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Archaeology & Art of India

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Introduction

The essays included in this book will give the readers not only some useful peep into the recent archaeological finds but also inform them about views held or suggested by the author on some of the problems facing Indian Archaeologists. The present author has been actively associated with Indian archaeology, particulary in Bihar for two decades now, and has thought it profitable to share his ideas between himself and scholars in the field on all that he has written, spoken or thought over about art and archaeology.

In the first paper while reviewing the work in Indian archaeology in 1973-74, the author has indicated the lines on which, in his opinion, more time and stress be devoted by archaeologists. A renewed and vigorous plea has been made for large scale horizontal diggings in preference to limited vertical excavations when cultural sequences in different parts of the country are by now largely established. The author has passionately pleaded with his colleagues not to err heavily on the side of caution and doggedly stick for younger dates for our pre-historic cultures when facts do not necessarily warrant such conclusions. This reassessment becomes more relevant when we find some competent scholars on the basis of new evidence and by use of new scientific knowledge antedating some European cultures like the Vinca Culture.

In the second paper a short account of progress in pre-and proto-

history of India has been attempted. However, the observation that there is no evidence of blade brim (Upper-Palaeolithic) culture has to be qualified by recent evidence of this culture in Uttar Pradesh and the Deccan. Similarly, the suggestion thrown out that the black-and red ware, chalcolithic ware continuous from the Harrapan lothal to the North-Indian and Central Indian Chalcolithic may be an Aryan pottery, has lost much of its force by the discovery of black-and red ware in the neolithic strata at Chirand, though with pottery forms differing with Chalcolithic black-and red ware. The origins, diffusion and authorship of the black-and-red ware technique taking into account not only far early in time the Badarian Black-topped ware and later iron associated megalithic black-and red ware of South India deserve a very close examination. The paper dealing with 'some problems of Ancient Indian potteries' poses many questions regarding the diffusion and authorship of some pottery-cultures well identified by now. But the view expressed that the PGW people may have introduced iron technology on their coming to India from outside is now less certain with the discovery of PGW without iron at Bhagwanpura in Haryana. PGW problem has now become more complicated. An important point, worth more discussion, made in that as the Vedic Aryans entered India in more than one wave and by more than one route, it is possible to speculate different proto-historic potteries with different Aryan waves of invaders. The next paper is a first hand summary of the discovery of neolithic culture in Chirand in North Bihar, and the first notice of neolithic in the Gangetic Valley in course of excavations. The author feels grati fied to be directly associated with the discovery and conduct of the excavations. The neolithic culture discovered in Chirand is unique in many ways besides being very rich in pottery (black-and red, red and gray wares including post-firing Ochre paintings in different designs on both grey and red wares, while grey ware is found in Burzhom neolithic and also in Aq Kuprick in Afghanistan, post-firing paintings together with bone-tools and sophisticated

beads of different stones and curious shapes. Unfortunately no C-14 dates for the neolithic strata could be obtained. Vishnu Mitre suggests 4000 B.C Malhar in U P. has given *c.* 5000 B.C. Chirand could not be far younger. But more work in Chirand is necessary and with the assistance of the U.G.C. and the Archaeological Survey of India, the author has resumed excavations at Chirand. Next paper is a comparative study of bone-tools of Chirand and Burzhom—two excavated sites in North India. In view of the fact that details of Burzhom bone-tools were not available to the author, the study is perhaps not fully exhaustive but the appendix giving the full details of the number and type of bone-tools discovered from Chirand neolithic should be of some interest to workers in the field. Recently Mahabharata and its historicity in the context of archaeology has had headlines not only in national papers, but was a subject of many academic discussions. In the paper on the subject included in this volume the author has emphasised that limited archeeological probing so far do not disprove the possibility of the Mahabharata having actually materialised. Negative conclusions on archaeological findings may prove risky and premature.

Champa (near Bhagalpur in South Bihar) is the site of an ancient city known to the Ramayana and early Buddhist and Jain literatures. The author has been supervising the excavations there going on for about 10 years now. The article 'Excavations at Champa' gives an account of the results of the excavations down to 1976. The foundations of the fortifications are traced to the beginning of the NBP. The potsherds collected from the trench cutting the foundations buried under subsoil water included some crude black and-red ware, and the excavation this year (1979) in a habitational area also yielded characteristic black-and-red ware sherds Including pieces of dish on-stand, proving the existence of a chalcolithic black-and red ware strata below the NBP. Another interesting feature suspected earlier but strengthened by this year's

excavation is that below the NBP strata we have grey-ware (unpainted) strata which yielded *no* NBP sherds at all. This was also the case at Buxar (another site in south-west of Bihar) where with grey ware in lowest excavated levels (due to vast accumulated sand deposits, virgin soil was not reached), there was complete absence of NBP, and from there grey levels were found the terracottas discussed in a subsequent article in this volume Generally, gray ware (thin section of well levigated clay) is found associated with NBP and is presumed to be contemporary. But Buxar and Champa excavations pose the problem whether the grey ware as a distinct ceramic culture antedates NBP in this region. ? Has it any relation with the PGW in technique and in time ? In the attached supplement a statistical account of the potteries and other antiquities has been given for the use of interested scholars with the hope that such an innovative feature would find appreciation. In the subsequent essay on 'Material Culture of the Bihar Plains', an idea of the material life of the people from 600 B C to the end of the Gupta period has been given on the basis of archaeological finds. I am indebted to Sri A. Ghosh, editor of the proposed directory of Indian Archaeology for giving me an opportunity to look at the problem from this angle. It has been suggested that the well-known Kumrahar (Pataliputra) Pillared hall is Asokan rather than of the time of Chandra Gupta is an Archaeologist's treasure-house and in the next paper a brief resume of archaeological activities in Bihar since 1862 has been given with the hope that such historical reviews of different regions in India will immenseily help in compiling a comprehensive history of Archaeology in India which is more than one hundred years, old now. A short note on the Buxar Terracottas introduces a few terracottas discovered in grey ware strata unassociated with NBP. These terracottas are painted, probably earliest examples of painted terracottas in the region. The subsequent note on the crystal-human figure from Sonpur (South Bihar) describes a unique find for its size and time. The paper on Antiquities from recent excavations in Bihar highlights the uniqueness

and quality of some of the antiquities discovered at Champa and Chirand particularly, the Ivory female figure and Jewellery moulds with drawings from Champa and the huge terracotta mask from Chirand. The paper on Ramayanic scenes on stucco from Aphsad should give scholars a very pleasant surprise. The Aphsad inscription of Adityasena had informed us of a Vishnu temple built by him. The ruins of the temple mound have been under excavations, first begun by the author himself. The excavations show more than one phase of buildings. But the plinth-wall of the earliest phase bears sculptures in stucco depicting the story of the Ramayana-art reminiscient of the Nalanda stuccos This is for the first time that for as early as the 7th century we have in stuccos a continuous story of the Ramayana depicted in a true sequence. Only a part of the plinth-wall has been exposed. Probably, further excavations will give us a complete Ramayana story in life-like stuccos figures unknown in the history of Indian art so far. While we have been rightly proclaiming our traditional policy of religious toleration among multiplicity of sects and religions, the article 'Trampling of Hindu Deities by Buddhist Deities' may give some shock to many of us. But History is a relentless enquiry for Truth, and many such studies may unravel a feature of life and beliefs of atleast some not very tolerant sections of our people. The note on the image of Sadyojata only introduces some distinctive features of this images.

I am aware that many scholars may not agree with the views and analysis of the author on many problems touched in this volume, but I hope they and the common readers, and certainly students will read them with some profit and find themselves better informed.

It is with this subdued confidence that this volume is being published.

PATNA : August, 20, 1979. B. P. Sinha

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1

Problems of Indian Archaeology*

Indian Archaeology since independence has made immense strides, and can rightfully claim, because of its brilliant achievements both, in quality and extent of activities, a honoured place in world archaeology. Indian history from the time of the Buddha and certainly from Asoka's time was fairly well-documented on literary and archaeological basis. But the pre-and proto-history was very imperfectly dotted along the lines. The loss of Harappa and Mohenjodaro to Pakistan posed a great challenge to Indian scholars to discover sites of same size and importance. The Neolithic pattern in India was hardly known except for stray finds of neolithic celts here and there and excavations in South India, particularly at Brahmagiri. Chalcolithic culture was almost unknown. Indian literature is very ancient and varied, and it contains traditions of hoary antiquity. These were still absolutely unrelated to archaeology. But archaeologists since independence under fatigue and in spite of tremendous financial limitations and inadequacy of trained man-power, were inspired by the life-giving rays of freedom of the country and rose to the occasion. Realising the atlantean load of work for the archaeologists, the universities were called upon to share this great gigantic national task, and the results have been singularly rewarding for any one to see. Lothal and Kalibangan give us not only mature Harappan culture but also some features not met with at Mohenjodaro and Harappa. Phenominal progress has been made in discovery of Early, Middle

* Based on the author's presidential address at the annual session of the Indian Archaeological Society in Delhi in 1974.

and Late Stone Age sites, found now not only in the Deccan and the South, nor only in the Punjab but in Kashmir, Gujarat, Maharashtra, in plains of Bihar and Bengal and in the Madhya Pradesh. Prof. B.B. Lal discovered a new site in Gwalior with well-defined implementiferous terraces of Early, Middle and Late Stone Ages. The contributions of the Deccan College Research Institute under the inspiring and competent leadership of Dr. H.D. Sankalia, the doyen of the Indian archaeologists, will never be forgotten. B.B. Lal and Thapar and S R. Rao's works in Kalibangan and Lothal are really epoch-making. Great progress has been made towards unraveling and understanding the Neolithic pattern of India since the late V.D. Krishnaswami read a paper on the 'Neolithic Pattern in India'. Piklihal, Utnoor, Sanganakullu and Tekkalakotta particularly have enriched our knowledge of the Indian neolithic complex. But discovery of Burzahom as full-fledged neolithic site gave us in stratigraphic context a Neolithic culture in Srinagar Valley, which may have been influenced by the Chinese pit-dwelling culture. The discovery of Chirand in North Bihar, as a fully developed neolithic site, with characteristic large bone-tool kit, and post-firing painted pottery has been actually sensational. Neolithic culture in archaeological context has been found in Orissa and Assam. The Chalcolithic culture with Black-and-Red Ware succeeded the Neolithic culture in Chirand. Chalcolithic cultures have been located now throughout the Gangetic Valley, Rajasthan, Gujarat, Madhya Pradesh and Maharashtra. The antiquity of O.C.P. over the Black-and-Red Ware of the Chalcolithic is proved by the Lal Qila and Atranjikhera excavations. PGW is to be rarely found east of Allahabad, and Allahpur excavations have posed a problem for the advocates of early dating for the PGW. Black-and-Red Ware and PGW are followed by the NBP in Northern India with which the historical period begins This briefest summary just illustrates fairly the extensive and intensive work done in the pre-and proto history of India.

Recently three Late Stone Age and four proto-historic sites were located in Gujarat. Near Jaipur and Ajmer were found sand-

dune sites yielding microliths and pottery and showing relationship with Bagor culture complex. The discovery of iron in post-OCP but pre-PGW and in Black-in-Red Ware strata poses an early date for iron in Rajasthan. It may be pointed out that at Chirand in Bihar also iron was found with Black-and-Bed Ware below NBP strata. It should now be accepted that use of iron in Bihar and Rajasthan at least is certainly pre-NBP, and probably pre-PGW also. The question needs further elaboration and analysis for the history of technology in India. Lal Qila excavations takes OCP date earlier than 1800 B.C. and so it becomes contemporary with Harappan. A rich and far more extensive than Kalibangan site has been found at Rakhigarhi, and pre-Harappan Siswal-I complex has been identified at other sites in Haryana. So pre-Harappan culture complex or complexes are being added to our knowledge of proto-history. Continuation of work in Chirand confirmed the previous results of a developed full-fledged neolithic followed without break by Chalcolithic Black-and-Red Ware. And now in Andhra in Jami in the Visakhapatnam district has been discovered a Non-megalithic Black-and-Red Ware unassociated with iron. In this first phase only one small copper piece, part of a ring, has been found, but two ground axes have been reported from the same phase. The excavator puts the culture as Neolithic-Chalcolithic and places it before 700 B.C. Unraveling pre-and proto-history of India was constant pre-occupation of Indian archaeoiogists forsometime and naturally, as it was, sometime ago, little documented. Though much work has been done in this field, much more remains to be done. The Early, Middle and Late Stone Ages whose traces are now being found in the Gangetic Valley, have to be more intensively looked for by thorough exploration of the Ganges, the Gandak, the Bagmati, the Sarayu, the Damodar, and the Son Valleys. The changes in the river-courses have been phenomenal. In the *Ramayana* the Son flows by the side of Rajgir, and according to Patanjali Pataliputra was more on the bank of the Son than on the Ganges. This is just an example. In exploring the Bagmati, the Gandak and

even the proverbially changing Kosi, the cooperation of the Government of Nepal would be necessary. This is stupendous task and not one agency alone can cope with this in foreseable future; but the task appears to be urgent. Large scale irrigation projects may damage or even obliterate the evidence we are in search for. The Neolithic pattern or patterns in India is/are now slowly emerging, but more patient and sustained work is needed. The geographical gap between Chirand and Burzahom is wide and much more wider is the gap between Chirand and the Neolithic Deccan and south Indian sites. There appears to be no ecological or geographical reasons why Burzahom and Chirand or Kuchai should be isolated neolithic communities. The sophisticated beads and the bone-tools of neolithic Chirand reflect a technology which must have drawn on some other experiences. Excavations of the Bharatpur mound on the left bank of the Damodar in the Burdwan district have exposed a Neolithic-Chalcolithic habitation and this is an ecouraging step forward in linking Chirand with Kuchai.

Pre occupation with pre-history should not make us blind to other equally, rather more, challenging tasks. In spite of creditable increase in our knowledge of the post-Harappan cultures, it has not been possible to satisfactorily identify, archaeogically, the people who composed the Vedic literature and who created the great Epic Age of the *Ramayana* and the *Mahabharata*. Are these hoary traditions mere grandmother-stories, or are they not like the old Biblical traditions to be unearthed by the archaeologists ? Our problem to correlate the Vedic, Epic, and the Puranic literary references with actual archaeological finds is more difficult than faced by the archaeologists working in West Asia. Changes in river-courses, frequent wars and invasions and above all the funerary customs have conspired to leave little luck for our archaeologists working on traditional sites. The excavations at Hastinapur, Ayodhya, Mathura, Rajgir Vaisali, Mahesvar (Mahishamati), have so

far yielded nothing to corroborate the Epic grandeur of these cities. But it is to be admitted that the excavated areas have been very small and only much extensive horizontal excavations could settle the problem. Archaeologists should certainly be relentlessly objective and scientific in their approach but, at the same time they should not start with negative outlook. Schliemann's work at Troy still is an example to remember. It is conceded that our Epic stories and descriptions of cities have exaggerations as in all Epics, but they have no substratum of truth at all, could be accepted only when thorough extensive excavations are carried out at traditional sites. One may not necessarily come across stone and brick structures. Most of the traditional cities were on the river-bank, and Kautilya refers to use of wood in building cities (*puras*) on river banks. To imagine that the Vedic Aryans, who must have been for sometime contemporary with late Harppan at least, would not learn anything about architecture from them, is not absolutely reasonable. What I am pleading with all humility and sincerity that before we dismiss our ancient literatry evidence we should give it full chance to defend itself. This is just fair for arriving at any conclusion over a disputed problem.

This naturally leads to historical period, beginning from the Buddha's time. Much work has been done. Taxila, Vaisali Kumrahfar (ancient Pataliputra), Ujjain, Kausambi, Sravasti have been excavated and additional knowledge about political and cultural history has been added to what was known from literature, foreign accounts, incriptions and coins; and this is hardly an occasion to go in detail about them. Even recent excavations at Piprahawa settled a knotty problem of the identification of the site of Kapilavastu. Notwithstanding doubting Thomases in our midst, the inscribed seals (of course of much later period) and the cultural stratigraphy of the site with the relic caskets, definitely indicate that the Capital complex of the Sakyas included in Piprahawa. Another important identification of an ancient site comes from West

Bengal. Excavations at Rajbadidanga in Murshidabad district have yielded seals bearing the legend *Sri Raktamrttikamahavihara*. This sets at rest a long controversy about the capital of Sasanka; Karnasuvana is to be located here Further excavations are bound to unearth the civil structures of the site. Excavations at Ajaygarh in the Kalhandi district in Orissa have yielded cultural sequence from *c.* 500 B.C. to 5th Century A D. An interesting find is a piece of Chunar sandstone with Mauryan polish on one side only. Roman pottery and early Satavahana coins have been reported from Bhokhardan excavation (Bhoavardhana of the Sanchi and Bharhut inscriptions). Lying on the route from Pratisthana to Ujjaini, the city developed as a trade-centre dealing particulary in Roman pottery—amphorae, Roman bullae and coin moulds. A carved ivory-handle of a mirror dated in the 1st Century A.D. reminds us of Pompeii example. In Bihar Balirajgarh (Madhubani district) was again taken up for excavation. The site was excavated by the Archaeological Survey of India and later by the Bihar State Directorate of Archaeology. Excavations gave a good idea of the massive brick-fortifications of the Sunga period, and trenches inside the fort yielded beautiful terracottas of birds, animals and human figures. A few NBP sherds were just being picked up when the subsoil water came up. This is a serious problem to contend with in this promising side.

This problem is more challenging in Champa. Champa is one of the early cities known from the Epic, Buddhist and Jain literatures. Remains of an extensive rampart and continuous habitation from the NBP to Gupta levels has been exposed. Medieval Muslim settlement was also upset. Antiquities reveal and corroborated the industrial life of the city with numerous jewellers' moulds of the early Buddhist and Maurya period. The NBP cultural strata is very thick and what is important is that the best quality of NBP and antiquities are obtained from the lowest strata; quantitatively also the lowest strata are richer in NBP. It appears, therefore, that the

introduction of the NBP in Champa was fairly early, may be earlier than 600 B.C. For long it has been believed that the home of NBP is in East India, the epicentre being Magadha. It is important to note that both in quality and quantity best NBP is obtained from Champa and Sonpur, both in Bihar. But the main problem to be tackled at Champa is the correlation of the rampart with the habitation site outside it. The site of Champa is very large and the problem of sub-soil water coming up both at the rampart site and the habitation sit is staggaring.

The excavation of Champa is really of All-India importance. Among ancient cities, Champa with the extensive remains of fortifications typified by large high mounds may answer the questions of the antiquity of city in ancient India. Sravasti excavations have not solved the problem of the origin of the traditional Buddhist city in the Buddha's time. Kausambi datings have been questioned. Pataliputra cannot be placed before the last phase of the 4th century B.C. Ujjain is a promising site and its report is eagerly awaited, but its dimensions as a large city in the time of the Buddha are archaeologically suspect. Champa has some promise. An extensive horizontal excavations of the NBP and still earlier buried phases may give us clue, and the excavation to the foundations of the earlier fortification may, with its associated finds, help us in arriving at some positive conclusion about the antiquity of city. The recent work of Sri A. Ghosh on Early Historical Cities of India should act as a spur to archaeologists to find if there was really any archeological proof of the first urbanisation in India, particularly in the Gangetic Valley in the time of the Buddha or even before. Iron technology must have become the dominant one by the 6th century B.C, and the Buddhist literature is replete with refrences of brisk trade and commerce and industrialisation, leading to development of cities. But the datings of the different strands of the Buddhist literature are controversial, and many of the works referring to cities and their descriptions are believed to have been put to

writing not before the Mauryan. It is also to be noted that so far no substantial brick or stone structures have been discovered which with certainty can be placed in the pre-Mauryan times. Actually the Kushana structures in Kumrahrar, Chirand, Vaisali and Pataliputra in Bihar are really first massive structures we find, leaving aside the eighty-pillared hall at Kumhrahar alone. It would be a signal fortuitous coincidence that at each site, may be Vaisali, Ujjain, Ahichchatra and Champa, the archaeologists' lay-out and spade missed the pre-Mauryan massive (?) remains of the cities contemporary with the Buddha, or even earlier. This serious problem—history of urbanisation in India—has now to be tackled as the most important archaeological problem to-day, and all heads and resources should be mobilised to plan and undertake this project on an All-India basis.

Actually the crying need of the hour is an extensive and thorough exploration of the entire country. Everyday lost means loss of irrepairable national heritage. The large scale irrigation projects, setting up of industrial colonies and urbanisation are inevitable dangers to archaeologically potential areas. The Archaeological Survey of India's Scheme of exploration has not yielded desired results. The Universities and State Archaeology departments have to take up this task in a coordinated way. The Government of India on the advice of Dr. Sankalia had thought of roping in students in this gigantic task. In my opinion M.A.'s in Ancient Indian History and Archaeology or even Post-graduate students with Archaeology as their subject could be of immense help. No time is to be lost, and an effective workable scheme should be prepared and sent for approval to the Government of India for financial section.* This would while in one way contribute to reduction in unemployment of specially trained personnel, on the other would generate constructive and healthy competition among

* The Government of India appear to be keen on implementing such a scheme.

workers in different areas. Performance-orientation should be the hall-mark of the scheme and modest funds necessary should not be denied.

But the country is very large and archaeological and historical materials are spreadout throughout the length and breadth of the country. In a democratic world nothing clicks without popular sympathy and support, which cannot ramain wanting if properly approached. It is suggested here that at the first instance the formation of archaeological society in every college. The students and teacher members of the society should collect information about mounds, sculptures, manuscripts, folk-tales in the area of their choice. It may be possible in due course to have an archaeological society at every block level. All this requires hard work and planned thinking. Our Society members can take lead and found such society in each State and university they come from. This will ensure a continuous replenishment with new blood to our society and make it a dynamic instrument of not only archaeological research and activities but a vehicle of generating intelligent interest in the history and culture of the country in general and of regional localities in particular among the educated people. Professors should encourage M.A. dissertation or Ph. D. theses on archaeology of a district or a still smaller locality as is done in England. This would bring, I am sure, many new and useful information for archaeologists and historians to work further, and will also help in salvaging something from being lost for ever.

But all this knowledge gathered from so many sources and agencies if not published soon after would gather dust and be lost again not to be regained. Publications of full reports of excavations take a lot of time. A good summary of results, with essential drawings and photographs be prepared and zeroxed for use of hundreds of co-workers. Indian Archaeology Annual Review is doing this kind of work in its own way with obvious limitations, and is not available to many who want it. It may not be out

of place here to take notice of some recent publications on Indian Archaeology. The Potteries in Ancient India published by the Patna University is a collection of papers contributed to the Seminar on Ancient Indian Potteries held at Patna. Till to-day it probably remains the only book which deals with all aspects of ancient Indian pottery. Studies in Ancient Indian Seals by Thapalial is a fairly comprehensive work on inscribed seals from early historical times D.P. Agrawal's work on Copper and Bronze Age in India is an exceedingly useful work for study of ancient Indian technology. Manchanda's book 'Study of the Harappan Pottery' with profusion of drawings gives a good descriptive account of the Harappan pottery. S.P. Gupta's Disposal of the Dead and Physical Types is a pioneering effort in this rather difficult branch of study. S.R.Rao's work on Lothal and the Indus Valley Civilisation fulfils a long awaited dream of many of us and Agrawal and Ghosh's work on Radio-carbon and Indian Archaeology gives up-to-date data on C-14 dating's of ancient Indian cultures. This useful publication has been followed by excellent monograph entitled Prehistoric Chronology and Radiocarbon dating in India by Agrawal and Kusumagar' giving us upto date position of radio-carbon datings of prehistoric cultures of India. These source and reference books will for a long time be on shelves of the archaeologists at work. But many more equally useful publications are our urgent requirements. A scheme should be drawn up for preparing an album of pottery types —region wise and also type-wise. So much ancient pottery is being dug out every season that it is difficult for any one to keep pace with ceramic industries of the past—the keys to unlock many cultural mysteries. Detailed monographs of specific ceramic cultures should be planned. An album of Terracottas period-wise with due notice of exact stratification and locus has to be attempted. This study may be taken region-wise to stress regional variations in technique and adornment An up-to-date Archaeological and Historical Atlas of India is a long-cherished dream which should

be realised in near future.+

Archaeology to serve its objective and also to get adequate financial backing from the authorities, Central or Local. has to be popularised. Readable pamphlets, booklets, monographs and learned articles in Indian languages have to be brought out. I am sure there is a dormant demand for this. Who is there who has no interest in his or her Country's past. Archaeology from being the monopoly of tight-lipped archaeologists has to be made freely available and understandable to the people at large. Extramural lectures in cities in block-centres, even on topics of general and particular local historical interest may be arranged. An archaeological temper, as may be said, is to be generated among the common people who will then actively assist in discovering the country every day and in salvaging and preserving the national and local heritage.

This is absolutely necessary today when priceless pieces of national heritage—sculptures, paintings and manuscripts—are being stolen and many of them leaving the shores and sky of the country. Eternal vigilance on the part of the government, the archaeologists and the people is the only answer. Making people realise the importance of these objects is a task which the Indian Archaeological Society and its branches could take up with profit. The Government of India has passed the necessary legislation and hoped and the scheme of compulsory registration of antiquities would gather necessary momentum.

The discovery of new sites and antiquities is a continuous process, but the conservation of what is with us is still a sacred task towards repayment of our debt to our ancestors. Class-IV low paid monument attendants often to look after more than one monument spread at long distances are hardly the desirable agency

* It is gratifying to find Dictionary of Archaeology being edited by Shri A Ghosh under Indian Council for Historical Research.

to stop vandalism at important monument sites. These monument attendants are more often than not provided no accomodation and they are expected to attend to the monument for 24 hours. This must end. Monument attendants are to be increased in number, are to be better paid, and more than all this, tours of inspection are to be more frequent Vandalism at Khajuraho is a glaring example exposing the limitation of the present machinery of watch and ward

But all these efforts would be little rewarding and of insignificant social relevance if archaeological data so pains-takingly recovered from the bowels of the earth cannot be processed within relatively reasonable absolute chronological frame work. To talk of prehistory and history of early man and his society without firm datum lines within possible chronological bracket may be very much talking through one's hat All of us are deeply indebted to Dr. D P Agrawal and his competent colleagues for giving us, within limitations of course, a series of C^{14} dates for reconstructing chronology of our ancient cultures. The dates have also thrown spanners in our traditional scheme of chronology. Take the Harappa Culture On the basis of Carbon^{14} datings, Agrawal puts the Metropolitan Harappan within 2300—2000 B C. and Peripheral Harappan to 2200-1700 B C. This very much reduces Wheeler's bracket of 2500 1500 B C. S R. Rao strongly argues for earlier date for beginning of Lothal and while accepts the 1st series of dates, rejects the inconvenient second series dates. Upper levels of Mohenjodaro give 2000 B,C. But antiquities down to 60 feet below the present flood plain show that occupation of Mohenjadaro was from such earlier than 2300 B.C when contacts with the Sargonied period and comparable materials have been found only from the upper layers of Mohenjadaro. How much earlier one cannot be definite. In this connection it should also be noted that Pre-Harappan Kot Diji materials of 16 layers overlying neolithic has been found in Sarai Khola in Pakistan. The Kot Diji Culture in

Pakistan has been placed within 2600-2100 B.C., taking the earliest and youngest dates for Kot Diji. Sarai Khola's lowest Kot Diji material is to be dated in this background. Pre-Harappan Kalibangan I's earliest date is 2370+120 B.C and it would not be unreasonable to place the beginning of Early or Pre-Indus Kalibangan in 2600-2500 B C unless dates from foundation level of Kalibangan I give us a number of younger dates. Some years ago I had pointed out on the basis of painted motifs on Harappan pottery that some of these show much affinities with much earlier than 2500 B.C. painted potteries of West Asia. Of course we have no answer to the question as to why no definite pre-Sargonid contacts are demonstratively shown in Harappa or Mohenjodaro. But bottom layers below the flood plain of Mohenjadaro might have been hiding the necessary clues. However, I think that one has to wait for sometime before coming to a definite conclusion about the beginning of the Harappan culture though there can be hardly any doubt about the time of the end of the Culture. Coming to the Indian neolithic scene what surprises us are the much younger dates for Burzahom, Chirand and South Indian sites than from West Asia and South-East Asia. Neolithic in neighbouring Burma has been dated in 7000 B.C., in Thailand in 6500 B.C. On the Western border in Afghanistan at Kupruk ceramic-neolithic is dated to 7200+100 B.P. In India the earliest date is 2375+120 B.C. from Burzahom. There is no reason why the neolithic should be so late in India. A large horizontal excavation at Chirand and some sites in Assam would be very much fruitful Moreover the C^{14} datings from neolithic Chirand are not from bottom layers when the total neolithic deposit is more than 4 metres thick. Another important point to bear in mind is that in Chirand we have chalcolithic culture succeeding neolithic without break. But we have still to find stratified evidence to show that LSA or Mesolithic led to the development of neolithic. About Chalcolithic cultures in the country our information is reasonably adequate. What should be done is to intensively study the material sitewise and then prepare a consoli-

diated account noting the differences and similarities between the cultures This would indicate the unity of the cultures or culture and also regional variations, and would thereby help us to identity the peoples responsible for introducing this culture-complex and its direction of movements. At present on the basis of the C^{14} datings the Banas Culture appears to be nuc'ear. Chirand Chalcolithic with many common Aharian forms in pottery has only one distinct white-painted black-and-red ware example, (a dish) when Ahar has many. The later date for Chirand chalcolithic thus appears to be true, but it must belong to the time before white-painted black-and red ware disappears from Ahar. On the basis of of thermoluminicence datings of Lal Qila pottery-OCP is put in the time bracket of 2650-1170 B.C. But doubts have been expressed that this ware is different from the well-understood OCP and associated material discussed by Lal, and has therefore no bearing on the date of the OCP. But OCP in Atranjikhera is found to be earlier than the Black-and-Red ware and therefore early date for OCP appears to be reasonable. The PGW has been again in the thick of controversy. The C^{14} dating (except one from Atranjikhera) and the Allahpur evidence almost knock out the theory of early dating towards the close of the 2nd millennium B C. as proposed by Lal * But it is more important to note that the PGW people knew the use of iron; and problem is when was the use of iron introduced in the Gangetic Valley. At Pirak in the 6th level iron appears, is in general use in level 4 dated to 755 + 105 and 810 + 125. So in Pakistan iron appears about 900 B.C. It is interesting to note that in the upper level at Pirak are found wheel made and even burnished grey and black ware. Would it be reasonable to postulate that use of iron and burnished grey and black ware at Pirak may mark the march of the PGW people or rather the culture

* Recent excarvations at Bharatpura in Haryana prove that prosperous PGW cultural was a pre-iron culture at first and so early date for PGW is warranted.

into upper Gangetic valley ? Paintings might have been the innovation introduced in the upper Gangetic valley, 800 B.C. as the upper limit of the PGW on the basis of C^{14} datings can be thus confirmed. Iron is used in the middle and the lower Gangetic Valley by the Black-and-Red ware people. The *Satpatha Brahman* is dated in the 7th century B.C , on the basis of Tirhaka's date in Egypt, and 700 B.C. may be the date for introduction of iron in the middle Gangetic valley. But in South India we have a date of 1005 B.C. from iron-horizon ot Hallur. Iron may have been introducted in South India earlier and by sea route. A question naturally poses itself. If iron was used in South India earlier by 2 or 3 centuries than in the Gangetic valley, why were organised urban life and empires based on iron technology so lale to appear in the south compared to in the Gangetic valley in the 6th-5th centuries B C The final answer may be found in more thorough and complete excavations of some promising sites in South India. I would not be surprised if it is found that our traditional idea of civilization arising from the north and diffusing into the south is to be drastically reviewed, as Eastern European and Mediterraenean chronologies are being very much antedated and some of the claims of diffusion of civilizations from the west Asia are being seriously challenged.

Radiocorbon datings of Indian cultures are still quite suspect, and for many valid reasons. In the first place there are too few dates for each site to give the C^{14} dates adequate respectability, and there are still fewer dates layerwise for any site. Then there are hazards of miscollection of the samples. The Tata Fundamental Research Laboratory has to work within severe limitations, some of which noted above, outside their control, and then we have to make allowance for errors in the Laboratory as well. It would be better if archaeologists in the field are properly taught to collect the samples in fair number from each layer, and cer-

tainly for each cultural period. Workers of the C^{14} laboratories should be available at every important excavation for the entire duration. It may mean increase in their staff but this should not be grudged. Also attempts should be made to compare the results by getting samples tested in other laboratories also. Tests in foreign laboratories of samples from the same cultural strata would be valuable.

C^{14} datings have to command much more respectability than at present. Recently bristlecone-pine dendochronology has challenged the basis premise of the C^{14} dating system. Calibraiion of the C^{14} dates is said to have been accepted by all participants in twelefth Nobel Symposium at Uppsale in 1969. It has led to moving of European cultures earlier in time en bloc. The Mesopotamian dates remain unchanged, and Egyptian dates for the earlier period arrived at by comparative method of comparison with West Asian material have now by Calibration shown to be correct, while Radiocarbon dates before Calibration had put them much younger. The Vinca culture now after Calibration is put to to 5300-4000 B.C., a period much earlier than the Ubaid or the Uruk and the Aegean cultures from which they were earlier said to have been derived. The theory of diffusion of culture from west is thus virtually shaken, and even beginnings of writing as traced on Romanian tablets of Vinca Cultural antedate Uruk wrtiting by more than a thousand years. It has been observed that the late neolithic cultures both of Iberia and the Balvans are far earlier than had been thought of, very much earlier than their supposed ancestors in the east Mediterranean. Those calibrated dates have been checked with Thermolumiuscent dates from pottery of the Danubean early neolithic. Varve datings also confirm the calibrated dates. Childe's theory of 'the irradiation of European barbarism by Oriental civilisation' is now shown to be topsy-turvy. If the calibrated dates are good for western and Eastern Europe, good for Egypt and the Near East, the million dollar-question is why not for

India? If it is believed that C^{14} datings are true for all places, on the basis that the level of radiocarbon has been the same as in Europe and elsewhere, why should the variation in the quantity of radiocarbon in the atmosphere be true for California only, and not to the rest of the world including India. Here I may quote from Libby's observation in 1970, "The principle of simultaneity means that radiocarbon dates are the same at any given epoch over the entire earth, so that a calibration at one location is equivalent to a world wide calibration; finding the same concentration of neutral radiocarbon all over the world and in different forms of life nearly guaranteed this result". If Indian C^{14} dates are to be read after calibration, all dates would have to be read much earlier. This may take the origins of the Harappa culture towards the beginning of the 3rd or late 4th millennium B.C. — a date which may explain the lower levels and still sunk levels of occupation of Mohenjodaro.

I am aware that the concerned scientists could only give us the right answer, but let there be no prejudice, this way or that. It appears that today our leading archaeologists and historians are almost competing to arrive at younger dates for our cultures which some of them even begin to see as colonial cultures derived from West Asiatic civilizations It may be so Toynbee thought long ago that the Indus Valley Civilization was a colonial culture of the Sumerian. But it is intriguing to watch over this volte face attempts in the light of recent trend of some European archaeologists. Long ago Greece was the mother of all western civilizations, later the scene shifted to Aegean islands and then to West Asia generally for the roots of the early western civilization The direction was from west to east. But now the picture is changing. Megalithic Chamber Tombs of Western Europe are now dated earlier than the Pyramids; the impressive stone temples of Malta are now believed to antedate any West Asiatic architecture. Copper metallurgy is said to begin in the Balkans earlier than in the Ubaid, and the Vinca proto-writing was much earlier than the protoliterate period in Mesopotamia. Many European scholars have now turned

their back on the diffusionists' school which looked to West Asia as the focal diffusion centre. The debate between the Evolutionist and the Diffusionist has been re-opened. Why should we not also look to our materials with non-jaundiced eyes, free from obession about West Asia?

Agarwal in another context warns the archaeologists of dating their sites earlier in time than facts warrant It is an apt warning, no doubt, but it is also to be noted that many archaeologists on the other hand are anxious to put other archaeologists sites' later in time than facts warrant. We have to caution both sides. Example of Chirand Neolithic can be taken. More than 4 metres of metal free neolithic deposits with many varieties of bone tools in fair number and with polished stone-axes as well, because of some affinity in form of some vessels with Jorwe ware, was long suspect as being not true neolothic. More logical would be to think that some Jorwe forms could be derived from cultures much earlier in date. Has a similar bone tool-kit with celts been found in quality and quantity in the Malwa or Jorwe cultures ? Even spouts in many sizes and forms have been found in Chirand. Instead of putting a late date for this culture, one should try to appreciate the skill of the Chirand Neolithic people After all except at Jericho we have no fortified villages (city ?) in the neolithic culture complex anywhere else. But this unique developed feature did not make the site younger in date. One is reminded of Jarmo-jericho controversy. Braidwood, excavator of Jarmo ridiculed Kathlean Kenyan's early dating of the pre-pottery Neolithic city of Jericho and 'deplored the bandwegon phenomenon for generally earlier dates'. But subsequent C^{14} dates proved Kathlean more correct rather erring on conservative side. Actually the innovative genius of any people from the neolithic times onwards cannot be overlooked Thorough horizontal excavations of Chirand Neolithic and Chalcolithic strata with a number of C^{14} samples for dating will settle the issue.

* UGC has sanctioned for the author funds to carry out the Chirand Project.

2

Some aspects of Pre-History and Proto-History of Ancient India

During recent years archaeologists have given a lot of attention towards pre history and proto history of India. It is true that in 1863 Bruce Foot collected the first human artifacts of the stone age, and since then collections have been going on. Africa has shown what one single generation of devoted scholars can achieve in the reconstruction of pre history of Man. It is both a challenge and inspiration to the Indian field workers, which appears to have been taken up seriously, and heaps of fresh materials are being amassed, which have to be shifted and classified simultaneously with the field-work in progress which may naturally modify the sequence worked out on earlier materials.

However the Early Man has not yet been squarely set on foot in the Indian stage. One of the most disappointing experience has been total lack of any physical remains of early Man or his ancestors of the Stone Age in India. Let us hope that now when scientific archaeological excavations of pre-historic sites have been taken up, we would by lucky to find some such remains. The search is to be on, especially when so much remains to be surveyed and brought under archaeologist's spade.

The other great lacuna in pre-history of India is that so far no systematic exploration, much more excavations have been made with a view to make palaentological and geomorphological study of the country's ancient remains. Except for pioneer work done by

De Terra and Peterson in Punjab and Kashmir and for a part of Gujarat by Dr Zenner, the entire large mass of the old country is untouched The great strides that the study of geo-chronology had made in Punjab and old secrets of man's past its revealing are phenomenal This is a field in which the young Indian scholars would be properly trained; study of Indian geology from this point of view may become very fruitful Co operation between Geologists and Prehistoricans is essential for this task. The other science of dendochronology — by which the age of the trees can be determined on the basis of the number and kinds of rings that its sections reveal is entirely unapplied in Indian prehistory. We have yet to establish more than one laboratory in India for C^{14} dating. Because of the lack of this facility in the country, it has become impossible to cross-check dates of archaeological materials dated by the C^{14} laboratory at Bombay, now at Ahmadabad. The very sparing use of the facilities attended by the British Museum and the Museum of Pennsylvania in USA, have been richly rewarded. Increased facility of this, and more properly trained personnel to use it, are our immediate needs.

It may not be also out of place here to state that even a complete archaeological survey of the whole country has not been undertaken in the scientific manner. In absence of this our attempts have been sporadic and chance has played more part in making us tumble over an ancient pre historic site. Cunningham and Carlyle have done great work, but so far as pre-history is concerned nothing like even touching the bare problem has been undertaken. For a coherent and sequential study of the Early Man in the country and not in any particular localised region, an exhaustive scientific archaeological survey is another immediate necessity; especially now in view of the extensive development programme in the country leading to large scale erection of new buildings, submerging of vast lands, clearing of forests and modernisation of ancient tribal life. Most of the sites

which would yield rich harvests for the pre-historians may be shut out to them permanently. A strong voice for such survey of the cuntry must be raised now.

However, in spite of these serious handicaps, some significant progress has been made in the field of pre-history and proto-history of India since 1930. The discovery of Early Soan and Soan palaeolithic industry in the Alpine glacial cycles in Kashmir and the pre-glacial quaternary sequence in the Punjab have stimulated the study of old stone age tools A comparison with the lower Palaeolithic tools of Madras Industry represented by bifacial hand-axes and cleavers, with the chopper-chopping tools and levallosian flake complex of the Soan Valley has raised the problem of their co-relation. Are they entirely independent techniques, and if so which is earlier in time ? A casual glance at the map showing distribution of the Soan type tools and the tools of Madras industry would show that on the whole the Soan-pebble Industry is to be located in the north, having spread to the Narbada Valley and the Madras Industry in the Peninsular India. However, there have been found early Madras-type tools in the lowest levels with pre Soan in the Potwar region, and early Abbevillian and Acheulean tools on pebble remind us of the pre-Soan technique. In the valley of the Sabarmati and Mahi in Gujarat mixed industry of pebble tools and bifacial flakcs occur in two implementiferous horizons. The problem is therefore awaiting further closer study of the tools in stratified area. Recently with the development of the study of African pre history particularly, old Stone Age, influences from Africa across the sea as a factor on the evolution of Madras Industry is being hypotheticated. The possibility of influence from East-China and Indo-China should also not be ignored, when Worman has postulated the theory that neolithic evolution of India and Indo China shows close tie. Thus both occidental and oriental patterns influencing Stone Age in India should not be missused. The mixture of the two main lower Palaeolithic industries — Soan and

Madras—are found in Madhyabharat, Godavari region, while in Mayurbhanj were found in the lowest deposit tools in Setu from both the sections of the boulder conglomerate—crude rolled Madras bifaces and pebble tools of Pre Soan industries. Similarly, the Singrauli basin near Mirjapur has both traditions, Soan and Madras, but the later is predominent. From Bihar in Chotanagpur Acheulian tools of Madras type are found quite frequently and reported. But recently the explorations carried on by the Department of Ancient Indian History and Archaeology, Patna University and the K.P. Jayaswal Research Institute have yielded lower Palaeolithic tools, namely, of Madras variety, from the Khargpur Hills in Monghyr District.

The problems of the lower Palaeolithic age is still not permanently solved, and this is not possible without large scale excavation of the numerous sites, and the study of the tools in Situ and their sequence not on the basis of typology but on the basis of palaeontology and climatic environments. It is not yet known for certain, though, there are indications as to whether there were similar cycles of glaciation and interglaciation in the Himalyas as in the Alps region, and whether tropical India had corresponding pluvial and inter-pluvials about the same time. Only when this is settled one can be sure of the picture of the life during the Stone Ages.

While in Europe there is clear indication that the middle Palaeolithic was succeeded by the Blade-burin industry—Upper Palaeolithic—but we have no clear evidence of such an evolution in India. And then is the problem of the microliths, generally placed in Mesolithic Age Recently, Teri in Kerala yielded a large number of pre-pottery non-geometric microliths, what Dr. Zeuner dated in 4000 B.C. still recently at Birbhanpur near Durgapur have been discovered non geometric microliths with any association with pottery. On grounds of typology they have been placed even earlier than Teri microliths. The microliths of geometric forms and

with pottery have appeared in the Western India and they continued especially in the form of chert-blades, crested-ridge tools in the chalcolithic and the Indus Valley Civilization. As such microliths have not been found in neighbouring East, it is possible that there was western influence, probably from Africa. But the Birhbanpur find has complicated the problem. Is it possible that the microliths tools evolved here as in Africa from the Upper Palaeolithic tools? Birbhanpur finds suggest that more exploration and excavation and a critical comparative study will be necessary before the problem is straightened.

