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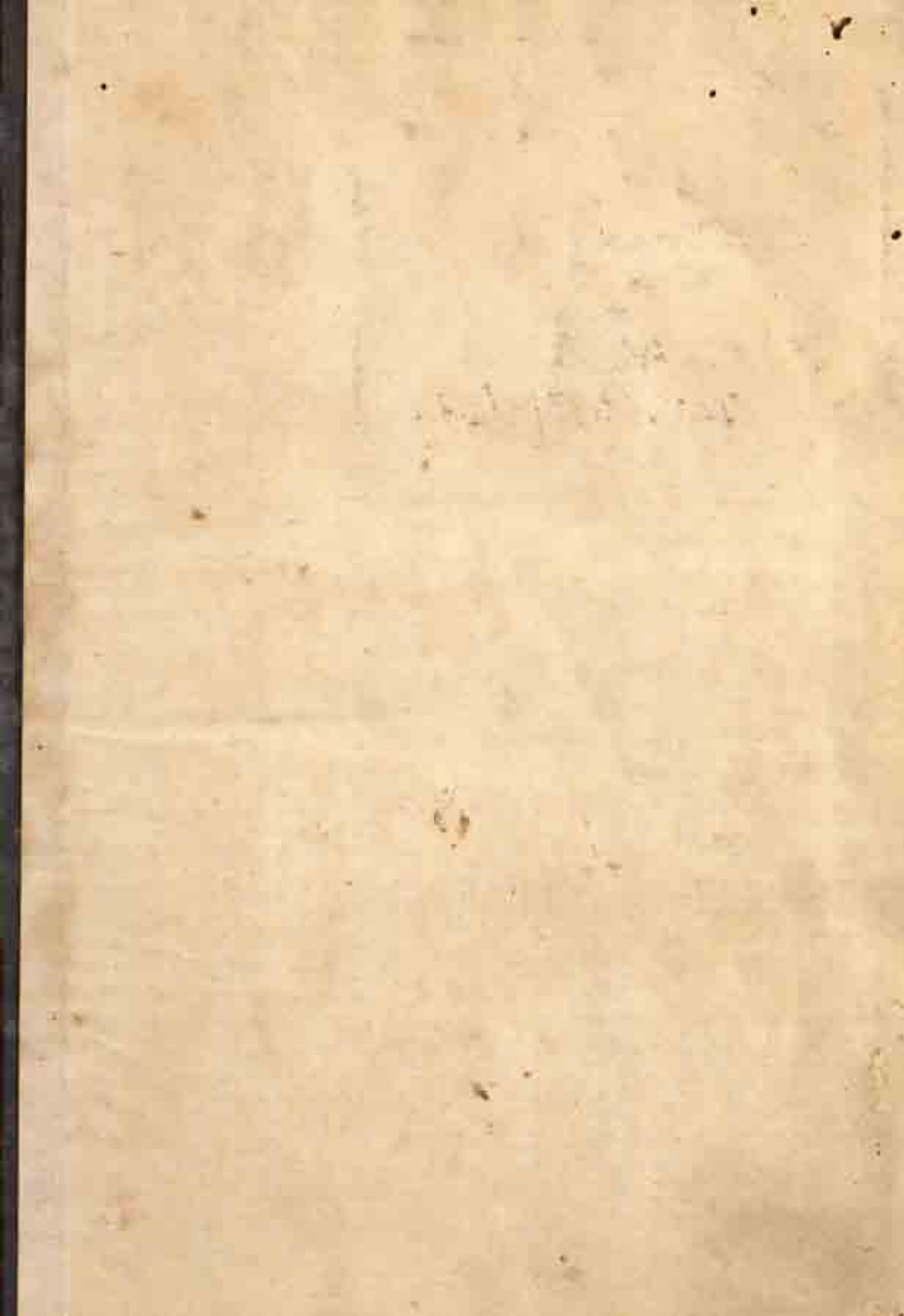
