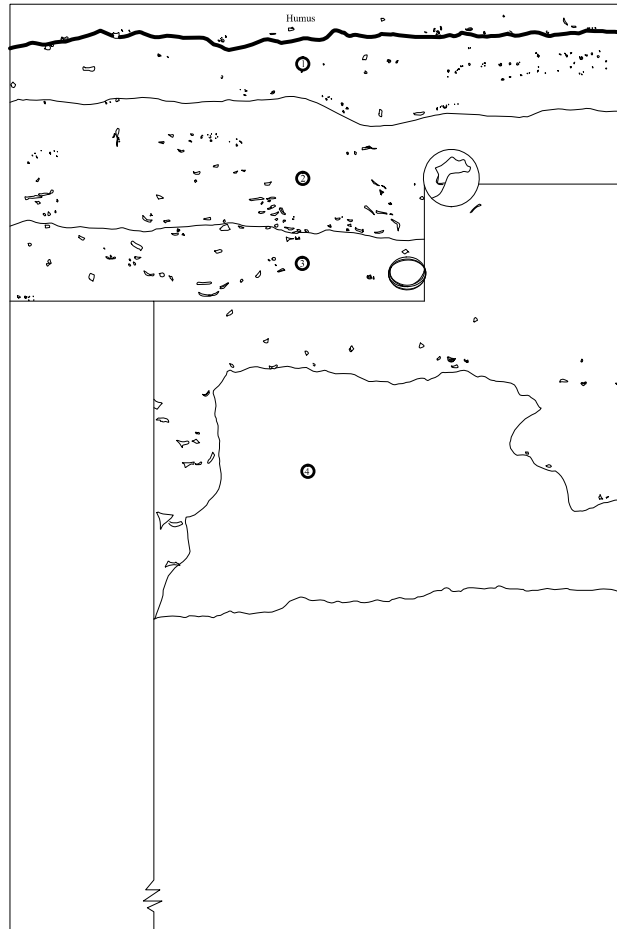


Fig. KLD- Eastern Section, Q-A3/2

well with 5 lower terracotta rings of the well found intact.

The next layer named as Layer-5 was typically a sterile deposit highly compact of yellowish brown clay content. Its maximum thickness noticed measured 1.55meters. The minimum thickness of this sterile deposit was 66cm at southwestern corner of the quadrant. Partly broken globular spouted vessel placed with its mouth at the lower level was traced near southeastern corner of the quadrant pertained to Layer-2. Another small vessel namely a shallow bowl with highly good neck and out turned rim of red slipped ware almost in full shape was found embedded at the lower level depth of 5 courses of terracotta rings.

TRENCH NO : YP8/3 AND YP7/2

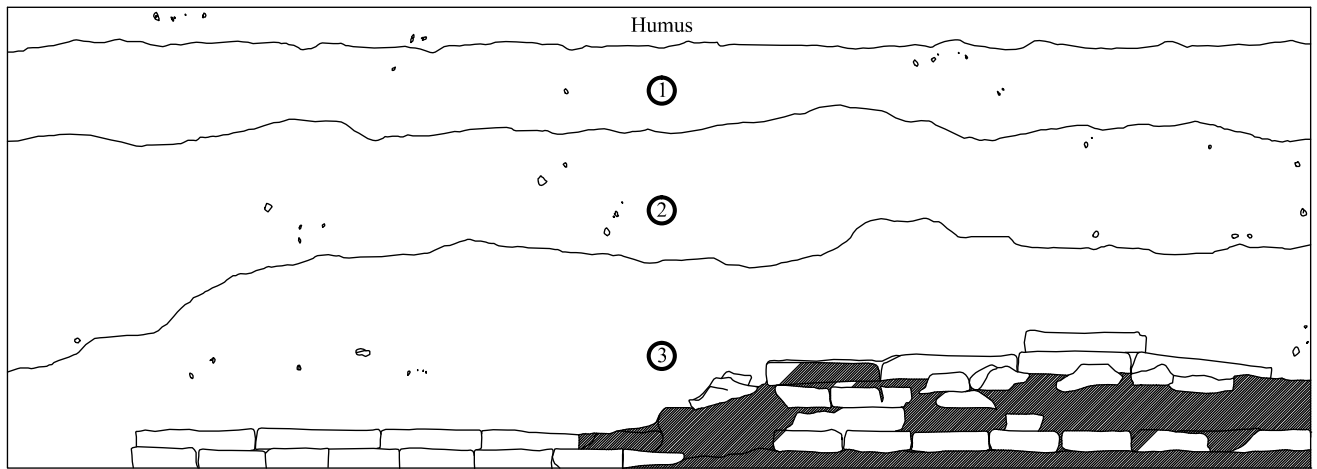


Fig. KLD- Southern Section, Q-Yp8/3

The excavation at both the trenches reached a depth of 1.80 mts which marked the stage of two courses of brick structure noticed at the quadrant YP7/3. As the quadrant YP8/3 did not reveal the continuation of the brick structure running south west to north east of the other trench found by removing the balk portion in between the trenches.