In Palestine, at Jericho, has been discovered a highly developed pre-pottery Neolithic civilisation which has been dated by Carbon-dating method to earlier than 8000 B.C. In Mesopotamia at Jarmo pre-pottery Neolithic gives carbon-dating as 4758 B.C.± 320. In Belt-caves in Northern Iran, pre-pottery Neolithic with domestication of sheep and goats is 5840±330 B.C., by 5330 B.C.± 260 years, they had begun to make pottery and to reap grains as well. Even in the Mesolithic Age when microliths were main tools the Natufians in Palestine were reaping grains. It is therefore a tantalising challenge to us to find if in India also we could not find such an ancient Mesolithic cultivation and pre-pottery Neolithic. At Langnaj in Gujarat was discovered a quern and a pestle four feet below the level, where pottery was scarce. This might indicate that some primitive form of agriculture was practised before pottery came into use, and the microlithic—mesolithic people had known incipient prodution of grain Here is possibly a promise to be fulfilled by more extensive excavation and by taking recourse to C.14 datings.

The Rangpur excavations have shown that the Harappan Chalcolithic followed after considerable gap the earlier microlithic culture. The origins of the Harappan civilisation are still a mystery. Recent finds at Rohri and Sukker may provide the basis for the

evolution of the characteristic chert-blade and cristed ridge microliths of the Harappan culture. Recently near Karachi has been discovered the remains of an earlier city with mud-fortification which may be earlier than the Harappan At Klli Ghul Mohammad near Quetta pre-pottery neolithic at the upper level has returned a date in the last century of the 4th millennium B.C. Thus the problem of the origins of the Harappan civilisation may clear further after more scientific excavational and comparative analysis of the material—the Vedic, Puranic and the West Asiatic finds. The period when Harappan civilisation flourished is now generally taken to be 2500-1500 B.C. But the period is not absolutely fixed. It is important to note this. Patric Carleton (Buried Empires pp. 145-146) after making comparative study of the Indus Valley finds with those of Mesopotamia holds that the Indus civilisation was already firmly established, in perhaps 2800 B.C, and that it was still in existence as late as 2000 B.C.

Similarly the end of the Harappan civilisation is not definitely known. It now appears to have survived in the South of Mohanjodaro and east of Harappa in Rangpur, Lothal, Rupar, Bikaner region, and even near Merrut in the East. The distribution of the Harappan culture is to be studied a fresh in the light of recent discoveries. The Chalcolithic culture of West India and central India with characteristic Black-and-red pottery, and the chert microlithic blades and knives appear to be fairly widespread and durable, lasting from the end of the Harappan or late Harappan till the introduction of iron. Such culture complex needs to be studied more closely. Then the discovery of the Black-and-Red ware in Lothal in Harappan levels, its discovery in large quantity in Ahar in Udaipur, and its discovery in Sonepur in Bihar has shown that the Black-and-red ware complex continued from the Harappan to the iron-age and is found together with Painted Grey Ware and NBP. This is a very interesting problem. who were the Black-and-Red ware people? What was their relation with the Aryan ?

The discovery of the Ochre-washed ware in layers below the Painted Grey ware in Hastinapur and other associated sites leads me to think that the Aryan of the Madhyadesa who used Painted Grey ware, followed, probably after some gap the Ochre washed ware people, with whom are associated the copper hoards of the Gangetic valley on purely circumstantial evidence. Are the Ochre-washed ware people a mere local group, or represent a widespread culture.

Thus there are so many tantalising problems awaiting serious studies by historians. Not only extensive and intensive excavations, but a sympathetic and critical study of the ancient literature and philological studies of the Indian languages and vernaculars, cum dialects may throw expected light—Dr. S.K. Chatterji has been doing pioneer work in this field.

3

Some Problems of Ancient Indian Potteries*

Archaeological excavations and explorations in recent years had led to the discovery of numerous ceramic-ware types; some of these are apparently local and some have wide distribution. Different interpretations regarding the authors of these wares, the probable lines of their extension and their relative and absolute chronology have been put forward. It was therefore felt that the time has come when an up-to-date stock of the position be taken and problems relating to the ancient Indian potteries be discussed and tackled by scholars from different angles in a concentrated and cooperative way. This Seminar therefore is first of its kind to focus attention on one of the many source-materials of our ancient material culture It is rightly held that the Indian culture is synthetic in character and there is unity in diversity. The study of the evolution of ancient Indian pottery, the examination of the different charactertistic shapes ofancient pots, and a comperative evaluation of the technique followed in different places even for such ancient period for which literary and monumental evidences are extremely meagre, have also led to the same conclusion that the Indian cultural scene even from the view point of ceramic history is also mosaic in character—different pieces are weaved into a variegated colourful picture.

* Paper read at the Seminar on Ancient Indian Potteries held in Patna, 1969.

Coming to some specific problems that have been engaging the attention of the archaeologists and historians. Of late I would only mention a few. India's literary heritage is extremely rich, but unfortunately most of our ancient literature bears no absolute dates about its composition, and one has to guess about their dates by reference to their style, stray references to historical events corroborated by non-literary evidence. Epigraphy and numismatics have tried to lay some bricks for bridging the gap, no doubt, but the problem is still challenging. What material culture assemblage should be corelated with specific periods and peoples known from literary traditions. What pottery can be associated with the Vedic Aryans? What material culture unearthed can be related to the Epic period? Can we attribute—some pottery types to the Asurs, Dasyus, and Panis of our literature? Often some historians in despair declare that our literary traditions stored in the Puranas and the Epic are mere flights of imagination of our brilliant dreamer poets. While we must concede that conditions in India and Western Asia and Egypt differ but still some of us like Schlimann should start with the blind faith and following the traditions that have so powerfully moulded our life and thought for thousands of years discover our ancient Troys—Ayodhya, Hastinapura, Dwarka, Indraprastha, and the like. Some work in this direction has already begun but still we are literally in the stage of gathering pebbles on the sea-shore. Only a fringe of the vast and sacred task has been touched.

Since 1921, Harappa culture was regarded as the most ancient culture. But now we have Kalibanga. Kot-Digi and Amri Wares. What is the relation between them? Is Kalibanga ware the same as Amri? Probably not. And thus we have in Sindh Rajasthan two distinct cultures superseded by the Harappan. Can a coherent explanation be given to this phenomenon? Then coming to the Harappan Ware. Its extent as is well known is much widespread now, Western U.P. to the Punjab, and down to Gujrat. Harrapan ware has

raised many problems. Was it indigenous or foreign? Has it evolved from Kalibanga. What is its relation with the painted ceramics in Afghanistan. Baluchistan, Iran and Mesopotamia? In a paper ccntributed to the journal of the Bihar Research Society in 1960 I had tried to indicate the similarity between some characteristic painted designs and technique of the Harappan pottery with the Halafian and Arpachiyan or Samarra. It is rather not easy to explain a whole series of identical or very similar potteries observed on vases of different countries as absolutely un-related. Some of the painted designs such as the Fish-scale pattern, interesecting-circles, four-petalled rosette and mulitirayed sun-motif are found almost in identical representations in Harappan and Halafian wares. The use of Reserved-slip, Knobbed ware, particular types of pottry stoppers point to connection between the Harappan and the Uruk and Jemdet Nasr Wares However there is a large gap between the chronology assigned to Halaf, Samarra, Uruk, Susa-I and Hissar and Harappan in Indian sub-contienent. Carbon[14] dates do not go beyond 2600 B.C. for the Harappan. Then often the painted designs of Harappan and Halafian are not met with in the intervening regions.

And then the discovery of Black-and-Red Ware in many sites in North India has raised a series of knotty problems. Black-and-Red Ware is found with the Harappan at Lothal. It is found in both white painted and plain types in Ahar and Guilind It is found in Navada-Toli and Maheshwar. It has been reported from Eran, and from Bengal at Pandurajdhippi. In Bihar both at Chirand and Sonpur it is found at the lowest chalcolithic occupational layer In Chirand a few pieces of white-painted black-and red ware were also found which in technique and quality resembles Ahar types. A white painted black-and red ware spouted sherd has been found at Oriup in East Bihar. It has been found at Atranjikhera in occupational layer following

1. Since then, it is found in the neother straha in Chirand.

Ochre-washed ware and is succeeded by the P.G.W. It has been found in Rajghat again at the lowest occupational level. Thus it is clear that Black-and-Red ware is a widely distributed ceramic culture. Who were the people who used this ware? They can not be just a localised group. I had suggested in a paper read at the Aligarh Session of the Indian History Congress in 1959 that a branch of the Aryans who came to India across the sea to Gujrat were responsible for this pottery. The fact that the Aryans came in numerous waves is attested to by the Vedic literature. In historical times the Sakas came from two directions—one through the N.W.F. passes and the other across the sea to Sindh, Malwa, and Gujrat. In Bihar archaeologically they formed the earliest settled groups. Can they be identified with the Vratyas who were earlier Aryans who in contact with non-Aryans had given up their religious traditions and even modified their speech, and that is why as fallen brethern they could be taken back after undergoing some purificatory rites. The Vedic and Puranic literature do contain definite allusions to some Aryan tribes siding with non-Aryans against other Aryan tribes. Lothal finds to corroborate co-existence of the two ceramic cultures—Harappan and Black-Red and Black-and Red. But I am aware of the difficulties of this solution. What was the direction of the migration of these early Black-and-Red people.? We have numerous C-14 datings for this culture. On the basis of this Agrawal suggests that from Central India this group went east ward following a narrow strip to Bengal and then turned east and came to Bihar and then eastern U.P. But from Chirand while we have a date in 9th century B C , we also have 1600 B.C., from a pit-material dug from the lowest Black-and Red ware strata. Historically also the route of migration has generally been from west to east. But if the Black-and-Red ware people were co-existing at Lothal with the Harappan, which was extensively spread in Rajasthan, why we do not have Black-and-Red ware in Kalibanga and other Harappan sites with the Harappan ware? At Chirand in Bihar we found at the lowest occupational layer crude Black-and-

Red ware with copper and microliths, but in period IB we find iron with Black-and-Red ware. This is significant. Iron is not found at Atranjikhera with Black-and Red ware. Iron has been found with PGW at Hastinapur and Atranjikhera. From where and when did Iron technology begin in India? We know that iron was first developed in the Iron-region of the Hittite land in Anatolia. The PGW people might have brought the knowledge of Iron from outside.[1] But it is only thorough examination of Iron in PGW layer and the Black-and-Red ware level respectively which might settle the point as to the source of Iron for the PGW people. We know that Bihar and Orissa have iron mines which have a long history of exploitation.

The Ochre-washed pottery is another engima. It is found in Atranji Khera in layer enterier to the Black-and Red Ware. But it is found only in small quantity and that also in sparse distribution. It had been suggested that the Ochre washed ware should be associated with the copper-hoard people of the U.P. However, more reliable archaeological setting is required to support this thesis.[2] In the Patna Museum we have numerous copper objects found from different hoards. But their archaeological setting is not known. What is the connection, if any, between the copper-hoards of Bihar and U.P. Again a chemico-geological comparative analysis of the material may throw light on the source of the copper.

The Painted Grey Ware has been much talked about pottery. It certainly flourished between 1100-800 B.C. and continued later with N.B.P. Except for some degenerated form in Kausambi and a few sherds in Vaisali; it is not found in Eastern U.P. and Bihar or Bengal. It has not been reported from the West Punjab, but have

1. Bhagwanpura (Haryana) excavations show a Pre-iron PGW culture complex. Did the PGW people later develop iron-technology in the Doab ?
2. Excavations at Lal Kila and Sapai prove the association of Copper tools with Ochre Ware. But is Lal Kila Ochre ware the same ?

been found in Haryana. I am told that a few sherds were found in Sindh. If it was the Aryan-pottery then it should have been found with the Harappan, if co-existence of the two peoples is to be accepted, and certainly should have closely followed Harappan. The problem needs more thorough investigation.

The N.B.P. is the prince among potteries in India. Its chronology is 700-200 B.C. In Chirand and Sonepur, it is found in association with the later layers of the Black-and-Red Ware. It is found in abundance in Bihar. In any important historical place and near mounds one can pick up N.B.P. in different hues. From Sonepur and Oriup we have beautiful pieces.[1] It is obvious then that this region was the home of this ceramic industry. It might have spread from here with Buddhist and Jain missonaries and with the political expansion of Magadha. This pottery was definitely aristocratic and could not have been used by the common people. Who were the people who introduced it? Was it the result of evolution from Grey Ware and Black-slipped Ware? Or was it introduced by some distinct group of people?

Then we have many wares which have generally local distribution. We have Cemetry H, Jhukar, Jhangar, Malwa—Jorwe to name a few. Their comparative study is great desiderratum.

Another problem is the foreign influence on Indian pottery or foreign intrusion in the Indian scene. What is the relation between the Central and North Indian Black-and-Red Ware and the Megalithic ware of South India? How to explain the great gap in time sequence? Then can it be related to the Badarian (Egypt) Black-and-Red Ware or Black-topped Ware? If so, what is the route of the migration into India? How to bridge the chasm in time and space? Some have suggested Iranian intrusion in the Chalcolithic pottery assemblage in Central India. Can this be substantiated from excavations of

1. From Champa in the Bhagalpur district best quality, largest varieties including painted one have been obtained from the earliest excavated strata going down to 600 B.C. or earlier.

other Chalcolithic sites in North India? Why Black-on-Red is conspicuous by its absence in Gangetic Valley, while other wares of Central India are found here? Fortunately, we have definite proofs of Roman potteries in the Deccan. Was North India sealed to this influence? India's contacts with the Western Asia Greece and Rome extend to many millennia B.C. Should we not have some evidence of these in pottery types? This leads us to an aspect of Indian pottery which has not been given due attention. It is the comparative study of the evolution of distinct pottery-forms and their distribution in India in stratigraphic sequence, and then an attempt to connect these with the evolution or distribution of the distinct forms or shapes of pots in West Asia. This helps in the solution of the problem of cultural diffusion.

Pottery is only one of the aspects of material culture, though a very important one. We have to study the associated wares and other material finds related to a distinct ceramic culture to have an integrated picture of cultural development of any region. It may be that an excellence in ceramic industry had its counterpart in other aspects of material culture. But it may be that with the development of metal technology, pottery began to lose its prominence and degenerate. The Classical writers while mention rapturously of the golden vessels and palanquins of Candragupta Maurya, make no mention of even beautiful lustrous N B.P. which was in a flourishing state at this time. Kautilya refers to potteries and earthen pots casually. Did potter's art lose patronage of the royalty, nobility and the elite in general ? It became the poor men's possession mainly. But NBP cannot be the preserve of the commoner. But could the rich dispense with pottery ? If in religious rites, copper vessels are still regarded pure (Pavitra), did not the earthen pots in traditional society like the Indian regain their importance, in the past. Then why the deterioration ? What was the relationship with the development in metallurgy and ceramics ? Whether earthen vessels were proto-types of the copper vessels or vice-

versa. What are the porttery forms, shapes and sizes which are not found in copper or iron or bronze vessel-assemblage or vice-versa? Again a history of ceramic technology in India is to be attempted at.

These are some of the problems which have arisen in my mind casually. I have not attempted a scholarly discussion of those issues. I am aware that I am not quite competent to do this. I have pleaded before you the doubts and questions what arise in the mind of curious dabblers in archaeology like me, and I have pleaded before you, experts in the field, some of my ideas, which might appear naive to you, with the full hope that this seminar will help in clearing some of these doubts and answer some of the questions. It is obvious that in the seminar lasting for hardly more than 20 hours, all aspects of pottery may not receive due share of attention. There is not, and should not be an attempt at general consensus in scholarly pursuits. Different heads are free to hold different opinions. But I am sure that we will be immensely profitted by the discussions in the seminar.

4

Neolithic Culture in the Gangetic Valley

Neolithic Culture in India has been elusive for a long time since first neolithic was picked in 1842 in the lingsugur area of the district of Raichur in Karnataka an by Beaching in Bihar in 1868.[1] Purely neolithic culture assumes settled habitation, some agriculture, introduction of pottery, domestication of animals and use of ground and polished stone tools. Of course all these may not be found together in all sites what are regarded as neolithic, but absence of metal and presence of agriculture and animal remains are indispensable criteria for a pure Neolithic site. It is now being increasingly realised that presence or absence of polished and ground stone axes by itself would not determine the neolithic or otherwise character of the settlement. Even microlithic equipment, functionally shown to be used in harvesting of crops, jars and silos for storage of harvested grains, pounders and pestles for breaking the grains and grinding them, presence of domesticated animals and charred grains and husks would make the settlement distinctly neolithic. It is the entire complex of antiquities including pottery that is to be evaluated and not merely ground tools.

In India as late as in 1949, Worman stated that there was no Indian culture that could surely be called 'neolithic'. Of course

1. Proceedings, of the Asiatic Society of Bengal, 1868. p, 177. Author is thankful to Dr. B. S. Varma Mr. L.A. Narain and Mr. Naseem Akhter for assistance in preparation of the paper.

Brahamgiri was excavated in 1947. The earliest Brahmagiri IA neolithic is without any trace of metal but in IB together with polished pointed-butt axes, microliths, handmade pottery, were found a copper chisel, one small rod of copper and another of bronze, and a bronze finger ring. So acquaintance with metal was there, though it was too meagre to influence the neolithic character of the economy. In Langhnaj in Gujrat pre-pottery mesolithic and pottery with microliths do not show practice of agriculture and presence of ground tools. Nasik, Jorwe, Nevesa, Bahal, Prakash, and Nagda have been, on the basis of their cultural assemblages, termed 'chalcolithic'. A purely neolithic culture with hand-made pottry, stone-blade industry, ground and polished axes was excavated at Piklihal in the Andhra State. While no metal was encountered in lower neolithic, a copper Chisel and two fragments of a copper bowl were found in the upper neolithic. Utnoor ashmounds disclose a neolithic culture pattern, but no ground stone axes were found in the excavated strata. So purely neolithic sites without trace of any metal in the Deccan and South India are Piklihal IA, Brahmagiri IA, and Sangankallu IIIA. and Palavoy. In North India in Burzohm in Kashmir has been found a pure neolithic cultural complex. In North-East India, in Bengal, Bihar and Assam ground stone-axes were found at numerous places on the surface but so far not in definite archaeological context, and these also are in the proximity of hilly regions. It is therefore a distinct advance in our knowledge of the Indian neolithic to find evidence of pure neolithic culture in the Gangetic Valley in the low lying plain in Chirand in the Saran district of Bihar. The neolithic people of Chirand settled right on the natural soil composed of compact reddish yellow earth mixed with kankar. In the Gangetic valley so far the earliest ceramic culture known was Ochre-Washed Ware (OCP), believed to be associated with copper whose date could go to the second milleunium B.C. Thus, Chirand opens a new leaf.

Chirand (Lat.25° 45'N; Long, 84° 45' E) is a small village, and

lies on the left bank of the Ganga in the Saran district of North Bihar. It has many high mounds where surface explorations had yielded NBP and black-and-red ware. Excavations were started by the State Directorate of Archaeology, Bihar, in 1963, and continuing till 1968-69, it exposed a remarkable cultural sequence from early chalcolithic to the Pala period. Earliest strata yielded plain and white painted black-and-red ware, showing distinct similarities with Ahar and Gilund chalcolithic, and the C 14 date for the earliest chalcolithic was cir. 1600 B C

In 1969-70, and 70-71, further excavations exposed a full-fledged *per-metal* neolithic culture complex settled on virgin soil of *compact* clay. Two trenches, CRD XI (15m × 10m) and CRD XIII, (10 x 10m) on the eastern and western part of the mound, yielded thick neolithic deposits. CRD XI has 4½ meters thick deposit with 6 layers, 12-17 and CRD XIII yielded 1½ meters thick of one layer only. The entire deposit is free from any evidence of metal.

It is significant to note that so far all neolithic sites in India have been located on hill-tops or on foot-hills but for the first time in Chirand we have a pure neolithic complex in low lying plains having monsoon climate. It appears quite natural that the alluvial soil brought by rivers (the Ganga, and the Ghogra which meets the Ganga a few furlongs to the west) flooded by the monsoon rains provided the necessary stimulus for agriculture. Vishnu Mittre reports that from Chirand come the first records of cereals from the neolithic of North India. From Burzohm weeds only were recovered thus only indirectly indicating cultivation of wheat and barley. The carbonised grains show that wild and cultivated rice, wheat, barley and lentils like mung, masur and peas were known.[1a] Sometimes the grain-seeds could have been just brodcast over the wet

1a. Vishnu Mittre reports that besides wheat, rice and barley legunes like Pisun arvense, Lathyms Sátivés, lens culinaris Macdik, Phaselus Mungo, are found (Paleobotanist-XXI, No. 1, 1972).

lands in the region and later were harvested. No evidence of ploughing was available.[1b] Some of the large number of microliths, might have been used as sickle-teeth hafted in wooden or bone handle. But some of the microliths are too small tobe hafted and to be useful for harvesting. It is likely that more often than not the ripe plants were extracted from the roots and then beaten to release the grains (a practice still common in villages in India). Rudimentary cultivation was probably practised by means of digging-sticks mainly, though stone or bone digging tools were very few. Milk and other liquid diet was more popular as may be deduced from frequency of spouted vessels and absence of dish or platter. Rarity of storage jars, or 'and' dug-in silos, shows that there was not much storage of grains. Use of cereals as food must have been rather marginal. Terracotta hollow beads of knob like shape may have been used as in strings of neclace for cattle or goats, or could have been loom-weights. Hunting and fishing appear to be major occupations. A large number of animals' and birds' bones have been found. According to the preliminary report by Dr. Bhola Nath of the Zoological Survey of India, in Neolithic Chirand were represented *Bos Indicus* (domesticated humped cattle of India), *Bubalis—bubalis linn* (the Indian domestic buffalo), *ovis aries d. lichure durest* (the domestic sheep), *cepra hiracus aegagrus exable* (the domestic goat), *suscristatus Wagher* (domesticated pig), and the dog (*caries familiarie linn*). Besides the domesticated animals, such wild animals as Rhinoceros *unicornish* (Indian one horned rhinoceros), Elephas *matimus* (the Indian elephant , *carvius duvancellu Cuv* (Swamp deer), and Chital (*Axis atis Erne)* roamed the region. Remains of two species of river turtle and Chitra Indica (gray) soft-shelled river turtle are found. It is thus clear that both domestication and hunting of animals were practised. On the basis of preliminary sorting of bones, the anlmals whlch predominated were deer, bison, cattle, boar and goat in that order. Meat and fish probably dominated the food-menu.

1b. But earleist evidence of ploughed field is from Harappan Kalibangan.

Some of them might have been hunted and some were domesticated animals. Hunting of small and fast running animals or flying birds was practised by use of bone or stone arrow-heads, and by clay sling-balls (which have been discovered in plenty); while large animals could have been driven into pits, and killed by long spears and pelted stones. A number of fish bones, teeth and snails, shells of moulluscus suggest that fishing was popular; riverine fishing or fishing in monsoon-waters collected in shallow pools could be imagined. A number of clay net-sinkers is a corroborative evidence. No harpoon was found. Spears might have been used to kill the fish in water.

Weaving was also practised as attested to by the presence of bone needles, *kaolin* spindle discs, bone shutters and clay *discs* with holes. Tanned skin or furs might have been utilised for clothing. The spinning disc (clay) may imply that some sort of flax or fleece of certain animals was spun into threads. (knob) like clay beads could have been used as loom weights.

People loved ornaments. Barrel; cylindrical; triaingular-and disc-shaped beads for necklaces or bracelets made of chalcedony and agate, of various shades, and of steatite, faience, jasper and clay have been found in good number. Steatite and faience may have been imported and may suggest contact with the north-west. Other materials were locally available from the Son bed. The bead-making industry was fairly advanced. They were fashioned with great care and precision, and it is puzzling as to how such minute holes were drilled across the beads and with what tool. Pendants and bangles made of clay; probably for the poor were found in some quantity. But a miniature bone-axe pendant is a unique find. Bone comb was also found. Compared to the number and type of stone and bone beads found in other neolithic sites in India, Chirand assemblage is remarkable for its quality and variety and excellence of workmanship. It pre-supposes that the art must have been learnt from somewhere else.

Some crude hand-made terracotta of cow, bird and sanke and humped bull were discovered. They could be mere pieces of art or toys or they could have had some religious significance. Presence of burnt-clay-amulet, squarish in shape with puncture decoration on one side and applique knob with hole on the back may have had some magic significance for the wearer. Miniature axe-pendant must have had some religious significance, probably connected with the cult of the mother-goddess. Some of the animals could have religious significance. Terracottas of bull, coiled and hooded snake, and dove may have been believed to have some sacred charms. In the later period at Chirand we have ceremonial burials of domesticated pig, cattle and chital.

The tool-kit of the community is very distinctive. We have neolithic stone-axes, triangular in plan with round butt and convex-cutting edge, pestles, querns, hammer and rectangular milling stones, polisher, and circular balls. However, there are very few of the other characteristic heavy stone tools.[2] The paucity of raw material for such tools may be the reason. A large number of microliths have been found, like parallel sided blades, fluted cores *bladelets* lunates, points, tanged-points, and arrow heads. Some may have been used as arrow-heads, and some are knives. However, the frequency of blades (about $\frac{3}{4}$ of the total yield of microliths) is significant. Waste flakes and some in manufacturing stage indicate a flourishing local microlithic industry as an integral part of the neolithic complex at Chirand.

But a surprising fact is the abundance of bone tools, many of which are made of antler's horns, - the animal which was common in this thickly forested region, which gave the region its name

2. Longish axes of rectangular outline with flat faces with cutting edge towards one corner (one of them polished) reminds us of such a type found in the Lung-Shan Culture of China. The Chirand type is closely similar to the cult found in Kuchai (IAR 1961-62, p. 36, fig. 11) and IA Brahmagiri (A I. No. 4 Type A.N. fig. 32 plate XIII No. 3, p. 249).

'Saran' *Saranya*. Need for sharp-edged tools for cutting firewood from the forest, for making spears and javelians, shaft and handles, for microlithic tools, forced the people to make use of as raw materials bones of animals and horns of antlers on a large scale for, as stone the usual material was not readily availble. We get a highly sophisticated tool industy.

We have *pick*, burnisher, chisels, hammer, dabber, weeder, barcelts, shaft-straightner, side-scrapers, end-scrapers, needles, with eyes, bodkins, tooth-picks, awls, arrow-heads. Some of the bone-points have such sharp working point as to suggest 'leather sewing'. Antler's pick could have been used for breaking the soil, burnisher for burnishing clay vessels; chisel, hammer, and shaft-straightner indicated developed wood-craft. Scrappers and gauges could have been used in skinning animal hide and vegetables, pointed needles indicate sewing probably of *leather bags* or some textile, bodkin could be used for net-knitting, and arrow heads and daggers as missiles. Convex-edged barcelt could be used as a digging tool, or for cutting firewood. The vertical and oblique scratches around the cutting edge may imply that the tool must have served many fold purposes. Bone tools appear to have been dominated the technological equipment. The antler-bone tools appear to have been derived from deer's horns detached by gut or fleece of certain animals spun into thread. An outline was made round the portion to be detached with some sharp instrument and then the constant friction of the thread cut the portion with unique evenness. Many traces of gutting are present in some example. To provide oblique, straight or convex cutting edge, the edge portion of the tool was rubbed against bone anvil or by stone pestle. One bone anvil has been found. A parallel sided bone—blade is a unique find in bone

People lived in houses made of reed and mud. The houses were circluar huts in plan and some post-holes have been noted. A central pole may have been sunk in the ground to give support to the structure. The reed-mats or split-bamboo frames were plastered with

mud on both sides of the wall. Burnt daubs reveal reed-impressions. Huts were laid close to one another with paved floors. Clusters of ovens were unearthed, and they are of peculiar nature. They appear to have been used for roasting games, shells and snails. The whitish charcoal suggests bone ashes (calcium phosphate). Some food also must have been cooked.

The ceramic industry is very distinctive, varied and developed. The pottery is by and large hand made. A few examples of vessels made on turn-table or by dabbing method are known. Mica or quartz powder appear to have been mixed in the levigated clay. Mica was dubed over before finishing. The bulk of the pottery is red ware about 50 per cent of entire lot. Grey, black and black-and-red wares were also manufactured. Black-and-red ware has been found in abundance in Chirand and other sites in chalcolithic strata. But its presence though limited in the neolithic strata suggests that the inverted fire technique was known from before. The earliest black-and-red ware is the black-topped ware of the Badarians of the upper Egypt. Now when the neolithic black-and-red ware in Chirand can be easily placed a few centuries before 2000 B.C., the time-gap between its appearance in India and Egypt is significantly shortened. A few black-and-red ware sherds were observed in Piklihal IA and Sangankalu—pure neolithic. However the forms of the pots in black-and-red ware of the neolithic period do not find repetition in the Chalcolithic ware. As at Utnoor we have here also examples of burnished black ware, highly lustrous-red ware sherds reminding us of later Rangpur Chalcolithic lustrous-red ware. We have sometimes the bases of vessels rusticated, showing that they were used as cooking vessels or were partly dug under the ground, probably for frying popcorn and rice (*Chura*). More than 25000 potsherds have been discovered, of which spouted vessels number about 500, 200 are bowls, lipped bowls 100—50 perforated bowls, 50 footed bowls, 2 oval bowls with broad lips, 2 channel-spouted vessels with lips, 10 mini-

ature pots, I spoon or laddle and 10 knobbed vessels. Prominent forms in red ware consist of big vases with flared rims, some having soot-stains, could have been cooking-vessels; vases with spouts, bowls, perforated bowls, and knobbed pottery are many. Burnished Red Ware is 20% of the assemblage in which spouted vases with everted, and out-turned rims are in prominence. Carinated, handi, and lipped bowls also occur. Grey ware accounts for 25% with spouted vessels, elongated vessels with rounded bases, lipped bowls, footed bowls and channel spouts. Only two pieces of black-burnished ware have been found, and also 10 pieces of burnished pale yellow ware including a bowl-on-stand; black-and-red potsherds number about 10 and include bowl and footed-bowl. A few pieces of coarse grey ware were picked up which include *knobbed lid*, punctured-decorated sherds, and bowls with flat base. Some of the large vases with flared rims may have been storage jars. One large potsherd deserves special notice. It looks as a part of modern tile (khapra), but it might be a part of a long stem of a stand with a bowl or basin. Childe (Dawn of European Civilisation, 1961, p. 17) refers to goblets on tall half-hollow pedastals and to fruit-stands with hollow feet in neolithic Crete Villages. Is Chirand specimen a similar object? Or is it a part of a large sarcophagus foot-stand? A miniature sarcophagus like object was found in chalcolithic strata in Chirand.

The pottery is decorated in many ways. Applique decoration representing rope and notch design on the neck portion of the vases was very common. Incised designs are known. Post-firing scratch decoration was noticed on some pots. On one of the sherds there is mat-impression.

One of the most interesting charcteristics is the post-firing Ochre-painting on grey and sometimes on red and black-and-red ware. Linear (horizontal and vertical), Criss-Cross, concentric circles, semi-circle and oblique designs have been found. On one

sherd there is a painting in dots representing a trident. Rim-band painting in linear design was very popular. Spouts were painted round the mouth and at the junction of the spout and the body. About 80% of the grey burnished ware are Ochre-painted. Does it show that this had some particular ritualistic significance? These paintings appear on vases, bowls, lipped bowls, channel spouts etc. Taking into account the pottery forms, one notices that in the upper strata lipped bowls, spouts, bowl with pedestalled base and perforated pots appear with greater frequency.

There is clear archaeological evidence that the small settlement was often visited by floods and suffered out-breaks or fire. Flood scars are observed in the section of the trenches and series of thick black bands in the occupational strata prove out-breaks of fire.

It is to be noted that in spite of flood and fire calamities visiting the settlement, the neolithic population bravely stuck to the site noted for its fertility of soil, abundance of water closeby and availability of games. The Chirand neolithic population the earliest settlement at the site, appears with fully developed neolithic technology of food production, tool-manufacture and domestication of animals. Bead making was a sophisticated industry. This is the only site found in a low lying plains in river valley. It may be suggested that as no evidenc so far of the evolutionary process of the Chirand neolithic has been traced here, the community must have migrated from some where they had learnt the neolithic technology. Did they come from hilly region of South Bihar or from the Mirjapur hilly areas of U.P.? However, here at Chirand they showed exemplary skill in making of technology applied to stone, over bone and antler material.

Tools of antler and bone are mainly replics of stone prototypes.

After our acquaintance with the neolithic material cultural

assemblage of Chirand, it would be advisable to consider its affinities, if any, with other neolithic cultures of India and outside. So far as the settlement pattern is concerned we have at Chirand no evidence of pit dwelling as in Burzhom in Kashmir and in Neolithic China Slightly raised circular platforms along with post holes on the periphery suggest round huts with conical roofs as in other neclithic villages. There have been found a large number of mud-brick like objects with thumb impressions which are similar to what have been illustrated as mud bricks found in pre-pottery neolithic Jericho. Like Chirand, in Piklihal (Andhra) lower-neolithic burnt daubs with read impressions suggest mud plastered walls with readframe structures. The discovery of large sized hearths with longitudinal passage in line at Chirand have no parallels in other neolithic sites and this may suggest that the practice of community cooking practised here. Both at Chirand and Piklihal Lower-neolithic, presence of Indian humped cattle, sheep and goat is to be noted (Piklihal Excavations, p. 144 f.). However, while at Chirand domesticated pig, buffalo and dog have been found, these are absent at Piklihal where buffalo does not appear before early historical times. Elephant, deer, one-horned rhinoceros and gangetic turtle have been found in Chirand. These are absent at Piklihal where elephant makes its appearance only in the upper neolithic. At Burzhom (Kashmir), Piklihal (Andhra) and Brahmagiri (Mysore) food production has been assumed because of the presence of saddle querns, pestles and mortars but actually no evidence of grain has been reported. However, at Chirand, though pollen analysis is still to be completed, carbonished remains of plants from the lowest layer show that barley, rice, wheat, lentils, white peas and small peas have been found. In a communication to the author Dr. Vishnu Mittre of the Birbal Sahani Institute of Paleobotany writes that "barley, wheat, muter (peas) and mutary are not known so far from the neolithic of India. Thus the material fills a gap in the history of archaeobotany in India, The material on the whole looks much

like the one known from Indus Valley Civilization and from the Chalcolithic cultures of Madhya Pradesh".

So far as the terracottas are concerned, humped bull terracottas have been found at Piklihal, Sangankalu and also at Chirand. These may have religious significance.

Taking into account the stone tools and other stone objects we find that rounded-butt polished and ground axes were found at Chirand, Piklihal, Brahmagiri IA, Sangankallu III and Burzhom but their number from Chirand neolithic is much less though, a number of axes has been found in the chalcolithic and early iron ages in Chirand. Nine specimens of axe-group have been found in Piklihal in lower neolithic strata. Not a single tool of axe group has been found in Utnoor Excavation and only one axe at best was discovered in Brahmagiri IA. So paucity of ground stone axes at Chirand need not make the neolithic complex here suspect. Nos. II, III, IX and XIII of plate 46 of the Report on the Piklihal Excavation the ground and pecked stone industry are similar to Chirand examples. While no stone vessel has been found at Chirand, stone bead-making industry was much more developed here when compared to other sites in India. A large number of beads of steatite, jasper, agate, chalcedony were found. But only six beads of steatite and shell have been found at Piklihal. None is reported from Utnoor or Burzhom. Microliths have been reported from Brahmagiri IA and B, Sangankalu III and Piklihal. Chirand also has yielded a number of microliths including parallel sided blades, arrow heads microburins serated points etc. Crested-ridge technique is conspicuously absent in Chirand but is fairly common in Piklihal and Brahmagiri. No microlith has been reported from Burzhom.

As mentioned earlier the bone kit of Chirand is very conspicuous and unique. Bone tools first appeared in upper palaeolithic. Bone points, needles, awls, chisels, scrapers or burnishers and harpoons have been found at Burzhom in good number. These except

harpoons are also found at Chirand. Bone comb, bone axe-pendant and bangles are rare finds from Chirand actually. In other neolithic sites in India worked-bone objects are very scarce. Only one bone point that also from the upper neolithic was found at Piklihal. None is reported from Utnoor and Brahmagiri. From Utnoor a bovine long bone ground at one end to form a flattened chisel like blade has been reported (Utnoor Excavations. p.54). At Sangankallu ground bones and bone tools such as points and chisels are found in small number (Excavations at Sangankallu p.17 fig. 10). Actually all the bone artefacts discovered in the numerous sites in India when totalled measure to less than 50 p.c. of the Chirand haul alone. And the varieties of bone artefacts of Chirand are staggering in comparison to any neolithic site in ancient India. However, excavations at Palavoy in the Andhra Pradesh by Dr. V. Rami Reddy yielded 25 bone artefacts. Halur yielded 8 and Tekkalakota 11 of these at Palavoy as many as 7 bone axe heads similar to Chirand specimen were discovered and are copies of stone axe-heads. A perforated bone-pendant like one at Chirand is another interesting find at Palavoy. In the south Indian sites cattle bones provided the most common material for making axe-heads, scrapers, awls, blades and points and antlers tools were rare here. In Chirand it was just the reverse, though one cattle stapulae was used as a shovel. In Chirand antlers horns were rather very much used. Perforated antlers axe found at Chirand, have been noticed in the Gobi Culture of China (Prehistoric China, Volume 1, page 42, figure 14.1). Bone awls and chisels have also been found from Ku-hsing-tun (*ibid*, p.46, figure 15, 3-4) and also bone needles (figure 18, 12.30). Bone awls, short flat needles or bodkins have also been found in Natufian in Maglemosian times, awls and chisels from stags' antlers were found in Europe. Bone axes from Chirand may be compared to "Lynglyx" of reindeer antler illustrated in Dawn of European Civilization (p.8, figure 5). According to Childe lynglyx were, in fact, in use in late Pleistocene times in

Moravia, Hungary and Romania. Antler axes and bone combs were discovered in Ertebolle Culture, Denmark (*ibid.*, p 15, figure 7). Bone awls similar to Chirand have been illustrated by Soniacole as belonging to the Kenyan Capsian (Prehistory of East Africa, p. 262, figure 39 c). Bone axe-head is also reported from Sudan neolithic (*ibid.*, p.278, figure 46 B). It is suggested that the bone tools might have been the prototypes of polished stone axes and adzes. It might have been used for chopping meat of large animals such as rhino and elephants hunted by the people. In Scandinavia bone axes and adzes are believed to have been used before stone ones. Bone artefacts such as awls, points and needles with perforation have been found in Jericho in pre-pottery neolithic. Bone shaft-straightener found at Chirand is unique, as like of it has not been reported from any site in India. It had been also known as batons decommandement. The name signifies that they were used as ceremonial scepters but that may have been much later and that also only richly carved ones. The Chirand example as other specimens elsewhere was used for straightening arrow-shafts and softening leather thongs (History of Mankind, Vol I, pp. 169-70). An unique find from Chirand is a miniature bone-axe with a hole. Such a bone pendant has been-found in Nioro River Cave in Sudan (Pre-history of East Africa, p.291, fig 52B).

Chirand Neolithic ceramic traditions, while being individualistic in some ways, also suggest some affinities with other neolithic wares, being largely hand-made and partly on turntable and dabber and anvil technique, as, red ware and grey ware are found at Pikiihal, Brahmagiri and Chirand. Grey ware is not found in Burzhom where black ware is in abundance; only a few sherds of black ware were picked up at Chirand; pale grey ware is also met with at Chirand, Brahmagiri IA and Piklihal. The changes in colour were due to changes in temperature in firing. We have already seen that black-and-red ware (inverted fire technique) was present

in neolithic Chirand. It appears to be present also at Brahmagiri where it has been described as 'brown-and-black' and at Piklihal described 'as approaching black-and-red ware'. At Utnoor also similar ware appears to have been discovered and referred to by the excavator 'as ware with red and black surface'. Black-and-red ware was found in Lothal in Harappan context. It may tentatively be suggested that so far as India is concerned this black-and-red ware first appeared in neolithic Chirand and continued in the succeeding chalcolithic cultures in abundance, though the forms of the neolithic vessels were different. Black and red ware pottery was known as 'black-topped ware' at Badari and the Tasian, Egypt and in the Sudan neolithic referred to as "red burnished ware with blackened rim" (Prehistory of East Africa by Sonia Cole, p.280). Probably the excavators of Brahmagiri, Piklihal, Sangankallu and Utnoor were hesitant in describing the ware as black-and red because that was a characteristic ware of the chalcolithic age in India and was not expected in the neolithic strata. Both at Chirand and Piklihal there is evidence of micacious pottery. At Kuchai in Orissa a coarse grit tempered red ware, sometimes slipped, as at Chirand was found. One has to examine whether there is any generic relationship between the ochrish red-ware pottery found with microlithis at Bhainsaur and Lakhania in the Mirjapur district of U.P. and the gritty red ware of Chirand neolithic. Burnished ware is common,at all the neolithic sites. At Piklihal, Utnoor and Chirand there is evidence of pairing—scraping in the interior of the vessel to take off extra clay when it was leather hard. At Chirand this was done sometimes with fish-bone, and a spine portion of teleost fish used for the purpose has been found.

So far the decorations on the potteries are concerned, we have at Chirand applique decoration on the neck portion of the vases. There are incised and punctured decorations also on some of the sherds. Applique decoration on pottery is reported from Piklihal,

Sangankallu and Brahmagiri and other neolithic sites in India An incised decoration is also found at Piklihal but punctured decoration is absent there. At Tekkalkota we have a punctured decorated-lid representing some animal figure. However, at Tekkalkota the find was associated with metal. Punctured decoration is reported from Danubian region (Our Early Ancestors by Burkit, pp. 122-23, plate 15, Nos 10,11,12—No 10 comes from Danube Valley, Nos 11 and 12 from the Omalian Industry of Belgium). Punctured decorated sherds and pots are also reported from a late neolithic North Pontic cemetry, Eastern Europe (Chronologies in Old World Archaeology by Robert W. Ehrich, p.475, fig. 1, Nos. 2 and 3). Besides applique decorations, incised decorations are found on some of the vessels at Piklihal also. Incised designs on a few sherds were seen at Brahmagiri IA. Knobbed decoration, very prominent at Chirand, has been also noticed at Sangankallu. Pot-sherds with incised and geometric designs and also applique decoration have been noted in the Gobi Culture which is neolithic in date (Archaeology in China, Vol. I, p.56). There are perforated vessels found both at Chirand and Piklihal. The perforations are at the base of the pottery. One of the Chirand specimens has seven holes similar to an example at Piklihal. There are pots with holes on the shoulders which were probably suspension pots. Such suspension pots are also found in Yang-shao Culture of China. The post-firing ochre painting in various designs is an important trait of Chirand neolithic ware. A few pieces with post-firing ochre paintings on the rims or on the spout have been found at Piklihal, Utnoor, Brahmagiri IA and Sangankallu. At Chirand we have greater fequency and painted designs are varied. At Chirand we have found an ochre piece also, the material of which the painting was made. There are some pots with rusticated base found both at Chirand and Piklihal. These may be mostly cooking vases.

The pottery forms which are found at Chirand are vase, vase with spouts, miniature vases, vase with pointed base, *handi* with

blunt carination on the shoulder, deep bowls, hemispherical, and perforated bowls, lip bowls, bowl on stand, footed bowls, oval shaped bowl with broad lip etc. The spouts have been reported from Piklihal, Utnoor, Sangankallu, Brahmagiri and Nagarjunikonda and these are mostly in red ware. One spouted vessel has been reported from Piklihal. Handi (Water vessel) with blunt carination is an important discovery from the neolithic strata at Chirand. Such type of handi is not reported from any other neolithic site. Deep bowls have also been reported from Chirand. Piklihal, Utnoor, Sangankallu, Nagarjunikonda etc. Hemispherical bowls have been reported from Chirand and this is a common feature of the Indian Neolithic ceramics. Lip-bowl is also very common at Chirand. It is also reported from other neolithic sites in India, but its frequency at Chirand is much higher than at other sites. A solitary example of oval-shaped bowl with broad lip, probably for libation in burnished red ware is noteworthy. It is of its own kind and not reported from anywhere in India. Bowl-on-stand is a unique feature at Chirand though we have not got the stand portion, we got the luting mark which indirectly indicates about the size of the stand. This is in pale grey ware. This can be compared with the bowl on 3 or 4-legged stand found at Piklihal. Footed bowls have been found in all the wares including red, grey, black-and red etc. Such footed bowls have been reported from almost all the neolithic sites in India but the frequency at Chirand is much higher as compared to other sites. At Chirand we have got only one example of a bowl on a short 4-legged stand which is not reported from any other place. There is one water-vessel pot which can be compared with a similar pot found at Piklihal (Piklihal Excavations, (Plate 25, type 17). it may also be noted that no platter or dish has been found though such a type has been reported at Piklihal. Dish is generally a later innovation and this may anti-date Chirand from Piklihal. There is no doubt that among neolithic sites in India, Piklihal comes closest to Chirand in ceramic technology.