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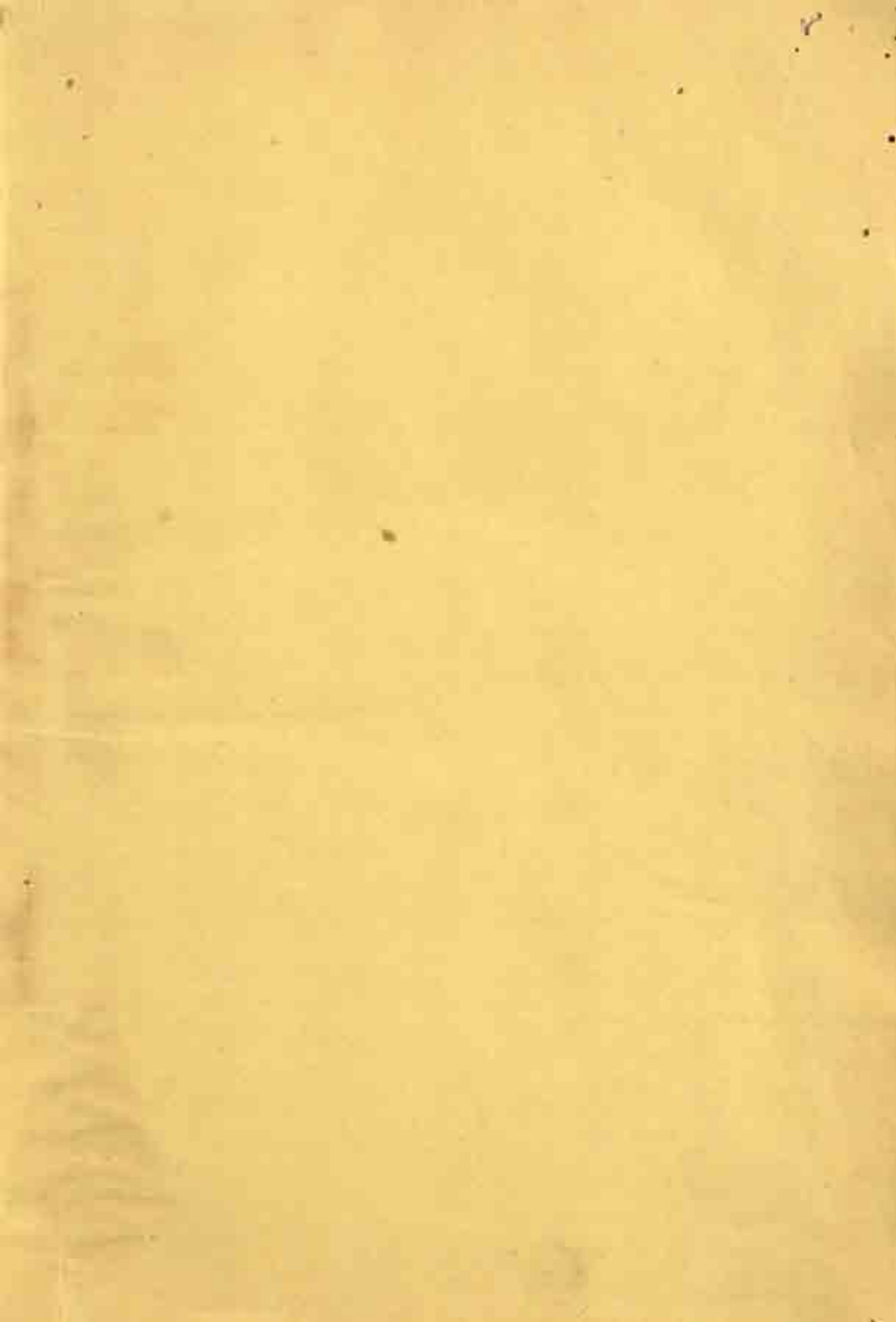
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