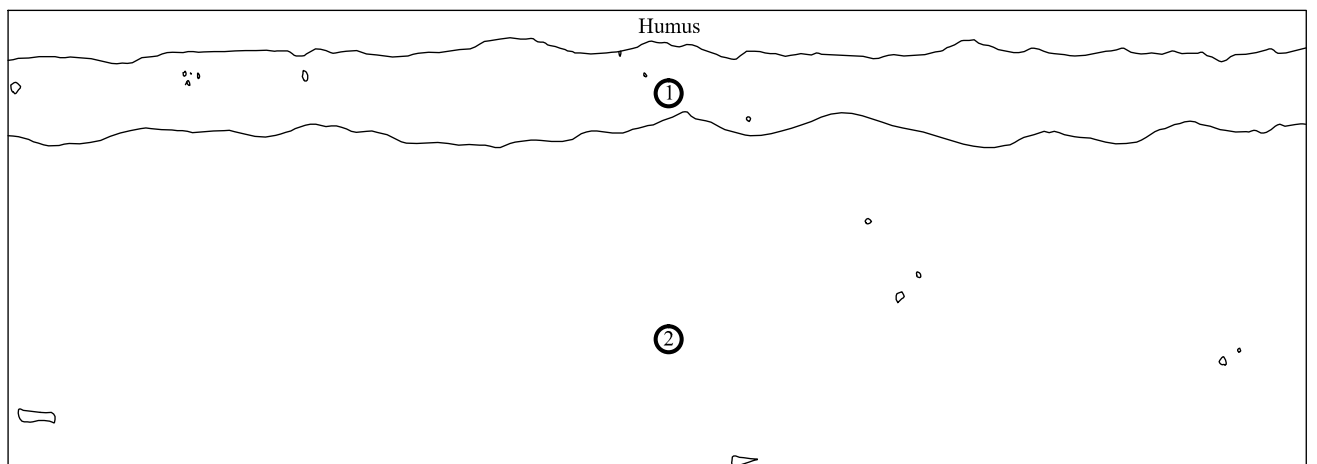


Fig. KLD- Northern Section, Q-Yp8/3

TRENCH NO : YP7/2

Systematically the work at YP7 /2 was continued at the north eastern quadrant. During the dig a small pellet like copper coin with much encrustation was recovered at 35cm. More over few broken portions of a copper bowl (miniature) with curvilinear surface recovered. Examination of the same is properly conducted. Much antique remains of the deposit could be adjudged by means of extending dig at this quarter. The trace of the orientation of the brick structure was noticed at north of this quadrant. In this context further digging is advocated to pertinently search. The

deposit was meticulously examined for recovery of significant antiquities along with associated ceramic types contemporary to stratified deposit.

This quadrant was not disturbed except the penetration of roots of the bushy thorny plants. During the course of the dig, partly broken pieces of hop-scotches were recovered. One piece with finely ground of the edges and inner of the side smoothed found while the other side was perfectly flat.



TRENCH NO : YP 7/2 & YP 8/2



The Excavation at both the Trenches reached a depth of 1.30 mts and which was the stage of two courses of brick structure noticed at the YP7/2. The Quadrant YP8/3 did not reveal the continuation of the brick structure running south west to north east of the other trenches found entering the balk portion between them

The Quadrant YP8/3 just reached the level exhibiting large brick bats found embedded on the southern section of the trench. So, with an intention of tracing the alignment of the brick structure found at the Quadrant YP7/2, a 1 m balk between the trenches was attempted of its removal by the slow steady and systematic process of digging. During the process of the excavation at balk, same color, content and texture of the respective stratified deposit observed.

Further digging at the lower level till the top of the brick structure was carried out. Whence, the continuation of the brick course at a higher level was identified and as a result careful exposition was under taken. In this context a systematic slow scraping was carried out, so as to identify the lower courses of bricks and accordingly the earlier course already traced continued

underneath and the same continued till the middle of the eastern section. As surmised earlier, the brick structure continued its orientation diagonally towards the north east from the middle of the trench with same kind and size of bricks were utilized for its construction. The western side of the balk from the middle portion was also excavated in order to find the other end of the brick wall. Almost all this bricks of same size were found in few pieces of the other quadrant.

It is quite interesting to observe the offset projection of the bricks of the structure uniformly continued. Such a type of offset projection is mainly to with stand the over load. There is also a post hole noticed on the northern side completely with loose sandy deposit. Similarly there is another posthole on the southern side of the wall jutting into the eastern section. So the existence of post holes gives clear-cut provision of roofing supported by poles over and along the brick walls. Adjacent to the same level of the brick structure on the northern side was noticed a thick layer made of mud flooring of well levigated clay. Similar flooring was also noticed in YP8/4 quadrant at the same level. The existence of such well levigated compact flooring indicates the platform of the living quarter probably well within the four walls of the structure so that it could be protected from the wrath of rain and sun light.

TRENCH NO : YP8/1 (FLOOR)



At a depth of 1.50mts a spread of highly rammed Clay floor was noticed on the eastern half of the trench. The western half slightly at the lower level revealed the same type of flooring. The texture was so hard and compact indicates clear pavement of Clay flooring probably of fine clay mixed with herbal extract and lime in the ratio 3:2:1. As a result, the surface revealed ashy mass green color. This resembles and recalls the mud flooring of almost of recent past. So the habitation area gets extended in similar fashion for a different purpose. This is hard due to rubbles and brickbats found spread near the middle of the southern section.