Taking into account the thickness of the neolithic deposits at Chirand one could easily hypotheticate that the culture existing from the 18th to 12th layer must have had a long life, more than 500 years. The single carbon date for the uppermost neolithic strata of Chirand is 1845±160 B.C. Certainly more carbon 14 dates also checked from other laboratories would be much more welcome. However, taking into account the carbon 14 date of 2295±155 for Utnoor and 1590±110 B.C. for Sangankallu and 2375±120 B C. for Burzhom, it is suggested that Chirand neolithic people settled in Chirand at about same time or somewhat earlier than the other neolithic settlements.[3] It is important to note that the earliest date for neolithic on Indian border land is from Killiogul Mohammad. The date is 4th Mill. B.C. (3400 B.C.) and it is followed by successive pottery cultures of Baluchistan showing affinity with Iran.[4] It is rather significant that the Chirand neolithic ceramics show no clear affinity with Kulli, Mahi and other ceramic cultures of Indian border land. The pottery also shows significant differences with Bruzhom neolithic pottery and any relationship with the East Asian ceramic can only be conjectural. Taking into view the total culture assemblage of Chirand neolithic, one has to say that it has its own individualistic characteristics.

Supplement

On the basis of excavations at Chirand in 1972-73, the results may be surmised as follows :-

On ceramic avidence, Period-I was divided into two phases,

3. Vishnu Mittre thinks that the bottom layers of Chirand Neolithic may be dated around 4000-3000 B.C. (Palaeobotanist, Vol. 21(1).
4. It has been rather intriguing that while in the West Asia and the South-East Asia beginning of the neolithic culture lies between 8000 and 6000 B.C., in the Indian sub-continent it does not go before 3500 B.C., No satisfactory explanation for this retarded development is available That insufficient work in this vast area in this particular field could be the real explanation is confirmed by the discovery by a French Archaeological team of a neolithic site at the Mehragarh in Baluchistan in Pakistan which is dated between 7000-3000 B.C.

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the earlier phase (IA) was represented exclusively by burnished and unburnished potteries in Red Ware The Types met with included medium-sized vases with vertical neck and everted rim and bowls with round base. Other material relics consisted of terracotta beads both tubular and drum shaped, terracotta balls of varying sizes, a female terracotta figure in archaic style; tongs, file, arrow head, point, drill and bangle made of bone; beads of steatite and semi precious stones, microlithic tools including nodules and waste flakes; stone hammer, quern and fragmentary neolithic celts.

People during this period constructed circular reed huts which they plastered with mud. Chunks of mud lumps bearing reed impressions were collected in profusion from the excavations sites. Series of longitudinal ovens with multiple wavy side channels were unearthed which may have been used for roasting games and cooking food.

Hunting was the main source of their subsistence which was, however, supplemented with cereals. The discovery of charred and semi-burnt bones of varieties of animals, birds, fishes, mollusca and snails and carbonised grains, seeds of wild fruits bear testimony of the above observations.

The later phase (IB) was distinguished by the potteries having various tints in red ware, blackish grey ware and very small percentage of black-and-red ware. Both burnished and unburnished specimens were present in the above wares. In addition to the earlier types of phase (IA), the types encountered were vases with obliquely flared rim and narrow neck vases with short everted rim, vases with rusticated base, vases with spout, simple bowls, perforated bowls, bowls with ring base, bowls with simple lip. Miniature pots in grey ware bore red ochre post-firing paintings and some of the pots in red ware were decorated with appliques. Sand and mica mixed clay was utilised in the manufacture of potteries of both the phases.

5

Bone Tools from Chirand & Burzhom :
A Comparative Study

Man first the tool-user and then tool-maker first used stone tools and also wooden tools (all perished) in his struggle and adjustment with the not-always aggreable environment. When man killed animals and scraped through its skin to chop off meat pieces, he must have noticed the hard bones, which he could turn into some kind of tools to fill in his tool-kit. The sharpness of bone points and edges when worked and the variety of uses they could be put to must have amazed the primitive man.

Bone was used as a material for tools manufacture, not only it was easy to work upon, but because of its hardness. However, in comparison to stone tools, they were easy to desintegrate and thus lost to us. It is significant that bone tools first appear in the upper Palaeolithic and Mesolithic Cultures in Europe and Asia (China), when man has progressed much towards improvement in his (stone) tools which are better made, smaller in size, and are in more numerous varieties with a view to cope with the change in evironment. It is only when smaller and more sophisticated tools, so to say, become popular that bone tools form an important constituent of the man's tool-kit. It is quite obvious to see that bone tools would be of little use in falling trees and clearing jungle but would be very handy and useful in scraping, cutting meat, in digging soft ground and in sewing, piercing hole and as arrowheads and points.

However, in India earliest bone tools have been reported in neolithic content, in stratified excavated sites. A worked bone point like object from the upper Neolithic has been reported from Piklihal. According to the excavator[1] this curious article formed part of a shuttle, and was not an arrow-point or spear-head. No bone tool has been reported from Neolithic Utnoor and Brahmagiri. But from Palavoy (AP), seven bone axe-heads, one chisel, three blades, thirteen points have been obtained from excavations of neolithic strata. From Hallur were discovered seven points and one pendant and from Tekkalkota seven scrapers, two chisels and seven points are reported. In all total fifty one bone artifacts only have been found from all the sites in South India taken together.[1a]

The first real discovery of bone tool-kit of neolithic times was made in Burzhom in Kashmir. Neolithic Burzhom has been assigned to two periods. Bone tools are met with in both periods, but according to the excavator, bone tools are more frequent in Period-II than in Period-I.[2] The bone-tools are highly polished and have sharp working ends. Amongst the types reported are short daggers, points both large and small, awls, antimony rods, polishers, scrapers, chisels, needles with eyes, arrow-heads, harpoons etc.[3] Unfortunately, neither the total number nor the type-wise breakage has been reported.

Compared to Burzhom, bone-tools from Chirand excel if not, in number, certainly in quality and types. Chirand (Lat. 25 48°N and Long 88.51°E) is a small village on the northern bank of the Ganga in the Saran district of North Bihar. Archaeological ex-

1. Allchin. F R., Piklihal Excavations, p. 112, pl. 57a.
1a. V. Rami Reddy's Paper read at Seminar on Indian Pre-history at the Deccan College.
2. I.A.R., 1960-61, pp. 11-12.
3. Ibid , 1961-62, p. 17.

cavations were started in 1963 and till 1969 it had yielded stratified culture sequence from the Chalcolithic to the Pala period. The Chalcolithic Culture with plain and white painted black and-red ware with the usual associated finds could be compared favourably with the Chalcolithic Ahar, in Rajasthan. Early in 1970 in an attempt to determine the base level of the Chalcolithic Culture the neolithic strata was struck. The excavations ending in May, 1973 yielded a total of 150 bone tools. The number of types described below will prove the unique importance of the neolithic Chirand in the context of not only Indian neolithic, but world neolithic taken as a whole. It would be very rewarding to know if from any single site, such a full-fledged neolithic culture, rich all round but particularly in bone tools—both in number and types together – have been reported from any where in the world.

At Chirand we have a neolithic culture with grey ware, red-ware, black-and-red ware, with numerous vessel types, such as spouted ones, jars, perforated vessels, rusticated vessels, vases with flared rims, spoons, laddle, lipped bowls, perforated bowls, footed-bowls, knobbed vessels, carinated *handis*, elongated vases with rounded bases. We have pottery with numerous incised designs, applique designs and also knobbed vases. Post-firing Ochre painting on vessels in various designs is a unique feature in contrast to simple linear Ochre-paintings on a much fewer vessels at Piklihal, Utnoor, Brahmagiri IA and IB, and Sangan kullu Phases 1 and 2 (Period III). Many vessels at Chirand are well burnished, and some red-ware vessels have lustrous character. At Burzhom steel grey ware predominates at the first stage while black burnished ware is dominant at the second stage. At Chirand in 1972-73 excavations, it was noticed that IA phase had exclusively burnished or unburnished red ware while in IB besides red-ware in various tints, black-and-red ware and blackish grey ware were dominant ceramic traditions. Red ware (wheel made) dominates period III[4]

4. Ibid., p. 17.

at Burzhom. Thus, while at Burzhom we have burnished black ware, it is practically absent at Chirand, (only two doubtful pieces) and if red ware is met with in Chirand at the earliest phase, it comes to dominate only in period III (Megalithic) at Burzhom which has no black-and-red ware in the entire neolithic deposits But in Chirand we have a few pieces (ten) of black-and-red ware. There is evidence of pit-dwelling in Burzhom while this is absent in Chirand where we had circular reed-huts plastered with mud. Chunks of mud lumps bearing reed impressions were collected in profusion. There are longitudinal ovens with multiple wavy side channels in Chirand not met with in Burzhom. So far as polished stone tools are concerned at Chirand, only very few have been found while at Burzhom they are more numerous. At Chirand mocroliths have been found in large number throughout, some are even in manufacturing stage. While Neolithic Culture of South India is noted for blade industry and crested guiding ridge technique was employed, at Chirand we have no example of this technique In the presence of terracottas also Chirand neolithic has edge over other sites. At Piklihal only one bull is recognised from excavation [5] Bulls and birds have been found at Sangankallu.[6] But at Chirand we have in terracottas bulls, snakes, coiled and uncoiled (symbolic), birds (parrot) and a female figure in archaic style. Human figure in terracotta in Indian neolithic is a unique find from Chirand. Thus, taking everything together, the Chirand neolithic has its own distinct individuality, and has features not found in Burzhom in the north or in Deccan and south Neolithic. So far Eastern India is concerned, only Kuchai in Orissa and Daojali-Hading in Assam have yielded neolithic finds. Here we have greyish pottery showing sometimes basketry and cord impressions; on one of the pot-sherds from Chirand we have basketry or mat-impression. At Daojali-Hading. besides polished shouldered-axes, we have the polished celt as in

5. Pilkihal Excavations, pp. 79-81, pl. 40.
6. Excavations at Sangankallu, pls. 11A, 11B.

Chirand, and also corn-grinders, mullers and pestles, besides *bones* (tools ?).

At Kuchai in Orissa coarse grit-tempered red ware often slipped with incised or finger tip decoration is met with Microliths are present here also and a shouldered-axe is a surface collection. In view of so little evidence of neolithic of Eastern India, it is impossible to relate Chirand neolithic to some special Eastern Indian neolithic complex. For the present Chirand has to stay as something unique and special for the history of Indian Neolithic pattern or patterns.

This uniqueness is extremely highlighted by its bone-tools. Of the total 150 bone artifacts discovered from Chirand, 17 are unstrafied. The break-up of the remaining 133 tools classified according to their supposed functional uses is as follows : Broad ended Chisel-1, Chisel small-4, Burnisher-4, Bar-celt-1, Hammer-1, Wedge-3, Scraper-9, Shaft-straightner-2, Punching tool-1, Javeline head-1, Tong-2, Borer-1, Awl-1, Needles-8, File-2, Compass-4, Arrow head-7, Tanged arrow head-9. Cutting tool-4, Drills-23, Spear point-3, Disc 4, Bangle-2, Pointed pencil like tool 3, Pendents-4, Surveying Instrument-1, Combe-1, Socketed handle 1, Socket-1, Adze-1, Antler p'eces showing cut-marks-26, Cattle shouldered blade 1.

These tools are of various sizes. Chisels range from 5.2 cm to 13.5 cm. Burnisher between 10-5 to 16 5 cm Shaft straightness are of 12.4 cm. and 8 cm.; Javeline 10.5 cm , puncturing tool of 22.2 cm. Scrapers range between 5.5 and 12 5 cm , needles between 7 cm. to 16 5 cm ; arrow heads between 2.2 to 9.3 cm. The varieties of the tool-types and their comparative frequency not only suggest the versatile uses to which bone tools were made and also their comparative popularity. A number of scrapers suggests the scraping of hunted animals' car-cases for meat which might have been chopped into pieces by cutting tools. The frequency of arrow-

heads and tanged arrow-heads suggest the popular use of and progress in archery for hunting running animals and flying birds. Shaft straightners were used for straightening the arrow shafts and softening leather things.[7] Awls and needles with holes must have been used for sewing leather goods, fishing nets, mainly with sinews as threads. So many tools with holes suggest the necessity of drills. Bar-celt, socketed handles, adze and socket hammer and wedges point to the use of larger bone-tools for cutting tree-branches or roasting out shrubby jungle or for breaking the earth for agricultural purposes. Spear points and javelines might have been used in mutual fights but more generally in killing large beasts cornered in a prepared ditch natural or swamp. The cultural development and advance in technology of bone tool-making is attested to by the use of compass and surveying instrument. The perfect circular holes of the surveying instrument and the circle in the shaft-straightner could be possible only by divider and compass which can be demonstrated even to-day. Even bone toilet articles like comb, antimony rods (pencil-like pointed things) show the neolithic men and women following the then current fashion, as thereafter. Bone bangles and pendants decorated their bodies as ornaments in place of stone ones. Decking the body with ornaments, doing hair-dos and using eye paints were popular with the neolithic Chirand people. Discs could be spindle whorls and with the needles, these may suppose weaving. Leather cutting-tools and flesh cutting-tools show that while meat was a common diet, working on leather was fairly prevalent. Leather-bags for carrying water, leather-made dress sewn by leather sewing needles must have been popular. Cattle shoulder-blade might have been used for agricultural purposes as shovel or winnower. Compared to Burzhom bone tools, Chirand bone tool kit is more sophisticated, and equally polished and sharp-pointed where necessary. Except for a few spears and javeline heads, we do not have short daggers as reported from

7. History of Mankind, I, pp. 169-70.

Burzhom unless they are same as are spear-heads. But one very significant omission from Chirand assemblage is *harpoon* which is found quite frequently in Period-II at Burzhom. One cannot explain its absence from Chirand adequately when copious fish-bones and scales have been found in excavations at Chirand. We have terra-cotta net-sinkers. The site is on a river bank. Therefore, there is no doubt that the Chirand neolithic community went for fishing. This must have been done by nets sewn by the bodkins with net-sinkers in it. Boatmen might have spread the nets in the river to catch fish, and they may even have used spear-points or pointed-pencil like tools to pierce the fish coming on the surface of water especially for the baits when thrown in the water; bar-celt, shoulder-blade, pieces of querns, pestles and mortars and microliths suggest agricultural operations like, digging the ground, harvesting and grinding and breaking of corns. Carbonised remains of paddy, rice, wheat, barley and lentils of many kinds confirm that the comm-unity was an agricultural-cum-hunting-fishing one.

The comparative abundance of bone-tools and rariety of poli-shed stone-tools demand an exaplanation. The region does not abound in readily available stones as raw materials for fabricating a large number and varieties of tools demanded by the progressive neolithic community. But the region was forested enough for animals like rhinoceros, wild buffaloes and was an ideal home for fleeting antlers and deers. The name ''Saranya' and the neighbour-ing district 'Champaranya' even today remind us of the forested and deer-infested tracts. But what is significant is that the a num-ber of bone tool-types suggest that they were conscious imitations of stone tools. The Chirand neolithic community appears to be the first settlers on the site. There is no evidence of the evolution of the neolithic from any earlier stage in Chirand. Sophisticated bone tool-kit appears from the lowest stratum with varied pottery, beads and other associated finds. It, thus, appears that when the com-

munity came to Chirand, it had already acquainted itself with neolithic way of life. But it was sufficiently intelligent and resourceful, and gifted with ingenuity and high level skill and technology to use the readily available raw materials—animal bones and antlers to make the types of tools which they might have used in their earlier habitation, but which were of stone not readily available in the new home. Did they come from the Chota Nagpur Plateau where polished stone-tools were all through popular and finding raw materials for these tools scarce in the region adopted the abundant bones and antlers of the stages as the raw materials for their stone prototypes tools ? This ticklish problem can be solved only after thorough exploration and excavation in Bihar and its neighbourhood.

Discovery of a surveying like-instrument, compass and dividers bring into focus the high level of culture lived by the people here. Fine polished beads, tiny and medium and large with minute perfect holes made of agate, chalcedony, jasper and marble have been found in large number. They are long tabular, disc, long-barrel, short babrrel, cylindrical, spherical in shape. Many are in manufacturing stage showing that they were locally made. Some stone-raw materials must have been brought from outside. Bead manufacture was highly developed and sophisticated, like of which is not comparable to very limited number of beads found in other neolithic sites in India. Only six beads of steatite and shell have been found at Piklihal, none from Utnoor and Burzhom The bone drills, polishers, pencil-like points must have been used, but the community must have learned this skill at some other site. Thus, our hynothesis that this was an intruisve community here settled for the first time on the river-bank and took to hunting fishing, pottery-making and rudimentary agriculture gains added strength. They were mostly a non vegetarian community. Longitudinal ovens in a line with which ashes in the side channels suggest that the animal flesh was roasted here by a group of people and

the long bone-tongs might have been used to clear the oven's side channels off the fallen meat pieces, burnt bones and accumulated ashes. Copious fish scales and bones testify to fishing occupation of the people. That the people mostly took to liquid or semi-liquid diet and drink like milk, liquor etc. may be presumed on the evidence of abundant spouled vessels and lack of dishes.

Thus, the analysis of the bone tools and their functional uses brings into focus the living conditions and habits of the neolithic community in Chirand. In view of comparative paucity of detailed knowledge available for bone-tools and their types in Burzhom, no relationship can be established between these two known North Indian Neolithic communities. The geographical gap between the two areas is also large, and the intervening sprawling region is yet to be thoroughly explored and excavated to establish any link between the two areas. Pit dwelling in Burzhom does indicate some relationship between Kashmir and China. But Chirand has nothing like this. We have already seen that till the neolithic sites in Assam and Orissa are extensively excavated, no genetic relationship with Chirand can be established.

Some similarities between some Chirand finds and finds from other Upper Palaeolithic, Mesolithic and Neolithic sites of the world so far as bone artifacts are concerned may be noted. A number of mud brick like objects with thumb impression found at Chirand are similar to what have been illustrated as mud-bricks found from pre-pottery neolithic Jericho. Bone shaft-straightner of antler found at Chirand has a parallel from Gobi Culture in China.[8] Bone awls, chisels and needles have been found from Ku-hsing-tun but in Mesolithic assembly.[9] The Ordos Man is said to have worked in stone.[10] The upper Cave Man also made tools of bone and

8. Prehistoric China, Volume I, p 42, fig. 14.1.
9. Ibid , p. 46, fig. 15. 34; fig. 18, 12, 30.
10. Cheng Te-kun, Archaeology in China, Vol. I, p. 3.

horn and a bone needle was produced.[11] At the site of Djalai-Nor in Manchuria were noticed deer antlers with perforated holes suspected to be of human workmanship.[11a] Bone awls, short flat needles or bodkins have also been reported from Natufian Culture in Maglemosian times.[12] Awls and Chisels from antlers were found in different sites in Europe Bone axes from Chirand may be compared to 'Lynglux' of reindeer antler illustrated in the Dawn of European Civilization, p. 8 Fig. 5. According to Childe lynglux have in fact been in use in late Pleistocene times in Moravia, Hungry, and Rumania. Antler axes and bone combs were discovered in Ertebolle Culture, Denmark.[13] Bone awls similar to Chirand have been illustrated by Sonia Cole belonging to Kenyan Capsian times.[14] Bone axe head is also reported from Sudan Neolithic.[15] In Scandinavia bone axes and adzes are believed to have been used before stone ones. Bone artifacts such as awls, points and needles with eye have been found in Pre pottery Neolithic Jericho. The miniature bone axe-pendant found at Chirand has a parallel in a similar bone pendant found in Nagoro River Cave in Sudan.[16] All this shows that the bone tools from Chirand individually speaking and by large have their parallels in such scattered regions as China, Palestine, Scandinavia, East Africa and Sudan. The technique appears to have been widespread but there is nothing to establish any kinship between them.

It is possible to assume that as the idea of pit-dwelling in Burzhom was most probably derived from China, the tradition of bone tool making which is recorded from earlier periods, may have also percolated into Kashmir Valley. The other possibility to be

11. Ibid, p. 35. 11a. Ibid., p. 43.
12. J. Mellart, Earliest Civilization of the North East.
13. G. Childe, Dawn of European Civilization, p. 15. fig. 7.
14. S. Cole, Pre-history of East Africa, p. 262, fig. 39(c).
15. Ibid., p. 278, fig. 46B.
16. Ibid., p. 291, fig. 52B.

kept in mind is the influence from West Asiatic Cultural Centres, where neolithic revolution is believed to have taken place first. But compared to what is found in India, China and Europe, the bone tools found in West Asia are very much less in number. The possibility of influence from the East, particularly South-east, cannot be ignored. There is a strong view that Eastern Indian Neolithic stone-axes are adapted from South-East Asian prototypes. However, no definite evidence of shouldered celts in clear neolithic context has been yet reported in archaeological stratified layers. Taking into account the depth of stratified deposits of neolithic period in Chirand, it is clear that chronologically the Chirand Neolithic can be placed in about the same time as the Burzhom and the South Indian Neolithic. And to emphasize again at one single site, the number and types of bone tools found at Neolithic Chirand make it a signularly unique—give it a distinct personality in Neolithic world.

It may be noted in passing that bone tools, particularly bone arrow heads, points, antimony rods continue in later cultures in various sites in India. Bone stylus and points have been reported from Mohanjodaro and Lothal. Bone awls and bone tools made from the rib of a large ruminant resembling a paddle with slight natural curvatures have been reported from Chanhudaro which also yielded bone awls.[17] Bone points found at Chalcolithic Navdatoli, were probably used as arrow heads, or stylus, gorge or weaving needles or as combs or as ornaments.[18] A fragment of *bone-pin* was found in Chalcolithic Black-and-red Culture in Eran[19] From Chalcolithic Nagal in Broach district have been reported bone-points or arrow tips.[20] Prahladpur in Varanasi district yielded bone

17. Mackay, E., Chanhudaro Excavations, p. 234, pl. XC. 2, 3., Pl. XCII, 29 and 32.
18. Sankalia and Subha Rao, Excavation at Navada Toli, pp. 221-222.
19. I.A.R., 1961-62, p. 25; 1962-63, p. 12, pl. XXXV A.
20. I.A.R., 1961-62, pp. 11-12, pl. XXVII A.

points in both Chalcolithic Black-and-red-ware Culture and in N.B.P. strata. Rajghat gave us large number of bone points and arrow heads in N.B P. contest.[21] Bone arrow heads and awls have been reported from chalcolithic Paudes—Rajardhibi which continued in Iron Ages also.[22] From P.G.W. and N.B P. strata were found a large number of bone styli, awls, knitting needles;[23] Kaushambi yielded arrow heads, some socketed and some with double grooves of bone, ivory and horn in P.G.W., N B.P. and post-N B.P. strata with concentration in N.B.P. level.[24] Bone from P.G.W. were recovered from Atrangi-Khera[25] and from Alamgirpur also.[26] Bone arrow heads and stylus were found in black-and-red ware strata in Ujjain and also in N.B.P. level with bone needles added One of the bone arrow-heads was stained with the blood of a bird: Awls of ivory were also found.[27] From Sonpur in Bihar arrow pins, arrow-heads, points and styluses have been found in Chalcolithic context, and also in N.B.P. strata.[28] In pre-N B.P. context a tanged arrow head of bone has been reported from Birpur near Vaisali, and bone points and ivory antimony rods from Chakramdas near Vaisali in the N.B.P. context.[29] In N B.P. level in various sites in Patna were found bone pins, arrow heads and styluses.[30] In Chirand itself in Chacolithic context ivory and bone objects were found.[31] From

21. I.A.R., 1962-63, p. 41, pl. LXXIV B; 1961-62, p. 58, pl. XCIII A.
22. P.C. Das Gupta, Excavation at Pandu Rajardhibi, p. 23, pl. XV; XII 6.
23. Lal, B.B , Ancient India, No. 10 & 11, p. 105, pl. LX, No. 1-4 & 11.
24. Sharma, G R., Excavation at Kausambi, pp. 47-49, pl. 39-1,15.
25. I.A.R., 1962-63, p. 34.
26. I.A.R., 1958-59, pp. 48-54.
27. I.A.R , 1956-57, p. 24, fig. 11; p. 27, fig. 11, pl. XXXVA, Nos. 10-18, blood stain on No. 14.
28. I.A.R., 1961-62, p. 4; I.A.R. 1959-60, p. 14; I.A.R., 1960-61. p. 5, I.A.R. 1956-57, p. 19.
29. I.A R., 1961-62, p. 7; I.A.R , 1959-60, p. 16, Dev and Mishra, Vaishali Excavation, p. 9.
30. I.A.R., 1955-56, p. 22.
31. I.A.R., 1962-63, p. 6, pl. XIII B.

Champa in Bhagalpur a number of bone arrow heads and antimony rods have been found in N.B P content. All this shows that the tradition of manufacture of bone tools persisted even when metal and stones were in general use. Why they continued ? Probably, because they were rarer and were more costly now to give distinction for the upper classes. It is interesting to note that their functional uses are now very much limited. They are mostly antimony rods or styluses, points for puncturing, and arrow heads for luxury and pastimes. They no longer constitute an essential tool-kit for a hard working community as a whole.

Appendix

Total number of the bone tools discovered during the years

1969-70 and 1970-71	.....	120
1971-72	.....	10
1972-73	.....	30
Total :		150

The number includes finished and unfinished artifacts.

Layerwise and trenchwise break up of the tool types

(1) *Spear Head*

	Reg. No.
Tr. CRD-XI- (9)	1710.
,, (12)	1621.
,, (13)	1600.
,, (16)	1862.

(2) *Bodkin*

Tr. CRD-XIII-(9)	1725.
,, ,, (9)	1785.
,, ,, (9)	1710.
,, XIS (15)..	2252.
,, XI (17)	1893.

(3) *Drill*
Tr. CRD-XI(12)1684.
,, XI-(13)1600.
,, XI-(13)1600 A.
,, XIS-(13)1761.
,, XIS-(14)1921 A.
,, XIS-(14)2218.
,, XI-(14)1920.
,, XI-(14)2255.
,, XI-(15)1848.
,, XI-(16)1877.
,, XI-(16)1877
,, XI-(16)1595.
,, XI-(17)1958.
,, XI-(17)1881.

(4) *File*
Tr. CRD-XI-(15)1844.
,, -XI(16)1863.

(5) *Leather Sewing Needle*
Tr. CRD XI-(15) . . . . . 1894.

(6) *Awl*
Tr. CRD-XI-(16) . . . . . 1858.

(7) *Projectile Point*
Tr. CRD-XIII-(9) . . . . . 1802.
,, -XIE-(12) . . . . . 1756.
,, -XIS-(14) . . . . . 2216.
,, -XI-(15) . . . . 1854.

(8) *Narrow Ended Chisel*
Tr. CRD XIII-(9) . . . . . 1744.
XI-(17) . . . . . 1905.

(9) *Leather Cutting Tool*
Tr. CRD-XIII-(9) . . . . . 1762.
XIII-(9) . . . . . 1786.
XI-(15) . . . . . 1885.

(10) *Compass*
Tr. CRD-XIII-(9) . . . . . 1730.
,, (9) . . . . . 1735.
,, (9) . . . . . 1833.
,, (9) . . . . . unnumbered.

(11) *Flesh Cutting Tool*
Tr. CRD-XIIIE-(9) . . . . . 2151.
-XI-(17) . . . . . 1918.

(12) *Shaft Straightner*
Tr. CRD-XI-(15) . . . . . 1928.

(13) *Tanged Arrow Head*
Tr. CRD-XIII-(9) . . . . . 1766.
,, XIII-(9) . . . . . 1785.
,, XIIIE-(9) . . . . . 2150.
,, XIE-(12) . . . . . 1740.
,, XIS-(15) . . . . . 2243.
,, XI-(17) . . . . . 1958.

(14) *Pendant*
TR. CRD-(9) . . . . . 1742.
,, -(10) . . . . . 1682.

(15) *Pointed Tool*
TR. CRD-XIII-(9) . . . . . 1729.
,, XI-(13) . . . . . 1604.

(16) *Bangle*
Tr. CRD XIS-(14) . . . . . 2224.
,, XIS-(15) . . . . . 2252.
,, XI-(17) . . . . . 1939.

(17) *Survey Instrument*
Tr. CRD-XI-(15) . . . . . 1830.

(18) *Tong*
Tr. CRD-XI-(18) . . . . . 1901.

(19) *Pinetuing Tool*
Tr. CRD XI-(15) . . . . . 1930.

(20) *Wedge*

Tr. CRD-XIII-(9) . . . . . 1723.
,, - ,, -(9) . . . . . 1852.
,, - ,, -(9) . . . . . 1852A.
,, - ,, -(9) . . . . . 1762.

(21) *Bar Celt*

Tr. CRD-XIII-(9) . . . . . 1733.

(22) *Chisel*

Tr. CRD-XIII-(9) . . . . . 1793.

(23) *Javeline Head*

Tr. CRD-XIII-(10) . . . . . 1815.

(24) *Comb*

Tr. CRD-XI-(15) . . . . . 1841.

(25) *Disc*

Tr. CRDXIII-(9) . . . . . 1715.
,, XIII-(9) . . . . . 1722.

(26) *Hammer*

CRD-XIII-(9) . . . . . 1762.

(27) *Tines Showing Cut Marks*

Tr. CRD-XIII-(9) . . . . . 1782.
,, ,, (9) . . . . . 1768.
,, ,, (9) . . . . . 1883.
,, ,, (9) . . . . . 1788.
,, XIS-(14) . . . . . 2215.
,, XI-(15) . . . . . 1960.
,, XI-(18) . . . . . 1901A.
,, XI- . . . . . 1962.

(28) *Splitting Tool*

Tr. CRD-XIII-(9) . . . . . 1737.
(9) . . . . . 1737A.

(29) *Shoulder Blade used for Ploughing*

Tr. CRD-XIIL-(9) . . . . . not numbered.

(30) *Scraping Tool*

Tr. CRD-XIII-(9) . . . . . 1891.
,, -(9) . . . . . 1851.
,, -(9) . . . . . 1810.
,, XI-(9) . . . . . 1955.
,, XI-(15) . . . . . 1892.

(31) *Soil Digging Tool*

Tr. CRD-XIII-(9) . . . . . 1759.
,, -(9) . . . . . 1855.
,, -(9) . . . . . 1926.
,, -(9) . . . . . 1737.
,, -(9) . . . . . 1689.
,, -(9) . . . . . 1908.

Tr. CRD XIII-(9) Agate bead.
(9) Terracotta ball.
(9) Steatite bead.
(9) Terracotta bird.
(9) Stone piece (hammer)
(9) Stone bead.
(9) Terracotta bird figuring.
(9) Terracotta bead.
(9) Terracotta ball.
(9) Terracotta ball.
(9) Terracotta armlet.
(10) Terracotta bangle.
CRD XI-(12) Stone Hammer.
(12) Quern.
(13) Stone tool of rectangular shape.
(13) Banded agate bead.
(13) Steatite bead.
(13) Steatite bead.

(13) Terracotta bead.
XIE-(14) Terracotta bead
(14) Neolithic celt.
XI-(14) Terracotta bead.
(14) Terracotta bead.
XIE-(14) Jasper bead.
XIE-(14) Stone piece.
XI-(14) Terracotta ball.
XI-(14) Terracotta bead.
XI-(14) Stone piece.
XI-(14) Terracotta ball.
XI-(14) Terracotta ball.
XI-(14) Fabricator stone.
XI-(14) Ball (Terracotta)
XI-(15) Neclithic celt.
XIE-(15) Stone piece.
XIE-(15) Terracotta bird figurine.
CRD XI-(15) Chalcedony bead.
XI-(15) Terracotta ball.
XI-(15) Stone piece.
XI-(15) Stone piece.
XI-(15) Terracotta bird
XI-(16) Neolithic axe-2 numbers
XI-(16) Terracotta bead.
XI-(16) Terracotta ball.
XI-(16) Ball Terracotta.
XI-(16) Bead.
XI-(16) Unfinished bead of Stone.
XI-(17) Terracotta bead
XI-(17) Stone bead.
XI-(17) Ball Terracotta.
XI (17) Bangle piece (Terracotta).
XI-(17) Naga Fig (Terracotta).
XI-(17) Bead unfinished (Stone).
XI-(18) Hammer stone.

Functional Classification of the Artifacts discovered in the Neolithic Horizon at Chirand

S. No. Object	Trench No.	Depth Layer	Size of the Artifacts	Remarks
1. *Chisel (broad ended)*	XIII	6.55 m 9	13.5 cm	slightly broken
2. *Chisel (small)*	XIII	6.45 m 9	7.8 cm	broken
3. ,, ,,	XI	10.25 m 17	5.2 cm	broken
4 ,, ,,	XVI	9.46 m 14	8.7 cm	broken
5 ,, ,,	XIX	8.70 m 15	8.6 cm	broken
6 *Burnisher*	XIII	6.60 m 9	14 3 cm	complete
7. ,,	XIII	5 95 m 9	16 5 cm	,,
8. ,,	XIII	5.95 m 9	11.5 cm	slightly broken

S.No.	Object	Trench No	Depth Layer	Size of the Artifacts	Remarks
9.	*Burnisher*	XIII	5.95 m 9	10.5 cm	—
10.	*Bar-Belt*	XIII	5.95 m 9	13.2 cm	broken
11.	*Hammer*	XIII	6.55 m 9	18.5 cm	partly broken
12.	*Wedge*	XIII	6.25 m 9	10. cm	complete
13.	,,	XIII	6.25 m 9	8.5 cm	—
14.	,,	XIII	6.60 m 9	14. cm	—
15.	*Scraper*	XI	P. yard —	11.5 cm	—
16.	,,	XIII	8.50 m 9	10 cm	—
17.	,,	XIII	P. yard —	12.5 cm	—
18.	,,	XI	6.65 m 9	10.8 cm	—
19.	,,	XI	9.60 m 15	12. cm	—
20.	*Shaft Straightner*	XI	8.15 m 15	12.4 cm	—
21.	,,	XVI	9.10 m 15	8 cm	broken
22	*Puncturing Tool*	XI	8.20 m 15	21 cm	complete
23.	*Javeline*	XIII	6.20 m 9	10.5 cm	complete
24.	*Tong*	XI	10.00 m 18	22.? cm	complete
25.	,,	XI	7.80 m 14	13.8 cm	broken
26.	*Brocer*	XI	9.60 m 17	12.3 cm	—
27.	*Awl*	XI	8.70 m 16	8.7 cm	complete
28.	*Scraper*	XIII	6.60 m 9	7.5 cm	—
29.	,,	XIII	6.15 m 9	8.2 cm	—
30.	,,	XI	9.60 m 15	5.5 cm	—
31.	,,	XI	—	8.5 cm	—
32.	*Needle Big*	XIII	5.90 m 9	16.5 cm	complete
33.	,,	XIII	6.02 m 9	12.7 cm	broken
34.	,,	XI	9.60 m 15	11.5 cm	broken
35.	,,	XIII	5.95 m 9	7.5 cm	broken
36.	,,	XI S	8.05 m —	7 cm	broken
37.	,,	XIX	6.70 m 12	10.8 cm	broken

S No.	Object	Trench No.	Depth Layer	Size of the Artifacts	Remarks
38.	*Needle Big*	XVI	8.20 m 14	8.7 cm	broken
39.	,,	XIX	6.75 m 12	10.6 cm	broken
40.	*File*	XI	8.80 m 16	7.7 cm	complete
41.	,,	XI	7.75 m 14	6.4 cm	complete
42.	*Compass*	XIII	6.23 m 9	7.7 cm	complete
43.	,,	XIII	6.65 m 9	7.4 cm	broken
44.	,,	XIII	6.25 m 9	6.9 cm	broken
45.	*Arrow head*	XIII	6.60 m 9	9.3 cm	complete
46.	,,	XI E	6.45 m 12	6.8 cm	—
47.	,,	XI S	7.70 m 14	4.5 cm	—
48.	,,	XI	8.70 m 15	6.2 cm	—
49.	,,	XIX	6.22 m 12	6.5 cm	broken
50.	,,	XIX	6.22 m 12	6 cm	—
51.	,,	XIX	6.30 m 12	2.2 cm	broken
52.	*Tanged Arrow Head*	XIII	6.25 m 9	8.2 cm	broken
53.	,,	XIII	5.77 m 9	9 cm	broken
54.	,,	XIII	5.05 m 9	7.7 cm	broken
54.	,,	XIII E	5.25 m 9	7.4 cm	—
55.	,,	XI	8.70 m 15	4.3 cm	—
56.	,,	XI E	6.60 m 12	4 cm	—
57.	,,	XIII	5.95 m 9	3.2 cm	—
58.	,,	XIII E	5.35 m 9	3.7 cm	—
59.	,,	XI S	9.60 m 17	7.1 cm	—
60.	*Cutting Tool*	XI	10.65 m 17	7 cm	—
61.	,,	XIII E	5.40 m 9	9.5 cm	—
62.	,,	XIX	7.30 m 13	11.2 cm	—
63.	,,	XVI	8.30 m 15	6.4 cm	—
64.	*Drill*	XI	8.80 m 16	6.8 cm	—
65	,,	XI	8.50 m 15	7.1 cm	—

S.No.	Object	Trench No.	Depth Layer	Size of the Artifacts	Remarks
66.	*Drill*	XI	7.35 m 13	6.8 cm	—
67.	,,	XI	7.37 m 13	6.5 cm	—
68.	,,	XI	7.35 m 13	6.4 cm	—
69.	,,	XI	7.20 m 14	6.2 cm	—
70.	,,	XIII	6.60 m 9	5.4 cm	—
71.	,,	XI	7.20 m 14	5.7 cm	—
72.	,,	XIS	7.80 m 14	5.5 cm	—
73.	,,	XIS	7 05 m 13	5.4 cm	—
74.	,,	XI	9.60 m 17	5.5 cm	—
75.	,,	XI	6.55 m 12	5.2 cm	—
76.	,,	XI	9.10 m 16	5.3 cm	—
77.	,,	XI	9.35 m 17	5.1 cm	—
78.	,,	XIS	8.00 m 14	4.5 cm	—
79.	,,	XI	9.60 m 17	4.4 cm	—
80.	,,	XIX	8.15 m 14	6.3 cm	—
81.	,,	XVI	9.10 m 15	5.6 cm	—
82.	,,	XVI	8.32 m 14	6.3 cm	—
83.	*Drill*	XVI	8.42 m 14	5.1 cm	—
84.	,,	XVI	7.90 m 14	4.1 cm	—
85.	,,	XVI	7.65 m 13	5.3 cm	—
86.	,,	XIX	7.50 m 13	3.2 cm	—
87.	*Spear Point*	XI	7.35 m 13	8.6 cm	—
88.	,,	XIII	5.90 m 9	7.9 cm	—
89.	,,	XI	8.70 m 16	6.7 cm	—
90.	*Dish*	XIII	6.00 m 9	4.2. cm Dia.	
91.	,,	XIII	5 80 m 9	3.4. cm Dia.	
92.	,,	XIII	5.95 m 9	2.3. cm Dia.	
93.	,,	XIX	6.65 m 12	3.00. cm Dia.	
94	*Bangle*	XIS	7.60 m 14	5.7 cm Dia.	
95.	,,	XI	8.50 m 17	6.3 cm Dia.	
96.	*Painted Pencil like Tool*	XIII	5.95 m 9	16.2 cm	

S.No.	Object	Trench No.	Depth	Layer	Size of the Artifacts	Remarks
97.	,,	XI	7.50 m	13	11.8 cm	
98.	,,	XIX	6.22 m	12	9.7 cm	
99.	*Pendant*	XIII	5.75 m	10	2.5 cm	Dia.
100.	,,	XVI	7.27 m	13	3.4 cm	
101.	,,	XVI	8.42 m	14	2.7 cm	
102.	,,	XI	—		2.9 cm	
103.	*Surveying Instrument*	XI	8.00 m	15	2.3 cm	
104.	*Comb*	XI	7.75 m	15	4.6 cm	
105.	*Socketed Handle*	XIX	6.65 m	12	5 cm	
106.	*Socket*	XIX	6.55 m	12	7.1 cm	
107.	*Adze*	XVI	8.45 m	14	14.5 cm	
108	*Antler Piece showing cut marks*	XIII	6.25 m	9	14.8 cm	
109.	,,	XI	9.60 m	15	13 cm	
110.	,,	XIII	6.60 m	9	11.2 cm	
111.	,,	XIII	6.60 m	9	10.3 cm	
112.	,,	XIII	6.25 m	9	11.6 cm	
113.	,,	XIII	5.53 m	—	10 cm	
114.	,,	XIII	6 50 m	9	9.2 cm	
115.	,,	XIII	6.90 m	9	8 cm	
116.	,,	XIII	6.20 m	9	6.6 cm	
117.	,,	XIS	7.50 m	9	5.6 cm	
118.	,,	XVI	7.27 m	13	20 cm	
119.	,,	XVI	9.06 m	14	21 cm	
120.	,,	XVI	8.04 m	14	12 cm	
121.	,,	XIX	6.30 m	12	10 cm	
122.	,,	XVI	8.55 m	14	11.2 cm	
123.	,,	XIX	6.46 m	12	16.4 cm	
124.	,,	XVI	8.75 m	15	6 3 cm	

S.No.	Object	Trench No.	Depth	Layer	Size of the Artifacts	Remarks
125.	*Antler piece showing cut mark*	XVI	8.32 m	14	9.6 cm	
126.	,,	XVI	8.35 m	14	7.2 cm	
127.	,,	XVI	8.32 m	14	9 cm	
128.	,,	XIX	6.32 m	12	5.8 cm	
129.	,,	XVI	8.00 m	13	23.5 cm	
130.	,,	XIII	—	—	21 cm	
131.	,,	XI	10.00 m	18	18.5 cm	
132.	,,	XIII	6.90 m	9	18 5 cm	
133.	,,	XIII	6.00 m	9	8.5 cm	

Total Bone Tools Discovered so far 133 + 17 = 150.
(17 tools discovered last year are kept in godown. They have not been verified).

Materials :

(1) Antler, other bones, tortoise shell and ivory.

Associated Antiquities :

Terracotta animal figurine (Bird, Snake, Bull, parrot).
Terracotta human fig.

Spinning Disc :

Terracotta bead (Painted and unpainted variety).
Brooch.
Microlithic tools.
Fish scales and refuse bones of animals.
Bird bones.
Carbonised paddy husk, wheat and mung.
Snails and mollusca.
Haematite piece.
Chunks of mud plaster.
Terracotta balls.

Stone Objects :

Four stone axes, Seven squarish stone, Five balls,
Five broken pieces of querns.
Techniques—cutting, scraping and rubbing.

6

The Mahabharata and Indian Archaeology

The Mahabharata, the Great Epic is a store-house of Indian historical and cultural traditions. It is claimed that it is encyclopaedic and what is not contained in it is not worth knowing or remembering. The nature of the work as it has finally come down to us is that of having moral and religious overtones, a diadactic work, teaching the ultimate success of right over wrong, justice over injustice, of good over evil It is thus a work of permanent significance with lessons for the present and future. It is because of this fundamental obsession that round some possibly historical narratives, myths, exaggerations and even palpably chronological absurdities have been woven round in such a manner that a few strands of truth have been enveloped by deep layers of mist. Then the work has definitely passed through at least three recognised stages—from an epic of about 8,000 or more verses to 24,000 and finally to 1,00,000 verses. The style of the composition and cleverness of the later composers and editors is such that it is well-nigh impossible to distinguish the three stages of the growth of the Epic, and naturally a critical student finds himself completely at bay in isolating kernels of historical narratives in any reasonable chronological sequence. While there is no doubt that the present Mahabharata does contain allusions to events and cultural traits of periods anterior to the event of the alleged Great War itself, it also abounds in references to events long after, such as the references to the Yavanas, the Hunas, are just stray examples. It, is thus,

obvious that additions to the work went on atleast down to the 4th century A.D. before which the Hunas could not have been referred to. This is the main difficulty in trying to read political history from the Mahabharata.