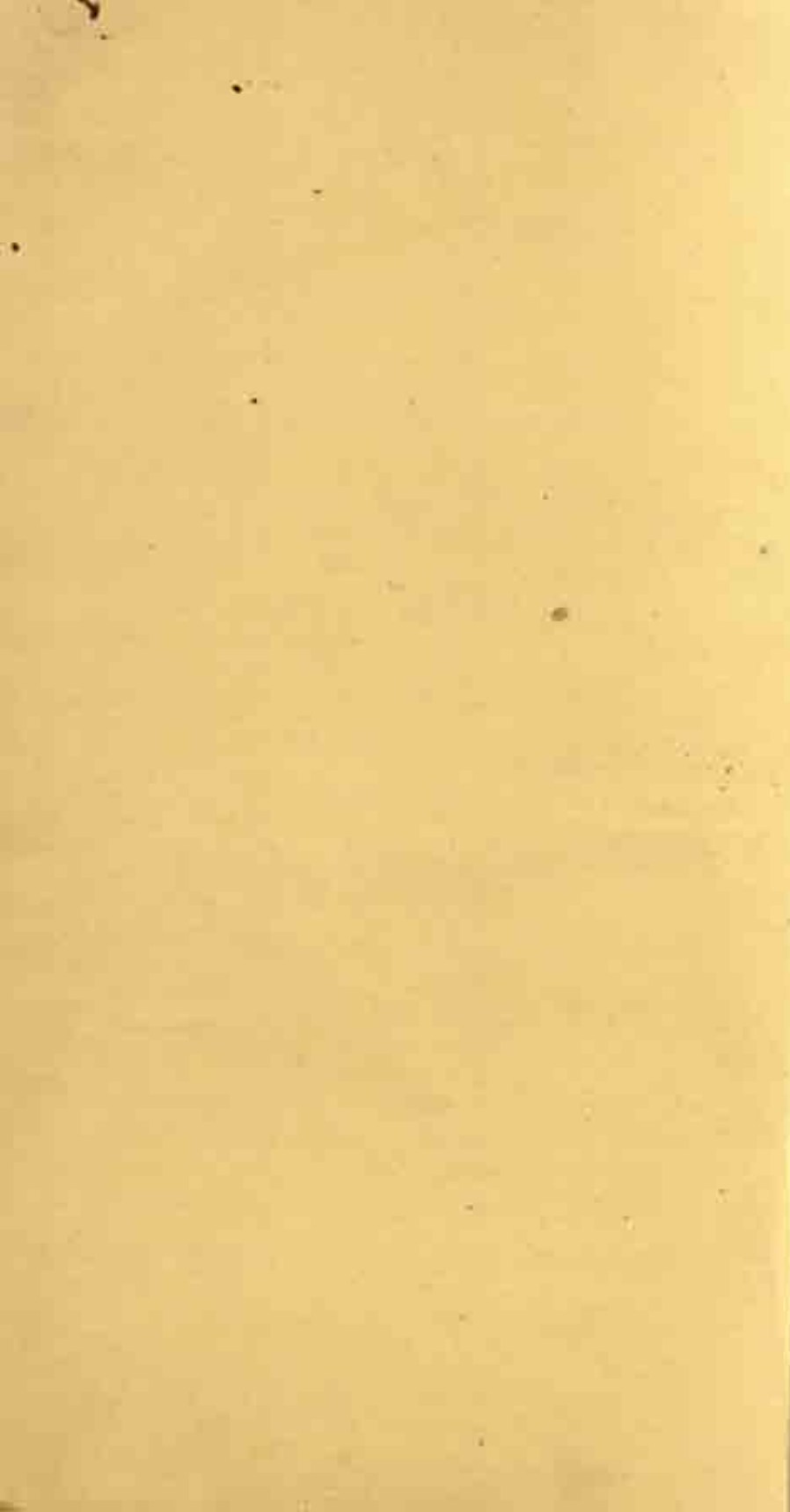
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POTTERIES