TRENCH NO : YP8/3

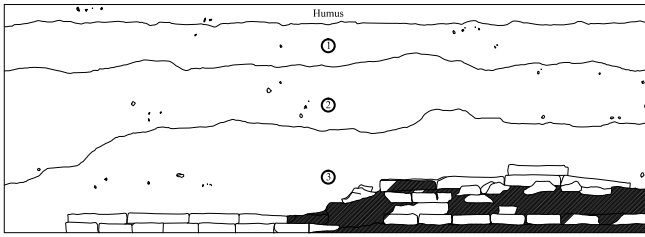


Fig. KLD- Southern Section, Q-Yp8/3

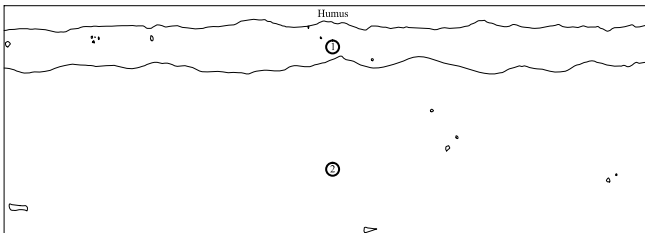


Fig. KLD- Northern Section, Q-Yp8/3

The excavation work at this trench was carried throughout. In order to probe the continuity of the cultural structure, this trench was opened of tracing the extension of brick structure found at YP7/2.

TRENCH NO : YP10/4



The holding portion of a pot contains six radiating traces of parallel lines. Each radiation contains 14 small parallel lines probably of painting decoration. This gives an indication of the painted design as a glorified / magnified Sun symbol. This is quite interesting to recognize that such a clubbed form of the Sun symbol as a developed version with circular spacing of the centre and the spokes found all around with different strokes.

TRENCH NO : ZB5/2

At a depth of 2.40 mts very close to the north western corner of the trench, a rim portion of a larger bowl of Black and Red ware was noticed. As a result much care was taken to expose the same without causing much damage. This large bowl had slight cracks at some portion. To everyone's surprise this seems to be the unique

large single specimen of the bowl so far excavated from the state of Tamil Nadu. The rim is inturned with blunt beaked shape having the groove at the outer level just below 3 cm of the rim tip.

This vessel measures 62 cm in diameter. The shape seems to be round with slight portion found hidden in the western section. The thickness of the rim is 2 cm and that of



the body is just a centimeter with typical nature of finer variety of Black and Red ware. This recalls the refined color, fabric and luster on either side of the vessel. To the best of knowledge this is a rare sized Black and Red ware larger bowl. With an intension of retaining its location in situ to the trench further digging was temporarily stopped The contemporary yellowish patch probably comprising of fine river sand deposit running all around the trench gave a different indication from the lower.

In this context the top deposit was observed at the above level of the vessel with much lime mixed context needs to be critically related as for the utility of vessel is concerned

with the lower deposit at the adjoining portions of the vessel. This deposit is also found running uniformly all around the trench with much semi compact blackish deposit. As far the stratigraphy is concerned, this level slightly recedes from north-south towards the south. Further dig revealed cluster of potsherds found emerging at the south western corner. The lower level of the trench was excavated and examined to continue the work and reach the level of natural soil. It is quite interesting to the observe the rope design on the shoulder level of the Black and Red ware vessel.



BRICK STRUCTURE

A row of the bricks paved with proper alignment running east west is found traced from this Quadrant YP7/2 at a depth of 1.25 m found adjacent to the northern section. After giving a fine brushing, the successive course of brick structure became clear. The structure extended towards the east and gave some indication that diagonally the continuation of the structure would either be traced on the east or on the north diagonally. The size of the bricks measured 35/36cm length and 23/24 cm breadth. Further digging in the adjacent quarter without disturbing the structure would reveal either the lower courses of bricks underneath as such the thickness of the bricks could be measured.

The size of bricks clearly indicates on par with the sizes of the bricks of the brick structure exposed by earlier excavation at the site. Hence, the structural activity of the site runs at selected points thorough out the mound and indicates the standardized level of living. Moreover, this area in situ the other adjoining area seems to be the peak of cultural mound. The excavation on the eastern and north eastern side will

reveal more spots of brick structural activity contemporary to the early phase of the Christian era. On the upper level of the brick alignment few brick pieces of the ruined structure were found embedded.

Further dig at this quadrant revealed another course of bricks just below with off-setting projection towards the south, with the bricks arranged breadth wise. Moreover they are of three fourth of the size, retaining square shape of bricks.

The upper course contained 4 bricks and the lower course with 7 square shaped broken bricks and the same found continued to the extreme end of the north eastern section of the trench. A refined treatment to the surface of the brick course of the brick structure really revealed the engineering technique of early century builders. It is very much suggestive of the structural extension of the same towards the north eastern direction at right angle.



SILT FLOOR



The excavation work of the trench – YP7/1, is resumed for the day from the depth of 34cm. In the course of the pick, the texture of the deposit was semi-compact on the northern side and comparatively loose on the southern side. The color of the soil was dark-yellowish brown. After clearing the deposit, a course of fine silt like well levigated clay layer of flooring occurred on the southern section of the trench to a width of one

and a half feet from the southern section. This seems to be contemporary to such a layer traced at YP7/4 in the same depth. So the continuation of such flooring existed at required area is suggestive of specific purpose of living of this settlement. The flooring thickness measured around 6 cm and made of fine levigated clay. Further dig at the adjacent area of the floor level revealed non continuation of the same. Hence, by means of observation and recording, the next dig was applied so as to continue the excavation.

Tamili [TAMIL-BRAHMI]

The *Tamili* (Tamil-Brahmi) scripts found engraved on the outer surface of Black and Red-Ware with single horizontal line drawn along with six *Tamili* (Tamil-Brahmi) letters namely ku, vi, ra, ṅ, ā, ta. The reading could be related with sufficient letter 'n' (d;) so the letters read together with 'n' (d;) suffix may mean the name of the person as 'kuviran-ātan'. The suffix letter in this is conjecturally added to become portion of script and missing of the broken sherd. The proper noun of the *Tamili* (Tamil-Brahmi) script is suggestive of either the quality of the individual as philanthropist similar to the nature of rain.