It has to be conceded that our knowledge of other ancient histories and civilisations even of the Middle Ages in Europe is even to-day derived quite extensively from traditional literature. But the difference is that while in such literary traditions—a compound of myths, exaggerations and reality—bare historical truths could be separated from fiction, in the Mahabharata there is a complete *mixture* of facts and fictions, hotch-potch of chronologies and sequences that it is a herculean task to extract the nector of truth from the solution. This has made many historians throw up their hands in despair. The same problem was faced with regard to the Puranas, many scholars, including D.C Sircar have little faith in the Puranas as a sourse of history. The problem becomes further complicated and the issue hotly drawn when many indologists storngly vouchsafe for the historical veracity of every word or event in the Mahabharata or the Puranas. While there is no scope at all to take every word or incident described in the Mahabharata as historically sacroscent—this is obvious from the nature and purpose of the work itself—there is hardly any vaild reason to relegate the entire traditional lore into limbo of fiction or unreality. This is only evading the challenge, is a counsel of despair. Pargiter heroically, in those days of distrust of the Puranic lore and of complete faith in the Vedic literature, attempted a reasonable reconstruction of dynastic history down to the historical period and it is to be remembered that inspite of all known deficiencies the Puranic literature, even to-day with all the advance in the fields of epigraphy, numismatic and field archaeology, for the history of the period from 600 B.C. to 320 A.D , supplies a workable base, and, therefore, it is reasonable to assume that for the period prior to that also they must contain some truths. It is true that with distance

in time and subsequent additons, interpolations and even ommissions, the base that they provide for Pre-Bimbisarian period is more shaky, but that the entire account is to be brusquely left out of consideration is like throwing the baby with the tub water.

This is not the place to argue about the value of traditions as a source of history. One does not know where our understanding of the classical Greece, Rome, Middle Ages, and even of Medieval Britain, or of the Vikings would have been without the traditions. The anthrcpolcgists knew the value of folklore and traditions in reconstructing social and cultural models of the past. I may seek indulgence for the following long quotation. "It is true that the farther the past the more likelihood of error and falsification in tradition; but it might be suggested that not a little of its falsehood is collected before it becomes tradition. and the idea that contemporaneity proves truth is hardly borne out by the printed propaganda of our cwn day. But modern historical research has often shown a sound basis for tradition in the early classical word, or Dark Age Britain; so Indian tradition deserves atleast to be allowed to present its *prima facie* case for consideration . by ordinary probabilities of human nature the statements are quite possible, they are consistent with one another and what external evidence there is; therefore there is reason, even if weak, for believing the tradition, and considering its implications. Weak reason is not, no reason, and a conglomoeration of weak reasons may add up to a probability just as a sum of fractions may make unity".[1]

Here we are discussing the historicity of the Mahabharata War. Do we find any corroboration of the events or the personalities connected with it in other literature. Seriously, speaking it can be nobody's case that every event alleged to have happened during the Great War as related in the Epic is gospel truth—the nature of the Mahabharata Epic and of the Puranas is unlike the Vedic litera-

1. R. Morton Smith, Dates and Dynasties in Earliest India, pp. 1-2.

ture which remained unsullied throughout. It is also to be clearly remembered that the original Mahabharata or Jaya Kavya was compiled not long after the event but after the compilation of the Vedas. Therefore, there is no wonder that the war and its participating heroes are not mentioned in it. But it is significant to note that the war could not have happened long after the compilation of the Vedic literature as Devapi and Santanu,[2] Vicitravirya[3] and Dhritarashtra, and Krshna[4] are mentioned. As the Vedic literature is by no one taken to be fictitious, these personages were historical and when they are found closely related to the heroes in the Mahabharata war, they or their close associates do not at once become fictitious personages. The Asvalayana Grihyasutra refers to the Bharata and the Mahabharata as the Epic and Panini also knows of the Bharata and the Mahabharata, and names Vasudeva, Arjuna and Yudhishthira. Thus, it can be asserted that the Mahabharata and its main heroes were well-known to the Vedic and Brahmanic literature and to Panini Because of the nature of their works no events of the Great War are mentioned, but this does not prove them to be non-event. The tradition was well-known by as early as 5th century B C , or even earlier as the Asvalayana Grihyasutra may be placed in the 6th-5th century B.C. The events of the Great war can be well expected to be referred to in the historical narrative like the Puranic literature, and we find the corroboration of the kernel of the story of the Mahabharata in the Puranas. Then the earliest of the Puranas refers to the Mahabharata war and some of its heroes and events Abhimanyu son of Arjuna slew Brhadbala in the Bharata[5] war. Arjuna the third Pandava as a Playmate of Krshna, burner of the Khandava forest killer of Jayadratha in the Bharata war is referred to in the Bhagavata, Matsya, Vayu, and Vishnu Puranas. Karna as evil advisor of Durychhana is referred to the Vishnu

2. V.S. Agarwal, India as Known to Panini. p. 340.
3. Kathaka Samhita, X 6.
4. Chandyogya Upanishad, III 17.6.
5. Vishnu, pp. IV. 4. 112.

Purana[6] The Bhagavata, Matsya, Vayu and Vishnu refer to Duryadhana and events of his life. The story of Jarasandha is also well-known to the Puranas. Bharata as an akhyayana by Vyasa is referred to in the Bhagavata Purana[7], and the *Bharata Yuddha* (Mahabharata War) is itself mentioned in the Puranas.[8] The Great Epic as the Mahabharata itself is mentioned as such in the Vishnu and the Vayu Puranas.[9] Thus, there is no doubt that the Puranas in the main corroborate the events of the Great War and also the prior existence of the Great Epic. If the Puranas can be seriously studied for the reconstruction of the Post-Great War genealogy, there is no reason to reject its references to the Great War and its heroes outright unless proved to be impossible events. The burden of proof lies on "Doubting Thomases".

There is great controversy over the date of the Mahahbarata war—while one cannot be as definitive as B.B. Lal that the war took place in 836 B.C., or as Smith that it is to be dated in 975 B C. I have no doubt that taking everything together, the war must be placed between Circa, 1200 and 1000 B.C; the average of regnal periods cannot be too exact. It appears that on the basis of literary evidence the main story of the Mahabharata war can be regarded as a very probable event. Even to-day we have to base much of our historical knowledge of period from the Buddha on wards on literary accounts without which our story or rather history would be very bald or incomplete.

Some have raised the objection that the Mahabharata as described could not have happened. One cannot take too seriously the objection of Dr. Sircar that 18 *akshauhinis* could not have been collected in the Kurukshetra There is no unanimity about the

6. Vishnu P., IV. 14. 36.
7. Bhag. P., 1.4.25, 29; 5.3.
8. Br. P., III, 74. 109; Matsya P., 12.55; 103.2.2.; 271.19; Va. P., 99.296. Vishnu P., IV. 4, 112.
9. Vishnu P., III. 4.5.; V. I. 18,45.

strength of an *akshauhini*, and then there can be no sacrosecence about this figure-element of gross exaggeration in any epic is quite normal. The other objection is that in the Mahabharata war kings of the far South and East appear to have joined one side or the other but even in the 6th century B C, the Buddhist and Jain sources do not mention any kigdom of the South except Asmaka (in Madhya Pradesh), and no kingdom East of Anga is referred to. It is further argued that while we have small kingdoms (Mahajanapadas) in the time the Buddha, great kings of large kingdoms as envisaged in the Mahabharata war could hardly exist. As against this objection, it may be pointed out that in the Vedic literature itself the reference has been made to great king–Cakravartins who performed Asvamedha and Vajapeya sacrifices after carrying their victorious arms into others territories. Vedic literature refers to some sort of imperial domains, imperial suzerains lording over smaller feudatories. The word 'Adhiraja' occurs fairly often throughout the early literature, denoting overlord among kings or princes.[10] Samraj in the Rgveda and later means superior rule, as expressing greater degree of power than 'king' (rajan).[11] In the Satapatha Brahmana the Samraj is asserted to be a higher authority than a king because of the performance of Vajapeya as against Rajasuya.[12] Janka is a Samrat[13] We know of amalgamation of more than one tribe into one–such as of Kuru and Pancalas. Thus, in the time of the Great War there could have been great kings like Jarasandha who lorded over other kings–of course some element of exaggeration in the description of the number of subjugated kings or the pomp and splendour of the overlord has to be conceded. There is no reason to doubt about kings of different kingdoms siding with one or the

10. Vedic Index I, p. 19; R.V.X. 128.9; AV. Vi. 98, I; SB.V. 4.3.2, Kathaka Samhita, IV. 12.3.
11. RV. III. 55 7; 56,5; IV. 21.I; VI. 27,8; VIII. 19,32, Vajasneyi Samhita, V. 32; XIII. 35.
12. SB.V, I.I.13; XII. 8.3.4.
13. Ibid, XI. 3.2.16.

other side in this fraticidal war. They could have been near or distant blood relations or diplomatic relations existed between them. If Bimbisara could have diplomatic relations with the king of Gandhara, the kings of north, west and east could join the war, because there is no reason to doubt that road transport was not available then as in the 6th century B.C. Our knowledge of the history of South India is very incomplete. The Buddhist, the Jain and even Brahmnaic literature are north-centred, and non-mention of South Indian kingdoms does not mean certainly their non-existence. In view of finding of iron quite early as far south as Mysore does suggest corresponding political development as well. And there was not much revolutionary development in technology since 1000 B.C. down to the time of Samudragupta when with his Chariots, cavalary and foot soldiers he penetrated into south as far as Kanchi. It is not impossible that the Pandava heroes in their *digvijaya* penetrated into forested tracts of Assam and south It is to be noted that there is no corroboration of the epigraphic evidence of Samndra Gupta's campaign in the south, but it is not doubted by most of the scholars. Suramasa (Surma valley in Assam) is referred to by Panini.[14] It is not mentioned as a mahajanapada in the Buddhist and Jaina literature, but its existence as a Janapada was known to Panini. Where is the impossibility of Arjuna going there? Some have observed that the weapons mentioned in the Mahabharata war could hardly be used in those early days. It is to be observed in this connection that many supernatural weapons are mentioned, and no historical proof or credibility can be given to these, and they are certainly sheer exaggerations and figments of imaginations unless we think with some astral scientists to-day that there could be trans-terristial messages from far off planets in space to earth, which are still being received but cannot be decided. It is to be noted by the way that in our

14. Agarwal, op.cit., pp., 34, 37, 60.

ancient literature only specially trained persons after going through lots of austerities and meditation with devotion could establish contact with the sentient beings and receive weapons as boons. But we cannot at present discuss their veracity. But it is known that the main weapons of war were bows and arrows and use of chariots. Most of the Epic heroes ride in chariots in the battle field, and are wielders of bows and arrows. Chariots are known to the earliest stem of the Vedic literature It is significant that though cavalry is just mentioned casually, no important hero of the war is seen on horseback and there is no doubt that the war took place at a time when cavalry was not much in use and royalty did not use it as a mount. We find that the Buddha was riding horse, but cavalry is very important wing of the Mauryan army. On this basis alone the Mahabharata war must be placed long before the Buddha. It is true that stone-balls, and other stone weapons, maces are used. But this would place the Mahabharata war in the stone ages. Archaeologists are aware that stone arrow-heads, stone-balls, mace-heads are found in abundance with even bone-arrow heads in historical archaeological sites.

I have personal knowledge of such finds at Champa belonging to 2nd century B C. It is also to be noted that Kautilya refers to many stone weapons also. The Magadhan army used Mahasilakantaga and Rathamusala in war against Vaisali. It is true that we have references to Cannibalism—drinking human blood and use of trees as weapons by Ghatetkaca and Hidimba Rakshasas and so on. But this would not disturb the main story. The Mahabharata being encyclopaedic in nature does refer to primitive societies and their cultures together with more developed cultures of the age of the Mahabharata war, and there are even interpolations at places in later times when the Epic was still in the process of growth. The culture represented in the Epic does not necessarily represent the culture of the time of the Great War alone. It is also to be noted in any particular age cultures of earlier times continue in some

way. Even in much later times together with developed cultural societies we have primitive societies existing side by side and that is true even today.

In my view the early P.G. Ware strata should not be far from the Mahabharata times and the Great War. There is a lot of controversy as to when iron was in use. The Vedic literature refers to *'ayas'*[15] and to many it is iron, but more probably *ayas* is bronze which was the main metal in use in the Harappan Culture. Together with *ayas*, another metal *syama* is mentioned, with *loh*[16] etc. and *ayas*. Syama is most probably iron so in the later Vedic period iron was known. Iron was found in Hallur Cir. 1100 B.C and in Noh earlier than 1000 B C i e., about the time when the Mahabharata War is supposed to have taken place. Sophisticated weapons and war chariots though not found in the Harappan sites are mentioned in the Vedic literature—ayasapura and purcharishnu—fortified castles and breaker of forts. These must have been associated with metal copper or bronze, if not iron. Authors of the Vedic Index conjecture that the Rgvedic arrow with 'ayas' arrowheads (ayomukham) could be iron tipped arrows. Copper, however, is conceivable and bronze quite likely,[17] we have not yet identified the Vedic strata in Indian excavated sites. But the Vedic period is not taken to be non-existent, but whatever archaeologically known culture—Ochre-Ware or Black-and Red Ware—is to be considered to represent the Vedic period, we have not found any archaeological evidence which could represent the Vedic material culture or its weaponry and transport. No chariots or wheels even have been picked up. Hence, the limitation of Indian archaeology is quite obvious. One may doubt the Puranas, the Epics and rest of the traditional literature, but no one has seriously doubted the veracity of the Vedic literature in general. The Asvamedha and Vajapeya per-

15. RV. I. 57.3.; Vedic Index I, p. 31.
16. Vaj. Sem. XVIII 13.
17. Vedic Index I. p. 32.

former kings—the Sabha and the Samiti the Ratnins and the Rshis mentioned by name must have existed though their chronological sequence may be not as accurate, because the Vedic priests were not historians or chroniclers even But archaeology has not as yet found anything to corroborate these things. Would we be justified in therefore rejecting completely the Vedic literature—its religion, its the social and material life, the sacrifices and priests and kings mentioned in the vast literature.

The Mahabharata heroes must have used iron weapons together with bows and arrows, stone balls etc. In their arrow and in their chariots and horse accouterments, iron must have been used. It has been suggested that in all Epic sites so far excavated In the Early P.G.W. strats iron is very meagre. This is true but one should keep in mind the fact that at historical sites as well when iron was certainly abundently used as weapons or equipment in the proved iron-age cultural strata—iron objects are very few. From Sisupalgarh no iron object was obtained from the levels belonging to period-I (C. 300-200 B.C.); from Navda Toli Period IV (Early historic period) only a few iron tanged or socketed arrowheads were found. From Kausambi Period-III (605-45 B.C.) only a number of arrowheads—tanged or socketed or barbed were found. Some spears or javelins were also found. Nails and adzes are also to be noted. From Vaisali period I A & B (500-300 B C) one iron knife and a lance head and blades were recovered. From Hastinapur period III (600 300 B.C.) only arrowheads and nails were found. This only shows that heavy iron objects are rarely found in the excavated trenches. Reason mostly is, that iron is easily corroded underneath the ground. It is quite obvious that the rarity of iron objects, particularly of weapons, would not prove the barrenness of iron-armoury in the Nanda and the Maurya armouries. Literary evidence is profuse about the rich Mauryan armoury atleast.

Thus, it is clear that archaeology has not disproved the story of the Mahabharata and the culture of time. Vertical excavations

have given us a mere cultural sequence and the Atranjikhera and Hastinapur limited excavations actually tend to corroborate the culture of the time contemporary with the Mahabharata War. Much of the grandeur of the palaces of the Pandavas and the Kauravas at Indraprastha and Hastinapur, with exaggerations and embellishments, certainly were probably of wooden-frame work. Candragupta's imperial palace was largely of wood but was so well done and embilished with paintings, carvings and gold and silver embroidery that it could be compared favourably in grandeur with Ecbatana and Persipol s. Excavations at Kumhrar have not revealed these but their existence is not denied Yudhishthira's palace could have been also such but has perished. It is also to be remembered that it is only since the eve of independence that scholars have turned their attention to Epic sites. Vertical excavations of very limited area might have made them to miss some of the more habitated and richer areas of the settlement. If Marshall had stopped with vertical diggings at Mohanjodaro with the labcurer's quarters being touched by his spade, and he had stopped, what a misearable idea of the Indus Valley Civilization, we would have had even if a chronclogical sequence of the culture was revealed. Therefore what is needed is extensive horizontal excavations at the potential Epic sites at the PGW and lower strata in the Gangetic Valley So far our archeologists have done fine, but it is rather disquieting that so soon they appear to be losing hope and hurrying with negative conclusions rejecting outright hoary traditional heritage which have sustained the people for many many hundreds of years. More and more digging with faith and devotion is the cry of the hour. Then we must know what we expect to find in excavations of the Epic cities We cannot find evidence of monumental architecture because pro-Mauryan and certainly pre-Buddhist monuments—houses, palaces, forts or temples were mostly of wood, and all this must have perished by now. We would not find much of armoury as remains of chariots, iron weapons and equipments must have been too much rusted

or corroded now. We could only expect ground plan of mud or mud-brick, mostly in horizontal excavations. We should also bear in mind the changes in the courses of the rivers and occurrence of floods at times which might have ruined completely or destroyed even the existence of the built up cities, mainly on river-banks. The Son which flows 12 km west of Patna now was flowing in Pataliputra in the time of Patanjali. Our archaeologists should therefore bear in mind these limitations—natural and man-made, and lack of adequate financial backing and then tread on the delicate ground where 'angels fear to tread'. There is no reason to lose hope. Schlimann's optimism should be infectious, and the Bible is being vindicated in Palestine and Mesopotamia. What is needed is faith, devotion and human and financial resources.

Archaeology is a positive science. What is found by it is real, but what has not been found, does not necessarily non-exist. Future may belie our present presumption and so what has not been found by archaeology cannot be taken to be non-existent. Much of our history to-day is non-archaeological. Archaeology is adding immense dimensions to our knowledge. Hats off to Archaeology but a word of caution as well. Even to-day Western archaeologists are sincerely and seriously searching remains of the Noha's Ark. They will not rest content unless completely convinced about its existence or non-existence. Has our archaeology reached that finality about the Mahabharata War and its times? Certainly not. Archaeology has not proved the Mahabharata War as yet. But it is too early for archaeologists to conclude that it is *unreal*. Traditions are not to be dismissed so easily. I cannot but end with Pargiter's words—"All human testimony is liable to error and tradition is human testimony concerning the long past, hence, it is not to be discarded simply because it contains discrepencies. Ancient Indian historical traditions must be examined and weighed with the aid of all information available and of *experience* and *commenserse*".[18] We should not be deterred by the confusion in

18. F. E. Pargiter—Ancient Indian Historical Tradition-1962 p.

chronology and sequence in some of the traditional stories related in the Mahabharata and the Puranas. There is confusion in the story of Saul, King of Isreal and Saul (Paul) the religious teacher in the Old Testament, "yet would any one say—the confusion of the chronology in the tales of Saul is a good example of the worthlessness of the supposed historical books of the Old Testament.[19] Pargiter observed—"The position now is this, there is a storng presumption in favour of tradition; if any one contests tradition, the burden lies on him to show that wrong, and till he does that, tradition holds good".[20] In my opinion the position as stated by Pargiter in 1922 is not far away from it to-day. The Archaeologist friends have not yet shown conclusively that the tradition is wrong. They can say, as yet they have not proved it archaeologically. But this is not enough to show that the Mahabharata War did not, rather could not happen at all.

19. Ibid. p. 11.
20. Ibid. p. 6.

7

Excavations at Champa

Champa, the traditional capital of the Anga Janapada, was one of the most flourishing cities in ancient India. Though the Rgveda does not mention it, the Atharva Veda mentions Anga and Magadha together in contemptuous terms. There appears to be some basis in the belief that the Anga and Magadha peoples were not orthodox Vedic Aryans. The Ramayana, the Mahabharata and the Puranas refer to a large number of kings of Anga and also mention the capital city Champa in eulogistic terms. According to the Ramayana the region came to be known as Anga because of Ananga or Kamadeva losing his body here in view of Siva's anger. But the Mahabharata names Anga, as the son of Bali after whom the country came to be known as Anga. The story is that Bali had no son from his queen Sudeshna, on whom by niyoga the sage Dirghatamas caused to be born five sons, Anga, Vanga, Pundra, Suhma, Kalinga and each of these became ruler of a kingdom in East India. Their kingdoms may be placed in East Bihar (Bhagalpur Monghyr) and West, South and North Bengal and Orissa). Of these kingdoms of the eastern region, Anga rose to the greatest fame. Lomapada was an important king of Anga in the Ramayana age, and Karna was given the kingdom of Anga by Duryodhana, according to the Mahabharata However, no systematic account of the history of Anga has yet been woven out of tangled webs of

the Puranic and Epic references.[1] When we come to the age of the Buddha we find Anga one of the sixteen Mahajanapadas. For some time the king of Anga even held sway over Magadha, as Rajagrha is referred to as a city of Anga. Anga had close relations with Kasi and Magadha, and Brahmadatta king of Anga had defeated Bhattiya who had overthrown Ripunjaya the ash of the Barhadrathas of Magadha. However, the independence of Anga was stilled by the first aggressive push of Magadha under Bimbisara. Annexation of Anga by Magadha marked the first big step in the march of Magadha to the position of the paramount power in India. The process that was started with the conquest of Anga in the middle of the 6th century B.C., reached its culmination with the conquest of Kalinga by Asoka in the 3rd century B.C., when Magadha with Pataliputra as the capital realised the dream of political unification of almost whole of India up to the Hindukush in the northwest. The independent political history of Anga thus ends with its annexation to the empire of Magadha. Though in later inscriptions and literature mention is sometimes made of Anga, it is just an echo of its earlier tradition and for all practical purposes Anga remained a part of the kingdom of Magadha.

Anga and Champa are closely related. Champa was the capital of Anga. According to traditions, Campa was founded by king Champa, grandson of Lomapada. But a more probable interpretation appears to be that it was so named after the abundance of the strong scented Champaka flowers. Malini appears to be another name of the capital city. From the Buddhist sources we learn that Champa was a very flourshing city renowned for its traders, merchants and craftsmen. Reference is made to guilds of perfumers, garland makers, carpenters, sugar-candy sellers, goldsmiths, jewellers, leather-tanners, spice merchants, weavers and washer-

1. Recently Dr. Y. K. Mishra of the Magdh University and my ex-student has published a book on the history of Anga.

men etc. The resourceful and ambitious traders from Champa made full use of the river navigation and sailed down the Ganga to the lands of south-east Asia, and gave its name to lands visited and settled by them. A part of modern Indo-China was called ancient Champa. The city was also important as a religious centre. Yaksha shrines including that of Purnabhada abounded here. The Buddha visited the city many times and stayed here. It is here that he ordered the permission of using slippers (foot-wears) for the monks. The Mahagovinda-Suttaka refers to the building of the fortified city of Champa and numerous mahasalas or colleges in Champa. Thus, it was an educational centre also. The Jainas, regard Champa as a very holy city because Tirthankara Vasupujya was born here and Mahavira spent three rainy seasons here. Mankhali Goshala, the contemporary of the Buddha and Mahavira and founder of the Ajivika sect often visited Champa. Thus, Champa was a very ancient city with great political importance and brisk religious and economic activities.

Now the question is about the exact location of the ancient city of Champa. The Puranic, Epic, the Buddhist and the Jain accounts agree that Champa was a city in Eastern India on the south bank of the Ganga That it was closest to the eastern frontier of Magadha is in no doubt, and the view expressed by N L Dey that Champa is to be identified with Champanagar on the Damuda in the district of Burdwan is certainly wrong. There is a Chamapnagar in the district of Purnea, and Karnagarh in Sultanganj in Bhagalpur district is also a competitor for the identification. I had visited the site of Karnagarh which is certainly an ancient site, and remains of the Gupta period and later have been found there. But my hunch is that the site of ancient Champa is to be located near the village of Champa quite close to the T.N B. College campus and Nathnagar Railway station in Bhagalpur. Hsuan Tsang who visited India in the first half of the 7th century A.D. stated that Champa was 140 or 150 li to the west of a hill crowned with a temple.

This hill has been rightly identified by Cunningham with Patharghata near Colgong. On the top of this rocky mound are remains of a brick structure. The distance from Patharghata to Champa village in Bhagalpur is 24 miles and thus remarkably agrees with the estimate of distance given by Hsuan Tsang. According to ancient sources, the ancient city of Champa was situated on the confluence of the Ganga and the Malini; sometimes it is said to be on the confluence of the Ganga and the Chandan rivers or on the confluence of the Ganga and Champa. It appears therefore very likely that the Chandan or Malini or the Champa meant the same river or were tributaries of one or the other.

It is important to note that there is a river Chandan which joins the Ganga near Champanagar in the vicinity of Nathnagar. There is also a Champa Nala flowing from west to east and this nala is fed by different channels of the river Chandan which originates near Deoghar and flows into different channels before joining the Ganga. One of the channels of this river Chandan joins the Ganga near Nathnagar to the west of Bhagalpur. The Behula Ghat the celebrated ghat from which sati Bihula sailed with her dead husband in search of blessing from the goddess Mansa for her husband Nakhandar son of the great Caravan leader Chand Saudagar of Champa is situated at the junction of the Ganga and the Chandan. Annual fare commemorating Bihula is still held in Champanagar and a temple is built here. Taking into consideration all the relevant literary sources and the old and current traditions, it is a reasonable conclusion that the ancient city of Champa is to be looked for in this area—Champanagar in Bhagalpur. It is Interesting that the name Champanagar or Champapuri has stuck to this locality till to-day.

The huge mound at Champa is about 3 km. west of Bhagalpur. Surrounding the mound are remains of a deep moat. On the mound were discovered pieces of the North-Black polished ware

and also ancient stone beads. There were remains of layers of large sized bricks (pre-Gupta) sticking in some parts of the rampart walls. Thus, it was obvious that here we had an ancient fortified city whose antiquities dated to 3rd century B.C. or even much earlier.

The Department of Ancient Indian History and Archaeology began excavation in Champa in 1970, and the work is still continuing. Due to paucity of funds the excavations have been limited both in area and in length of excavation periods. However, even under these handicaps, the results have been, rather encouraging. We took a cross section on the rampart wall which rises to about 14 metres above the surface which is not more than 175 feet above the sea level. The excavations reveal that the rampart was made of rammed earth, and later in late NBP phase sometime in the early 2nd century B.C, it was rivetted with burnt bricks. Remains of a watch-tower and an arsenal of stone balls were noticed. The stone balls in scores were collected at a place in the gully leading down to probably one of the gateways. This may suggest of some enemy attacking the rampart and defend planning to hurl stones may be in slings or just as missiles at the besieging enemy. Unfortunately, sub-soil water begin to gush forth, and so that foundations and earlier story of the rampart-construction could not be traced. However, after use of water-pump for some days, below the NBP strata stray black-and red ware sherds were picked up, and it is quite likely that it may suggest that the earlier settlement was of black-and-red ware using people, and the fortifications must have been begun after this settlement was superseded by the NBP culture-phase. The significance of this is that here for the first time in South Bihar we can trace the beginning of a fortified complex—a city—in the earlier phase of the NBP culture. Extensive excavations of the rampart-area is bound to add significantly to our knowledge of urbanisation in the early historical period, or even earlier.

Trenches were also taken in a habitated area on the level surface. Here also we went down to 9 61 metre, and were finding N.B P. and other associated antiquities to be described later Below this depth evidence of continuing settlement was there, but no stratified layers could be marked because of the sub-soil water coming up NBP must have continued still further down, and what was below the NBP strata could be guessed, but we do find a few Black-and-red ware sherds in the lowest NBP strata. Most of the pottery and the antiquities have been recovered from this area.

Further excavations in one of the trenches in the CMP-I area have revealed a complete sequence of culture. Below the lowest NBP strata was a Chalcolithic black-and-red ware culture. NBP is completely absent. Some of the potteries in black-and-red are quite akin to the chalcolithic Sonpur ware. This was the earliest settlement as it rested on compact yellowish soil above a gangat floor. The story was repeated in CMP-III, and here the settlement appears to have been abandoned some time in Late NBP period due to heavy cutting by the river, and after a lapse of many centuries settlement in Muslim period with green glazed pottery appeared. Thus, the story of Champa as at Sonpur begins with the Chalcolithic period with crude balck and-red ware as its characteristic pottery.

The ceramic industry of Champa was very advanced and varied. Here I propose to deal mostly with the culture associated with NBP—we may christen it as 'NBP cultures' as chronology of *NBP* is not yet firmly settled. In view of the fact that in Bihar we find the largest number, variety, and quality of the *NBP* often asscc'ated with Black-and-Red ware as in Chirand and Sonpur, the hunch that this deluxe ware originated in Bihar should not be far from truth The NBP deposit depth at Champa comes to 3 46. M and it must have continued further deep as we could not go beyond

8.61m. from the surface. We have divided the NBP period in three phases —(1) Early Phase—beyond the 19th layer and under 9.61m. from surface—not traced being under sub-soil water, (2) Middle phase from 19th to 15th layers, thickness of deposite 1 8M, (3) Late phase, 14-10 layers, thickness of deposit 2.54m.

Phase 2 (Middle NBP) yielded NBP, Black-and Red ware, Grey ware, Black-slipped ware and Red ware. The break-up of the vase-types in different wares is as follows :

	NBP	*Black-and-Red Ware*	*Grey*	*Black slipped*	*Red*
Dish	64	—	7	9	13
Bowl	12	1	7	5	2
Lipped Bowl	1	—	—	1	1
Basin	X	1	X	X	10
Miniature Vase	1		1	1	
miniature bowl	—	—	—	—	1
Vase	—	4	—	—	70
Handi	—	—	—	1	1
					Miniature pot—2
					Tiny pot with Sunga perforation—1

Painted NBP sherds have also been found from the lowest excavated layer 19.

Late NBP Phase
Phase-3.

	NBP	*Black-and Red Ware*	*Grey*	*Black-Slipped*	*Red*
Dish	13	1	14	8	4
Bowl	5	—	3	2	7
Lipped Bowl	X	X	X	X	8
Handi	2	X	X	X	X
Sprinkler in NBP with glossiness	1	X	X	X	X
Vase	X	1	X	5	29
Miniature pots	X	X	2	—	2
Basin	X	X	X	X	5
Frying pan with handle	X	X	X	X	4
Handi-cum-Karahi with Handle	X	X	1	X	2
Karahi	X	X	X	X	1
Spout	X	X	X	X	4
Hukka type Vessel	X	X	X	X	1
Lid-cum-bowl	X	X	X	X	5
Basin	X	X	X	X	5

This break-up may be of interest in the study of the growth of ceramic industry, the preference for certain types in certain distinct wares, and also the introduction of new types in the later phase. This may throw some light on food and drink habits, cooking-habits and the change in popularity of a particular type through passage of time. The lesser number of variety in the NBP ware compared to the red and grey strengthens the suspicion that it was largly a delux table-ware in use by the elites. Red-ware was the common ware. The introduction of new types as frying pan with handle, lid-cum-bowl, handi-cum Karahi, Karahi-with handle is to be particularly noted as indicating distinct change in cooking utensils. Particular notice may be taken of introduction of *spout* and of a smoking hookka type of unusual significance is recovery of a sprinkler in NBP state with high glossiness. Sprinklers have been of-course found towards the close of the NBP phase at some sites, though it is ordinary a post-NBP pot. But I would be very much interested to know if a sprinkler in *NBP* ware with glossiness has been found elsewhere in the NBP strata. I think if excavators of sites give a total break-up of the different ceramics discovered layer to layer and also indicate the types of the pot under each distinct ware, we may have a fuller idea of the culture of the people down the ages The situation at Champa shows that the most brilliant phase of the NBP was the Phase-2 the earliest excavated strata.

Very remarkable antiquities were discovered in the lowest-levels—19-15 (middle Phase of NBP). Besides stone beads, bangles, bone points, ivory antimony rods, terracotta beads and bangles. We find stone balls with marks (1), black-stone pestle, ivory-beads, copper beads, bone pins (i), a spinning takli-base, numerous terracotta animal figures, terracotta bird, rattle, oranaments, animal figurines and terracotta-naga and nagins with human like heads may have religious significance. A toy-cart of tortoise shell is a unique find An ivory female figure made in different parts and

then joined together through made-up grooves is a remarkable discovery from the same layer. The face looks non Indian, Egyptian or West Asiatic. Numerous stone moulds are jewellery moulds and some have finely engraved picture of horse and other objects. Objects of copper include a bowl and a wire. Three unidentifiable iron objects were found.

Late NBP phase (layers 14 to 10) have yielded stone beads, stone mould, stone ball, stone bangles, ivory disc, glass object, silver plated copper hair—clip, besides antimony rods of copper and bone, terracotta animal figures including one lion and a few bone points. Terracotta plaques depicting a female goddess with weapons round the top of the plaque have been found from on top of the NBP strata which may be placed in the Sunga period These are stylistically Sunga in date. The figure may represent goddess *Smivali* known to the Vedic and Puranic literature. Do they represent the early form of Durga?

The limited excavations thus present a rich fare in antiquities and suggest a very flourishing history of Champa even after its absorption in the Magadhan empire by Bimbisara. Champa appears to have continued to be an important city of great strategic importance and commerical and industrial significance.

So far as structures are concerned, we have hear evidence of burnt-brick structures of the Mauryan period (Middle NBP phase)—a significant discovery. Remains of Sunga, Kusana and Gupta structures have also been noticed.

Only extensive excavations in the habitational areas would give us a fuller picture of the various cultural periods from the early historical times to the late Gupta period.

Supplement—Statistical Account of the potteries and other antiquities in Champa (19) to (15)—8.69 m. to 9.61 m. Early and Middle N.B.P. Phase—Champanagar (Bhagalpur)

Pottery	*Stone*	*Ivory*	*Structure*
N.B.P.	Stone Mould-10	Figurine of Mother Goddess—1.	(1) Six Post Holes and a rammed brick floor. Diameter of post holes 24m, but the distance from centre to centre is not uniform (CMP-I).
Dish-64	Stone Bead-25	Antimony Rod—1	(2) Terracotta Ring well with two courses and its diameter was 0.70 m. (CMP-I).
Bowl-12	Stone Ball with Marks-1	Bead—1.	(3) A brick-well of 201 courses—diameter of the exposed portion of the well was 00.96m. (CMP-I)
Lipped Bowl-1 Miniature Vase-1	Black Stone Pestle-1. Stone Bangle-3 Stone-weights-2	Cross shaped Bead-1	(4) A Brick Wall of 13 courses running north to south (CMP-I). (5) Well built brick drain plastered with lime, kankar and sand. Runs in East-west directions and has been traced up to a length of 4 90 m. with a gap of 2.20 m. caused by later robbing. The width of drain at

Pottery	*Stone*	*Ivory*	*Structure*
Black & Red	*Copper*	*Terracotta*	
Bowl-1	Copper Bowel-1	T. Nagin-35.	the lip was 35 cm. and at the bottom it was only 25 cm. Depth of the drain was 52 cm
Basin-1	Copper-Wire-1	T. Skin Rubber-2.	
Vase-4	Copper Object-1	T. Animal Figurine-13	
Grey Ware	Copper slag-1	T. Bead-5.	
Dish-7	Copper Ear Ornament (Jhumka)-1	T. Bench-1	
Bowl-7		T. Bird Rattle-1.	
Miniature Vase-1	Copper Wire-1		
Black Slipped Ware	*Iron*	*Nail*	
Dish-9.	Iron Objects-3	Nail Bead	
Bowel-5	Iron Objects-3		
Lipped Bowel-1	*Gold*	*Glass*	
Miniature Pot-2	Gold piece with mark-11	G.Beads-2	
Handi-1			
Red Ware	*Bone*		
Dish-13	Bone Point-1		

Pottery	*Stone*	*Ivory*	*Structure*
Bowl-2	Bone Bead-1		
Lipped Bowl-1	Pipe like object-1		
Miniature Bowl-1	Bone Point 1		
Basin-10	Arc shaped bone object-1		
Handi-1	Circular Bone Object-1		
Vase-78	Base of Takli-1		
Miniature Pot-2	*Tortoise-Shell* Toy Cart		
Tiny Pot with single perforation-1.			
N.B.P.	Stone Mould-1	T. Female Figurine-1+1	(1) A brick wall cutting into the rampart of Phase-1 and sealed by rampart of 2nd phase was found running in north direction. It was 2.43 m. long. Size of the brick used in the wall—40 cm x 25 cm.
Dish-13	Stone Bead-15	T. Nagin (Broken)-1+1	
Bowl-Rimless	Stone Ball-1	T. Horse-1	
Handi-2	Stone Bangle-1	T. Animal Figurine-2+1	
Sprinkler with N.B.P. glossaries-1	—	T. plaque showing the figurine of Shakti-1	(2) A floor made of rammed brick-bats covering an area of 4 m x 3.5 m. Towards the eastren end of the floor, three

Pottery	Stone	Ivory	Structure
			steps of bricks were possibly utilised for going over the rampart of the second phase. An oven was noticed over the floor in the eastern corner—CMP-I.
Black & Red	*Copper*		(3) Two parallel walls running in north-south direction associated with a well laid out floor. The wall on the eastern side measures 3.12m x 00 32m, whereas the wall on the western side measures 2.15 x 00. 46m. 29 and 13 courses of brick respectively of the walls are still in Situ. In between the two walls, there is a brick drain of two courses of bricks and the drain measures 2 42 x 00.76 m.
Dish-1	Copper Coin-7	T. Bird (broken)-1	
Vase-1	Bent Bar Copper coin- -1	T. Bead -7+3	
Gre Ware		T. Wheel -1	
	Punch Marked Coin		
Dish-14	copper-1.	T. Reel -1	
Bowl-3]	Copper Slag-1	T. Loin -1	
Miniature	Antimony Rod-2+2	T. Object -1	
Vase-2			(4) Plan of three blocks consisting of rooms Late N.B.P. phase. The two rooms of the eastern block (Ist block) mea-

Pottery	*Stone*	*Ivory*	*Structure*
			sured 2.90 x 2 50m. and 2.10 m x 2 58 m. respectively.
	Copper Rod-1	T. Wheel with Spokes -1	5) The second block, which lay to the west of this block consisted of four rooms.
Handi cum-Karchi-1	Copper hair clip 1 (Silver plated) Copper Bangle-1	T Amulet -1	
Dish-8 Bowl 2 Vase-5	Iron Piece-1 Iron Slag 1 Iron Nail-1	Glass Bead-1 Glass Object-1 Terracotta crucible for smelting glass object 1	(6) The Western-most block (3rd block) consisted of a big hall measured 5 42 m x 3.10 m. The hall had a floor with a massive brick soling consisting of seven courses of bricks. To the north-west of the hall there was another room which measured 2 60 x 2 26 m. Associated with these two rooms were two brick walls, on the southern room and the other in the north-east corner of the room. Two wall like constructions further west which appear to be for storage purposes

Pottery	*Stone*	*Ivory*	*Structure*
Black Slipped Ware	*Iron*	*Glass*	
Red Ware	*Bone*		
Dish-4	Bone Stylus-9.		
Bowl-7	Bone Point-5		
Lipped Bowl-8	*Ivory*		
Lid cum-Bowl-5	Ivory Bead-1		
Basin-5	Circular Ivory Disc-1.		
Vase-29.			
Miniature Vase-2			
Rimless Handi-2			
*Pan with Handle-4			

Pottery	*Stone*	*Ivory*	*Structure*
*Handi-cum Karahi with handle-2 Karahi-1 Spout-4 *Hukka type vessel-1			

Kushan Phase—Champanagar (Bhagalpur)

Pottery	*Antiquities*	*Structure*
	Stone-Beads, Terracotta Beads, Terracotta Plaques containing figurines, of male deities.	(1) A structure consisting of two rooms of Kushan period was noticed. The size of the southern room was 1.50 m. east-west x 00,90m. north to south. The northern room measured 1 31 east-west x 1.40 m. north to south. A brick well was found within the northern room and the diameter of the well was 1 20 m. Floor of the rooms had brick soling consisting of four courses of bricks (CMP.-l)

Pottery	*Antiquities*	*Structure*
Red Wares & Black Wares	(1) Terracotta Circular object with flower design. (2) Terracotta Stamp. (3) Stone Beads.	(2) A wall running in east-west directions measured 1.22 in length. The return wall of the above construction running north to south has been robbed. The wall in question was associated with a Kuccha floor. (CMP-I). (3) Remains of two Ring walls were found in Situ at a depth of 4.20 m. and 5.30 m. respectively.
	Gupta Phase Champanagar (Bhagalpur)	
Red Ware Sprinklers Lid-cum-bowl, Incense burner, Frying pan with handle Spouted vessel.	Terracotta human figures Terracotta Animal Figurine Terracotta Skin Rubber Copper Antimony Rod Terracotta Bead Terracotta Ear Lobe Terracotta Plum Bob.	(1) Flimsy wall of brick-bats On its southern side, a brick drain measuring 1.80 m. x 00 30 m. was noticed. (2) Mud structure. The width of the wall was 00.30 m. Associated with the wall was an oven for two cooking vessels. (CMP-2)

Pottery	Antiquities	Structure
	Copper, Antimony Rod, Terracotta Talisman Terracotta Bone dice Terracotta Skin rubber Terracotta Human and Animal figurines Terracotta, conical object Terracotta mould Ur making human head Stone mould, bearing symbolic marks for making ear ornaments	(3) A brick wall measuring 2.40 m, x 00.70 m, of which 11 courses were still in Situ. (4) A wall made of brick bats in east-west direction and its measure 2 92 m x 00 42 m. (5) A brick wall running north to south with seven courses of bricks still in Situ. It was 2.50 m, in length and 00 40 m. in width. (6) Another-wall running east-west measured 1.70 m. in length and 00,30 m. in width. The wall in question had two arms occuring at right angles; the eastern arm was 00 50 m. in length and the western arm was 50 m. in length and 00.33 m in width. (7) Another wall running east-west up to a distance of 00. 90 m. wall in dilapidated condition.
	Stone Beads Inscribed seal with perforations in the neck posture Ivory object, Stone and Bones beads T. Horned animal, Glass bangle, Antimony rod (copper) iron needle	

Post-Gupta Phase (Bhagalpur) Chapanagar

Pottery	*Antiquities*	*Structure*
	T. plaque showing a couple lying on a cot.	(1) A mud floor noticed at a depth of 1.08 m from the surface. Charred stumps in two post-holes were noticed at the eastern end of the floor. A deposit of ash towards the western side of the posts (CMP-I).
	Terracotta Bench	
Red Ware		
	Inscribed T. Sealings in late Pala script.	
Black Ware		
Grey-Ware brick fabric	T. Beads	(2) A wall of 26 courses built over an earlier wall of Late N.B P. phase during the post-Gupta period (CMP-I).
	Stone Beads	(3) Walls of the Pala period. The two walls joined at right angle to form seperate rooms. The north-sougth distance between two walls was 2 90 m.
	Terracotta Bracelets.	

8

Material Culture Of The Bihar Plains 600 B.C.—1300 A.D.