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ANCIENT INDIA

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EDITED BY

Dr. B. P. SINHA,

M.A. (Pat.), Ph.D. (Lond.),

*University Professor and Head of the Department of Ancient Indian History
and Archaeology, Patna University, Patna*

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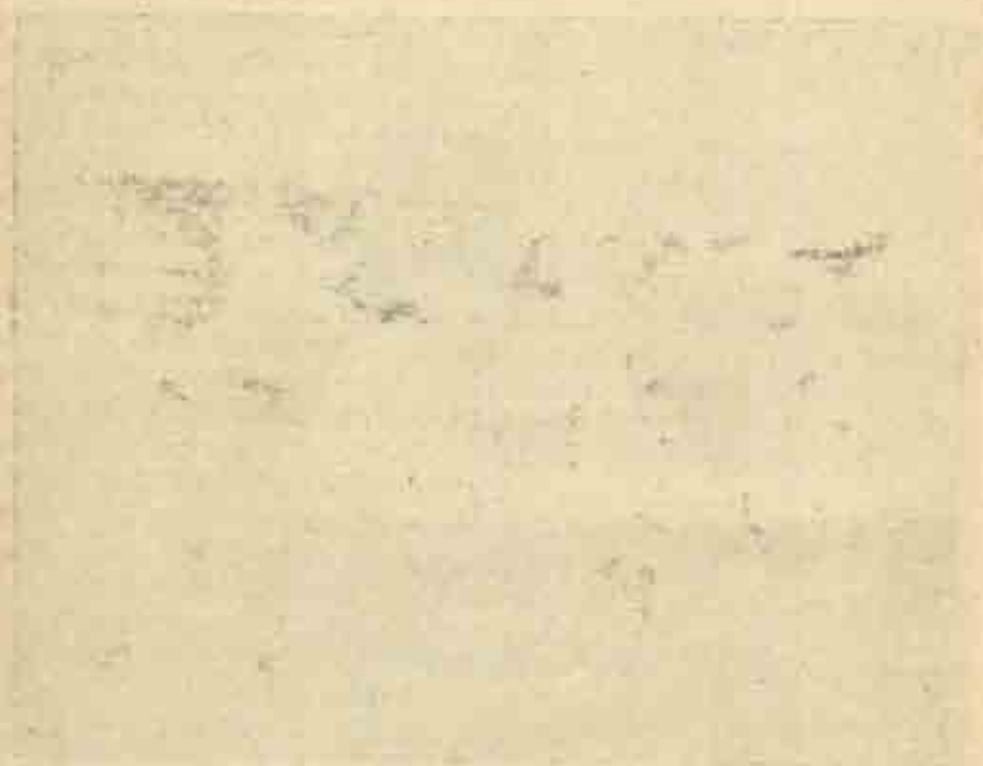
CONTENTS

1. Introduction	<i>B. P. Sinha</i>	1
2. Inaugural Address	<i>B. B. Lal</i>	3
3. Some Problems of Ancient Indian Potteries	<i>B. P. Sinha</i>	9
4. Sociology of Pottery : Chirag Dilli, a Case Study	<i>S. P. Gupta</i>	15
5. Study of Pottery—A New Approach : ABC of Archaeology or A to Z of Archaeology	<i>M. D. Khare</i>	27
6. The Devolution of the Peninsular 'Neolithic' Culture—an Analysis of Ceramic Influences	<i>K. V. Saunderrajan</i>	30
7. Rajasthan's Post-Harappan Pottery	<i>S. P. Srivastava</i>	36
8. Chalcolithic Pottery of Eastern Malwa	<i>K. D. Bajpai</i>	44
9. A Note on the Problem of the Plain Black and Red ware in Northern India	<i>K. N. Dikshit</i>	48
10. Nature of Harappan wares in Sutlej Valley	<i>K. N. Dikshit</i>	56
11. The Problem of Black-and-Red wares in Indian Archaeology	<i>Purshottam Singh</i>	67
12. Problem of the Ochre Coloured Pottery	<i>Krishna Dev</i>	75
13. The Ochre-Coloured Pottery	<i>B. B. Lal</i>	83
14. The Ochre-Coloured Pottery from Atranjikhhera and its Significance	<i>R. C. Gaur</i>	95
15. Black-and-Red ware in Bihar	<i>B. S. Verma</i>	102
16. Nature of Pottery Complex of Black-and-Red Ware Phase at Atranjikhhera	<i>R. C. Gaur</i>	112
17. Spouted Vessels in India	<i>R. C. Prasad Singh</i>	118
18. Technology of the Painted Grey Ware	<i>Ballabh Saran</i>	124
19. Paintings on the Post-Harappan Chalcolithic Potteries	<i>Bhagwant Sahai</i>	129
20. Dish-on-Stand	<i>Madan Mohan Singh</i>	139
21. Origin and Spread of the Northern Black Polished Ware	<i>Sachchidanand Sahay</i>	146
22. Potteries in the Brahmanical Literature (Upto 2nd Century B. C.)	<i>M. S. Fandey</i>	155
23. 'Yakshi' or Kinnari Pot from Begram and Allied Problems	<i>R. C. Agrawal</i>	161
24. The Northern Black Polished Ware in Bihar	<i>Sita Ram Roy</i>	167