BEADS

The collection of beads from Keeladi excavation accounts to 2301, which include glass beads, paste beads, quartz beads, faience beads, agate bead, carnelian bead, terracotta beads. Glass and paste beads of various colours. The shapes of the beads are spherical, cylindrical, gooseberry, and barrel. A2/2 quadrant yielded much paste beads from the depth of 1.47 meter i.e. 120 beads and at another depth of 1.55 meter 357 paste beads were recovered.



Carnelian Bead



Carnelian Bead



Crystal Bead



Crystal Bead



Glass Bead



Glass Bead



Quartz Bead



Soapstone Beads



Terracotta Beads

HOPSCOTCHES



The flat portions of the potsherds were generally ground of the edges to bring round shape. Such gamesman is called as Hop Scotches (sillu). They were used by children as game pieces. Hop Scotches are collected from the entire quadrant. These are of various sizes as well as of different pot sherds like that of black and red ware, coarse red ware and red ware etc., Totally 235 hop scotches were collected from the current season of excavation.

GAMESMEN

In the historic period gamesman were made out of clay material. Two types of gamesman were observed in Keeladi excavation. These objects might be used to play the ancient games like chess. The present session of the excavation work yielded 26 numbers of gamesmen. All are made of burnt clay and mostly black colour.



IRON OBJECTS



Iron nails were collected in considerable numbers and pieces of knife portion were also recovered. They are fragmentary. During this season, more than 50 iron object portions were collected and they are mostly of iron nails and iron knives. Some of them are of un-identified shapes and utility.



EAR ORNAMENTS



More than half size of a terracotta Ear ornament with a centrally depressed groove around the circumference on one side containing a Trident like pattern resembling the Tamil letter “La”(ல) in a group of three lines besides the minute pointed holes spread around the three leaves like trident motive along with the minute dot like design of pre-firing nature. Two varieties of ear ornaments were found in this season. They are of terracotta. One of the ear ornaments is of round shape with concave edge and looks like ear ornament of coiled palmleaf. But the other ear ornaments though seem to be same but decorated with a central hole. Totally 14 ear ornaments were unearthed from the excavation.

SPINDLE WHORL



Spindle whorl is a circular object with a central hole used as a flying wheel of a spindle. It is a disc shape made of potsherd. Considering its light weight and small size, it is presumed that this could have been used for spinning thread out of cotton. One spindle whorl was unearthed in quadrant A3/2 at a depth of 2.40 mts.

BANGLE PIECES

Excavation at Keeladi, yielded 23 bangle pieces. The bangle pieces were made of shell and glass with varying sizes. They are thick and thin in cross section. One piece decorated in outer portion of the shell bangle resembles two small lines going through all over the bangle.



TERRACOTTA MOULD & FIGURINES

A human head mould was unearthed in the Keeladi excavation. The collected mould is a portion for making cast of a human head in metal or any other material with the inner side of the mould beautifully carved. The head decoration and elongated ear are having minute carvings. This mould is made of levigated clay and well fired.



Male Torso



Relief



Torso



Horse Head



Mould of a Head



Bull Head



Head

HORNS

The finding of deer horns are common in all the excavations conducted in Tamilnadu. Especially Uraiyyur, Thirukkampuliyur, Boluvampatti, Karur and Alagankulam have yielded good number of deer horns. It is interesting to note the Sangam literature has thrown enough light on the trade of valuable deer horns to foreign countries. Single piece of deer horn is found at this excavation.



RARE FINDS

Few pieces of gold ornament like a star pendant, a small bell pattern like pendant, a broken bit of a small curved ring, a flake of an un-identified gold ornament were found. This season's work yielded a comparatively larger bowl of a black and red ware which seems to be unique of its size and considered it as a rare specimen from the excavations of Tamil Nadu.

The ring well traced at the trench A3-quadrant-2 seems to be the lowest level of terracotta rings so far found from this site. On the basis of its size and shape, this ring well is of lesser diameter 62 cm, slanting height of odd and even numbers of the rings are 34 and 38 cm respectively and thickness 4 cm and placed over the sandy materials of the riverine sand deposit fetching palatable drinking water

FINDINGS

The excavation yielded enough cultural traits in the form of structural activity (brick structures, terracotta ring wells, fallen roofing tiles with double holes and deeply finger pressed grooves to draw rain water), antiquities like few pieces of golden ornaments, broken portions, copper objects, iron implements, terracotta gamesmen (chessman), hopscotches, ear ornaments spindle whorls, images portions besides beads of terracotta, glass, paste, semi-precious stones (agate, carnelian, crystal, etc.) popular ceramic types like finer variety of Black and Red ware, Black ware, Polished ware, Red ware, Rouletted ware, few pieces of Arretines. There are also enough numbers of graffiti sherds of both pre and post firing nature. A good number of Brahmi shreds also unearthed. All these finds clearly indicate the cultural richness of the ancient civilization of the Tamils of this region having its close proximity to the temple city Madurai. As the cultural mound is so vast of its area and as on date undisturbed and protected by the palm grooves, it becomes essential to probe such cultural hidden treasures of Keeladi site for some seasons and reveal the cultural wealth of the ancient society dating back to more than 2500 years before present.