With 600 B C, we emerge in the early historical period. Between the end of the Harappan culture (*Cir.* 1700 B C.) and the beginning of the early historical period we have the chalcolithic cultures with characteristic black-and-red ware. In all the explored and excavated sites in the Bihar plains we have the same picture with black-and-red ware, some copper objects, mud houses, microlithic tools and bone arrow heads and a few terracottas. Chirand (N. Bihar) and Sonpur (S. Bihar are the type sites of the chalcolithic cultures. In both Chirand and Sonpur we find the introduction of iron with finer variety of black-and-red ware. Thus, iron was known and used before the introduction of the North Black Polished ware. The introduction of iron as a metal has been hailed as marking a great technological revolution leading to rise of urban centres. Sophisticated delux NBP ware, monumental architecture and beginning of writing. While there is no questioning of the significance of the use of iron, the point appears to have been overrated. Even without iron there were large and prosperous cities in India and outside, there were developed scripts monumental art and architecture and brisk internal and external trade. The view that opening of the mid-Gangetic Valley by the Aryans was facilitated by the iron tools for clearing the thick jungles is misplaced. While there is no evidence that the Mid-Gangetic plains were more thickly

forested that sub-Himalayan regions of the Uttar Pradesh (under Aryan settlements from before), we have clear archaeological evidence of flourishing chalcolithic cultures throughout the area, Maner (19 miles west from Patna), Chechar (Across the Ganges opposite Patna), and various other sites have yielded remains of characteristic chalcolithic complex But certainly iron tools and weapons must have helped a lot in marching ahead from the preceeding chalcolithic cultures into rise and growth of larger Kingdoms (Mahajanapadas) and even empires.

600 B.C. opens with the sixteen Mahajanapadas of which Vrjji, Magadha, and Anga with Vaisali, Rajagriha and Campa as capitals respectively. All the three sites have been excavated, though to a very limited extent. In all the three sites of the early historical period, the black-and-red ware appears to be the earliest pottery-culture. No definite date can be ascribed to the cyclopean fortification wall girting the hills of Rajagriha, and no archaeological evidence has so far been available to corroborate the history of the grandeur and culture of these great cities in the Epics, the Ramayana and the Mahabharata. The Campa excavations in a very limited areas—in the fortification complex and habitational sites- reveal the beginnings of a city fortification wall made of rammed earth excavated from the ditch surrounding the fortification wall. In view of the sub soil water coming up, the foundation level of the fortification wall could not be reached, but with the help of water pump and scores of sherds of black-and-red ware of early type were recovered without NBP mix up. Thus it appears a very probable guess that the mud rampart must have been raised in the early 6th century B C, or slightly earlier. It is rather tempting to suggest that in the early historical city, NBP ware and punch-marked coinage were introduced almost together. The Balirajgarh remains (in Madhubani district in North Bihar) also show the mud fortifications in early NBP period. Taking into account the C^{14} dates calibration, it is now safe to take back the

beginning of the NBP latest to the 600 B.C. and everywhere in the region it appears with the late phase of the black-and-red-ware. The silver and copper punch marked coins have been found in excavations in all the sites in the NBP stratas from the very beginning On the basis of comparative study of the weight of and symbols on the punch-marked coins, and their destribution in the west, north west and even south, it has been possible to hypotheticate the existence of an imperial Magadhan currency supplanting the local punch-marked coinages. Cast copper coins also appear quite close in time with the punch-marked. This makes it clear that trade and commerce in the very beginning of the early historical period had developed to the extent when metal currencies were unavoidable necessities. Though there has been according to many scholars' references to coins even gold coins in the vedic literature, there has been no archaeological evidence of coinage before 600 B C, and before NBP. Trade and commerce presuppose roads and developed means of transport. While the Buddhist literature refers to construction of highways and roads and mentions national highways which linked various cities of the west, north-west, north-east and south, and Kautilya refers to wide royal roads of different width the excavations, so far probably because of being limited in area and sporadic in character, have revealed no roads, big or small; while roads of the Harappan cities are well-known The discovery of agate, steatite and carnelian beads (out of 103 carnelian beads found in one site Sonpur, 33 belong to this period) from the different excavated sites in this region proves the trade contacts with far off north-western regions. but there is no evidence of any antiquity being imported from outside India, though the Jatakas do suggest contact with Mesopotamia (Bavaru Jataka). So far as architecture or building activities in general are concerned, one notices for the first time after the end of the Harappa culture, the use of sun-dried bricks (Sonpur) and burnt bricks (Champa) from the earliest exposed levels of the NBP. However, the stupa built on Buddha's ashes at Vaisali in 500 B.C.

was a small mud stupa. Whether the cities had special quarters or lanes for particular groups of professional artists or not, one cannot miss the significance of the discovery of a large number (more than a dozen) of jewellery stone moulds from the early NBP stratas from one small trench in Champa which is famous for its jewelleries in the early Buddhist and Jain literature. The people had pottery as their common utensils. Besides red ware, grey ware and the slipped black ware, and deluxe NBP ware were introduced. People used dishes, bowls, lipped-bowls tumblers, handis, jars, frying pans, drinking vessels for their eating and cooking purposes. The NBP vessels were mostly bowls, lipped bowls, tumblers and dishes. They must have been prized possessions of the elite ruling classes and the monk community; and from Sonpur we have a NBP bowl which when broken was repaired with a copper wire. These prove the existence of jewellers' workshops on the side. The moulds and the terra cottas give clear proof of the love of ornaments by the common people. Earrings and necklaces, armlets, bangles too were usual ornaments was this for ritualistric reason ? NBP was costly and luxury item is clear. There is no doubt that the NBP originated in this area. Here it is found in abundance in all sites; and Chirand, Sonpur and Champa and Vaisali have yielded NBP of different hues, and from Champa we have quite few pieces of white painted NBP. Carbonised grains of wheat, rice and other food crops have been found in many sites. But the abundance with which the bone, ivory, copper and iron arrowheads, and microliths have been found suggests that hunting also must bave been not only a pastime but means of additional food supply. Together with stone and terracotta balls some of these must have been used as missiles in wars which were very frequent in this formative historical period. Iron weapons were certainly much in use, but it is important to note that very few iron objects, much less identifiable, other than nails, knives, arrow heads, lance and spear heads and daggers have survived to be picked up in the excavation of these capital-cities. This is rather intriguing in spite

of the due allowance given to the certain possibility of corrosion of iron under the soil in this region. Is it possible to argue that iron like elephants was costly, and the use of these were in the beginning restricted substantially in the favour of the army at that time which explains the rarity of iron objects particularly, weapons in the excavated areas of habitation ? were iron tools of agriculture and smithy not yet in general use? Large iron axes and saws must have helped in clearing logs of wood from jungle in the sub-Himalayan region for the construction of wooden palace of Patliputra. This may further suggest that iron technology probably did not play that dominant role in the economy as has been taken to be by some historians. From Sonpur in the entire NBP long period (600—100 B.C) we have a few broken and corroded pieces, lances, broken spear, a leaf shaped arrow head, fragements of crushed chisel, broken knief-blades, fragmentary piece of an axe, socketed arrow head, a medium sized ring. Copper objects are more numerous and varied. But we have hardly any copper tools or weapons which appear to have completely yielded to iron Prototypes. But copper vessels like bowls, spoons. bells and ornaments such as earrings, bangles, hair clips, antimony rods predominate. Only a few copper nails and copper arrowheads are found.

The Mauryan period (323 B.C. to 187 B.C.) introduced stone as part of architecture and for fashioning mono-neolithic pillars with animal capitals all with shining polish Excavations at Kumrahar Bulandibagh and Kankarbagh have exposed extensive remains of massive timber palisades of the ancient city of Pataliputra which was founded in 488 B.C., a year before the death of Buddha, and which became the capital of Magadha empire in the time of Udayana in *cir.* 480 B.C. or soon after. While Megasthenes has described the wooden ramparts with hundreds of watch towers surrounded by a deep ditch, there is no statement which would necessary make Candragupta Maurya as the author of this complex. It could very well have been constructed in the time of the Nandas

who built the first all-India empire in the historical period with Patliputra as the capital. The eighty stone-pillar hall of Kumrahar stands completely isolated in the entire complex, and could hardly be a part of the palace of Candragupta. The hall could have been constructed in the time of Asoka with whom the use of stone as a part of architecture or for pillar and capital can be definitely associated. However, excavations have not corroborated Kautilya's statement about the lay out of the Capital city and well defined quarters for a different sections of population or administrative buildings. Burnt brick walls and floors have been traced in Patliputra excavations. Taking into Calibration of the C^{14} dates, NBP period may have ended by Cir. 100 B C. thus includes part of the Sunga period. Archaeologically the entire stratas which contain NBP may be better termed NBP period subdivided into phases. This should be specially so because absolute chronology for NBP is still debatable and NBP ware represents a very distinct material cultural determinant. The totality of this culture is fairly will archaeologically documented, and it may be divided into three phases—Early, Middle (Mauryan), and late (early Sunga). The middle phase besides introducing stone masoury and substantial ramparts, also shows sophostication in sculpture, terracotta, jewellery and ceramics. A few broken pieces of polished shafts and animal capitals have been picked up in excavations in the location of Patna, monolithic pillars of Kumhrar, fragments of Mauryan polished stone discs engraved with scenes connected with mother goddess worship at Murtaziganj the famous Didarganj Yakshi statue are important stone objects including a number of stone beads for ornaments mainly. This entire garnat of stone objects of high quality reflect the existence of a highly skilled and distinct professional class of artists working on stone. The potter's art had reached a height never attained before and after, and large prosperous potter's quarters may be easily suggested. Red ware was the pottery for common people and bowls, dishes, jars basins and handis, frying-pans etc. predominate in this ware. In black-

slipped ware bowls including slipped bowls dishes out number handis In Grey ware too dishes and bowls are prominent. In the deluxe NBP dishes and bowls predominate over other types. In late NBP phase we have a very glossy sprinkler from Champa which appears to imitate NBP texture. This find from Champa is significant as sprinklers were mainly ascribed to the Kushana period. The character of the NBP pottery with its thin texture, hardness approaching metallic sound, and in various colours, (some vessles have two colours) and some also with paintings speak volumes for the quality of the ceramic art. The NBP appears to have been rather specially designed for the ritualistic purposes or as table-ware for the nobility. Its wide distribution might have been in the wake of the March of Magadhan imperialism or the advance of Buddhism in the Mauryan period. The depiction of numerous types of ornaments earings, ear lobes, necklaces, armlets, bangles, girdles, anklets, displayed in sculputures and terracottas show the elegance of jewllers' art which is corroborated by the discovery of a large number of stone beads, ivory ornaments and jewellers' moulds. Ornaments could have been of gold and silver. Poor were no less lovers of ornaments but were satisfied with terracotta beaded ornaments, terracotta ear lobes etc. The art of terracotta making was also quite flourishing. Many of these could have been toys, but some were certainly of religious significance. Terracotta art in the period shows a steady evolution From hand moulded pinched nose, incised mouth and eyes, stumpy arrows and legs, we come across beautifully moulded human figurines of dancing girls, of graceful women with a variety of head-dresses and ear-ornaments. Animal figurines and toy ramcarts with wheels (one tortoise-shell cart from Champa) show the skill and artisty of toy-makers. Conventionalised terracotta figures of snakes, most abundantly found throughout this period attest of an early naga-cult particularly prevalent in Bihar even to-day. Working on bone and ivory was also a sophisticated art. We have not only bone arrow heads tanged, socketed and plain but bone awls, and ivory

arrow heads, antimony rods, stylus, spoons, dices and combs. A beautiful ivory female figurine with articulated limbs is a prize find from Champa. Varieties of ornaments and head-dressesd epicted in the terracotta and stone sculptures reflect the love of ornaments, a number of which may be corroborated from the Arthasastra of Kautilya. Dancing must have been a socio-religious pastime as revealed by many terracotta, and a large terracotta mask (pratisirsha) from Chirand suggests the popularity of pantormics (early form of Kathakali ?) or dramatic performances referred to by Greek writers and Kautilya about the time. Discovery of many glass objects including beads and a beautiful crystal amulet or pandant in the form of female head from Sonpur suggest the knowledge of glass technology. Writing had certainly come into use though no inscription earlier than Asoka has so far been found. Terracotta or clay sealings with short inscriptions have been found from Sonpur, Kumhrar, Champa and Vaisali; wheeled transport must have been in general use. Kautilya speaks of horse-drawn large chariots. We have only toy terracotta and bone-wheels to substantiate the observation. Towards the late NBP phase and early sunga we find for the first time almost in all cities excavated Champa, Vaisali, Balirajgarh, Katragrah and in particular evidence of strengthing of the mud fortification walls by brick revements and brick additions on the top. Had the threat of the Bactrian Greek invasions or Kharavela's compaigns in Magadha to do anything with this sprut in strengthing the ramparts ? Another important innovation was the use of terracotta plaques found in quite a large number from all excavated sites. They are mostly of female figurines. A few from Champa have weapons arrayed on the top, probably representing the early Durga or Sakti who was offered all characteristic weapons by the gods. Winged female terracotta from Vaisali and Champa, one from Champa having a West Asiatic head dress do suggest West Asian contact and evidence. In pottery and sculpture the period shows distinct decline. The NBP ware is practically non-existent. Grey Ware dis-

appears and Red Ware is the only ware noticed and the pottery forms also do not show any notable features. Houses continue to be simple and small, made exclusively of burnt bricks. Terra-cotta ring wells abound in all sites, and their exact purpose remains still enigmatic.

The subsequent Kushan period and after down to 300 A D. is remarkable for its massive well built burnt structures in Kumhrar, Vaisali, Champa and particularly in Chirand where five structural phases have been traced and exposed. Contrasted with the previous and later Gupta structures, the Kushana buildings exhibit a mature brick architecture. Except for characteristic Kushana terra-cotta with bulging bellies, distinct head dress and rather grotesque or amusing faces, there is no extraordinary feature to be noted about the culture-change in the period. The ceramic art continues to decline. We have only red-ware; the pottery is mainly utilitarian with no example of painted pottery. Sprinklers, spouted vessels, high necked *surahis* (water vessels) and miniature pots are more common. Terracotta art also shows a declining trend though terracotta plaques continue. Beads of agate, amethyst bone and ivory, carnelian, chalocdany; crystal and glass are found in greater quantities and attest to the continuation and further development of the concerned arts and crafts.

The 4th century A.D. ushers in the Gupta Age generally regarded as the Golden Age in Indian history. There is no technological revolution preceding it or in the Gupta Age itself. There is no doubt that plastic art, cave-paintings, Sanskrit Literature and Brahmanical religion attained classic excellence not attained there after. The Guptas are generally believed to have started their imperial career from Magadha and Pataliputra was their capital.

But archaeological excavations and explorations in Bihar do not reflect the Gupta grandeur. After the Kushana strata we have

comparatively poor brick structures in Vaisali, Kumhrar, Champa and other excavated sites. In excavations at Vaisali fort area, hundreds of inscribed seals, were discovered which certainly point to Vaisali being a centre of commercial activities with flourishing commercial houses and banking companies. It was also the administrative capital of the Gupta, bhukti-Tre-bhukti, with the Gupta prince viceroys Govinda Gupta, and Ghatekaca Gupta But excavations so far did not lead to discovery of any imposing structures suitable as Viceregal places or for officers and buildings of ancient Tatas and Birlas. Though the period is well-known for Brahmanical bhakti cults, we have not yet stumbled over any early Gupta temple in the excavations. Rather the Gupta archaeological ruins bear a sad contrast to well built Kushana structures lying beneath them. On the basis of the present archaeological data, one has to report that in building activities, the Guptas in the Bihar Plains did not show any promise much less excellence This is rather intriguing and more extensive, excavations may give us the final answer. In refering to structures of the period at Vaisali, we have to report only 'flimsy ones'. The only notable feature is the construction of a burnt brick rampart 9 ft. high and of military barracks. Excavations in the garh area where respectable buildings of the Gupta period could have been expected, only a few walls of fragmentary structures of indeterminable character were traced. Remains of only one structure may suggest its substantial character as a wall was traced to a length of 57 ft , and a large number of rooms were attached to the wall The building was roofed with tiles In excavations at Kumhrar were found a brick built wall, and numerous remains of brick built houses, whose brick walls could be traced to small length and limited to a few courses of bricks. The only noteworthy and somewhat substantial building complex belonging to the period is the 'Arogyavihara' a monastic cum-sanitorium complex, with remarkable features, having small and big rcoms. The structure was roofed with brick tiles, The smaller

rooms may have been occupied by patients individually and the bigger one could have been for prayers. Fahiien refers to monastries with hospitals in Patliputra. In Champa in a very limited vertical excavations a few brick-walls have been traced to some length with mud floors or floors rammed with brick bats. No structure of substantial character was noticed. Chirand and Sonpur have almost drawn blank, so far as any real structural activity of this period is concerned. The only exception is the Nalanda Mahavihara which was founded in the Gupta period. We have clear evidence of well built monastries and stupas of burnt bricks. The structures by any standard are massive and have been laid according to a well drawn plan with monastries and stupas separated. The plinth of the stone-temple decorated with hundreds of relief sculptures show the development in the stone masonary. The main stupa with stucco images in the well built niches add grace and beauty to the stupas. The ruins of a Vishnu brick temple mound in Aphsad in the Nawada district belong to the close of the 7th century A.D. in the time of Adityasena, and the plinth walls of the temple have been decorated with stucco panels depicting the Ramayana story in a clear sequence. As many as eight such panels in situ have been exposed in one side of the plinth wall so far, and in style and treatment they are near the time of the Nalanda stucco. With the Pala period the building activities appear to have made remarkable strides. Vaisali, Pataliputra, Sonpur are almost blank for the period after 600 A.D. But in Nalanda the Pala period marks a glorious chapter for its massive structures lain in many cases on previous Gupta structures (Stupas and monasteries) and improved on them. The excavations at Antichak (the sitc of the Vikramsila University) have revealed a Caitya-cum-monastic complex of the Paharpur type. The Caitya has two circumbulatory paths one above the other and the walls are decorated with terracotta plaques of both sacred and secular character. The method of construction was peculiar. Two parallel brick walls were constructed at a distance from one another, and the intervening space

was filled up with debris, brick bats, and rammed. And on the floor thus constructed, the same process was repeated finally leading to the drum of the Caitya. On each of the four cardinal sides huge images (3 clay and one stone) of the Buddha or Bodhisattava were installed Further excavations have revealed a large monastric complex, with hundreds of cells all around, and the entire complex was surrounded by a wall which had large gates supported on stone pillars. In massiveness it compares favourably with Nalanda though there are some architectural differences. In Champa also some brick wall structures belonging to this period were traced to some length. It appears that Buddhist monastries devoted more attention so far as architecture was concerned than secular buildings. The Khalimpur inscription of Dharmapala refers to the grandeur and prosperity of the great commercial port city of Pataliputra but excavations so far in various locations of Patna have not corroborated it even partly. But one thing that should strike historians is that in the Mid-Ganga Valley remains of numerous forts made of bricks and brickbats belonging to the Pala period have been noticed at Indpe (in Monghyr District), Oddantapuri (Nalanda District), Naula and Jaimangalgarhs (in Begusarai District), Katragarh in Sitamahri District etc. This may suggest difficult political conditions and tenuous law and order during the period.

The pottery throughout the period is non-descript. It is mainly red ware with no painted designs, though incised and applique decorations have been found in excavations at Antichak. Among pottery forms jars, bowls, offering stands crowned with a bowl with flared rims, may be mentioned.

Very few coins have been found in excavations. Only a few Gupta gold coins and a coin mould were discovered from Nalanda. But Gupta gold and copper currency must have been in general use. Copper coins of Candragupta-II have been found in exploration over Ohecher mound, opposite Patna across the Ganges. Pala coins are

also rare. Only few dramas of Vigrahapala-III were picked up from Jaimangala and Naulagarh complex. It is apparent that trade with distant regions was in decline.

But the sculptures and bronze smiths appear to have been very active. A few Gupta sculptures have been found in Nalanda. A number of Pala sculptures on black-stone have been found in excavations and exploration. Bronze statues of the Gupta and Pala periods show the excellence of the artists working in bronze. Remains of bronze smithing laboratory have been located in Nalanda. Stone sculptures of the Gupta and Pala period have been found in Nalanda and Champa and numerous sculptures of stone and stucco belonging to the period under review have been found in Nalanda, Antichak and Chirand. Terracotta art shows no special development. It reflects the continuity from the past, though in quality and variety, it is inferior to Maurya-Sunga period. So far as metal objects are concerned, copper vessels, antimony rods, stylus, pins out number iron objects. But daggers, swords, nails of iron have been discovered in Antichak.

People's love of ornaments continued. We have stone beads of Agate, carnelean and other stones, but the number compared to earlier period is certainly less.

On the whole the culture deduced from archaeological excavations certainly does not impress us as the previous Mauryan and Kushana periods in many respects.

9

Archaeological Activities in Bihar

Situated in the heart of the Ganga basin with Himalayas in the North, Orissan hills in the South, the States of Uttar Pradesh and Madhya Pradesh on the West and West Bengal in the East, Bihar offers an extensive scope for archaeological activities and research. Its natural isolation as provided by the Himalayas and Orissan hills, coupled with the absence of any well defined boundary on the east and west contributed not a little to the free influx and other flow of cultural elements throughout its long history. Account may be taken in this connection of the fact that Bihar had at one time been the seat of a large empire with its boundary extending far beyond its initial limit and on the other, it also preserved an integral part of the empire with the seat situated far beyond its borders. Thus the inter-play of cultural elements have no doubt left its impact on its culture and consequently on its archaeology. A thorough appraisal of the archaeological activities of Bihar, therefore, may have to be made against such a wider background keeping in view the significant and individual features of its archaeological remains and monuments.

I. (1862-1892)

The beginning of archaeological activities in Bihar as represented by systematic explorations and partial excavation work was actually initiated by Alexander Cunningham in 1862. Before Cun-

ningham, some work had been done by B.H. Hodgson, Colonel Mackenzie, Stephenson and others. But Cunningham and his able assistants Beglar, Garrick and Carellyle carried over years, extensive exploration in South and North Bihar. Cunningham used as his basis the description of places and monuments as mentioned in Hiuen Tsang's travel accounts for locating the ancient sites and the monuments associated with them. In south Bihar he succeeded in identifying places like, Budha Gaya, Kurkihar, Giriyak, Rajgir and Nalanda as associated with the life and activities of the Buddha. In North Bihar, however, he is credited with the identification of modern Basarh with Vaisali and a detailed account of Kesariya Stupa, supposed Vedic burials of Lauriya Nandangarh, the Stupa of Nandangarh and the four Asokan pillars. The Rampurwa Capital and column were discovered by Carlleyle in 1877. Of singular achievements of Cunningham's extensive survey in North and South Bihar, special mention may be made of the following :

In the area around the Vajrasana throne at Bodh Gaya, Cunningham found three phases of flooring of plaster, granite and sandstone pavement respectively as associated with the three building phases of Vajrasana throne. The earliest represents the sandstone pavement associated with the sandstone portion of Vajrasana throne with carvings of geese on its sides. He also found the railing enclosing the circumambulation path round the temple and Vajrasana. Both the railing and Vajrasana have sandstone and granite portions, and they probably represent the work of two different periods The sandstone railing pillars are ascribed to the late 2nd century B C or 1st Century B.C. in terms of the inscriptions inscribed on them, whereas the granite ones are considered to belong to the Gupta period in terms of the style of carvings on its reliefs. The Bodh Gaya temple is undoubtedly of a later period but the possible existence of shrine at the site as attested by the relief panels of Bharhut and Sanchi has been specially suggested by Cunningham. At Rajgir, Cunningham identified Sone Bhandar Cave with the place where the first Buddhist Council was held after the

death of Buddha. He also discovered a cylindrical brick structure in the area now locally known as Maniyar Math. A partial excavation at the site by Cunningham yielded three small figures of which only two could be identified, one that of Maya lying on a couch with ascetic Buddha portrayed above and the other of the Jain Tirthankara Parswanatha. His identification of Nalanda with the mounds and ruins situated within the close vicinity of modern Bargaon village about 8 miles from Rajgir was confirmed by the later excavations at the site. He also identified a few tanks of the area and indicated the probable spot of the central stupa shrine at Nalanda.

Further, his detailed account of the two groups of caves at Nagarjuni and Barabar respectively dedicated to the Ajivika sect by King Asoka and Dasaratha still provide the most authentic record despite a few discrepancies or errors. The caves are noted for their high interior polish, the vaulted roof and doors carved in the shape of a ogee arch. In North Bihar, he discovered at modern Basarh (22 miles to the N.W. of Muzaffarpur and identified with Vaisali) an oblong fortified area measuring 1700 ft.X800 ft. which is locally known as *Raja Visala ka Garh*. As to the stupa at Kesariya (about two miles to the S.W. of Kesariya P.S. and on the east of the road from Motihari to Chapra). Cunningham assigns the upper structure of the stupa measuring 68 ft. 5 inches in diameter and 51 ft. 6 inches in height, between 200 to 700 A D. and considers the lower structure to be a memorial stupa built by the Lichchhvis of Vaisali At Lauriya Nandangarh, he considers the 15 stupas represented in three rows within the close vicinity of the Asokan pillar, to be the sepulcharal mounds of Indian kinds of pre-Buddhist period. A partial excavation by him resulted in the clearance of a retaining wall which he regards as fairly late.

Thus, the work carried on by Cunningham and his able assistants during the period between 1862 and 1882 brought to light a number of sites with rich archaeological possibilities. While Cun-

ningham and his able assistants were engaged in identifying ancient sites and monuments of the historic period, Hughes in 1865 picked up possibly the first palaeolith from the bank of the Bokaro river, a tributary of the Damodar in the Hazaribagh district. The hand axe reminiscent of the Madras industry is made out of green micacious quartzite and was found in apparent association with the taluses of pebbles from the Gondwana rocks of this region. In 1888, Beeching collected from the area between Chakradharpur and Chaibasa microliths or flakes representing essentially a flake industry.

II. (1892—1939)

The work of Cunningham and others, thus, provided a solid basis for the operations of the spade of the archaeologists and consequently the period between 1892—1939 is noted for the series of excavations spread over years at different sites in Bihar. The first in the series is the excavation conducted by L.A Waddel (1892) at Kumraha, a locality situated to the south of Patna. The excavations were limited in extent but he succeeded in disproving the older theory that Pataliputra had been cut away by the Ganges. The excavations by Bloch and Spooner at Vaisali (1903-4 & 1913-4) yielded objects mostly of the Gupta period and only a few objects of pre Gupta period as represented by the terracotta figurines dating from the first century B.C. Other finds included two hellenistic heads, punch-marked coins and terracotta seals. At Lauriya-Nandangarh, T. Bloch of the Archaeological Survey of India took up excavation works in 1905. The excavations revealed that one of the stupas contained a deposit of burnt bones with charcoal and another yielded a gold leaf with a female figure akin to the one from Piprawa. Bloch lebelled these mounds as vedic burials but there is no evidence to support this view. There is another probable view that they represent Buddhist stupas. Excavations at Maniyar Math in Rajgir by Bloch in 1905-06 revealed that the hollow edifice (discovered by Cunningham) was enlarged several

times including in the late Gupta period, when niches were provided on its outer face for images modelled in stucco. A Naga figure in stone inscribed with the name Maninaga was found by the side of the structure. Further, the excavation in the new Rajgir area resulted in the discovery of terracotta seals of 2nd century B.C. and six uninscribed cast coins, known to be current in North India two or three centuries preceding and following Christ.

In 1912, D B. Spooner of the Archaeological Survey of India carried on further excavation at Kumhrar initially with the funds provided by the Tatas In course of his excavation, he found below some brick structure ascribed to the Gupta period, eight heaps of polished stones in eight rows of ten heaps, with an interval of 15 feet from heap to heap amidst a deposit of charcoal and ash. Spooner took it to be the site of the Mauryan pillared hall, whose wooden structure had probably caved in as a result of a conflagration He also found to the south of this hall seven wooden platforms, each measuring 36 feet long, 5 feet wide and 4½ feet high, but their purpose could not be ascertained.

In 1916 and 1922, the excavations were conducted at Nalanda by D.B. Spooner and J.A. Page respectively. The bulk of the structural remains, that the excavations have brought to light, actually belong to the post Gupta period with the exception of the main Stupa-shrine which shows seven restorations or seven periods of building activities. The stupa shrine was the most imposing structure during the fifth period when it had four corner towers and was adorned with niches enclosing the most beautiful stucco figures of the Budha and the Bodhisattavas. The date of the structure has been fixed according to a brick tablet inscribed with a Buddhist text and bearing the date 197 of the Gupta era, i e. A D. 516 17 inside one of the votive stupas attached to it. The sixth and seventh restorations of the main stupa shrine belong to the post-Gupta period. Among the other structural remains of the

post-Gupta period, special mention may be made of the eight rows of monasteries and the three temples. The three temples have each a central shrine on a high podium with stucco images installed therein. The essentially Gupta finds from the excavations include coins and a large number of seals of Gupta emperors and other contemporary rulers. The finds of the post-Gupta period include a large number of stone images of the Buddha and the Buddhist deities, bronze images, terracotta plaques and seals of which the official seals of Nalanda monastery bearing the legend Sri-Nalanda-Mahavihara arya-bhikshusamghasya deserve special mention.

In 1918-19, the excavation conducted by H. Pandey at Belwa did not yield any significant structural result excepting the terracotta figures of Gupta and partly pre-Gupta age, which are now in the Patna museum

In 1926, M-J.A Page and M Ghosh carried out excavations at Bulandibagh, a little to the west of Kumrahar, where below some brick building of the Gupta date, they found a unique wooden structure running east to west for a distance of about 250 feet. The wooden construction consisted of a series of 14 ft long wooden planks at bottom, flaked by 13 ft. high wooden uprights and these were spanned on top by tenoned planks. The excavators have identified it with the wooden palisade as mentioned by Magasthenese. Other finds from Bulandibagh include Punch-marked coins, seals, terracotta figurines, a wooden cart wheel etc.

In 1935-36, Shri N.G. Majumdar further examined the four mounds at Laueiya-Nandangarh. In course of the excavations, he found that the burial memorials had a burnt brick basement. Further, the layers of yellow clay mixed with grass and leaves in the core of the stupa, which accounted for the Vedic theory of Bloch were nothing but ordinary mud brick He, therefore, suggested that

it was not true to regard these monuments as connected with Vedic burial rites.

In 1939 Shri A Ghosh's excavation at Nandangarh (a little to the south west of Lauriya-Nandangarh pillar) revealed a large stupa with a polygonal base and rising in terraces. The earthen core of the stupa provided the punch-marked coins, cast copper coins and clay sealings of 1st century B.C. But further down below the structural surface was found a complete miniature stupa and by its side lay a copper vessel containing birch-bark Buddhist manuscript written in the script of the 4th century A D. This evidently showed that the stupa had been reconstructed about that date efter cutting through from above.

Apart from the excavated results the other important discoveries of this period include terracotta figures of the Maurya, Sunga and Kushana periods obtained from Buxar by A. Banerjee Sastri, bronze images of Kurkihar by Rai Sri Hari Prasad of Gaya, the female figure of a Chauribearer from Didarganj, the highly polished tor so of the Jain Tirthankara from Lohanipur in Patna and the unpolished sand-stone figures from Patna ascribed to 200-100 B C. and usually identified as Yakshas. Mention may also be made of the Asura sites discovered by S.C. Ray during 1915-26 in the Chotanagpur Plateau and the collection of microliths, neolithic tools and copper implements from Chotanagpur and the Santhal Parganas, which are now in the Patna Museum.

III. (1950—68)

The outbreak of the 2nd World War in 1939 accounted for the big gap that followed in the sphere of archaeological activities and it is not until 1950 that we notice any concerted effort being made in Bihar for undertaking exploration and excavation work. In the meanwhile, two very significant developments had taken place; the far-reaching chages that followed in the wake of political Indepen-

dence of our country and the introduction of the observation of stratification in excavations by Late Sir Mortimer Wheeler during his tenure of office as the Director General of Archaeology in India. Both had their effects on the archaeological activities of our country. In Bihar, however, the interests that followed during post-independence period is amply borne by the excavations taken up at different sites. Further excavations at Rajgir under Sri A. Ghosh and at Vaisali by Sri K. Deva of the Archaeological Survey of India, were carried on in terms of the new technique of stratified digging. The scrapping made in a section cut by a rivulet at Rajgir, yielded interesting data. The occupations at the site suggested a sequence of four periods corresponding roughly to Maurya, Sunga and Kushana periods. The excavations brought to light post-cremation burials from the lower levels yielding the N.B.P. Ware.

The excavation at the garh site at Vaisali had been undertaken with a view to determining the nature of the defences of garh area. The excavations revealed two different phases in defences namely, first the mud-rampart and then the mud-brick structure. The cutting at Chakramdas touched the earliest level as characterised by N.B.P. Ware, black-and-red ware and the associated objects consisted of bone points and a few iron objects. The excavations revealed four periods of occupation at the site corresponding to the Maurya, Sunga, Kushana and Gupta periods.

The excavation at Kumrahar by the K.P. Jaiswal Research Institute, Patna, spread over a period of five seasons (1951—55) revealed that pillar stumps were removed during 2nd century B.C after the conflagration and further the pillared hall as found in Spooner's excavation did not extend either to the East or West. The structural remains included a platform with a staircase, a covered drain, a monastric establishment known as Arogya Vihara according to a clay sealing and also an embankment of sand for

providing protection against flood—these remains range in date from the Maurya to late Gupta times. Other finds consisting of punch-marked coins, uninscribed cast coins (Kushana and Kausambi issues) and tarracotta of fine Gupta workmanship deserve special mention. The excavations revealed five periods of occupation corresponding to the Maurya, Sunga, Kushana, Gupta and late Gupta times.

Excavations undertaken in the isolated areas in Patna City, viz, Gulzarbagh Press area, Mahabirghat, Begam Haveli and Shah Kamal Road during 1955-56 also revealed the same five periods of occupation ranging from 6th century B.C. to the 7th Century A D. However, in the Mahabirghat area black-and-red ware of pre-NBP phase was encounterred but its significance was not then realised. The mideastern circle of the Department of Archaeology concentrated its work at Rajgir and during its four seasons of excavation work (1953-54—1957-59) at Jivakamravana site under Dr. D R Patil on the one hand, and Dr. K.C. Panigarhi and Shri A C. Banerji on the other, brought to light two long elliptical halls of which the latter had in the centre subsidiary rooms surrounded by a compound wall.

The excavations at Vaisali were conducted by the K.P. Jaiswal Research Institute, Patna, for five consecutive seasons from 1958--1962 at the following sites viz: Kharaunaka-Pokhar, stupa mound to the north-west corner of the garh area, Bhimsena ka Palla, Chakramdas, Bania and Lalpur, Virpur, Marpasauna. Collectively speaking, the most significant structural results of the excavations include a mud stupa containing a relic casket in soap-stone with ashes belonging to Buddha probable remains of a defence wall made of baked bricks and structures like military barracks. The minor antiquities consisted of terracotta figurines, beads, coins, besides finer pieces of N.B P. Ware, a few P.G. Waresherds, black-and-red ware pieces and other pottery types.

The K P. Jayaswal Research Institute undertook a trial excavation at Karian (Distt Darbhanga) in 1955 with a view to ascertaining the birth-place of Udayanacharya, a great philosopher of the 10th century A D. The excavation revealed that the site had been under human occupation atleast from the Gupta period if not earlier (Vide S.R. Roy's Karian Excavations, 1955, Patna, 1965).

But the most interesting and probably of far-reaching importance are the results of the excavation at Sonpur in the district of Gaya. The excavations conducted at Sonpur for four seasons (1956-57, 1959-62) by the K P.J.R. Institute, Patna, have revealed three successive cultural periods with a sub-division in the earliest phase. Sub-periods 1A and 1B of period I are characterised on the one hand by crude black-and-red ware, usually, wheel made with instances of completely hand made vessels and finer pieces of black-and-red ware invariably wheel made and often well burnished on the other. Of special interest are a few post cremation pit-burials of sub period 1B. The pit burials, each a circular pit about 1.2 to 1.8 metre in diameter and 75 c.m. in depth are filled with ash, bone-pieces and potteries in coarse red, black and black-and-red wares. Period II is marked by occurrence of the N.B P. Ware of fine golden and silvery varieties and of special interest are half a dozen polished stone axes as ascribed to this period. The excavations at Sonpur, thus, show the meeting point of three cultures namely, the iron age culture of the north, the black-and-red ware, reminiscent of the Chalcolithic culture of Central and Western India and the polished stone axe culture of the Deccan.

In 1960, the excavations were started at Antichak near Colgong in the district of Bhagalpur by the Department of A.I H. and Archaeology, Patna University with a view to determining the site of the Vikramasila University. Prolonged excavation work at the site exposed a large brick-stupa with shrine chambers containing huge clay figures of Buddhist deities on decorated pedestals. One of the shrines contains a stone figure of the Buddha in Bhumisparsa-

mudra. The architecture of the stupa is unique and is very similar to the Paharpur monument. It is important to bear in mind that the Somapura Vihara in Bengal (now Bangladesh) and the Vikramasila Mahavihara were contemporary in orgin in the time of Dharmapala. The Antichak stupa has two circumbulatory paths one above the other and the walls of the stupa have numerous terracotta plaques fixed in nitches. These plaques are not only very important for the study of the Buddhist iconography but also present a glimpse into the then prevailing social life, amusements, toilet, coiffure. That the terracotta art was quite vigorous is obvious. An inscription on a stone-capital has introduced for the first time a new dynasty of three kings (local) and their relations with the rival Pala and Sena kings. Thus, a very interesting light is thrown on a hitherto dark chapter in the political history of the region Further excavations carried out by the Archaeological Survey of India have exposed massive monastic complex with large gates and hundreds of monastic cells and dozens of watchmen's quarters. A high wall encircled the entire monastery which had the stupa as the main shrine. Large number of stone images, some bronze images too, not only of the Buddhist pantheon but also of the Hindu deities have been recovered. A large Buddha head is one of the significant finds. It may be mentioned that the present excavated area is only a small part of the unexcavated mounds strewn alround for long distances. There is, therefore, no doubt, that here we have a huge monastic complex, not smaller than Nalanda. Taking into consideration the Tibetan accounts about the Vikramasila University and the results of the limited excavations, the Antichak complex is decidedly a part of the great Vikramasila University which should be excavated fully.

Buxar on the Ganga bank, in the Shahabad district had yielded as reported earlier, very intersting terracotta going back to the Mauryan period The present residence of the SDO stands on a high mound which extends down to the bank of the river at the Ram-

ghat. Buxar is associated with Rama and Visvamitra and Tadika and Subahu. Some years ago a famous Sadhu, Khaki Baba, believing it to be the site of the Charitravana and the *ashram* of Visvamitra where Rama and Lakshmana fought demons Tadika, Subahu and Marici, started digging operations, and discovered a number of terracottas and stone balls, carbonised grains, pits with ashes and bones. He felt convinced that he had discovered the sacrficial pit of Visvamitra, and weapons of war fought by Rama and his brother and according to him the bones belonged to the Rakshasas. Excavations at Buxar were started by the Directorate of Archaeology in 1963. The very limited excavations with the objective of determining the cultural sequence of the site revealed a probable pre-NBP strata followed by NBP and Sunga and Kushana-stratas. The last occupational phase detected was of the Muslim period with glazed green and blue potteries. A gold armlet and a few silver coins of Jahangir were discovered. The excavations could not be carried on deeper down to the virgin soil because of huge river-borne sand deposits intervening. The earliest excavated period with grey, black-and-red-wares yielded unique terracotta of animal and human figurines, which may be placed before the NBP came in general use. The II period of the NBP (with associated potteries) culture also yielded beautiful moulded terracottas which are quite distinctive as far as head-dress, ornaments and physical features in comparison to terracottas found from other sites belonging to the same cultural period. The period-III represented Kushanand and pre-Gupta period with sprinklers and spouted vases. There is absence of NBP. Some years ago a hoard of Kushana copper coins was found from the bed of river in Buxar. Kushana occupation may be accepted. However, the excavations did not so far reveal any trace of chalcolithic culture and stratas believed by Dr. A. P. Shastri; and while there is no denying the richness and uniqueness of the Buxar terracotta figurines, there is no trace of their derivation from the Harappan examples. This is a site which deserves much more thorough and systematic explorations and excavations.

Chirand on the bank of the Ganga and close to the confluence of the Ghogra and the Ganga in the Saran district was excavated by the State Directorate of Archaeology from 1962—1970-1. The earliest culture settled on the virgin soil was a well-developed neolithic with characteristic bone-tools and post-firing ochre-painted pottery The beginning of this culture should be placed in the late 3rd millennium B.C This was followed without break by a mature chalcolithic culture with its characteristic black-and-red ware, some painted in white as in Ahar in Rajasthan. The vases include besides dishes, jars, bowls, dish-on-stand in both red and black and-red wares, some with paintings. A few copper rings and antimony rods were discovered. Later in the same ceramic culture (black-and-red ware), iron is met with. This is followed by NBP culture complex with characteristic terracotta figurines, balls, bone and stone arrow heads and more iron objects. A large terracotta mask is a very intertesting find. Post-NBP stratas reveal a few Sunga terracottas and characteristic Kushana figurines. A significant discovery is a hoard of 80 Kushana copper coins in the stratigraphic context. As many as five substantial building phases of bill burnt brick-structures prove the architectural brilliance in the Kushana period in Bihar. The Kushana pottery with various incised designs and variety of forms is reworkably rich here and bears comparison with the Kushana pottery of Soviet Central Asia. Gupta layers are not prominent, post-Gupta and Pala stratas have yielded usual Pala sculptures of which a small Trimurti figure in black stone may be noted.

Balirajgarh now in the Madhubani district in North Bihar is an extensive mound. Excavations first by the Archaeological Survey of India and later by the State Directorcate of Archaeology have partly exposed a rampart which was constructed in two phases. The mud-rampart was later (in the Sunga period) re-inforced by substantial brick revements and provision for watch towers was made Excavations on the surface of the mound away from the

fortification wall, revealed Gupta, Kushana and Sunga remains with characteristic pottery, terracottas, plaques and beads. A few NBP pieces suggest a substantial NBP culture complex underneath, but due to high rise of subsoil water, excavations could not be carried on further deep.

One of the ancient sites situated, in purely lowlying plains away from hills was Champa in Bihar, well-known to the Epic, Puranic, Buddhist and Jain literatures. The team of the Patna University has been excavating the ancient site of Champanagar near Nathnagar in the Bhagalpur district. The excavations have revealed two building phases of the rampart with watch towers and some evidence of armoury of sling balls. The beginning of fortification could not be traced due to rise in subsoil water. Excavations have yielded a very rich NBP in many colours, some pieces have double colour, some are painted also The number, quality and variety of the NBP founds, in the lowest excavated stratas here are more impressive than Upper NBP stratas. An ivory female figure with anticulated limbs, a number of stone jewellery moulds, fine stone beads from the lowest exposed NBP strata, are some of the notable finds. One highly burnished sprinkler from the top-layer of the NBP strata leads to weaken the theory that sprinklers were introduced in the Kushana period. The Sunga stratas abound in characterestic terracotta plaques particularly, female figurines. One appears to have a peculiar crown on the head remniscient of the west Asiatic examples, and while figures of mother goddess with various weapons arranged round and over the head may represent the evolution of the Durga concept. Kushana and Gupta building activities are to be noted but a remarkable discovery is burnt–brick structure of the NBP period. More extensive excavations of Champa may throw interesting light on the early urbanisation in India with its fort complex, industrial activities and artistic effloresence.

Excavations at Katra in the Sitamarhi district in North Bihar also reveal a large fortification complex going to the Sunga times

or even earlier. Actually, a systematic planned work on ancient forts in Bihar is a great desiderratum.