25. The N. B. P Ware—Fresh Hypothesis in the light of Sravasti Evidence	<i>K. K. Sinha</i>	174
26. The Painted Grey Ware at Atranjikhara—An Assessment	<i>R. C. Gaur</i>	185
27. Some Technical Observations on N.B.P. Ware Slip	<i>H. C. Bhardwaj</i>	188
28. Associated Antiquities of the N.B.P. Ware with special reference to Bihar	<i>Lala Aditya Narain</i>	193
29. Pottery of Kausambi (1300 B.C. to 200 B.C.)	<i>V. D. Misra</i>	203
30. Ceramic Industries in South India	<i>T. V. Mahalingam</i>	224
31. Potters and Potteries in Ancient Indian Inscriptions	<i>Sushil Multi Devi</i>	229
32. Pre-Harappan Painted Pottery Culture—a Study in Socio-Ecological Factors	<i>Vibha Tripathi</i>	241
33. The Pre-Harappan Pottery of Kalibangan: an Appraisal of its Inter-relationship	<i>B. K. Thapar</i>	251
34. The Harappan Ceramic wares and the Devolution of the Harappa Culture	<i>S. R. Rao</i>	257
35. Literary References to Pottery	<i>Brajdeo Prasad Roy</i>	261
36. Roman Pottery in India	<i>M. N. Deshpande</i>	275
37. Associated Antiquities with the Black-and-Red ware (Chalcolithic Phase)	<i>Naseem Akhtar</i>	285
38. Vedic Literature on Pottery	<i>Shivaji Singh</i>	301
39. A Note on the N.B.P. Ware	<i>R. C. Gaur</i>	314



Dr. B. P. Sinha, M. A., Ph. D. (London)
University Professor and Head of the Department of Ancient Indian
History and Archaeology, Patna University, Patna.



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INTRODUCTION.

There has been a tremendous spurt in archaeological activities in independent India. Many new sites revealing new cultural horizons have been excavated and explored. The legitimate anxiety to compensate for the loss of rich sites to Pakistan and to bridge the wide archaeological chasm between the Harappan and the Buddhist eras supplied the necessary stimulus to vigorous efforts in this highly exciting and rewarding field. To cope with the demand for more and more excavations, and for more and more trained scholars in field archaeology, it was rightly felt that the Archaeological Survey of India should have more sister institutions, and consequently separate directorates of Archaeology were set up in the States, and universities were encouraged to establish departments of archaeology to impart teaching and field-work training in archaeology. The Patna University was one of the first five Indian universities which was selected by the University Grants Commission to provide post-graduate teaching in archaeology and in 1959 the erstwhile department of Ancient Indian History and Culture was transformed into Ancient Indian History and Archaeology and teaching in theory and practice of Archaeology was started. There is no doubt that with the increase in the number of institutions of archaeology, the country has a large number of important archaeological sites excavated and explored, which have thrown considerable new light on the understanding of the history and culture of the people.

About more than two decades of highly exciting and rewarding efforts have laid bare sites such as Kalibanga, Lothal, Ahir Navda Toli, Nasik and Jorwe, Rangpur, Nagarjunikonda, Eran, Atranjikhhera, Hastinapur, Kausambi, Rajghat, Prahladpur, Sonapur, Chirand, and Pandurajardhibi and many others which have almost revolutionised our ideas of Indian archaeology. The application of C-14 dating method in India and the work of the Tata Fundamental Research Institute have added new dimension to this voyage of discovery of India's past.

Archaeological diggings throughout the length and breadth of the country, from the Sutlej Valley and Kashmir to Malabar, from Dwarka to Pandurajardhibi and Chandraketugarh, have revealed numerous distinct ceramic cultures in stratified layers. To name a few, Neolithic *Burzhom* and Chirand Red and Grey wares, pre-Harappan Kalibangan, Malwa and Jorwe, Painted and Plain Black-and-Red, Lustrous Red, Painted Grey, etc. It was therefore thought very opportune to have a stock of the position and to exchange notes between workers in the field and universities.

With the financial assistance of the Bihar State University Commission and the University Grants Commission, the department of Ancient Indian History and Archaeology, Patna University decided to organise a seminar on Potteries in Ancient India. Dr. K. K. Datta, the Vice-Chancellor and one of the most distinguished Indian historians; gave inspiring encouragement. The response from the friends of Archaeological Survey of India, State Directorates of Archaeology and Universities was more than expected. For full four days the participants in the Seminar had stimulating discussions for hours together, and returned visibly immensely satisfied with the results of their labours. It was a treat to see young workers rubbing shoulders with senior colleagues in the discussions. This is what should be in a seminar of researchers and workers in the field.