CULTURAL SEQUENCES AND CHRONOLOGY

The cuttings of the current season of the excavation revealed the cultural deposit of 2 distinct features of sequence with middle deposit continuation at the top. Based on the ceramics, tiles and minor antiquities, the chronology of the site could be of 3 stages and they are Period-I, II and III.

Period - I

Represented by finer variety of Black and Red ware, black ware, and associated red slipped ware of finer variety and of polish. Structural remains like terracotta ring wells, brick structure constitute the building activity of the phase.

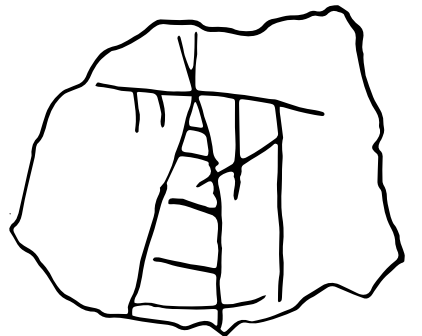
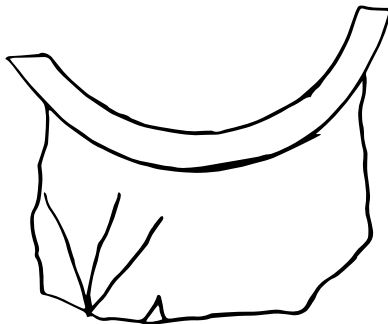
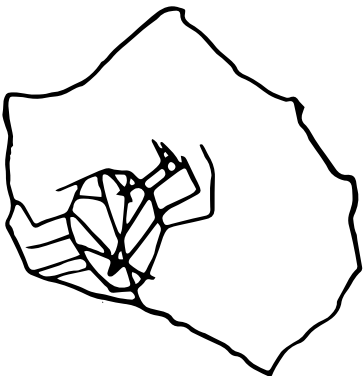
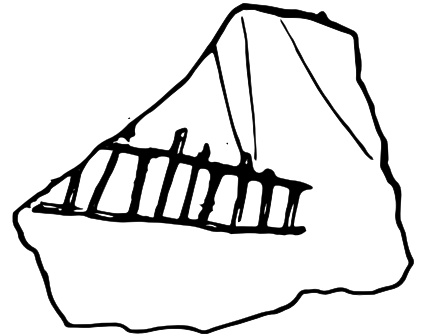
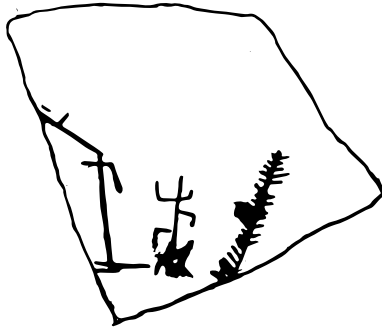
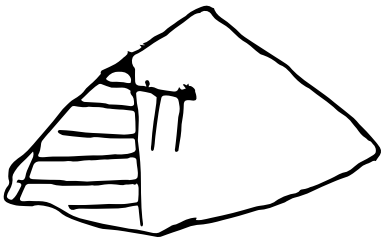
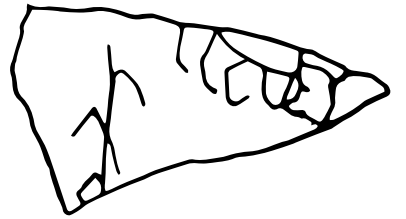
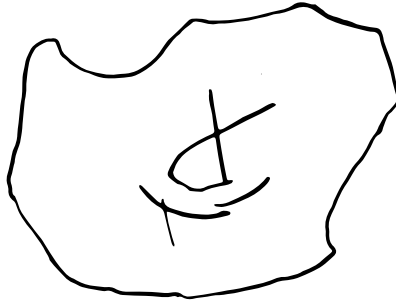
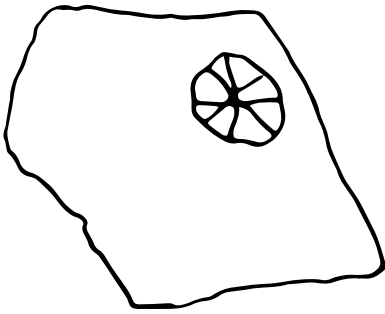
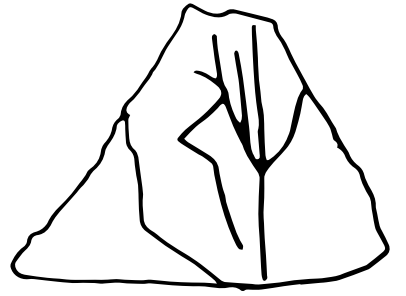
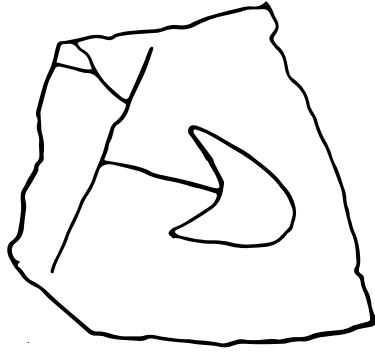
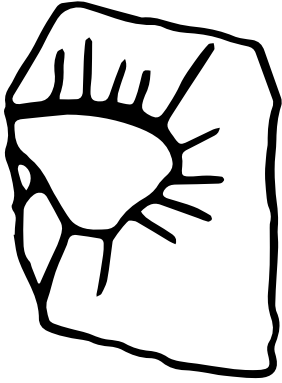
Period - II

Similar ceramic types as the lower level but of medium fabric and fineness, roof tile, with grooved depressions and most probably double holed besides antiquities like terracotta ear ornaments, gamesmen of terracotta of bone tusk, apart from bangle pieces of conches, semiprecious stone beads along with beads of paste belong to the this phase. Some numbers of spindle whorls were also recovered from the trenches. Apart from this few metal objects of copper (antimony rods, unidentified objects), copper coin, one in square shape with much corrosion, a silver punch marked coin having punch mark constitute the sequence of cultural deposit of this period. There were also ivory objects such as cubical dice like gamesmen, arrow points of bone used for hunting animals, hop-scotches made of terracotta and potsherds, iron objects like broken portions of spear head etc., found.