Aphsad in the Nawada district in South Bihar is famous for the inscription of Adityasena, the later Gupta king of the 7th century A.D. In the village there is a large brick mounds. Amature excavations below the present surface of the mound exposed a brick wall (probably the plinth of the ancient temple) which had a series of eight niches containing stucco images depicting the story of the Ramayana in a continual sequence from the scene of Rama crossing the Ganga at Sringaverapura to Bharata's meeting Rama in Citrakuta. These stuccos represent a unique theme in Indian art reminding us of the depiction of the Ramayana story in a clear sequence on temple walls of S. E Asia. From the style of the art, the Aphsad stuccos should be placed in the 7th century A.D. in the context of the Nalanda stucco figures. There is hardly any doubt that if the entire plinth wall is exposed, we may have more or less a complete Ramayana story illustrated here. This must form part of the Vishnu's temple erected by Adityasena as known from the Aphsad stone inscription. One seaon excavation of the mound in 1974 revealed remains of a temple complex on the top of the mound, which must have been built on a earlier temple of Adityasena's time. Unfortunately, the Directorate of State Archaeology has discontinued the excavations of this very important site.

A Japanese team excavated near Bodh Gaya and exposed remains of a Buddhist monastry of 3rd-4th century A. D. The Archaeological Survey of India carried on excavations across the Phalgu river oppsite the Bodh Gaya temple of a mound known as the Sujata Kutir. The two seasons excavations laid bare very substantial structures—monastry and stupa with more than one building period. Excavations exposed structures of the Gupta, Sunga and Kushana times. The site is very promising and it was unfortunate that the excavations were abandoned without completion.

Investigations in prehistory have also not been neglected. The Archaeological Survey of India carried on excavations at two different Asura sites in the district of Ranchi in 1964-65 and 1965-66 respectively. The former was a habitation site at Saradkel and the latter a megalithic one at Khuntitoli.

The State Archaeology and Museum, Bihar undertook excavations at Lotapahar near Chakradharpur (Singhbhum) in 1967 in order to find out a stratigraphic sequence of the Stone-Age culture. The excavations in one of the trenches revealed two cultural periods. Period I was characterised by Middle Stone Age tools on quartzite and Period II was represented both by the geometric and non-geometric microliths on chart.

Apart from the excavated remains, no less interesting and impressive are the results of exploration work carried over years by the K. P. J. R. Institute, Patna University and other agencies. The K. P. J. R. Institute carried on exploration work mainly in Chotanagpur region and some adjoining areas of Santhal Parganas and discovered a few stone age sites. Rajrappa in Hazaribagh district and Barda bridge and Lotapahar near Chakradharpur have yielded tools of Early Stone Age 'Marvania and Pratapur in the district of Palamau have yielded microlithic tools of both geometric and non-geometric types along with a few upper paleolithic blades. Lotapahar and Chandil have yielded a few pieces of Neolithic celts.

The Patna University carried on exploration work mainly in Santhal Parganas and the area around the Kharagpur hills in Monghyr. The most important discoveries include tools of Early, Middle and Late Stone Ages from Bhimbandh; tools of Early and Late Stone Ages from Karnakoljore near Deoghar, tools of Middle and Late Stone Ages from the river valley of Santhal Parganas and some pottery in association with neolithic tools from Jamtara area. Mention may also be made of remains of on ancient bridge discovered at Jaymangla garh by a team of teachers of G. D. College, Begusarai (Monghyr).

The Patna University team made an exploratory survey around the Antichak main stupa-mound within a radius of about 10 k m. and discovered Middle Stone Age tools from Chandipur, beads and microliths of chalcolithic assemblage from Lalpur, Late Stone Age implements from Malakpur and Namsukh-kothi and specimens of chaloclithic pottery from Oriup near Antichak. A trial excavation at the last mentioned site comfirmed a flourshing chalcothic settlement with painted and unpainted black-and-red ware. A tiny terracotta female figure in the style of paleolithic venuses is a very rare find from the chalcolithic level from Oriup. Another team of the Patna University along with Dr. R V. Joshi of the Archaeological Survey of India re-explored the Bhimbandh and adjoining area and the result was much encouraging so far as the Stone Age culture was concerned. A work site of Early and Middle Stone Ages on the top of the hill was located The Patna University team also discovered black-and-red-ware of chalcolithic assemblage from Maner (Patna district). The University team's expoalration in the Gumla sub-division of the Ranchi district discovered as many as eight Stone Age sites, viz.: Barwe, Chainpur, Jamatoli, Kandra, Kurumgarh, Nawadih, Nawagaon and Rajadera. The Anthoropology Department of the Calcutta University discovered in 1965-66 lithic industries in stratigraphic sequence near Deokulia in the district of Palamau.

A very interesting discovery was made in 1969-70 by the State Directorate of Archaeology and the Patna University teams in the Jethian Valley of the Nawada district. In the section in the Jamunia Nala a rubble gravel rested on bed-rock The gravel consisting of mainly quartzite and gneissic rocks yielded tools of Early Stone Age in the form of chopping tools, hand-axes and flake tools. The tools are of quartzite and most of them look fresh, a few are rolled. When the climate became dried and rainfall decreased brown red silt was deposited which is archaeologically sterile. But tools of the Middle Stone Age were found loose in the bed or on the

surface along the *nala*. There must have been therefore a second gravel which has been washed away. So the Jethian Valley underwent different climate changes in the prolonged Pleistocene age and early man roamed in the valley in the early Pleistocene times making use of readily available quartzites for tool-making. Tool types include hand axes, cleavers, chopping tools, flakes and scrapers—mostly of the Madras tradition. Clactonian and proto-Levalloisian techniques were known, and some flake tools remind us of Sohanian flake industry. On the basis of study of the flake tools, different stages of tool-making periods have been suggested. Tools of the middle stone age are different from those early stone age. They are all flake tools—scrapers of various shapes, borers, flake knives (and miniature hand-axe). These tools are made by plain-flaking and some also on prepared core-technique. The discovery of a flake knife here gives it a unique position as a flake knife so far has been reported from Rajasthan only.

The exploration and informations received disclose the vast ground still to be covered by archaeologists. There are numerous highly potential and prospective sites.

Prospective Sites in Bihar

Although considerable archaeological operations have been done in the region of Bihar, still there are prospective sites which, after thorough check-up, will add considerably to our knowledge of history.

Pre-historic Sites

The valleys of Sanjay, Ajay, Subarnarekha, north and south Koels of the Chotanagpur Plateau, and the Man Valley near Kharagpur hill of Monghyr, which have already supplied stray finds of Palaeoliths, microliths and neoliths, if explored thoroughly, may bring forth some clues to cultural sequence of lithic industries. Besides, stone age sites may also be located in other areas of the

region. The river valleys of the Bagmati, Burhigandak, Mahananda and the Kosi have yet to be properly surveyed and explored.

Megalithic Sites

In the Chotanagpur region there are megalithic sites which require thorough examination. The hilly region bordering the Mirzapur surroundings should be thoroughly investigated with a view to find continuation of rich megalithic cultures and rock paintings.

Chalcolithic Sites

The sites of Maner, Oriup and Manjhi, located in the districts of Patna, Bhagalpur and Saran respectively, need intensive excavations for a proper evaluation of the Chalcolithic culture. Needless to say that in course of explorations these sites have yielded encouraging results of the culture in question. A very promising site is Chechar on the opposite bank of the Ganga in the Hajipur district. The explorations of the rich and extensive mound with surface finds indicate a clear sequence of cultures from the Chalcolithic to the post-Gupta times, and in importance, the site appears to rival Chirand.

Historical Sites

Bhelawar (District Jahanabad), Jaimangalagarh (Begusarai) seem to be prospective sites for the early historical period. The sufficiently high mounds of the sites, along with the finds from the exploration and stray trial excavations reflect the great archaeological importance of the sites. Indpe (ancient Indradyumnagarh) in the Jamui sub division of the Monghyr district contains extensive ruins of fortified settlements with tanks and double surrounding walls. Further, excavations of this site (some probes were made earlier) will expose a highly complicated fort city complex of the late Pala period. Proper excavations at Kurkihara (in the Nawada district) from where scores of Pala bronze sculptures were dug up would be highly rewarding and a factory site for bronze articles may not be located far off.

10

Buxar Terracottas

Buxar is the headquarters of the sub-division of Buxar in the district of Shahabad, Bihar. Buxar has a hoary past and has yielded numerous archaeological remains. A large number of terracottas from Buxar are exhibited in the Patna Museum. They show an evolution of technique and envisage a continuous history of development. However, in view of the fact that there is no record of these being found in stratigraphic sequence, the story of the evolution and the sequential chronolgy suffered from a vital lacuna.

The Directorate of Archaeology, Government of Bihar undertook excavations at Buxar in 1963-64. The results were very promising in many respects. So far as the terracottas are concerned, they were found in definite stratigraphic sequence, and pointing to the evolution and difference in technique of pottery-making from one culture to another. Period I appears to be a pre-NBP culture (as no NBP sherd was found), though the associated potteries were black, grey and red wares found also in association with the NBP. The black pottery was of very fine and then fabric and common types were wheel made bowl, bowl with internally knobbed base and dish. This pre-NBP Period I also yielded six terracottas—4 animal figures and two female figurines. This was a very important discovery. The terracottas are hand made and what is most important is that the animal figurines are painted with hori-

zontal parallel lines in yellow colour. Terracottas that have been reported from Hastinapur from Pre-NBP level are much more crudely made and have no paintings on them. The two female figurines from Buxar are beautiful. The eyes are incised, nose pinched, breasts full and rounded, and one of these is wearing punched earlobes. The technique though primitive, is quite successful, and the modelling shows good craftsmanship. The hand and the fingers of the broken female torso have been very naturally made resting on the knee. The importance of these finds is that we have now a positive idea about the art of making clay-figurines in the period before 600 B.C. in the Central Gangetic Valley. Buxar is associated with the Epic heros - Rama, Lakshmana and Vishvamitra and their struggle with the Asuras like Tadika and Subahu. It is, therefore, very likely that in future more extensive excavations might throw some significant light on the Asura culture here.

Period II marked with the appearance of the NBP, along with red, black and grey wares. There was thus no abrupt break. A new ceramic tradition has appeared, probably begun, further east in Magadh, and spread as we knew practically throughout North India, or part of Central India and lower Deccan.

Terracottas also were discovered. In all nine of these are illustrated. A comparative study of plates with the earlier plate showing terracottas of the pre-NBP level will atonce show the great advance made in the art of making terracottas. The figures are much better modelled, the head-dress and other decorations are much more prominent and numerous. The popularity of use of wheel with spoke motif deserves special notice Was it do with the Dharmachakra of the Buddhists ? If it is pre-Asokan, we get probably the first archaeological representations of it associated with human figures It is to be noted that these female terracottas are entirely different from those that are commonly associated with the Mauryan and Sunga periods. The plates show that these Buxar terracottas have peculiar head-dress,

three of them have something like a crown on the head. The variety even in the six examples only is really astounding. No one agrees with another fully. Ornaments are there but not so heavy. Of the animal figurine, the head of an ass and the torso of a lion (?) have been beautifully modelled, and the neck ornament of the man-shaped ass is really a treat to see. The lions menes have been arranged in order. Do they give us some premonition of the sophisticated lions menes of Asokan period ?

Thus, this short report on the terracottas of Buxar of Pre-NBP and NBP level gives very valuable informations and the suggestions have been made to provide more scholarly discussions over and search for the terracottas in pre Mauryan and Mauryan period—a subject not studied in detail so far. it may also be pointed out that more such materials might help us in tracing the history of the art of terracottas from the Indus Valley period to the Mauryan period These terracottas actually fill up the gap to some extent.

11

Crystal Human-figure from Sonpur*

Rock-crystal is a semi-precious quartz stone. In India its chief find spots are Tanjore, Kalabagh Kashmir and a few other places, where crystalline quartzs of the requisite purity are obtained.[1] A leading authority has observed that the Alps and India are suposed to have furnished the ancients with their supplies of rock crystal.[2] Jankara in Kathiawar, bed of the Godavari near Rajmahendri, in stream beds of Tanjore and formerly even in Delhi region, crystal prisms were obtained. Small bi-pyramidal crystals have been obtained from marls of the Mari in the Mianwali district of the Punjab, Pakistan and are known as Mari diamonds.

Objects made of crystal have been in use in ancient India from the Neolithic times. Microliths made of rock-crystal were noticed at Nagarjunkonda,[3] Brahmagiri and at the later place they continued in the early phase of the Megalithic culture. In the Harapan culture crystal beads were manufactured. At Mohenjodaro a few short barrel-shaped beads and at Harappa one globular crystal bead were found.[4] The occurance of lump of crystal ready to be cut for

*Crystal object have been discovered trom various sites such as Taxila, Vaisali, Kumhrar, Amaravati, Navda Toli. Nasik in the post NBP Stratas. These have not been taken into account.

1. Wadia, D N , Geology of India, London, p. 493.
2. Marshall, J , Mohenjodaro and the Indus Civilization, Vol. II, London, 1931, p. 678.
3. Indian Archaeology 1958-59, p. 5, 1959-60, p. 6.
4. Ancient India, No. 4, p. 252.

beads at Chanhudaro[5] shows that crystal beads were manufactured locally here. The occurrence of only one perforated short bead at Rangpur III[6] associated with lustrous Red Ware tends to suggest that crystal bead-making was not much popular in post-Harrappan Chalcolithic cultures of Western and Central India. In the Black-and-Red-Ware Chalcolithic complex at Oriup (Bihar), were found a few crystal beads. These have to be dated long before the 6th century B. C. In Jaugada, District Ganjam, crystal beads with Black-and-Red-Ware (Period I) not associated with Iron may be noted.[7]

With the emergence of NBP, use of crystal products becomes again popular. From Hastinapur were found in Period (NBP) crystal beads, and one pyra midal shaped pendant from Period IV.[8] Crystal beads of Period II (NBP) from Ujjain and from NBP levels of Vaisali may be noted.[9] Taxila yielded a large number and a variety of crystal objects. NBP strtum IV) at Bhirmound yielded a star of highly polished crystal.[10] Crystal beads were manufactured in all periods in Taxila.

However, a unique crystal object in course of excavations, was discovered at Sonpur in the Gaya district in Bihar in the NBP strata (Period II).[11] This is a tiny human face of a female, well-finished (slightly damaged on the right side), horizontally perforated on the top of the head. This was probably used as a pendant. What does the figure indicate? This can only be speculated. It must have had some religious or magical significance. It may be of some interest to know that in Bihar even to-day a married woman who is the second wife (after the death of the first wife) of

5. E Mackay, Chanhudaro Excavation, 1935-36, p. 209.
6. A. I. Nos. 18-19, p. 144, Fig. 52, Pl. XXXIV, No. 5.
7. I. A., 1956-57, p. 30.
8. A. I No. 10-11, pp. 92-94, Fig. 29.
9. I. A , 1957-58, p 36, Deva Kushna, Vaisali Excavation, p. 62, Pl. XXIV, No. 16.
10. Marshall, J., Taxila I, p. 102.
11. I. A., 1961-62, p. 4.

the husband has a stone pendant or metal (silver) pendant with the figure of a woman hanging on her chest, probably as a mark of respect to the dead co-wife, or to ward off any evil from her spirit.

The artistic quality of this crystal piece has to be noted. The depiction of the eyes and eye-brows, and the very proportionate figure of the face with prominent nose and lips have, been beautifully cut into the hard rock. We get an idea of the hair-dress of the longish-faced woman. The extension on both sides from the head of the figure suggests that the head of the woman was covered by a head-dress (*Odhani*) like thing. Thus, some idea about the dress of the time may be also obtained.

But the importance of the figure lies in its being so far the only known example of its kind for such an early period. We do not know of any such a similar crystal human figure having been found in stratified layer belonging to the NBP period. That the art of the stone-cutter had reached the same degree of excellence as that of the potter in this period in Bihar is a legitimate conclusion.

12

Some Rare Antiquities from Recent Excavations in Bihar

Excavations in 1972 at Champa and in 1971 at Chirand yield some rare antiquities throwing unexpectedly new light on the socio-economic life and artistic skill of the people in Bihar in ancient times.

Champanagar

Five km. west of Bhagalpur town is believed to be the site of the ancient city of Champa, famous in the days of the Buddha. Excavations by the Patna University team have brought to light a mud rampart with two phases of construction As the virgin soil has not yet been reached, it is difficult to state about the height of the wall of the first phase. But pottery discovered in the lowest level include black-and-red ware sherds with weathered surface, black slipped ware, fragments of dishes and bowls in grey ware and a few early types of N.B P. sherds. It is reasonable to presume that the foundations of the fortifications would go down to 6th century B. C. A trench, taken outside the fortress near Champa village, though not dug up to the natural soil as yet, has yielded remarkable antiquities. The earliest levels exposed so far have yielded fragments of early N B.P. types and fragments bearing painting in pinkish colour. In the early N.B.P. level, dated to 6th-5th century B.C, we come across a broken ivory figure, stone moulds for making ornaments, toy-cart made of tortoise shell, and a *nagin* figure in terracotta. These are described one by one below:-

(*a*) *The Ivory Figure.* This is a unique find as such a large female figurine of ivory has not been reported from any site dated to the 6th-5th century B C [1]. The figure has been blackened, because of accidental firing and the right hand and the leg are missing. It is a very well proportioned object, 16 cm. in length from waist to foot and the length of the head is 2.9 cm. It has developed breasts, slender waist and long arms and fingers. The eyebrows and eyes have been well delineated, the nose is prominent aquiline and the forehead is broad, the face is oval and there are holes for fixing the hair or hair wig There are bangles on the left hand and *sandal* in the feet. What lends special significance to the figurine is that it is hinged at the neck, shoulder, elbow, wrist and knee. The different parts of the limbs were fashioned out of ivory pieces separately and then later screwed together at proper places. The grooves are well marked and finished. The general appearance of the face gives flattish impression. Wooden figures with articulated limbs of this type have been found in Egypt and West Asia belonging to earlier times. It is difficult to say whether this figure is an imported object, or fashioned after some foreign model. It is significant not only from the artistic point of view but also may throw light on India's contact with West Asia and beyond.

(*b*) *Stone Moulds*: According to the early Buddhist and Jain literature Champa was a very flourishing city having brisk trade with different parts of the country and outside. It was a large business centre and it appears that goldsmith's profession was at its height. These stone moulds are for making ornaments. Such stone moulds have been found in a large number. Two sets of specimens show that ornaments of specific shape and design

1. An ivory seal is reported from Rupar and Neresa. Ivory pendants and hair-pins were found at Nagda; ivory die, Ivory-handle and antimony rods from Vaisali; Ivory comb, antimony rod, dice, hair-pins, aivls seals, combs, knitting needles, mirror-handle from Ujjain and arrowheads from Kausambi and Sonpur and bangle and comb from Oriup in Bihar are only important Ivory items reported recently for early historical period.

were made by pressing together the moulds bearing the same shape and design. Even holes have been provided for tying the two moulds through a thin wire and where there is no hole or holes as such traces of regular lines produced through the tightening of the thin wire can be specially noticed on the outer ends of the moulds. Channels have been provided in the moulds so that the liquid material in excess of what could be retained in the design-portion, may flow out. The moulds reveal various shapes and designs of ornaments, special mention may be made of chains of varied designs (namely, bead-shaped, circular leaf-shaped, elongated leaf-shaped, and *makara*-shaped necklaces), pendants, earring and talismans. Moulds for making talismans or amulets have on the obverse two sets of incised carvings depicting human and animal figurines, and in each set the carved in line figures in panels are separated by a railing, which is shown at both the lower and upper ends of the panels for ensuring the decorative effect. On the reverse side can be seen a rider on horseback, charging with a spear in front. The dynamism of the figure and his holding the reins of the running horse has been well expressed. The stone moulds not only throw welcome light on the development of goldsmith industry of the period, but they also, in a way, reveal the excellence achieved in technology. The artistic skill in inscribing the human and animal figurines is to be noted. The design of the railing with uprights and *suchis* is a reminder that the railing is a much earlier architectural feature than the Bharhut and Sanchi railings. But here there are no circular medallions. The ornament moulds may be detailed as follows :

mould showing : (i) triple rows of small balls forming a check pattern for a chain, (ii) elongated leaf-shaped chain, (iii) bead-shaped chain, (iv) earring or ear-top, (v) a *makara*-shaped chain, (vi) a crescent-shaped pendant, (vii) a circular leaf shaped chain.

(c) A toy-cart made of tortoise shell showing double circular design

over the body and the wheel. The wheels are soild. The toy-cart is 12 cm in length. The length and thickness of the body are 11 cm and 8 cm, respectively. The diameter of the wheel is 5 5 cm. and the hub of the cart is 8 cm. The breadth of the cart including wheel is 6.3 cm. The significance lies in the material used for making the toy-cart, and in the wheels being solid, without spokes. Numerous terracotta wheeled carts were reported from many NBP sites in Bihar.

(*d*) a terracotta *nagin* figure whose head portion is represented by sanke god, and the remaining portion, including legs, represents abstraction of a human figure. This is an early representation of the concept of semi devine *nagas*, having human form as described in early literature.

(*e*) 'A broken terracotta female figurine wearing ear-lobes and a heavy necklace has peculiar arrangement of the hair. The eight weapons *or Ayudhas*) shown over her head from left to right are *Parasu, Chakra, Sakti, Gada, Vajra,* (thunderbolt), *Trisula, Dhanu-bana,* and *Ankusa*. The figure appears to represent the mother-goddess Sakti or later Durga who was armed with the characteristic weapons of the great gods. The early recognition of Sakti-worship is significant Later the mother-goddess is endowed with eight hands each holding characteristic weapon Similar more fighures have been found in course of the excavations They are to be placed in the post-NBP Sunga period

Chirand

Chirand is now rightly famous for its advanced neolithic culture. Situated on the bank of the Ganga, about 6 miles away from Chapra, the headquarters of the Saran District, Chirand mounds have given us a historic sequence from the neolithic to the Pala period; hardly, any other site has given such a long and stratified sequence of India's cultural history. It has yielded many, antiquities of the Sunga, Kushana and Pala periods. In 1971 excavation in

CRD XIII from layer 6 corresponding to the Mauryan period with good type of N B. P. sherds was found in a terracotta mask. (Figs. 6 and 7) whose measurement is as follows :

Length : 35 cm. (from head to the lower portion of the mask),
Breadth : 32 5 cm. (from left ear to right ear),
Inner diameter of the lower portion of the mask 23 cm.

The mask is double-faced—female and male. It must have been used at some pantomimes. Kautilya's *Arthasastra* refers to many dramatic performances in *Utsavas* and *Samaja* gatherings. The importance of this discovery lies in the fact that it is stratifically to be assigned to 4th-3rd century B. C , and gives an insight into the social amusements of the period. The earliest reference to something like mask may be traced in the *Mahabhashya* (3/1/26) where the actor in drama representing Kamsa uses *mukharaga* and the same actor puts different *mukharaga* for playing the role of Rama. (From Nevasa a big pot looking like a mask has been reported but it is to be placed in Ist or 2nd century A D.) Bharata's *Natyasastra* refers to *Pratisirsha* which may be equated with mask. But there is no reference to terracotta mask.

13

Representation of Ramayanic Scenes in An Old Temple Wall at Aphsad

Representation of Ramayanic scenes on temple walls have been reported from Deogarh and Sahet-Mahet. There are also some Ramayana scenes depicted in Kailashnath Temple at Ellora. Stray examples of some Ramayanic scenes from Chausa (Shahabad) and from Sitamarhi rock-cave in Gaya District have been reported. It is, therefore, very important to find as many as eight panels of stucco depicting Ramayanic scenes in sculptures in a part of a wall of an old temple still submerged under the high mound at Aphsad. Aphsad is a village near right bank of the Sakri river about 15 miles towards North-East of Nawada, the district headquarters of the Nawada district. It is from this place that large size Varaha figure was found and is still preserved. It is from this village that the famous Aphsad stone inscription was found. The Aphsad stone inscription refers to construction of a temple Vishnu by king Adityasena His mother Mahadevi Srimati constructed a religious college (Matha). His wife excavated a wonderful tank. It is important to note that there is still a tank in the village of Aphsad. There are extensive ruins which may contain within their womb remains of the Matha and the temple of Vishnu. The mound which is associated with temple of Vishnu has large number of Vishnu images in black stone scattered near about and on the top of the mound there is a clear evidence of sculptural temple with a cella. Unfortunately, there has been no regular excavation

of the Aphsad mound which is bound to throw very important light on political and religious history of the post-Gupta period.[1] A few years ago some curious villagers with the help of young boys excavated the corner of a side of the mound which revealed the part of the wall of a temple. In this portion there are as many as eight rectangular panels with stucco images depicting Ramayanic scenes in a clear stone sequence. It is important to note that the scenes represented here are not to be found in Sahet-Mahet or Deogarh. The first panel depicts the crossing of the Ganga (at Sringaverapura) by Rama, Lakshmana and Sita with the boatman with oar. The boat is well depicted with the boatman with oar at one side of the boat and then Rama with his bow and quiver. Both the brothers are in the attire of an ascetic. Sita is between the two brothers. All are standing. It is stated in the Ramayana that Sita was helped on the boat first, then Rama, was followed by Lakshmana (II. 52. 69. 81).

The second panel depicts Rama, Sita and Lakshmana squatting on their knees under shaded trees (conventionally treated) before Bharadwaja an ascetic at Prayaga. Bharadwaja after hearing the story by Rama offered Rama and his party good food. The Risi is said to have offered a bull (vrsabha) and dishes of food and drink. A bull (damaged) on the left corner below the Risi's feet is depicted in the panel. The scene is exactly as represented in the Ramayana (II. 54 12 - 18). The third panel depicts the crossing of the Yamuna on the raft made of wod-logs tied together with grass ropes with dry bamboos across, as advised by Bharadwaja. The presence of tortoise in the water is significant. On the raft only Sita has been sitted. Rama's and Lakshmana's bows and arrows are placed on the raft. Rama and Lakshmana must have jumped on it later as stated in the Ramayana (II. 55. 4-5, 13-17). The next

1. Excavations were started in 1974 which proved promising. However, with the author quitting the Directorate of State Archaeology excavations were stopped and have not yet been resumed.

panel depicts a scene in the forest where Rama with Sita on his lap and Lakshmana opposite in Virasana are taking rest under a shade. A goat's head and a deer's body are lying near the feat of Lakshmana testifying to the fact that they were hunted for meals. This is exactly as stated in the Ramayana wherein we are told that they slew games and beneath the trees they prepared their meals and ate. The fifth panel depicts Rama, Sita and Lakshmana squatting on knees before an ascetic. He is certainly Valmiki in Chitrakuta as stated in the Ramayana (II 56. 16).

The next panel shows Rama and Sita sitting under a shady tree, and Lakshmana with a bow and quiver is sitting on a branch of the tree and looking expectantly for the explanation of the loud sound being raised by the procession accompanying Bharata with his army. Sita is pointing to Rama, towards Lakshmana going up the tree with the bows and arrows in an angry mood. This panel is a faithful representation of the scene described in the Ramayana wherein we are told that Rama was disturbed by the confused flights, in terror, of animals and birds in the forest due to deafening sound of the approaching crowd, and so Rama asked Lakshmana to find out the cause of this disturbance in the forest, and Lakshmana climed on the sal tree to took around (II. 96. 4—11). The seventh panel depicts the procession of caprisoned elephants and horeses from Ayodhya coming to Chitrakuta, with Bharata as leader. This is what Lakhsmana said and reported to Rama (II. 96. 12—13). The next scene depicts Bharata falling on his knees before Rama who embraces him in arms; Sita and Lakshmana (damaged) are watching. The scene excatly tallies with the description of their meeting in the Ramayana (II. 99. 37—39).

It is quite clear that if thorough excavations are carried out we will have more scenes from the Ramayana. It is important to note that the panels had been carved in sequence telling excactly the story from Rama's crossing the Ganga to Bharata meeting him at

Chitra kuta. This is for the first time that we have a running sequence of Ramayanic scenes. We know that this method was deployed in South East Asia. The Ramayanic scenes in sequence depict the story of the *Ramayana*. In our opinion these panels are contemporary with the temple constructed by Adityasena and may be placed in the 7th century A D. and in style and technique they do not differ from the stucco figures in ths panels of the main stupa wall at Nalanda dated 6th or 7th century A D. The figures are bold, vigorous and the animal figures of elephant and one of horse are life like and majestic. The plasticity of human figures, their undulating arms and the round soft faces are clearly in the late Gupta style. The decoration on the plasters with Purna ghata motifs and simple decorative design and lotus medallions on the top all point to the artistic designs prevalent in the Gupta period. Some of the panels show traces of painting in red and in red are also remains of a few letters which unfortunately cannot be deciphered. Probably they served the purpose of captions for each panel.

in the Museums of the country. It is the presence of the Linga with yoni pedestal that fixes the identification of the image; otherwise there is no other sign such as the presence of Ganesa and Karttikeya to help us in identifying the image as that of Sadyojata. A mere comparison of this image with those already published will show other minor distinguishing features of the image under study.

15

Some reflections on Indian Sculptures (Stone or brozne) of Buddhist Deities trampling on Hindu Deities

It is universally recognised that by and large a spirit of mutual understanding and toleration among votaries of different sects prevailed in India throughout its long history and examples of violent religious preachers and feuds which disfigured the history of Europe and West Asia are extremely rare to be met with in ancient Indian history. Different religious sects flourishing side by side in the same localities and in the same periods are the most persistent and pleasant phenomena to be appreciated by all. Buddhism, Jainism, which arose as challanges to Brahmanism, though retained their individuality, found many of their essential features absorbed into the great absorbant Hinduism. Buddha was even taken to be an incarnation of Vishnu At Khajuraho, Sanchi and Bhilsa, Ellora, Gaya, Rajagriha, Mathura, Nagarjunakonda and practically at all places of religious and archaeological importance we come across temples, chaityas, stupas, images of Buddhist, Jain or Brahmanical deities, of all the three or of any two religions. Freedom of religious propaganda and proselytisation prevailed in the country without mutual violence. And it may be said that Asoka's prophetic and clarion call to the adherants of different sects, that to disparage others' sects injures one's own sect, and to honour Others' sects, besides one's own promotes the cause of one's own sect, remained the basic policy of Indian kings and religious communities.

But this should not blind us to the fact that there was freedom of propaganda for every religion and competition to gain adherants or to impress on the superiority of the respective sects went on unabated. This explains the missionary activities of the Buddhists and Brahmins in and outside the country. Fierce and keen philosophical contests to prove the superiority of one's own over others and to refute the tenets of others resulted in the productions of highly learned logical and philosophical treatises belonging to the Hindus or Buddhists. This rivalrly was not confined between Hinduism and Buddhism. Various sub-sects of Hinduism such as Vaishnavism, Saivism, Saktism, etc. also endeavoured to show their respective superiority over the rest. The *Puranas* are full of such ideas and stories However, sculptural representations of such beliefs or myths exhibiting sectarian rivalry among Hindu sects are few and on the other hand there are far more numerous representations of associations of various deities together as principal or supporting castes Such examples of syncreticism are not only confined to purely Hindu sculptures,[1] but there are Hindu deities and Buddhists represented together in some sculptures.[2]

In this perspective it is highly interesting to notice certain sculptures showing Buddhist deities trampling (or insulting) Brahmanical deities Tantricism had profoundly influenced not only Buddhist philosophy and worship but had enormously increased the Buddhist Pantheon and introduced numerous new features in Buddhist Iconography such as addition of many heads and hands to the deities. However, the significance of the critical study of iconography does not lie only in increasing our knowledge about the distinguishing features of the deities of a particular sect but also, in understanding the prevailing spirit of relationship between the different sects of the time Unfortunately, inspite of some doubt-

1. Harihar.. .
2. Buddha, Vishnu, Surya and Stara —Development of Hindu Iconography, 2nd Edition.

ful literary references about Brahmanical images for worship earlest images so far found are Buddhist in nature. With the growth of the Bhakti Cult, images of Hindu deities followed in large numbers and varieties; and it was natural for Buddhist and Hindu Iconography to influence one another. With the increase in the Mahayanist Pantheon and its later development into Vajrayanic Tantricism, we find numerous Buddhist deities taking over the form and attributes and often names of Hindu deities and Vice-Versa.[1] In such a background it becomes all the more significant to find such representation of Buddhist deities like those of Aparajita trampling Ganesa[2] and *Trailokyavijaya* trampling shiva and Parvati[3] Samantabhadra has sometimes in one of his six hands (left) the severed head of Brahma.[4] Hariharihariyahana has as his vahanas Simha, Garuda and Vishnu,[5] But no image of this god has so far been found in India.[6] Sixteen armed Hevajra has under his legs four Maras namely, Brahma, Vishnu, Mahesvera and Sakra.[7] Yamantaka is killer of Yama, the Hindu God.[8] His one form shows him riding a baffalo.[9] Vighnantaka is the Buddhist diety, the killer of *vighna*, (obstacle) who was Ganesa to the Buddhist;[10] in one representation Ganesa is prostrate and over him the God Vighnantaka is sitting[11].

1. Padampani Avalokitevara like Vishnu, Vajranga like Kamadeva, Simhanada has features similar to Siva (Buddhist Icon. pp. 127-28. Nilakantha reminds us of Nilakantha siva (Ibid. p. 140), Yamantaka like Yama rides a buffalo; jambhala resembles Kubus; Tara of Hindu Pantheon has been borrowed from Buddhist Tara (ibid. p. 190). Hindu goddes Manas is modelled as the Buddhist goddess Janguli (ibid., p. 193); Vajrayogini was adopted as Chinnamasta by the Hindus.
2. Buddhist Icon., fig. 108 for Natants.
3. Fig. 190 in Indian museum.
4. Pl. vI.
5. Pl. VII.
6. Buddhist Iconography, p. 136.
7. Ibid.
8. Ibid , pp. 166-67.
9. Ibid., p. 168.
10. ibid., p. 181.
11. Pl. VIII.

Vajrahunkara tramples on Bhairava, a form of Siva.[1] Vajravalanalaka tramples on Vishnu and his consort Only one Sadhana describes his form.[2] Paramasva has four legs and tramples Indrani and Sri, Rati and Priti, Indra and Madhukara, Jayakara and Vasanta.[3] Kalacakra dances on the bodies of Ananga and Rudra,[4] but his images are rarely found in India. Parnasavari tramples on Ganesa.[5] The goddess Ubhayavarahanana, a form of Marichi with her three faces, of which two are like that of a sow, tramples under her feet the Hindu gods such as Hari, Hara and Hiranjagarbha (Brahma) and others.[6] But no representation of it is found in India Five-faced and ten-armed Dasa-Bhujasita-Marici riding a chariot drawn by seven pigs also tramples under her feet the Hindu gods like Brahma, Siva, Vishnu and Indra.[7] Six-faced and twelve handed Vajradhatvisvarai Marici has in one of her hands the severed head of Brahma,[8] while Vajravarahi tramples on Bhairava and Kalaratri,[9] Prasannahara according to its Dhyana is trampling with her left foot Indra and with right foot Vishnu (Upendra) and presses Rudra and Brahma between the two.[10] Vajrasaraswati may have in one of her hands the Kapala of Brahma.[11] In the Dacca Sahitya Parishad image of Mahapratisara. Ganesa appears below the lotus seat lying prostrate on the ground under the weight of Buddhist deities.[12]

1. Buddhist Iconography, pp. 181-82.
2. Ibid., p. 183.
3. Ibid., pp. 185-86. Only a Nepalese drawing is eshibited.
4. Ibid., p. 17.
5. Ibid., p. 197, Pl. IX.
6. Ibid., p. 212.
7. Ibid., p. 213.
8. Ibid., p. 214.
9. Ibid., p. 218.
10. Ibid., pp. 249-50, Fig. 192; Pl. X.
11. Ibid., p. 352.
12. Ibid., p. 387, Pl. XI.

The aforesaid account is a fair sample of iconographic representations of the Buddhist deities insulting deities of Hindu Pantheon. It may be pointed out that though the Dhyanas in the Sadhanmala imagine numerous such deities actually many of these have not been so far discovered in the form of sculptures and again, many such as Hevajra, have been only found in Tibet and China, where traditions of religious toleration or co-existence of different sects were not so deep rooted and well-marked. There are historical instances of religious presentions by kings in Tibet. Then sculptures representing such deities like Hariharivahana have been found in Nepal only and that too rarely. If we carefully look into the catalogues of the museums and other notices about such Buddhist sculptures found in India it will appear that by far the largest number of such images belong to Aparajita, Trailokyavijaya-vighnantaka Parnasavari, Vajrahunkara, Marichi, Vajravarahi. Samantabhadra with the severed head of Brahma in one of his hands, is not rare in India, though more popular in China.[1] Paramasva is only represented in a Nepalese drawing.[2] Only a Nepalese drawing of Prasanatara trampling Indra, Visnu, Brahma and Rudra has been noted.[3]

Thus, it is clear that among the Hindu gods, Ganesa, Siva, Parvati or their forms and Brahma (his severed head) have been specially chosen to be objects of contempt and insult by the Buddhists as a whole in some sculptures found in India It is also obvious that these representations belong to the Tantric phase of Buddhism and such sculptures are to be dated not earlier than 8th century A.D. They are cetainly post-Guptan in time. Another point to be noted is that, most of these Buddhist sculptures so far found, belong to Eastern India, Bihar and Bengal, where Vajrayana Buddhism was most prevalent and where Hindu Tantric cults (e.g.

1. Ibid., p. 84.
2. Ibid., p. 186, Fig. 132.
3. Ibid., p. 250.

Saktism) also were very popular.[1] (The find spots of the images of the Baroda Museum are not indicated in the Buddhist iconography).

The usual explanation of these Buddhist sculptures that has been offered is that "This is how the Buddhists attempted to exhibit the superiority of their gods over those of the Brahmanical faith."[1a] At best it is only a partial explanation. It is true that in the Puranas there are numerous stories showing the respective superiority of the one deity over the other. In the Visnu Purana Visnu is shown superior to Siva and the rest, and in the Linga Purana there are several stories to prove the superiority of Siva over Visnu and others and latter's discomfiture at the hands of Siva.[2] There are some sculptural representations as well of such stories or ideas, some of which will be considered later. It may be, therefore, said that if sectarian rivalry within the Hindu fold itself developed, atleast for some, into mutual disparagement of each other's cult deities and which in some cases did not remain only confined to literary effusions but found visual expressions in sculptured icons,[2a] it was quite natural for the Buddhists to depict some

1. An Image of Aparajita slapping Ganesa is in the Patna Museum and another in Indian Museum is also from Nalanda; Parnasavari's image trampling on prostrate Ganesa in the Indian Museum belongs to Magadha. In the Patna Museum is a bronze sculpture from Nalanda depicting Vajrahunkara trampling on Siva and Gauri; there is another broken statue of Trailokyavijaya in Nalanda depicting the trampling of Siva and Parvati. A sculpture depicts Ucchusmajambhala trampling Kubera. It is in Sarnath Museum but its whereabouts are not indicated (Buddhist Icon. 2nd Edn. p. 267, fig. 130) In the Dacca Museum that are images of Parnasavani showing prostrate or crueling Ganesa (Icono_raphy Buddhist and Brahmanical sculptures in the Dacca Museum .... pp. 60-61).

1. (a) Buddhist Iconography, 2nd Edn., p. 389.

2. Linga Purana regarding the appearance of Siva as Sarabha to humiliate Narasimha (Visn). pt. 1, Chs. 95-96.

2. (a) Even in Buddhist pantheon, there was the conception of a deity Bhutadamara trampling another Buddhist deity Aparajita (Buddhist Iconography 2nd Edn., pp. 182-183, showing sectarian rivalry in the Buddhist fold itself. But such cases are very rare and may have been influenced by cult-rivalry among the Hindus.

Hindu deities in a dishonoured state. But it still remains to explain as to why mostly Siva or members of his family (Siva, Gauri, Ganesha, Kalayatri, Bhairava) are specially selected for such treatment and why are these sculptures mostly found in Bihar, Bengal and also in Nepal (which was very much influenced by Tantricism from Bihar and Bengal and where Buddhists fled with their books and images as a result of decline of Buddhism in Bihar and Bengal and more as a result of Muslim invasions and conquest of Eastern India)?

In this connection it has to be admitted that even in the earliest Buddhist art Brahmanical deities like Brahma and Indra (Sakra) were depicted as occupying subordinate positions to Buddha. In the birth scene of Buddha, Sakra and Brahma are represented as paying homage to the birth of the Buddha. On the Bodh-Gaya railing, belonging to the Sunga period, Indra and Sakra are represented in subordinate positions. The Buddhist literature is full of such references and stories which show superiority of the Buddha over the Brahmanical deities. It may not be unreasonable to expect that later the Brahmanical literature and also certain images, describing the humiliation or subordination of important cult-deities by respective gods or goddesses, the Ishtadevatas of the cults represented by the Puranas and the images, were inspired by the Buddhist art and literature. While in one Saiva image, namely, Ekapadamurti, Siva is the central figure having on either side Brahma and Visnu, in another Vaishnava image we find Visnu the central figure and Brahma and Siva are on either side. In the Puranas while there are stories describing Siva as paying homage to Visnu, there are also many stories depiciting Visnu paying homage to Siva. The latter as Kachchiyappesvara is worshipped by Visnu. Siva image as Vishnavanugarhamurti shows Siva pleased with the devotion of Visnu and offering him the cakra.[1] In a

1. Elements of Hindu Iconography, Vol. I, pp. 42-46.

Varaha panel at Mahabalipuram, on the other hand, we find Brahma and Siva in *anjalipose* (in a posture of offering service and devotion) to Visnu as Varaha.[1] In another Mahabalipuram panel depicting Trivikrama form of Visnu, we find Brahma offering *Puja* and Siva represented in *anjalipose* placed about the height of the navel of Visnu in space.[2] Thus, we find that "in some sculptured representations Brahma would be shown as offering argya at the uplifted tow of Visnu's leg, with Siva on the other side in *anjaii pose*."[3] However, these representations at worst prove the cult-rivalry and suggest that in a bid to prove and demonstrate the superiority of one cult over the rest that were strong rivals, stories were invented and some of them were translated into stone or bronze. But these representations atleast were not crude; and they also did not treat the Ishhadevats of cults other than one's own in contempt. Some may be said of the early Buddhist sculptures referred to above.[4]

The explanation of such Buddhist icons which depict trampling of Hindu deities by Buddhist deities, has therefore to be sought elsewhere. The simple cult-cons representing superiority of respective cult-icons over others could hardly, naturally and normally degenerate into such crude and unseemly representations under discussion without some special reason or change in circumstances. Bearing in mind the find spots of such Buddhist icons and their probable date in post-Gupta period, the explanation that easily offers itself is that cult-rivalries, especially rivalry between the Buddhist tantricism and the Hindu cults particularly, Saivism, had become very keen and acute in this period and in East India. There is no doubt that in the Gupta period Brahmanism had an edge of

1. Ibid , p. 138.
2. Ibid., p. 166.
3. Srinivasan, T.N. -A hand-book of South Indian Images, p. 40.
4. IHQ. VI, pp. 45 ft.

advantage over Buddhism; and though the Gupta emperors followed the policy of religious toleration and some of them even showed demonstratable favours to Buddhism, the latter was in a declining state, a fact noticed by Fahien and confirmed by Hiuen T'sang. Among the Hindu cults, Vaishnavism and Saivism were most popular closely followed by the Sakti-cult allied with Siva. Ancient Bihar being the epicentre of political and religious activities naturally was one of the most important arenas where the sectarian rivalry—particularly between the Buddhist and the Saivas—became more and more sharpened. This part of the country was not only the birth-place of Buddhism but also was stronghold of Buddhism for many centuries. Naturally therefore, the Buddhists resented the onrush of aggressive Hinduism in their cherished home, and their consequent losing hold made them angry and hostile to Brahmanical cults. The Saiva representing the spearhead of Brahmanical movement now boyant and confident, was equally bent upon vitally injuring Buddhists and their cult; atleast the Buddhists saw things in this light. It may be of some significance that Vainygupta Dvadasaditya was a devotee of Siva. Mihiarkula,[1] who was convert to Buddhism had ordered a general persecution of Buddhism and it was his this tall order which had enabled Narasimhagupta Baladitya to lead a large scale popular opposition to the Huna invader in Magadha.[2] Sasanka was a Saiva and he was responsible for many acts against Buddhists. He tried to uproot the Bo-tree at Gaya, threw into the Ganga the stone with Buddha's foot print at Pataliputra and he attempted to destroy Buddha's image at the Mahabodhi and place an image of Siva in the temple, east of the Bo-tree.[3] It is quite possible that political and personal reasons might have also weighed in launching the anti-Buddhist

1. Watters I, p. 288.
2. Decline of the Kingdom of Magadha, p. 105.
3. Watters ft. p. 92, pp. 114-15. Records II pp. 121-22; Watters II, p. 116.

tirade by Mihirakula and Sasanka,[1] but what is important to note is that to the Buddhists these acts appeared to be violent acts of Saiva fanaticism and in the account of Hiuen T'siang, and in the later Buddhist literature like Manju Srimulakalpa Sasanka is painted in darkest colour. We are told by Taranatha that the Nalanda monastery was burnt by the Brahmin sacrificers who, threw the burning ashes of the sacrificial fire into the monastery. Dharmasvami who visited Magadha in 1234-36 A D says that the fleeing Buddhist monks from the Nalanda monastery took shelter in a *Chandi* temple, against Turk invaders. He also informs us that when Vajrasana was threatened by Turks, the Buddhist monks had fled away after putting an image of Siva in front of the Buddha's image to hide the latter. All these facts show the growing hostility between Buddhism and the Saivas and also the growing popularity of the Saiva cult. The mood of frustration of the Buddhists might have further embittered some of them, who tried to avenge by representing Siva and members of his family in contemptuous and humiliated fashion. The growing animosity, between the Buddhists and the Brahmins in this part of the country, was further sharpened by a keen and persistent intellecutual rivalry; and the highly philosophical treatises produced at Nalanda and Vikramasila were sought to be controverted by Hindu philosophical works produced in Mithila by scholars of Saiva leanings. It is against this background that we may search for the explanation of the Buddhist icons under discussion.