We are extremely grateful to Sri B. B. Lal, Director-General of Archaeology, scholar-cum-administrator, to have found time in the midst of his heavy and pressing duties to come and inaugurate the seminar. Our thanks are also due to Shri Badri Nath Verma, Vice-Chairman of the Bihar State University Commission, and one of the leading old educationists in the country to open the Exhibition of Potteries arranged on the occasion. We are very grateful to Dr. K. K. Datta, the Vice-Chancellor of the University to have presided over the inaugural session. Many, many thanks are due to the members of the Archaeological Survey of India, the State Directorates of Archaeology and the Universities, for contributing informative and critical papers and for participating in stimulating discussions. Thanks are also due to organisations and authorities for sending their exhibits for the Exhibition, which gave so to say flesh and bones to our discussion on the subject. It was only because of their unstinted support and cooperation that the seminar, first of its kind in India, on an obtruse subject, could be a success.

But behind all this success and organisation lay the hard and sincere labours of my fellow members of the Department, of the staff of all categories who worked literally day and night for the successful run of the seminar.

It is not possible to discuss the papers here. They are for the readers to judge. The Seminar largely interested itself with potteries down to the early centuries of the Christian era. Later potteries were not discussed.

Our thanks are due to Mr. Kuruvilla, the Superintendent of the Patna University Press, without whose personal interest and initiative, the work would not have seen the light of the day so early. Sri Basudeva Narayan, Dr. S. N. Sahay, Dr. B. Sahay and Dr. O. P. Jaiswal deserve appreciation for seeing the proofs and offering such necessary help in getting the volume printed in a short time.

B. P. Sinha

Director of the Seminar



Sri B. B. Lal,
Director-General of Archaeology,
Govt. of India



INAUGURAL ADDRESS

B. B. LAL,

(Director-General, Archaeological Survey of India)

I have indeed no words to express my deep sense of gratitude to the Patna University and in particular to Professors K. K. Datta and B. P. Sinha for asking me to inaugurate the seminar on pottery in Ancient India. This is indeed 'greatness thrust' upon me, for I know full well that there are many distinguished colleagues in the gathering here who know much more about pottery than I. Anyway, it was the behest of these two professors that I must do the ritual of inauguration and here I am for the purpose.

I suppose I would be forgiven by my colleagues and co-workers in field archaeology if I withdraw for a while from them and first addressed my other friends present here. For, more than any thing else, it is their sympathy and subsequent co-operation that I would like to enlist. No doubt, the fact that they are present amongst us shows their interest in the subject, but it should, I suppose, be our effort to make them interested further and further so that they may be so filled with enthusiasm for the subject that they may, on their own volition, tell those whom they meet thereafter that we, who are dubbed as 'potsherd-hunters', are not really wasting our time and energy and the nation's money in the chase of broken fragments of pottery discarded long long ago and mostly forming parts of rubbish heaps.

The pottery, like any other source-material known to historians, throws light on almost every aspect of the past-social, cultural, religious, economic, political and what not! In fact, I might go even a step further and declare that in recent years pottery has helped us even in solving riddles which other sources just could not. I shall substantiate these statements with a few examples.

Amidst the pottery found in the excavations at Arikamedu, near Pondichery in south India, there were two varieties which call for special attention. One of them is the Arretine. It is known to have been produced in Italy at a place called Arezzo, from which it derived the name. This pottery originated some time in the first century B.C. and was driven out of the market by its rival potteries about the middle of the first century A.D. Its occurrence at Arikamedu, therefore, not only proves a trade-contact between Rome and India but also pin-points it in time; it could not have been later than A.D. 50, by which date the manufacturing itself of the Arretine had ceased. Such

a precise dating is not possible sometimes even with the help of coins, as these can continue to be treasured for a couple of centuries after the concerned king or queen has ceased to rule : Did we not have in our houses the coins of Queen Victoria until the other day ? But an earthen pot, being breakable, would not normally be in use beyond a few years of its manufacture. Hence the advantage of a closely-dated pottery over even coins. The Arretine Ware also confirms the historical indication that Roman trade with the East was in all likelihood the result of the unification of the Western World under Augustus who ruled between 23 B.C. and A.D. 14.