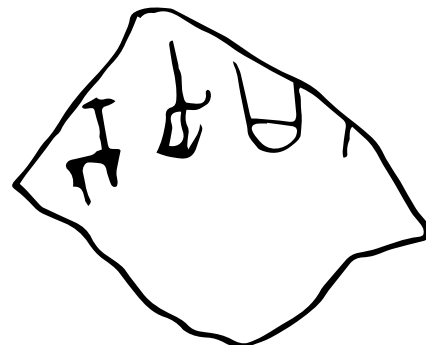
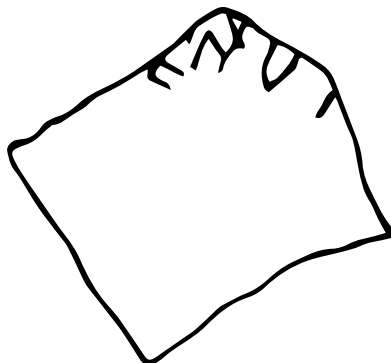
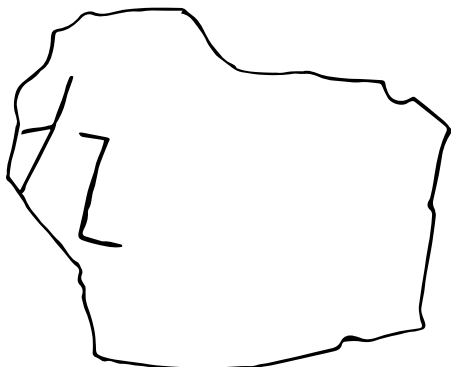
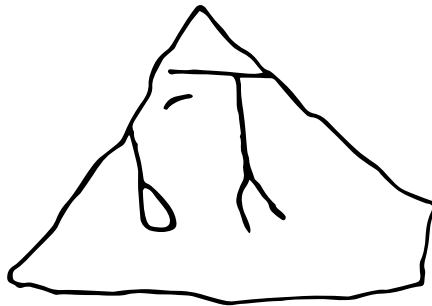
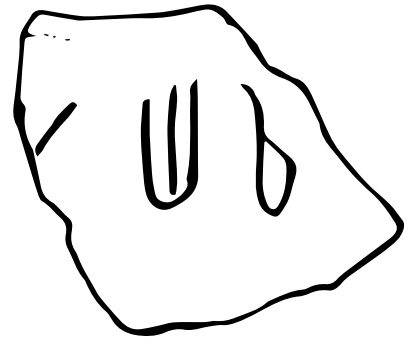
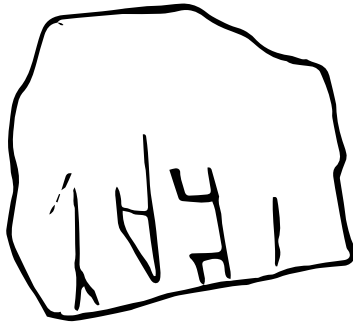
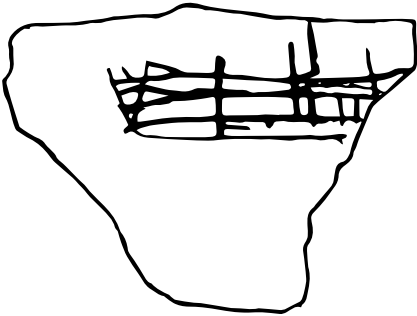
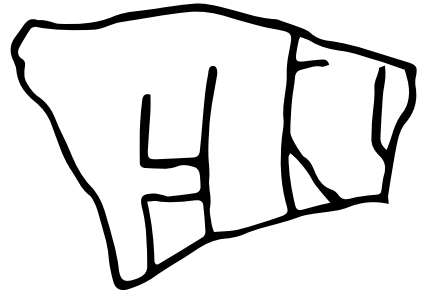
Period - III

Ceramic tiles of red slipped ware, red ware, glass beads from the upper level of the deposit represent this period. So the chronology of this site keeladi with three periods could be scientifically fixed between 6th century BCE and 11, 12th century CE. In this context, period-I represented the cultural settings of the site from 6 century BCE to 3rd century BCE. Period-II existed between 3rd century BCE and 4, 5th century CE, while the last phase, period-III constituted the finds belonging to date from 4, 5th century CE to 11, 12th century CE. Hence period-I is the earliest phase found at the lower level of the deposit and consequently the other two over it.