It is true that Hinduism had already accepted Buddha as one of incarnations of Visnu and in the Visnu Purana directions are given for the fashioning graceful images of the Buddha. But at the same time in the Visnu Purana many hard things have been said against Buddha and the Buddhists. In the Saura there are worse

1. Dk.M. pp. 260-261.
2. Visnu Purana.

effusions against Buddhists and it is advised that no righteous person should live in a kingdom inhabited by the Buddhists, charavakas, Jainas etc.[1] Dr. Jaduvansi may be right in suggesting that the Saivas took lead in aggressive cult-rivalry against other sects.[2] (It is certainly significant to remember that Saivism was a pre-Aryan cult which was later absorbed in Brahmanism and as happens with all converts Saivism was most bitter against the unorthodox cults). Even in the fold of Hinduism, Saivism retained some of its rustic characters and aggressive vigour of the old. The fanaticism of the Saivas against rival cults belonging to the Hindu fold itself was expressed not only in their sectrarian literature, but also in some of their icons. we have referred to the fact that various Hindu cults in their respective sectarian literature eulogised not only their respective *Istadevas* but also, showed them superior to other cult-deities. Saivism and Vaishnavism were the most dominant Hindu cults and we find their respective sectarian literatures proving the superiority of one set of deities as against others. But as we have seen above, while the Vaishnava icons were content with representing Siva in subordinate role to Visnu, some of the Saiva icons represent other deities in much worse situations. Siva in the form of Sarabha is represented as a mythical lion destroying Narasimha, an incarnation of Visnu. One representation from S I. shows Sarabha standing on his two feet. On the abdomen of the prostrate Narasimha in *anjalipose;*[3] in the Lingodbhava Icon, very popular in S. I , Brahma as the swan and Visnu as Varaha fail to find the upper and the lower limit of the Linga of Siva and ultimately Siva appears.[4] In the Brahma-siraschchedaka murti Siva is shown

1. Saura Purana, 38-54.
   न चाब्राको न वै बौदों न जोतो य न नडिये वा कार्यानका यौभिका वा तस्मिन राज्य विशात् कुचित् ।
2. Saiva cult, p. 138.
3. JASB, L. XXI, Pt. 2, Fig. 25, Pl. XIII, p. 85.
4. A Handbook of South Indian Images, p. 71.

with the severed head of Brahma stuck in the right palm of Siva.[1] It is of some significance that such Saiva image depicting violent aggressive character of Saiva icons against rival Brahmanical cults are mostly found in S.I The explanation probably lies in the fact that very keen and acute rivarly between the worshippers of Visnu and Siva went on in S I, since the 7th century A D contemporary with the rise of the Pallava power, and there are archaeological evidences to suggest that Vaishnavaite or Saiva images or temples were damaged or modified or taken possession of by the votaries of either cult. But the Saivas appear to have gone as far as demonstrating publicly in some of their icon-types the gross humiliation of the rival cult-deities at the hands of Siva.

It appears quite likely that some sections of the Buddhists who had reasons to be provoked by the growing state of Hinduism in this region and by the aggressive attitude of the adherants of Siva took recourse to fashioning some Buddhist icons, which might have been imagined in the Buddhist Dhyanas, and which demonstrated Siva or members of his family in prostrate or trampled position. It is also quite possible that the Buddhist saw in some of the Saiva images or in literary references discribing crude humiliation of other cult-deities, the models for exhibiting their wrath on some Hindu cults (probably many of the icons representing Siva's triumph over Visnu or Brahma belong to a period earlier than the Buddhist icons under discussion). It is understandable that Buddhists who represented some of their deities (mentioned above) holding the severed head of Brahma in one of their hands, were inspired by Brahmasiraschchedaka murti of Siva and the deity who was superior to Siva could certainly in fitness of things held Brahma's head in one of the hands.

The aftermath of the discussion above appears to be that it was the growing hostility between the Buddhists and the Hindus,

1. Ibid., p. 78.

particularly the Saivas in Eastern India, Bihar particularly in early middle age which explains the prominence of those Buddhist icons. There is certainly some truth in the assertion; the Buddhists as a proof of their aversion to the followers of the Brahmanical faith made their gods, trample upon Ganesa.[1] However, we have not come across any similar representation of Buddhist deities in any Hindu icon, even of Saivite character. Dr. B. Bhattacharya observes, "It is however a matter of satisfaction that the Hindus never disgraced any gods belonging to the alien faith in this manner".[2] But it has to be pointed out again that there are Hindu icons belonging to one cult disgracing the gods of the other rival Hindu cults in no less reprehensible manner than the Buddhist icons (some representations of Siva have been referred to above). Then why was no Buddhist deity depicted in the like manner by Hindu or more particularly Saiva iconographers? An explanation may be that in South India when such Saiva icons are generally met with there was no love lost between the Saivas and the Vaishnavas. In Bihar, during the period under review, Buddhism was declining and Brahmanical cults including Saivism were coming in ascendancy. The Buddhists, or more properly some of them were in most aggrieved and frustrated moods and swayed by emotional reaction resorted to such crude exhibitions of their embittered and frustrated feelings; the Brahmins had no reason to react in the similar way.

However, the aforesaid discussion should not carry us away with the impression that during this period Buddhists in general were following such aggressive, crude and intolerant opposition to Brahmanical cults in general. On the contrary there are numerous bronze and stone sculptures found in Bihar which would show that a reconciliation between the Buddhist and the Brahmanical cults had proceeded very far. Images of Hindu deities, like those of

1. Buddhist Iconography, 2nd Edn. p. 389.
2. Development of Hindu Iconography, 2nd Edn., p. 547, P1. XLVIII, Fig. I.

Balarama, Uma rakeshvara Saraswati, Ganga, Visnu and the Sun etc. have been discovered from Nalanda and Kurkihara. We have already referred to the fact that Buddha was regarded as an incarnation of Visnu and in some of the large images of Visnu found in Bihar, there are representations of his various incarnations including that of in Buddha form. The Buddhists adopted and modified manyof the Hindu deities. Padma Pani Avalokitesvara reminds us of Visnu. Resembling Dikpalas we have Buddhist gods of direction Ganapati etc. in the Buddhist pantheon as well. There are Dhyanas prescribed describing the forms of Agni, Vayu, Brahma, Indra, Visnu, Camunda, Ganapati, Mahakala etc. and of the Navagrahas. Manyof the Bodhisattvas are modelled after different forms of Siva. There is an unique image already referred to above depicting Hari-Hara, Surya and Buddha together. The image is in the Indian Museum, Calcutta[1] and most probably hails from east Indian part of the country. From Estern India are also discovered images of Siva-lokeshwara and Surya-lokesh-wara in the Ashutosh Museum, Calcutta,[2] showing close association of Bodhisattva lokeshwara with the prominent Hindu cult deities.

Thus, the irrefutable conclusion appears to be that notwithstanding the prevailing cult-rivalry the movement of religious syncreticism and mutual animilation and toleration was also gaining strength. However, some sections of the Buddhists were embittered and aggressive enough to get fashioned such icons, as depicting of trampling of Hindu deities by Buddhist deities. But this was the sure index of Buddhism's inner strength and quaility being fast dried up; and as we know Buddhism soon practically disappeared from the land of its birth leaving a trail of lesson behind for the posterity.

1. Ibid., p. 547, Pl. XLVI, Fig. 4. Image of Visnu-Lokeshwar also found in different parts of Eastern India.
2. Ibid, p. 554-55

16

Some Problems of Ancient Indian Numismatics*

I am extremely grateful to the Executive Committee of the Numismatic Society of India for electing me the President of the society for this session. I cannot claim to be a professional numismatist and therefore am quite conscious that the honour you have bestowed on me is more the expression of your love and affection for me than your recognition of my very humble contribution to the early Indian Numismatics. With great humility I accepted this high honour which was legitimately claimed by my very distinguished predecessors.

As a student of ancient Indian History I have had to use numismatic data available from time to time for studying and teaching the subject for thirty years. But it was during my studies in London that I dared challenge the data processed long before and accepted by all scholars A researcher has to relentlessely test his source material and in dealing with dynastic history of the later Imperial Guptas I felt like doubting the results tabulated by Cunningham regarding the chemical analysis of the Gupta Gold Coins. I was highly encouraged by late Dr. John Allan and the results that I obtained are to say, in lighter vein, now almost ancient history to fellow workers in the field. All that I want to stress that even the highest authority may be challenged by a keen researcher with great profit

* Presidential Address at the Annual session of Numismatic Society of India 58th session. Patna, 1969.

to the world of knowledge and scholarship. The study of metrology and purity of coins which had been neglected after Cunningham is receiving proper attention now and I may claim a share of satisfaction for this.

Ancient Indian Coins are being studied for more than a century now, and have been utilised largely for reconstruction of political history, religious life and social aspects, like use of ornaments and dress. While they constitute just one kind of source, though quite an independent one, for shedding light on the history of the tribal kingdoms, of the Satavahanas, of the Kushanas, the Sakas and Guptas, they are by far the most predominant source for the history of the Bactrian and Parthian rulers. For the Post-Mauryan royal dynasties of Kosala and Kausambi, the coins are our main stays. The Puranic account of the Satavahana rulers is being regularly supplemented or explained by discovery of coins of new Satavahana rulers The Kushana and the Gupta gold coins not only supplement our knowledge of political history, but also give concrete proofs of the process of fusion of the two Indian and foreign cultures in more than one field.

But the dominant function of a coin is to serve an economic purpose. It is generally believed that coins as such first came into use in Lydia in the beginning of the 7th century B C. When were coins introduced in India is a vexed problem. While there are vague literary references to something like metal pieces used as means of exchange in the Vedic period, there is no evidence that such pieces were stamped by a corporate authority. Unless positive proof is available, we will have to accept that the Punch-marked coins including the bent-bar ones are the earliest coins of India. However, there is still a live controversy about the earliest date to which the Punch-marked coins could be taken Stratigraphically the Punch-marked coins are found with the N. B. P., but unfortunately no specific answer to the question as to the exact position of the

coins in early or late N. B. P. layers is still available. But Carbon-14 dates do not take N. B. P. earlier than 6th century B. C., and that should be taken to be the time when Punch-marked coins were introduced and it should be so because it is the age of the development of cities in North India spurred by intense trade and commercial activities. It is still an enigma as to which authority issued the early Punch marked coins, whether some of these were issued by the Imperial Nandas and the Mauryas. Asoka, who was careful in issuing long inscriptions, if issued these coins left them uninscribed. There is no doubt that Kautilya speaks of royal mint and coins, but the date of Kautilya's Arthasastra is still a matter of controversy. All this goes to show how much uncertainty hangs about the antiquity of Indian coinage and its authors.

But while quite a large volume of written material is available and is being enlarged everyday, about the authorship of this or that coinage and the light it sheds on religious and other aspects of life, the economic data from coins which should have been the main topics of study has been generally ignored. It is, therefore, very satisfying and highly appropriate at the stage of advance in study of Indian Numismatics that a Seminar on the problem has been arranged during the current session of the society's annual meet.

Without anticipating the discussion and result of the Seminar, I may pose a few problems which should also receive due attention of the learned scholars assembled here. What was the source of silver of the silver Punch marked coins? Was it from the mines of the same region in the country or from different regions? Was it imported and if so from where? The correct answers to these questions may explain the direction of spread of the coins and also the nature and extent of internal and external contacts. Gold was known too and used by Indians from the time of the Harappan, Vedic, Buddhist and later literatures are full of references to gold and

gold ornaments. But why do we have the first gold coins only in the 1st or 2nd century A. D , when the Kushanas are supposed to have established their hold on India? Why do we have paucity of gold coins in the post-Gupta period? Is it due to extreme rarity of gold in India in the early period? What was the source of gold? Were the Mysore gold mines and gold dust from the Indian rivers not yet exploited ? Coins of a specific dynasty are to conform to a basic standard of weight to avoid confusion in the market-economy. Giving allowances for wear in course of circulation, it is found that coins of the same series have slight variation in weight. I had examined the later Imperial Gupta gold coinage from this angle, and had come to the conclusion that generally heavier the coin, later its date. A revised and critical study of the weights of the Punch-marked, tribal, Kushana and Gupta coins of different metals may be made and tentative conclusions arrived at. Whether some peculiar economic factor was behind this modification in weight ? My very limited study of the Gupta coins tended to suggest that heavier the coins, more debasement of the metal. Should we not re-examine the coins of different dynasties and tribal or city authorities, who issued them from this angle and find out the comparative percentage of purity or impurity in them? This may throw some light on economic condition of the period. Some of the Gupta gold coins are very much debased having purity as little as 45%. Should it not reveal a deteriorating economic condition tending suvarnas to become something like obtaining a mere token value of Suvarna. Incidentally, another question crops up in my mind. Was leather used as a raw meterial for coins ? It was plentiful. Lead was used. While there is evidence that Kushana gold coins were based on Roman weight standard, have we compared the weight of our silver coins with that of contemporary Greek coins? We have use of dinars in inscriptions which may suggest our knowledge of Sassanian coins. What was the extent of their prevalence in India?. We have found very few Sassanian coins in India. Could some economic beside political relationship

be inferred on however slender this base may be? Prevalence of foreign coins certainly has some economic or even political significance. Availability of Roman coins mostly south of the Vindhyas certainly had posed the question of Indo-Roman contacts. It was of course not possible to argue that these coins were a kind of souvenirs brought by Indians from Roman empire or presented by Romans to the Indian friends and collaborators. Ptolemy and Pliny had referred to brisk trade of Rome with India and bewailed the drain of Roman gold into India.

Archaeological excavations at Arikamedu gave positive proof of this phenomenon and also showed that characteristic Roman potteries were imported into India and suggested the establishment of Roman trader's colonies on the eastern coast. More evidence is coming and Roman antiquities are being discovered in excavations from both North and South Indian sites. It is clear that beyond the Kushana empire in India, Roman goods and coins penetrated into India. What an exciting chapter of India's foreign trade in ancient period is being gradually unfolded! The romance of Roman coins in India can be now understood in a large measure. India had brisk trade and other contacts with both the western and eastern world since the days of the Kushanas. Could we search for Indian coins in these regions?

Stray finds or even hoards of coins of the region found in different regions may not actually prove the existence or political or commercial links between the regions, but their being found out in stratified layers in carefully excavated trenches has a very great significance as for the date and economic factors. Archaeologists, therefore, though more interested in potsherds than tempting coins, should be very careful in docketting details of the manner and the locus of the coins that they found in stratified layers and note the associated finds with these.

One of the greatest enigma of the early medieval coinage in

India is that after the Imperial Gupta rule was over, except for brief periods of the Gahadavalas and Kalacuris gold coins are rare and coinage as such even becomes thinner and thinner. There were large Pala and Pratihara empires which stood the test of time for centuries but we have hardly any gold coins of theirs and only a few silver coins. What is the explanation ? Had trade declined to this extent? Did barter again reign supreme? If so why? Was there the stoppage of source of metals, indigenous or foreign ? These are some of the problems, and let me hope in the current session of the Numismatic Society of India, we will find answer to some of these

Actually, the Numismatic Studies in India have to be reorganised. It should not only remain confined to a few isolated Universities. The intelligentsia should take a hand in furthering this branch of study. There are coins being found in obscure places and in tilling the soil or digging a well. Mostly they are melted or lost. Unless there is a vigilant Numismatic Society, say in every Block, there is danger of this very important source material for our history, cultural, political or economic studies being lost or misplaced. The Treasure Trove Act should also be properly amended to facilitate the task of Numismatists. There should be museums at least in every district of the country which should not only have terracottas, sculptures and other ancient or modern exhibits, but must have actual coins or their replicas. Occasionally, mobile exhibitions may be arranged even on Block level to reveal the history of the country, or regions particularly from coins to stimulate interest in the subject and to inculcate a sense of pride and ownership in country's heritage.

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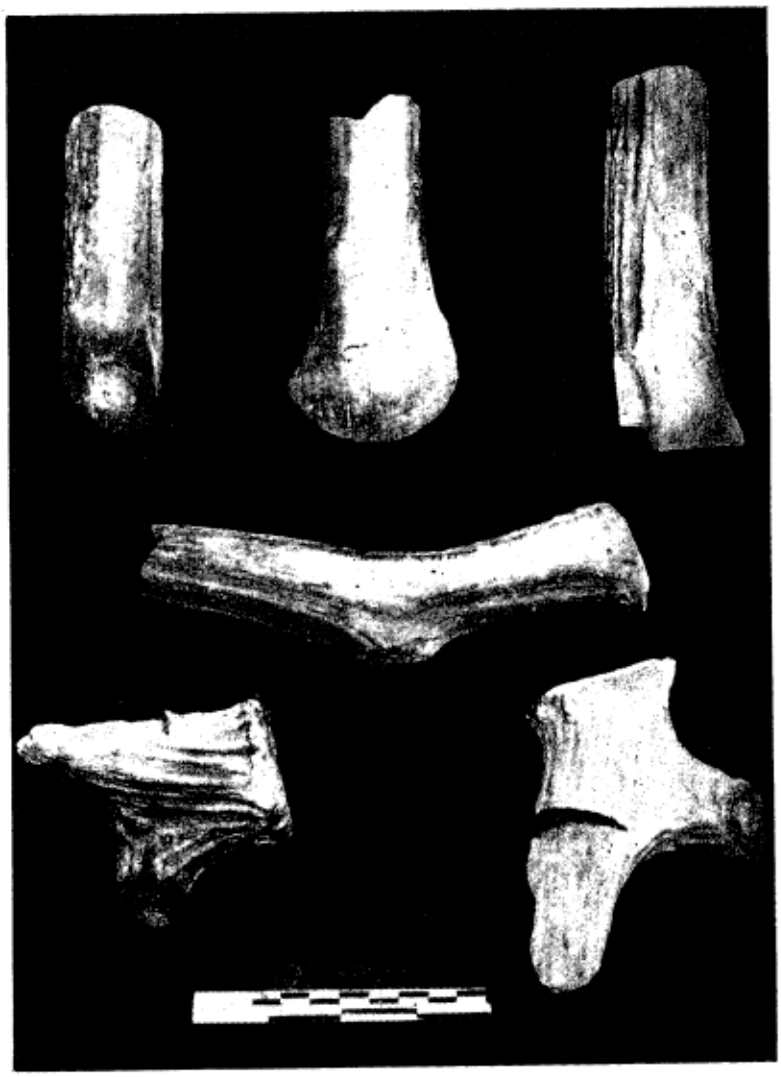
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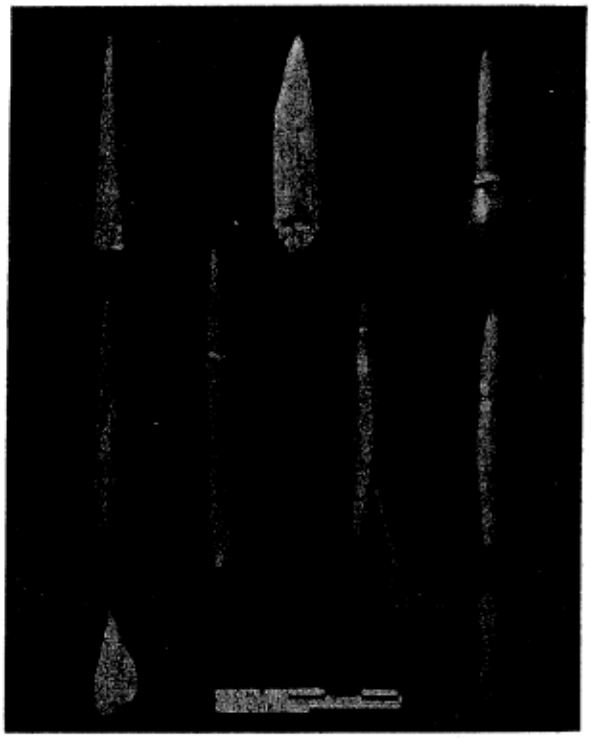
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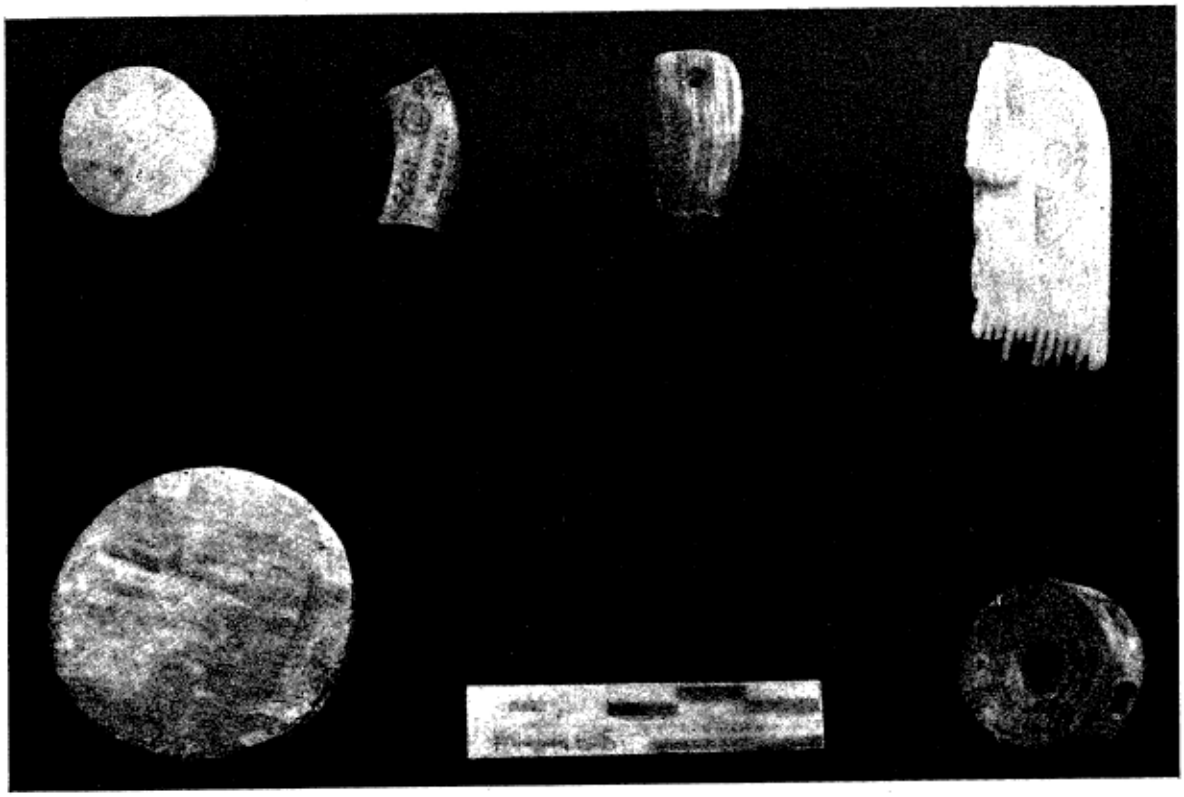
1. Bone tools from Neolithic Chirand.
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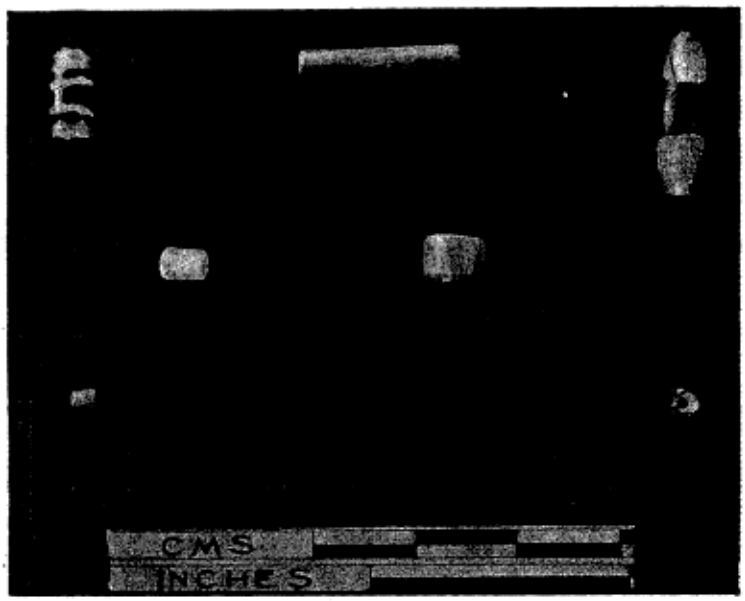
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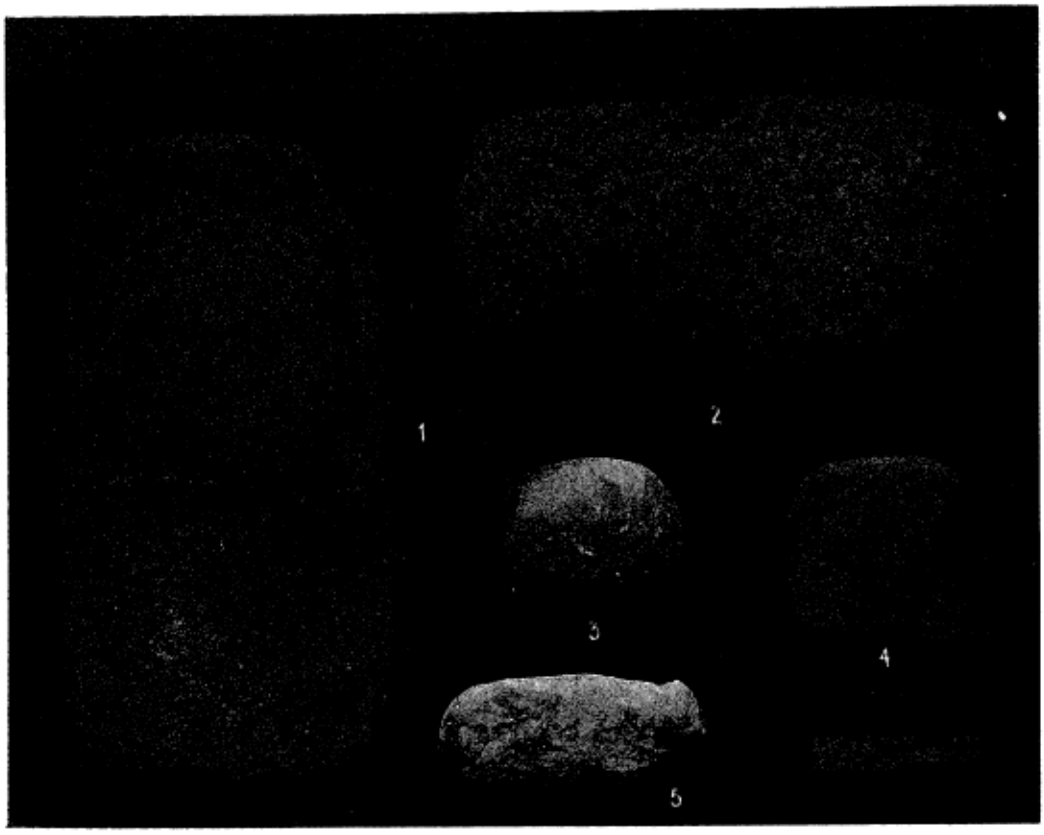
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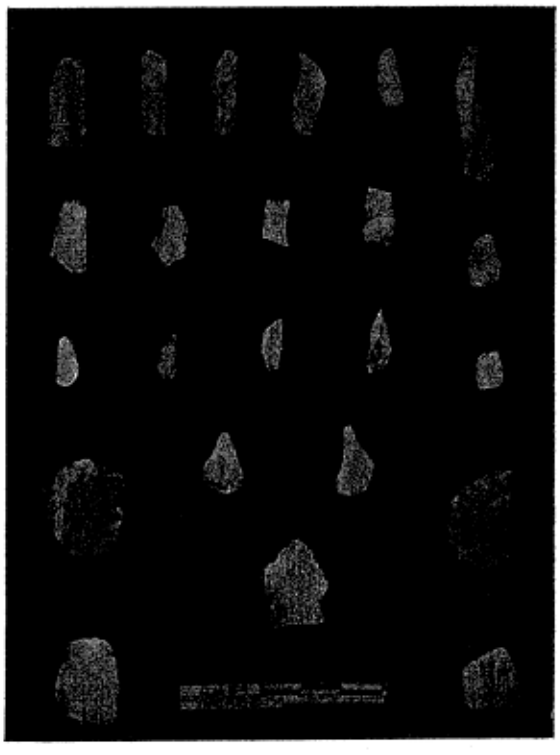
4. Bone and Ivory articles from Neolithic Chirand.
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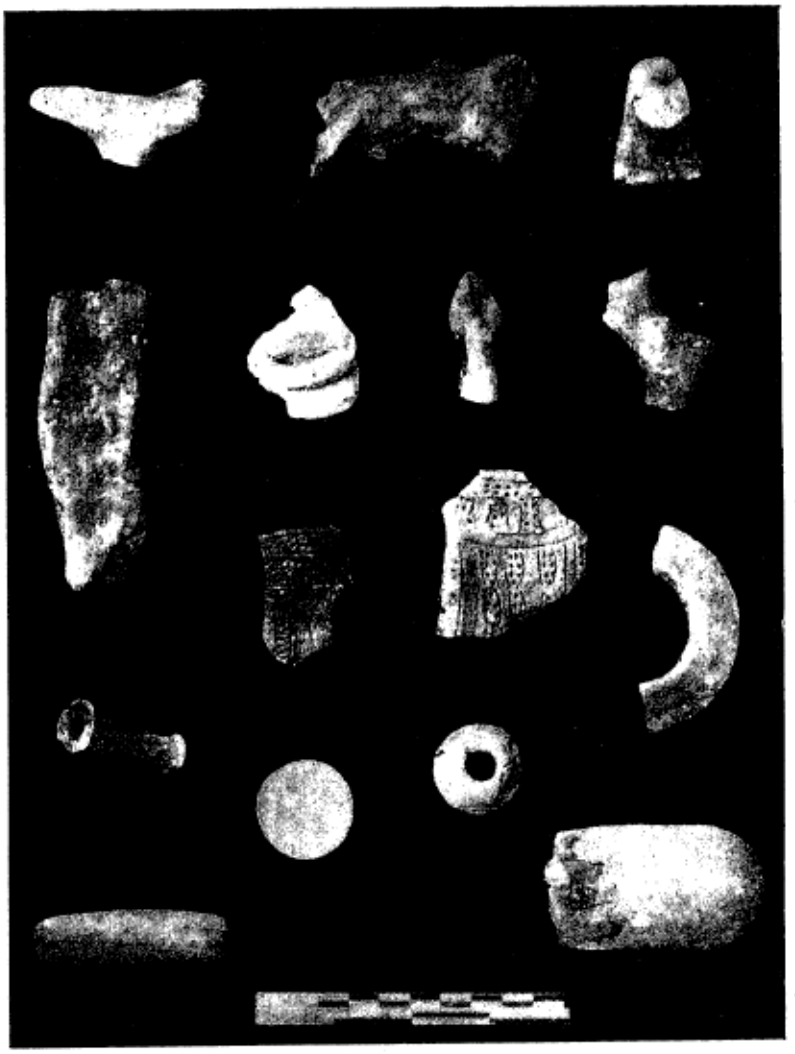
5. Stone Beads from Neolithic Chirand.
(Directorate of Archaelogy, Bihar)



6. Neolithic Stone tools from Chirand.
(Directorate of Archaeology, Bihar)



7. Microlithic tools from Neolithic Chirand.
(Directorate of Archaeology, Bihar)

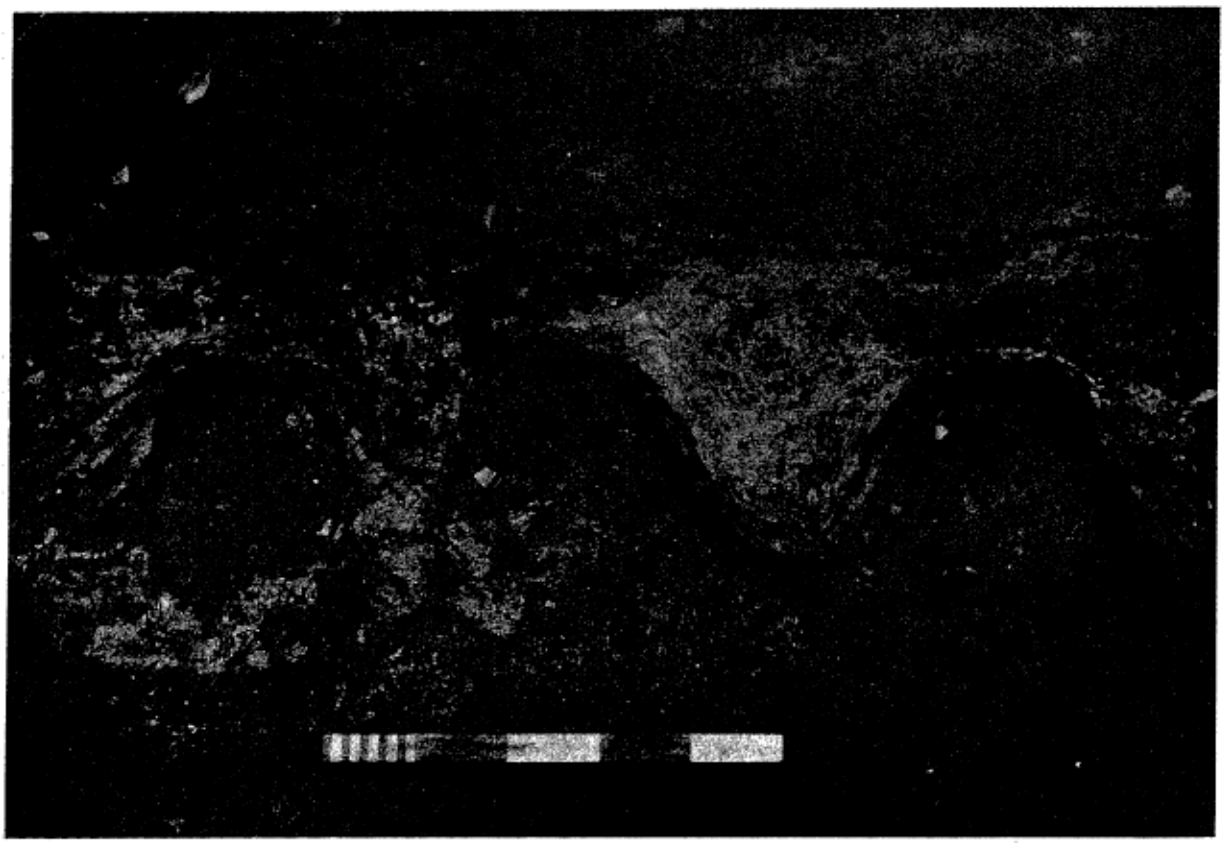


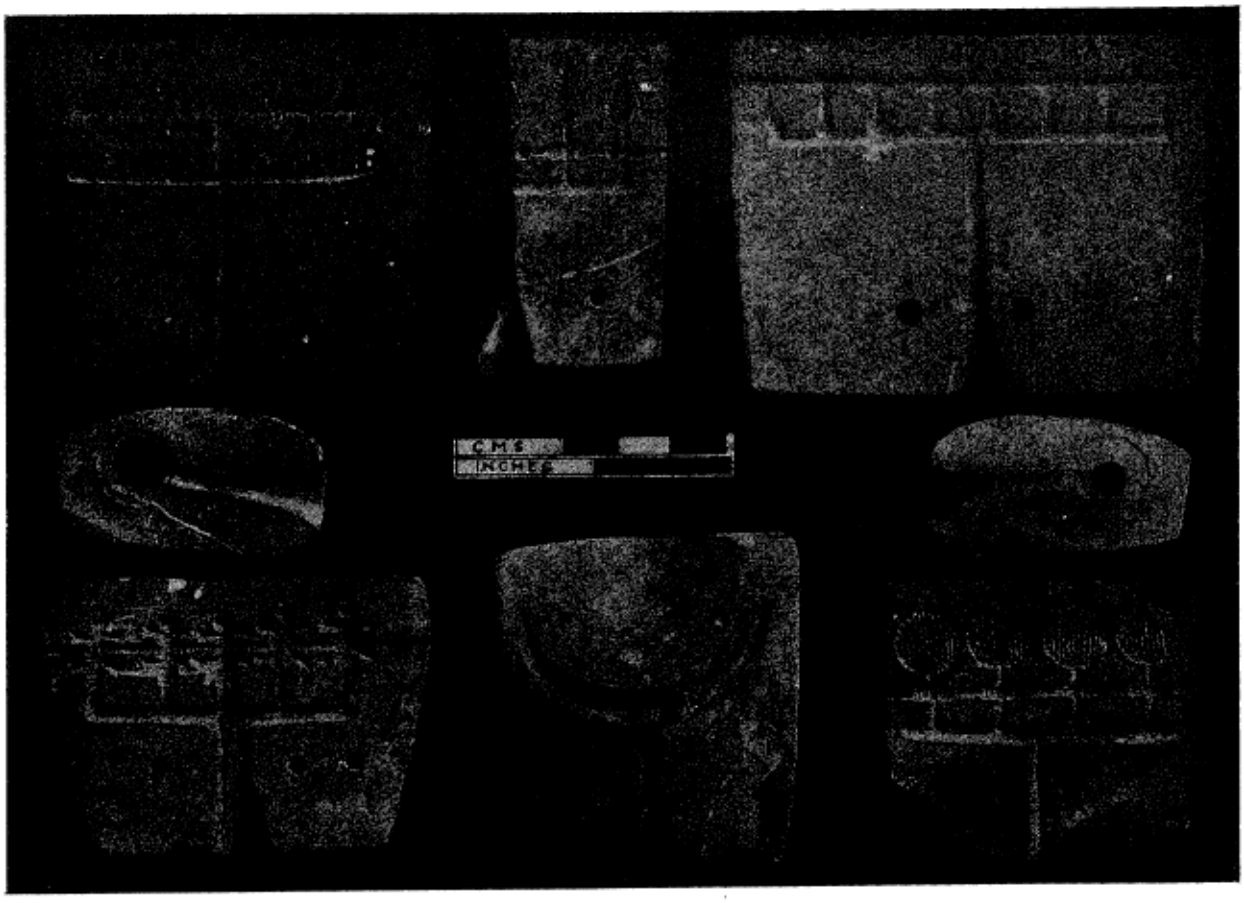
8. Terracottas and Miscelleneous Objects from Chirand.
(Directorate of Archaeology, Bihar)



9. Chirand Neolithic Pottery including Painted once. (Directorate of Archaeology, Bihar)

10. Multiple Oveus in Neolithic Chirand. (Directorate of Archaeology, Bihar)





12. Jewellers moulds from Champa.
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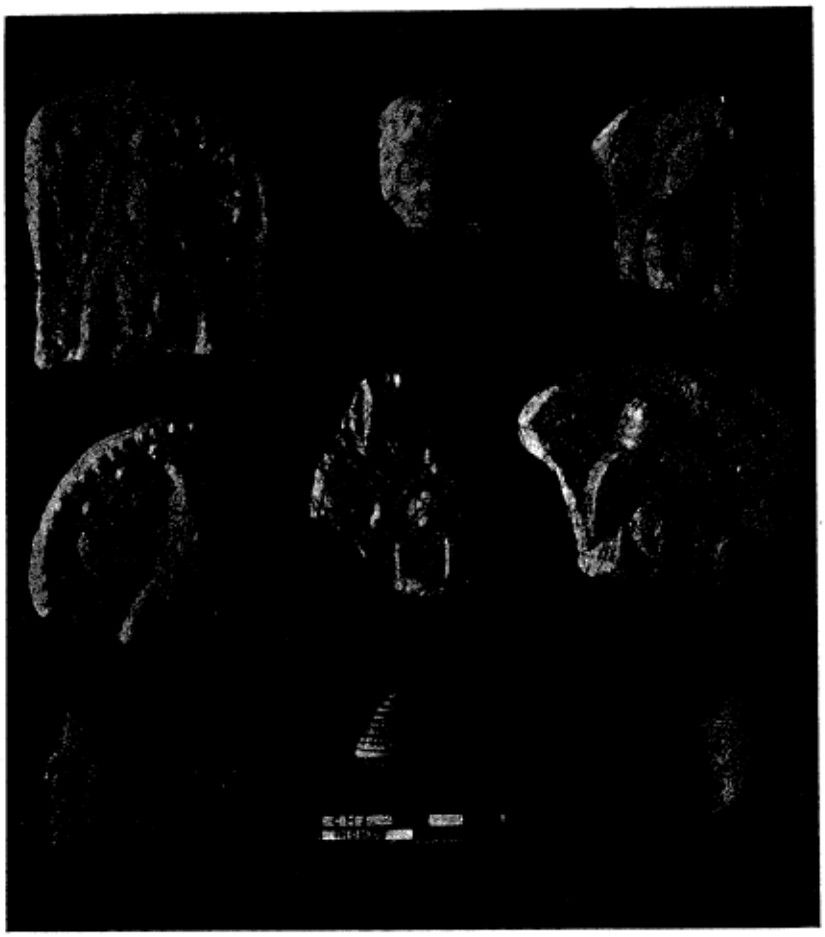


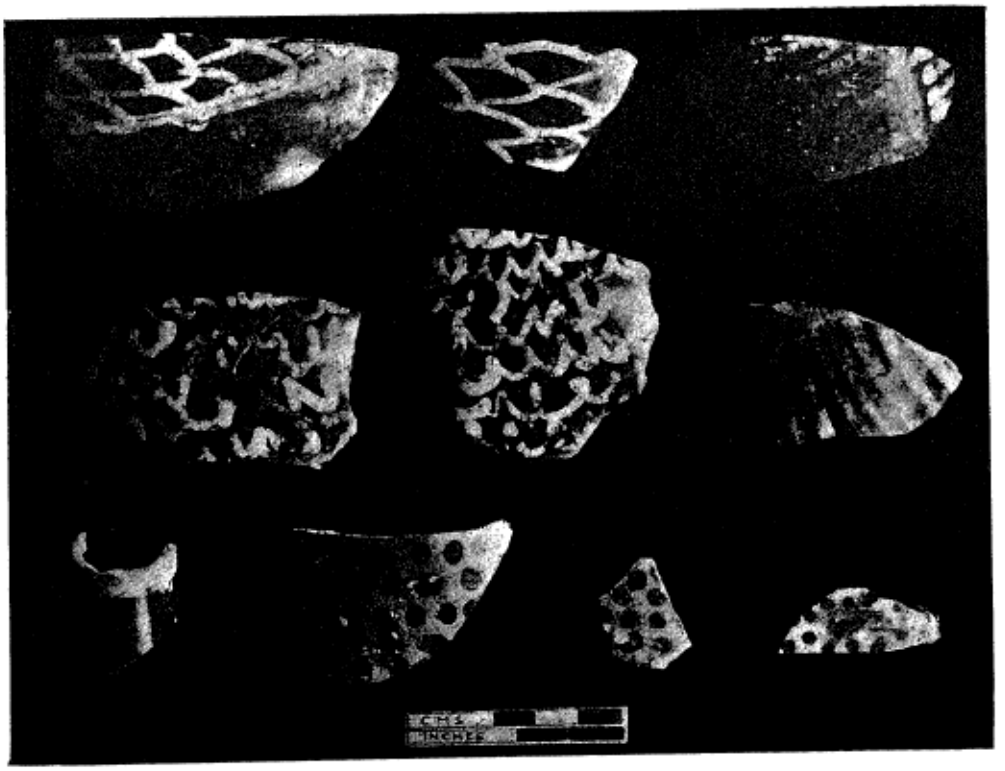
11. Ivory Female Figure from Champa.
(Deptt. of A. I. H. and Arch. Patna University)