The Tamil literature of the early centuries of the Christian era makes a reference to the importation of Roman wine into India. Now, while literature give only an inkling which may or may not have been believed—pottery has given it a concrete shape, namely how, when and what kind of wine was imported. At Arikamedu, already referred to, have been found tall conical jars with hefty handles, called amphorae (pl. 1). These jars are known to have been used in Italy for the transportation and storage of wine. And lest there should remain any doubt about the fact that it was wine and nothing else that was imported in these vessels from Italy, the chemical analysis of the incrustations on the inner walls of these vessels has proved the presence of resin, a prominent constituent of the Roman wines of the early centuries A.D.

The pottery may well be regarded amongst the most important keys that the archaeologist has, for it has unlocked many a secret of the past, which would otherwise have remained unknown. For example, who could have imagined that some of the stories narrated in the *Panchatantra* are as old as four thousand years ? On a jar found at Lothal, the famous site of the Indus Valley Civilization in Gujarat, occurs a painting (pl. 2) in which two birds are seen perched on a tree, each holding a fish in its beak. Below is an animal with a short thick tail, which Shri Rao, the excavator of Lothal, is inclined to identify as a fox. He also refers to the presence of a few fish on the ground. If this identification be correct, here we have the kernel of the story of the cunning fox who flattered the crow and managed to pinch away the morsel from its mouth.

The painted designs on the Harappan pottery include a variety of flora and fauna. While evidence in respect of the latter is also obtainable from the actual animal remains, the evidence regarding the former, viz. the flora, is not easily to be had from the material remains, except perhaps for the wood which may be identified through the charcoal. But I don't think there is any evidence other than that of the painted pottery to establish the plantation of the

banana by the Harappans. On other aspects, too, of the life of the Harappans does the pottery throw singular light. For, what other evidence but the painting on a potsherd from Harappa is there to establish the use of the *dhotī*, the typical Indian lower garment, as far back as the middle of the third millennium B.C.?

It is a pity that the Harappan script has not been deciphered so far. But more pitiable than this was the fact that until a few years ago there was no agreement amongst scholars even on a basic point, *viz.* whether the script was to be read from the right to the left or *vice-versa*. The excavation at Kalibangan in Rajasthan brought to light in 1961, amongst other inscribed potsherds, two specimens (pl. 3) which helped solve the riddle. On these sherds there occur overlaps of the incised symbols; and the incisions show that the symbols on the right were successively cut by those on the left. This proved beyond any shadow of doubt that the direction of writing in the Harappan script was from the right to the left. Hasn't the pottery scored over other source-materials in this battle of wits?

¹ The pottery also throws indirect but much welcome light on the food-habits of the people.¹ The *thālī*, which is a must in every household in northern India and can be seen as a proud possession of an upcountry labourer squatting on the pavements of Calcutta, at once reminds one of its prototype found in the painted Grey Ware complex (pl. 4) at the beginning of the first millennium B.C. I would have no objection if some one further imagined the Painted Grey Ware people eating *dāla-bhātā* (lentil and rice) in these dishes just in the same way as our common folk do even to day in Bihar or Uttar Pradesh. In fact, I should even place in one of the hands of the Painted Grey Ware person taking his or her meals the *lotā* found at Rupar, which is, again, more or less similar to its present-day counterpart in northern India. In this context it may well be affirmed that the shape of the modern Gujarati *lotā* (pl. 6) can boast of even a greater antiquity: its proto-types (pl. 5) have been found at Prakash in Khandesh in deposits ascribable to the middle of the second millennium B.C.