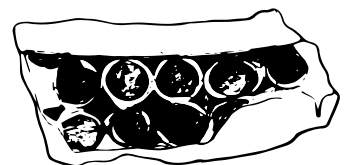
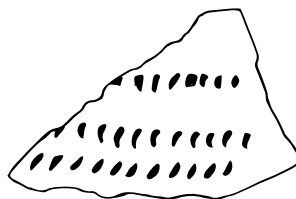
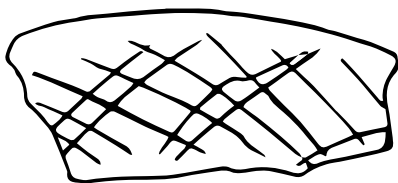
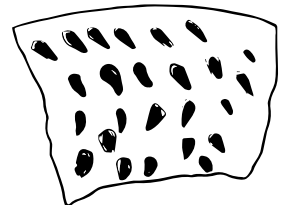
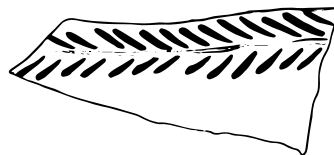
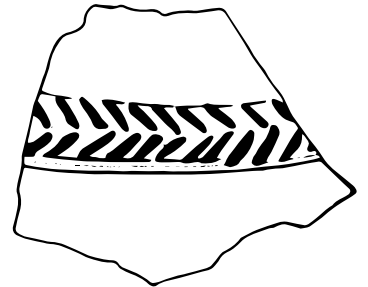
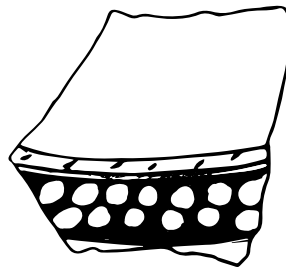
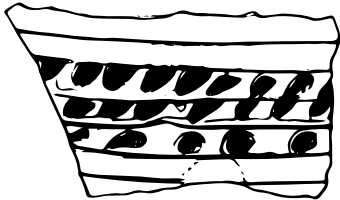
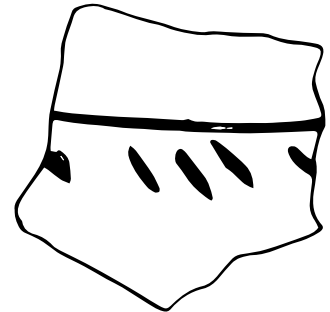
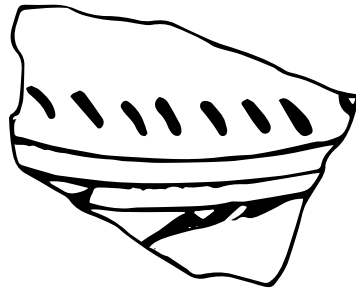
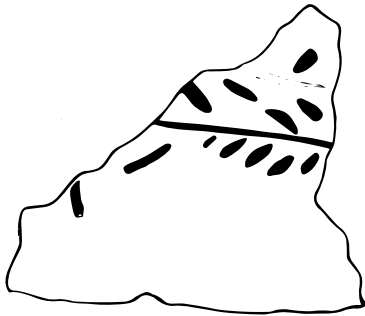
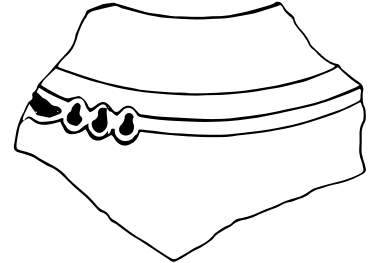
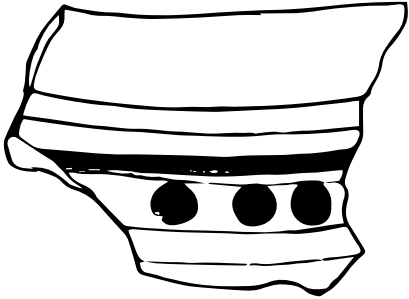
GRAFFITI AND SYMBOLS



TAMIL BRAHMI



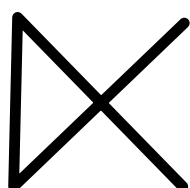
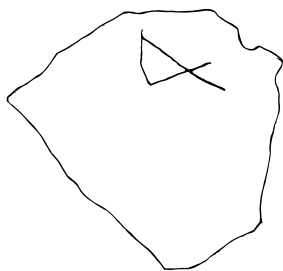
DECORATIVE WARE



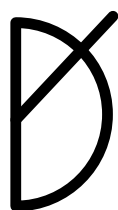
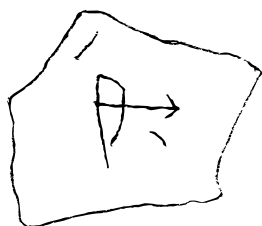
SIMILARITIES BETWEEN GRAFFITI SYMBOLS OF KEELADI AND SIGNS OF INDUS CIVILIZATION

Keeladi graffiti

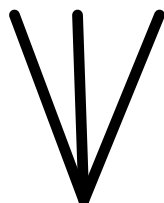
INDUS sign



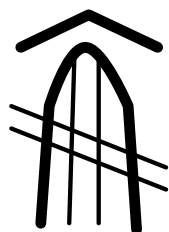
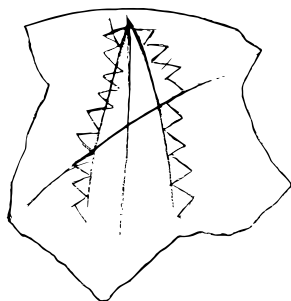
INDUS SIGN-225



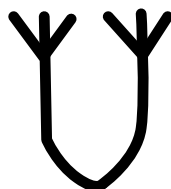
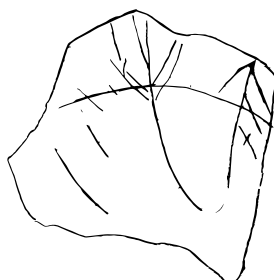
INDUS SIGN-307