13. Female Figure from Champa. (Patna University)

14. Terracottas from Champa. (Patna University)

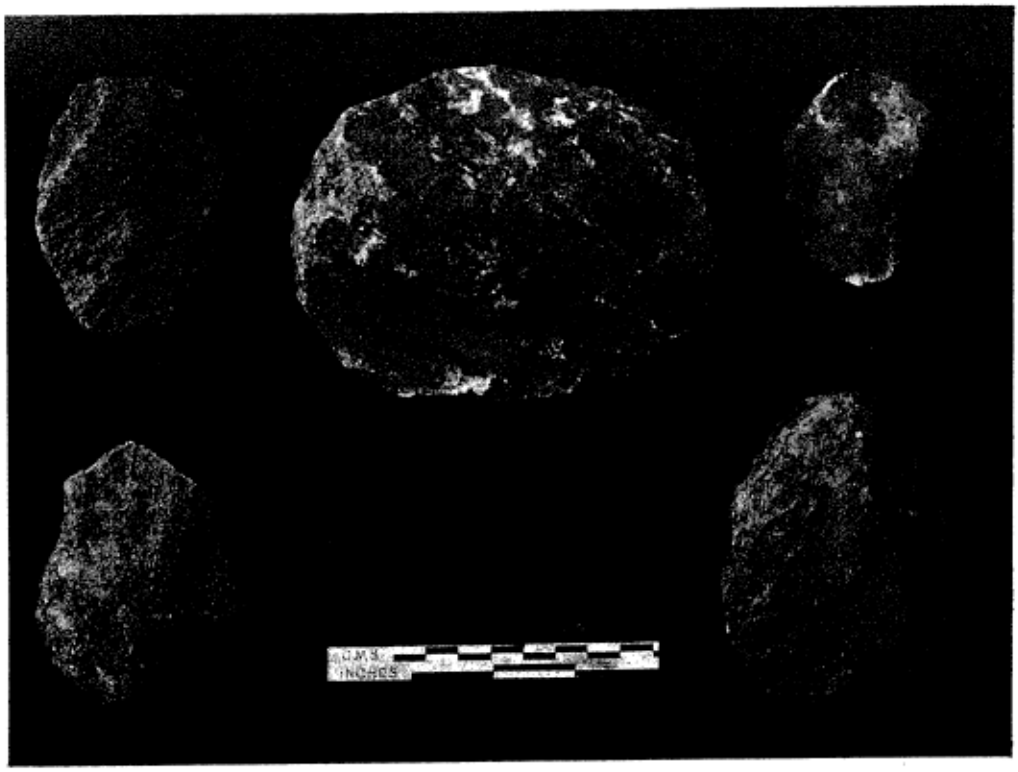




15. Painted NBP sherds from Champa.
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16. Palaeolithis from Bhirbrnah.
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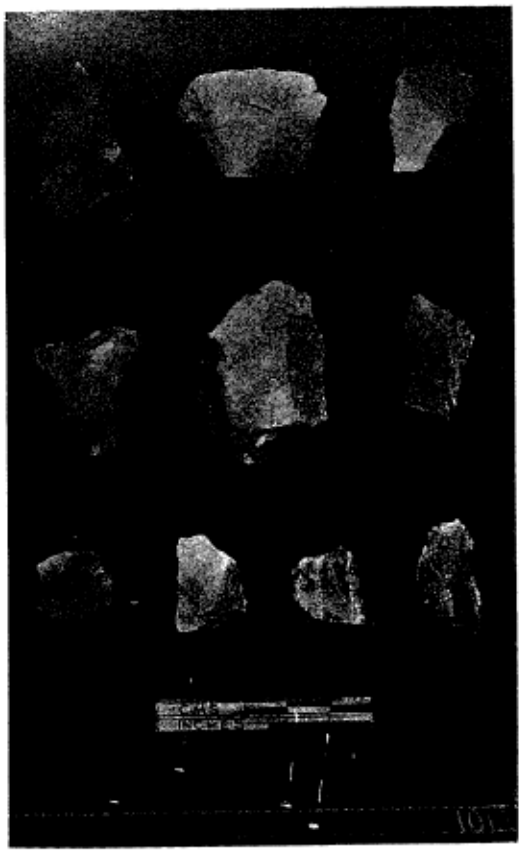
17. Palaeoliths from Dhanbad.
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18. Palaeoliths from Hazaribag.
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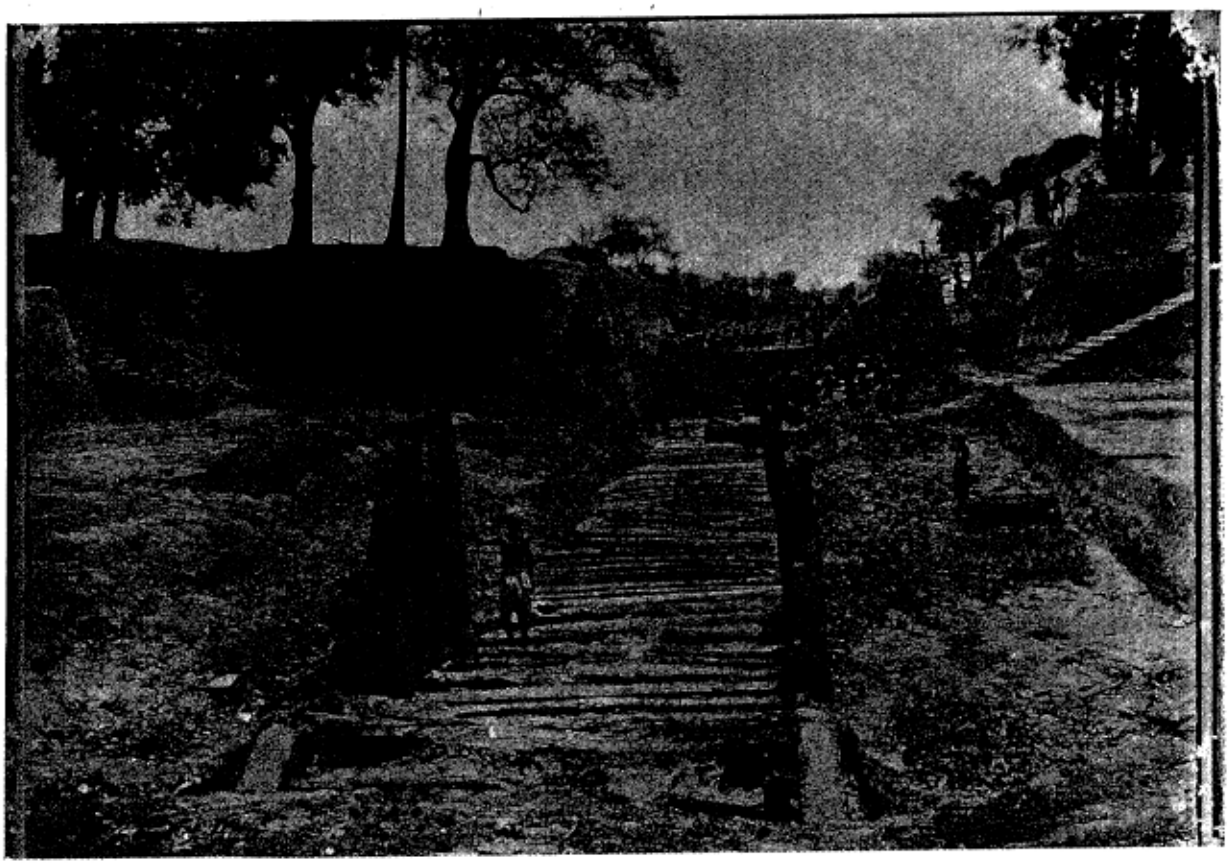


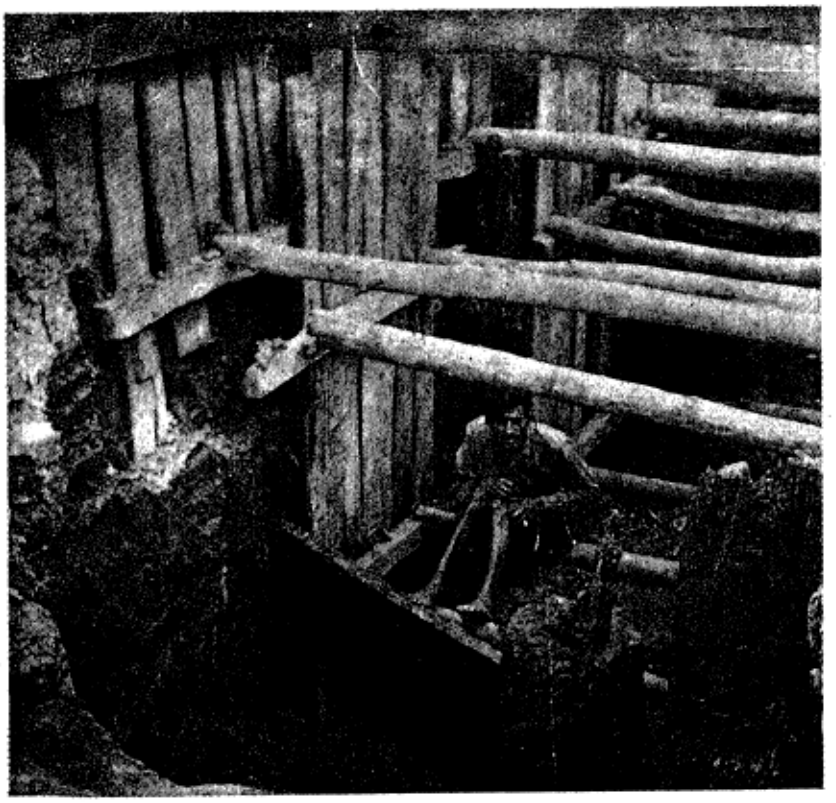
19. Stone tools from Ranchi.
(Deptt. of A. I. H. Arch. Patna University)



20. Microliths from Dhanbad.

21. Wooden Palisades of Bulandibagh.
(Archaeological Survey of India)

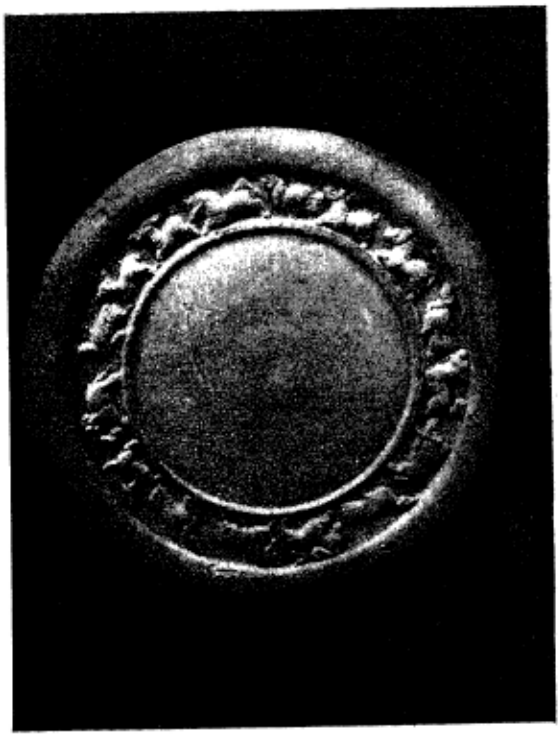




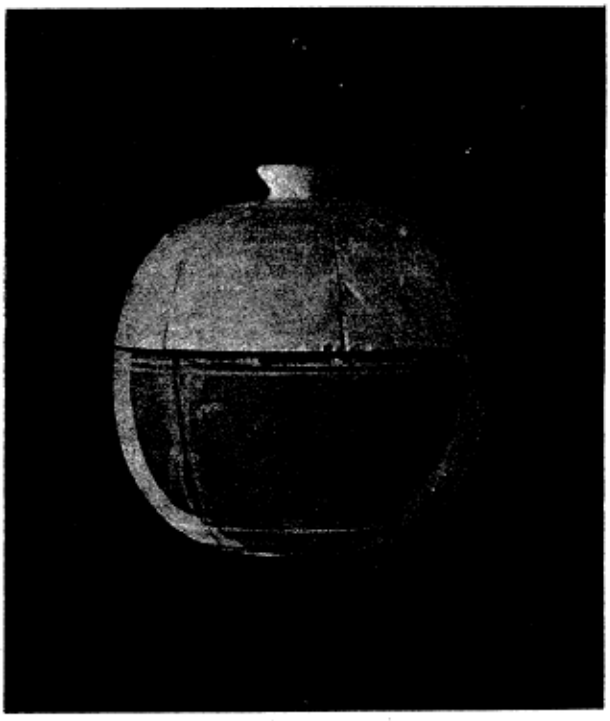
[22. Wooden Palisades (Kanparbagh)



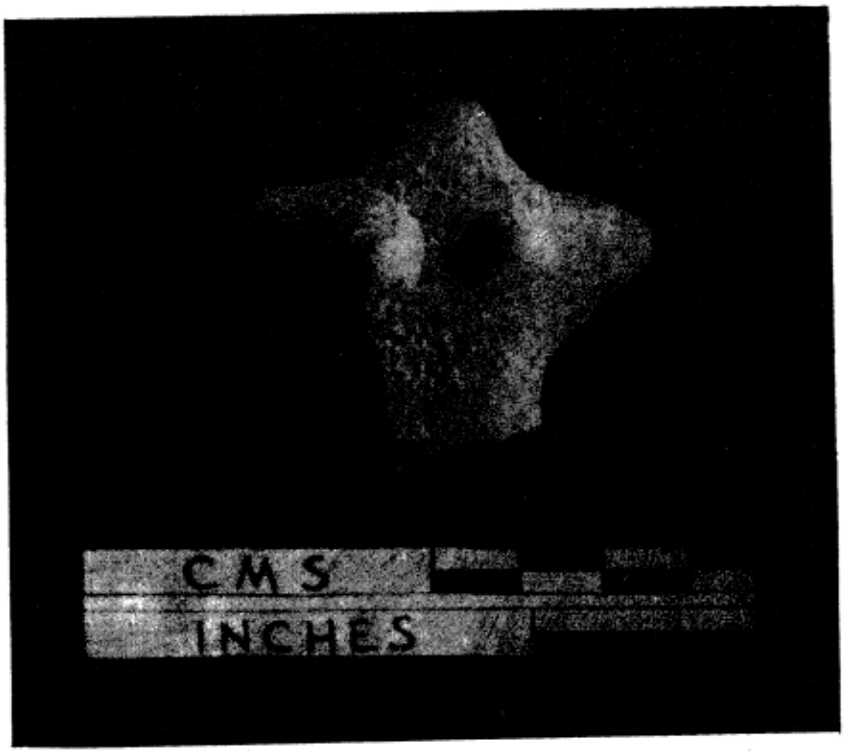
23. Stone disc from Murtazigang.
(Directorate of Archaeology, Bihar)



24. Stone disc from Murtazigang.
(Directorate of Archaeology, Bihar)



25. Buddha's relic-caoket (Vaisali)
(Directorate of Archaeology, Bihar)



26. Terrcotta Female Figure (Chalolithic) from Oriup.
(Deptt. of A. I. H. Patna University)



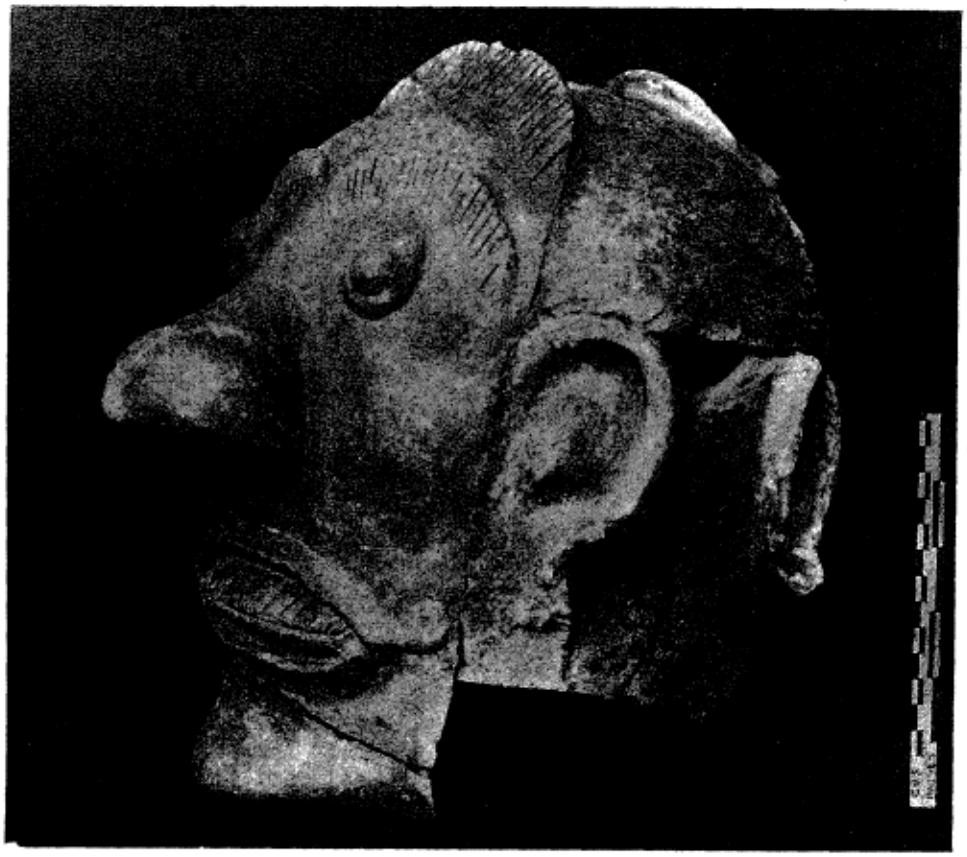
27. Monestery (Chirand) Kushana.
(Directorate of Archaeology, Bihar)



28. Crystal Female Figure (Amulet) from Sonpur. (Directorate of Archaeology, Bihar)



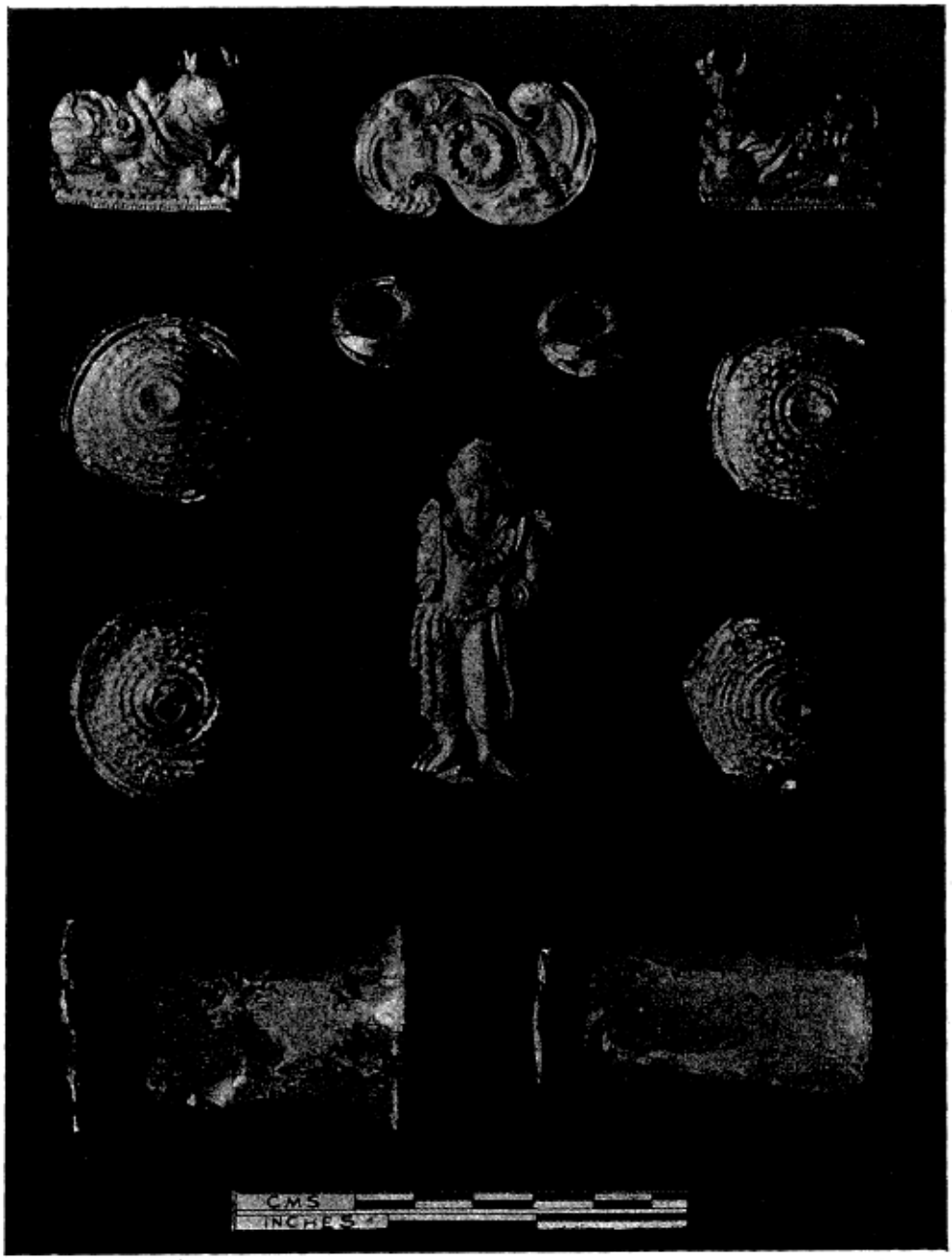
29. Terracotta Mask (Chirand) (Directorate of Archaeology, Bihar)



30. Terracotta Mask (Chirand)



31. Terracotta Female Figure (Sonpur)
(Directorate of Archaeology, Bihar)



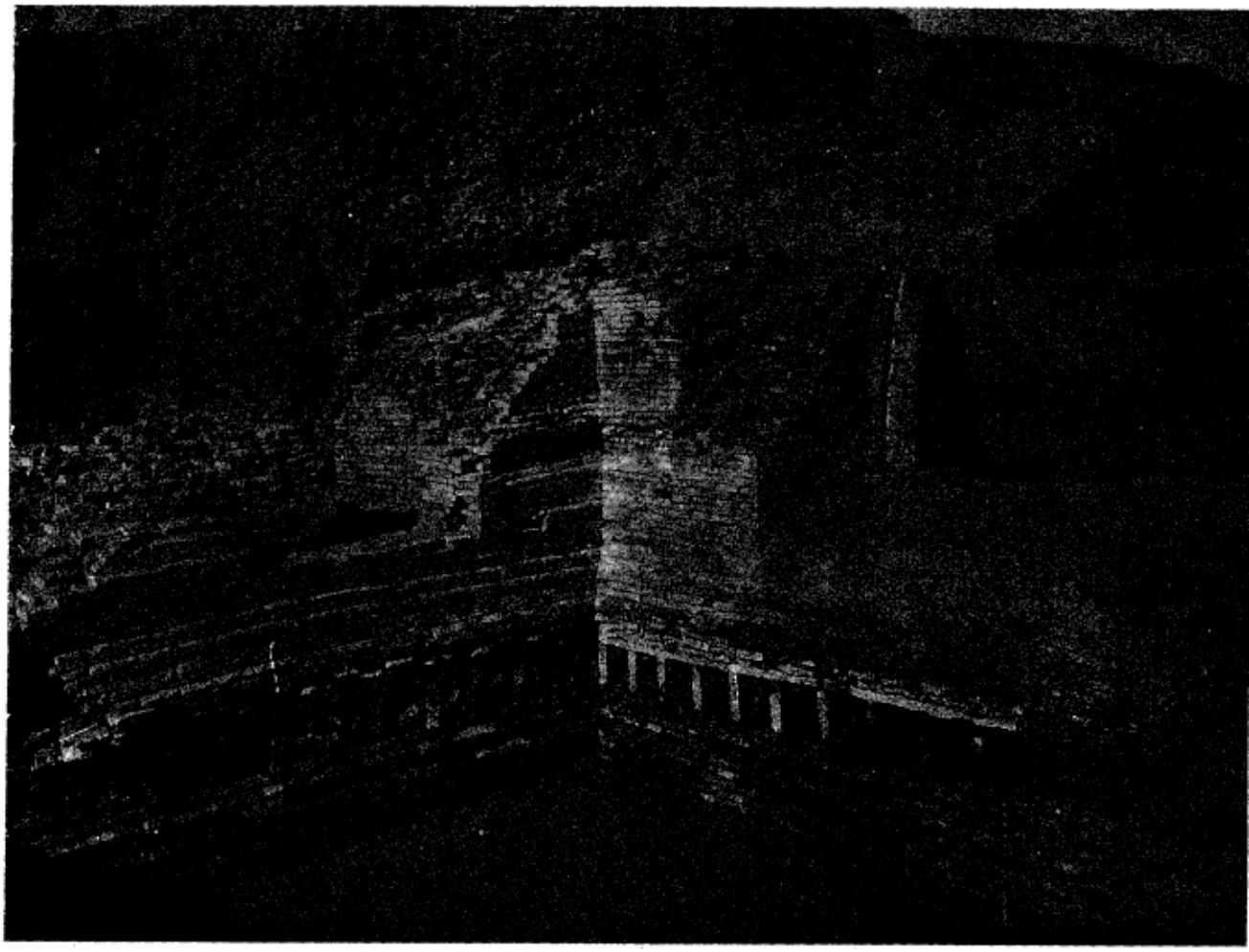
32. Gold Objects from Vaisali.
(Directorate of Archaeology, Bihar)



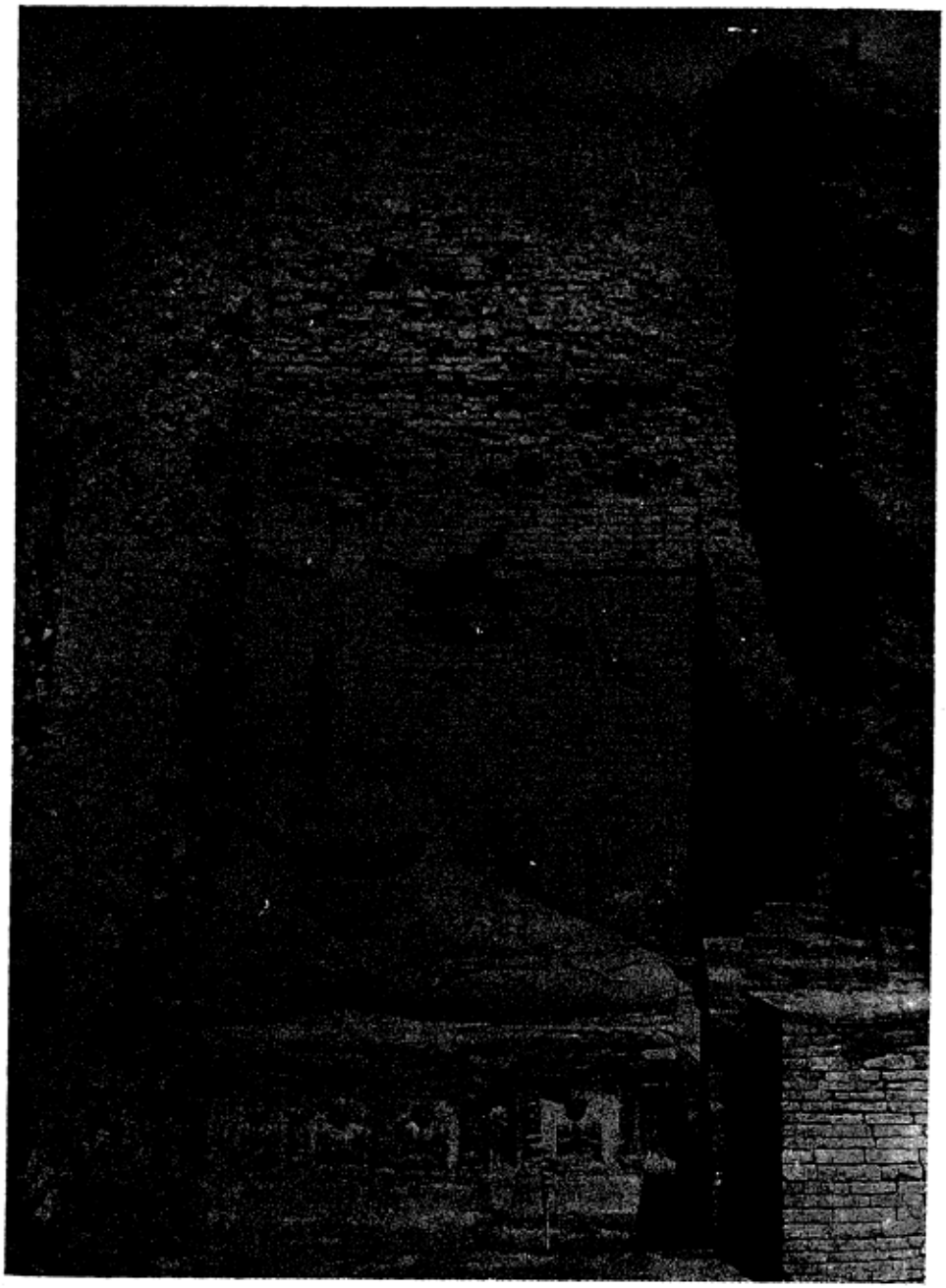
33. Khshan Terracottas from Chirand.
(Directorate of Archaeology, Bihar



34. Kaevandala from Chirand.
(Directorate of Archaeology, Bihar)



35. Brick Caitya Antichak Vikramshila. (Archaeology Survey of India)

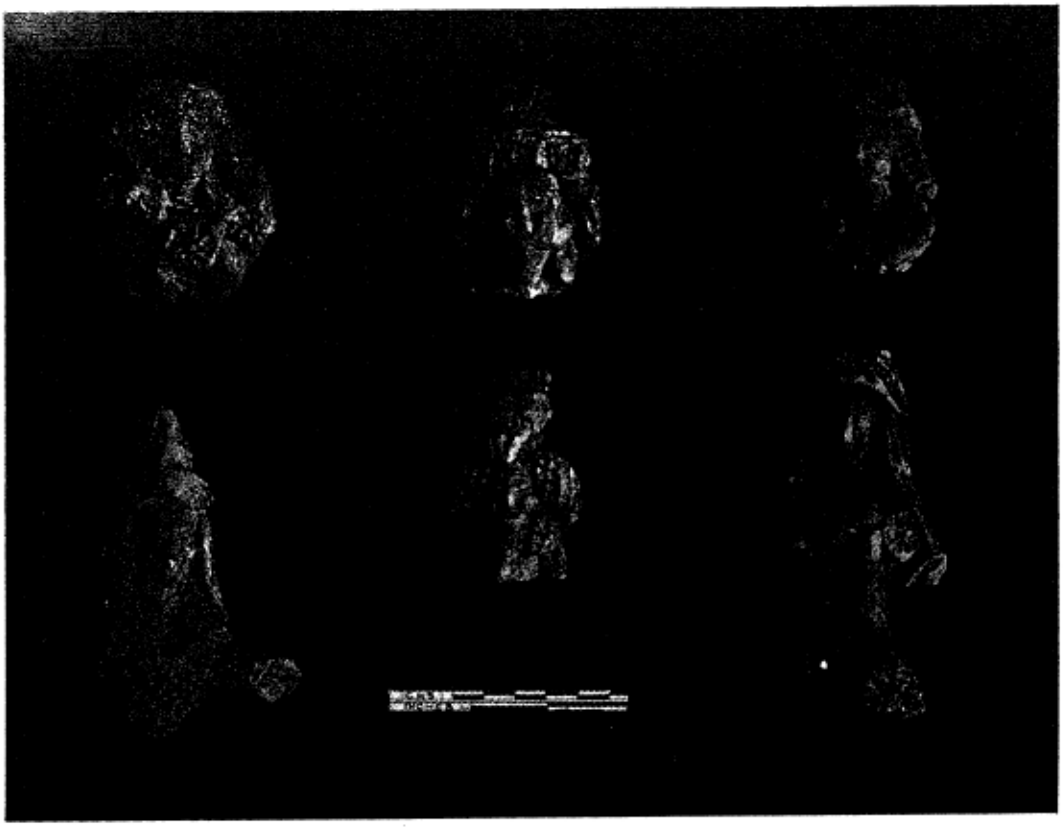


36. Large Clay images in situ.
(Archaeological Survey of India)

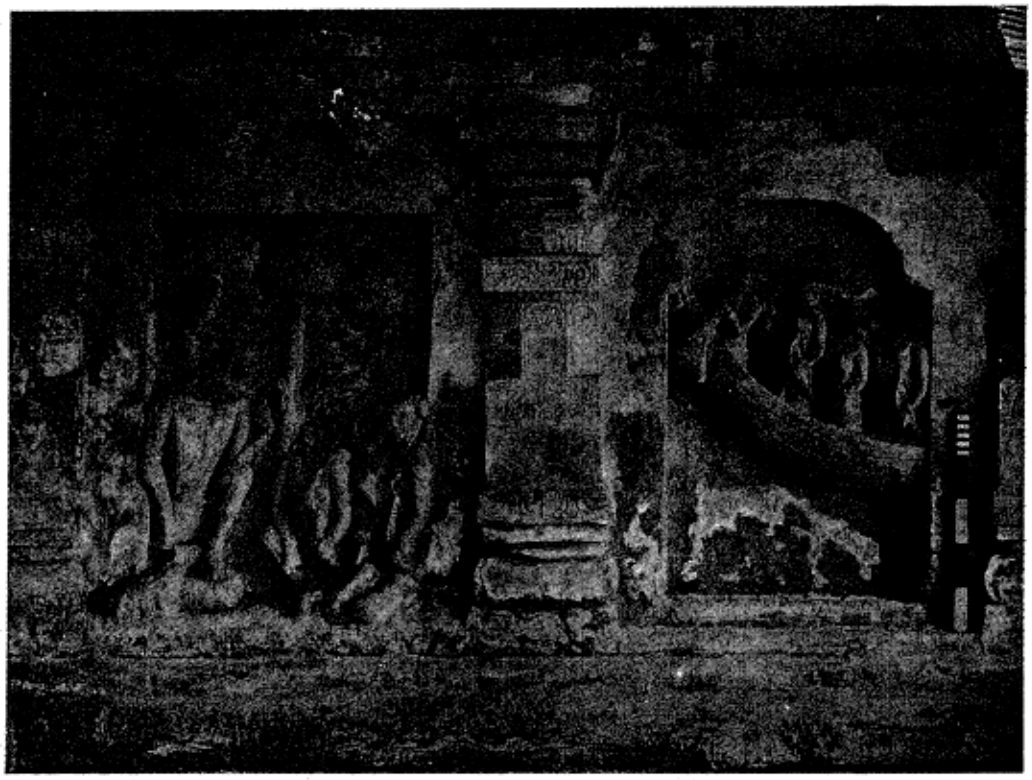


37. Large Clay image in situ. (Archaeological Survey of India)
38. Painted animale-Terracottas from Buxar. (Directorate of Archaeology, Bihar)

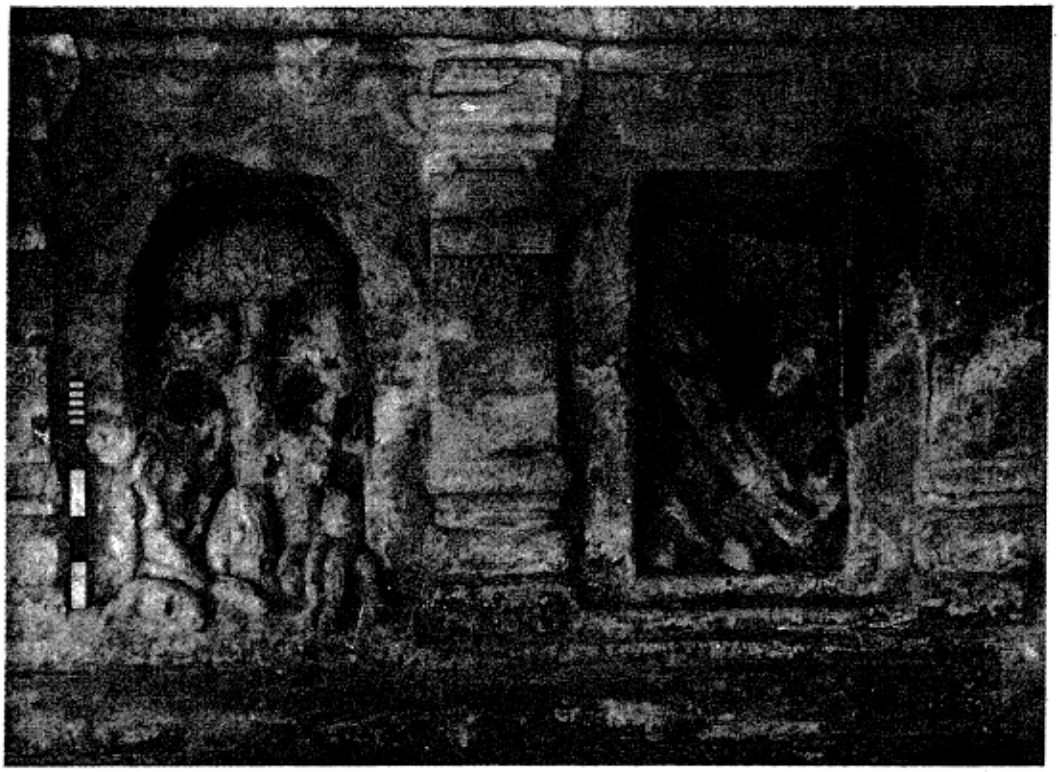




39. Female Terracottas from Bihar. (Directorate of Archaeology, Bihar)

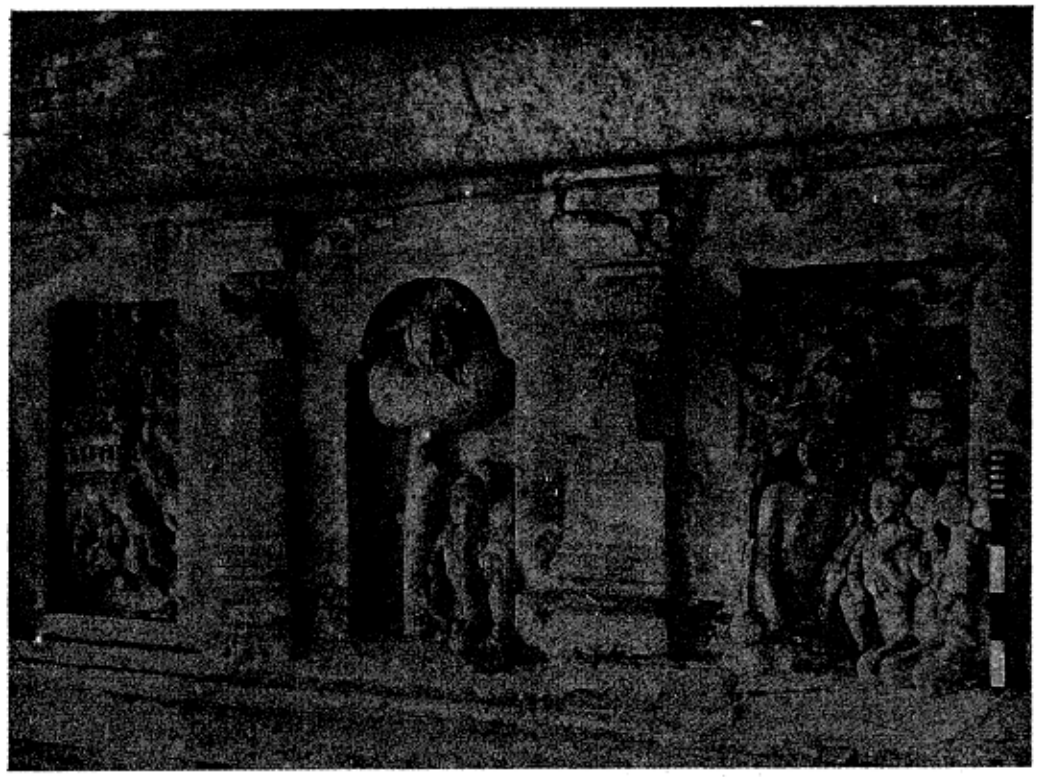


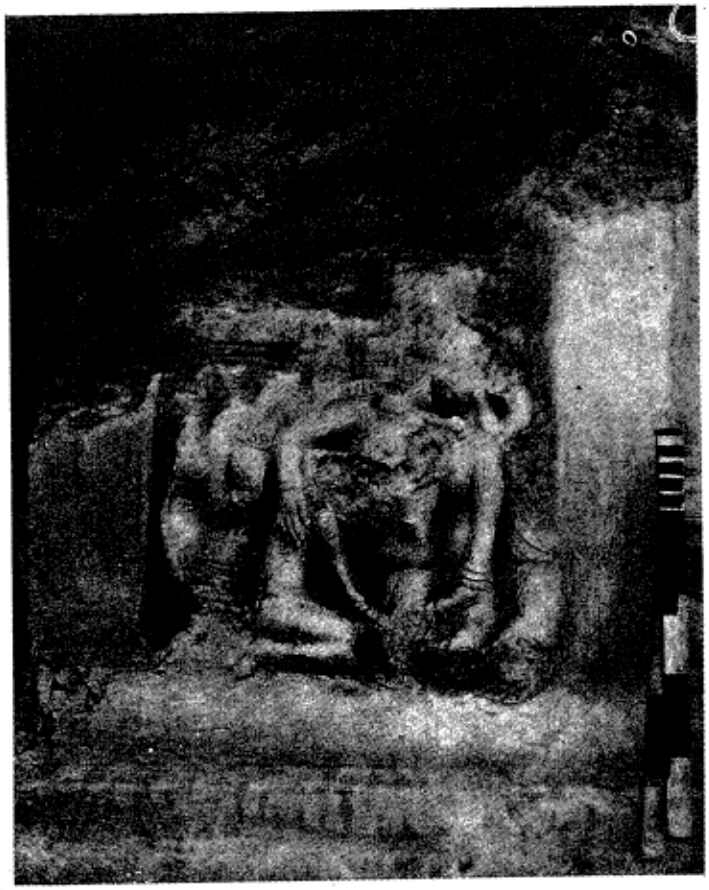
40. Ramayanic Scenes. (Aphsad)



41. Ramayanic Scenes (Aphsad)

42. Ramayanic Scenes (Aphsad)





43. Ramayanic Scene (Aphsad)



44. Sadyojata (Stone)
(Deptt. A.I.H. Arch, Patna University)



45. Tracloeyrvijaya. (Directorate of Arch. Bihar) (Bronze)



46. Aparajita. (Directorate of Archaeology, Bihar)

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