INDUS SIGN-365



INDUS SIGN-318



INDUS SIGN-318

Keeladi Excavation Team

Under the guidance of

Thiru T. Udhayachandran, I.A.S.,

*Principal Secretary and Commissioner
Department of Archaeology*

Dr. D. Jagannathan, I.A.S.,

*the then Commissioner [FAC].,
Department of Archaeology*

Excavation Team

Excavation Director	- Dr. R. Sivanantham, Deputy Director
Excavation Co-Director	- Dr. J. Baskar, Archaeological Officer (i/c)
Excavation Expert	- Thiru M. Seran
Archaeologists	- Thiru J. Ranjith <i>Thiru M. Prabhakaran</i> <i>Thiru T. Thangadurai</i> <i>Thiru S. Nandakumar</i> <i>Thiru K. Sakthivel</i> <i>Thiru B. Asaithambi</i>
Surveyor	- Thiru T. Thangavel, Executive Engineer <i>Thiru K. Olimalik, Asst. Executive Engineer</i>
Chemist	- Thiru P. Kaleeswaran, Chemist <i>Thiru P. Senthilkumar, Assistant Chemist</i>
On site Supporting	- Institute of Epigraphy Students <i>(2017-2018 & 2018-2019)</i> <i>Thiru M. Muthukaruppu, Office Assistant</i> <i>Thiru P. Senthilkumar, Driver</i>
Technical Assistance	- Thiru D. Prakash, Superintendent
Administrative Supporting Staff	- Thiru V. Sivanandam, Assistant Director (H.Q) <i>Selvi R. Kavitha, Assistant Accounts Officer</i> <i>Tmt. D. Sridevi, Superintendent</i> <i>Tmt N. Nagarathinam, Superintendent</i> <i>Tmt. B. Mythili, Superintendent</i> <i>Thiru B. Nagesh, Assistant</i> <i>Tmt. G. Umavathy, Assistant</i> <i>Thiru S. Anbunambi, Cashier</i>
Drawings prepared	- Thiru M. Ramesh, Research Assistant

PLACES OF EXCAVATIONS CARRIED OUT BY DEPARTMENT OF ARCHAEOLOGY

S.No	Place	District	Year of excavation	Nature of Site
1	Korkai	Thoothukudi	1968-1969	Early Historic
2	Panchalankurichi	Thoothukudi	1968-1969	Modern
3	Vasavasamudram	Kancheepuram	1969-1970	Early Historic
4	Anaimalai	Coimbatore	1969-1970	Megalithic
5	Pallavamedu	Kancheepuram	1970-1971	Medieval
6	Karur	Karur	1973-1974 1994-1995	Early Historic
7	Panayakulam	Dharmapuri	1979-1980	Early Historic
8	Boluvampatti	Coimbatore	1979-1980 1980-1981	Medieval
9	Kovalanpottal	Madurai	1980-1981	Megalithic
10	Thondi	Ramanathapuram	1980-1981	Early Historic
11	Gangaikondacholapuram	Ariyalur	1980-1981 1986-1987 2008-2009	Medieval
12	Kannanur	Tiruchirappalli	1982-1983	Medieval
13	Kurumbanmedu	Thanjavur	1984-1985	Medieval
14	Palayarai	Thanjavur	1984-1985	Medieval
15	Alagankulam	Ramanathapuram	1986-1987 1990-1991 1992-1993 1994-1995 1996-1997 2014-2015 2016-2017	Early Historic
16	Tirukkivilur	Villupuram	1992-1993	Early Historic
17	Kodumanal	Erode	1992-1993 1996-1997	Megalithic & Historic
18	Sendamangalam	Villupuram	1992-1993 1994-1995	Medieval
19	Padavedu	Tiruvannamalai	1992-1993	Medieval
20	Tiruttangal	Virudhunagar	1994-1995	Microlithic
21	Poompuhar	Nagapattinam	1994-1995 1997-1998	Early Historic
22	Maligaimedu	Cuddalore	1999-2000	Early Historic
23	Teriraveli	Ramanathapuram	1999-2000	Early Historic
24	Mangudi	Tirunelveli	2001-2002	Microlithic
25	Perur	Coimbatore	2001-2002	Early Historic
26	Andipatti	Tiruvannamalai	2004-2005	Early Historic
27	Modur	Dharmapuri	2004-2005	Neolithic
28	Marakkanam	Villupuram	2005-2006	Medieval
29	Parikulam	Tiruvallur	2005-2007	Palaeolithic
30	Nedunkur	Karur	2006-2007	Megalithic
31	Mangulam	Madurai	2006-2007	Early Historic
32	Sembiyankandiyur	Nagapattinam	2007-2008	Megalithic
33	Tarangambadi	Nagapattinam	2008-2009	Modern
34	Rajakkalmangalam	Tirunelveli	2009-2010	Medieval
35	Talaichankadu	Nagapattinam	2010-2011	Medieval
36	Alambarai	Kancheepuram	2011-2012	Modern
37	Srirangam	Tiruchirappalli	2013-2014 2014-2015	Medieval
38	Ukkiran Kottai	Tirunelveli	2014-2015	Medieval
39	Pattarai perumbudur	Tiruvallur	2015-2016 2017-2018	Later Palaeolithic
40	Keeladi	Sivagangai	2017-2018 2018-2019	Early Historic

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