¹ Lest one should go away with the impression that the pottery is capable of throwing light only on an odd bit here another odd bit there, may I now refer to something which can definitely be regarded as of far-reaching significance. One is pained to find that in the third decade of Independence we have to plead for an emotional and cultural integration of India, as if it is something new, something that has to be imposed now. Such an exhortation has become necessary evidently because there is a tendency amongst certain class

of people to over-emphasize regionalism even at the cost of nationalism. But let every Indian know that though there may have existed in the third-second millennia B.C. broad regional divisions in the pottery of the country, namely the Harappan black-on-red ware and its ramifications in the Indus valley and Gujarat, the Ochre Colour Ware in the Ganga Valley, the neolithic burnished grey ware in the south, at the beginning of the first millennium B.C. a great ceramic unity had begun to emerge, and by about the middle of that millennium there was a complete cultural intergration of India. Did not the Northern Black Polished Ware cover the entire length and breadth of the sub-continent from Charsada in West Pakistan in the north-west to Amaravati in Andhra Pradesh in the south and to Tamruk in West Bengal on the east? It was more than two thousand years ago that we, the sons and daughters of Mother India, had learnt to eat from the same plates and drink from the same cups. Then what is it that should separate us now? Let us reflect coolly over things and learn the lesson that ancient Indian pottery has to teach us even in its muteness.

May I now have a few words with my professional colleagues and draw their pointed attention to some of the more important problems facing us in the field of ancient Indian pottery?

There is first of all the problem of the black-and-red ware—or, shall I say, wares? Now, whereas there is no black-and-red ware in the Harappan context in the Indus Valley and Rajasthan, there does occur a black-and-red ware in the same context in Gujarat. Wherefrom did the Gujarati Harappans pick it up? Or, did they originate it? This ware continues into the Late Harappan levels at Lothal (Lothal B) and becomes a dominant industry in the still later ramifications, viz. those of Rangpur IIC and III, when it also shows marked white-painted designs. But while a white-painted black-and-red ware does occur in the Banas valley of Rajasthan about the time of Lothal B and Rangpur IIC, there is not much similarity in the pot-forms of the two regions. Can we then conceive of the black-and-red ware technique having originated independently in the two regions? Perhaps not. Again, we find the occurrence of a white-painted black-and-red ware as far east as Pandu-rajardhibi in West Bengal, towards the close of the second millennium B.C. Wherefrom did it come? From the Banas valley, through central India? How did it penetrate into Bihar? Through the Son valley? Should not then the valleys radiating from the central Indian plateau be thoroughly explored for the purpose? A plain black-and-red ware also occurs alongside the Painted Grey Ware and continues up to the times of the Northern Black Polished Ware. What is the exact relationship between the black-and-red ware and the Painted Grey Ware?

Looking southwards, Bahal and Tekwada in the Tapti basin have shown the existence of a white-painted black-and-red ware in a chalcolithic context. Some of these pots also bear graffiti which indubitably tie them up with the megalithic black-and-red ware. What, then, is the real story of the black-and-red ware which ranged in time from the second half of the third millennium B.C. down to the beginning of the Christian era and which encompassed the whole country during a major part of the first millennium B.C. Does the ware represent a single culture, with evolutions and devolutions in point of time and space? Or, is the similarity confined only to the technique of manufacturing, there being local adaptations by the concerned cultures? ✓ Indeed, is it not high time that a thorough, analytic-cum-synthetic, study was made of this ware?

Then there is the problem of the Ochre Colour Ware. Is it Late Harappan? Or, is it an altogether different industry dominating the Ganga Valley, there being, however, interactions between this Ware and the Harappan? There is another and, I dare say, a no less important aspect of the problem of the Ochre Colour Ware. At a number of places, for example Bahadrad, Nasirpur, Jhinihana, Hastinapura, Noh, Ahichchhatra, Artanji Khera, etc., this ware has been noticed to occur sporadically in a matrix of otherwise clean earth which imperceptively merges into the natural soil. Indications are that these deposits may be water-lain. Are we then faced here with a huge deluge covering hundreds of miles of the Ganga-Yamuna basin? Chronologically, this deluge may have to be placed some time about the middle of the second millennium B.C. Again, though there is a strong circumstantial evidence that this Ware may have been associated with the copper Hoards, unimpeachable evidence has yet to come.

There are two other noteworthy aspects of our studies in ceramics. In the first place, detailed technological studies, supplemented with actual experiments in re-production, ought to be made of the various kinds of pottery. No doubt some thing has been done in respect of the Northern Black Polished Ware, but the truth is still far from the sight. Should not one also contact the local potters in eastern Uttar Pradesh and western Bihar who still manufacture a pottery not very dissimilar to the Northern Black Polished Ware? Another question: Is the black-and-red effect in pottery always the result of inverted firing? For example, while in the megalithic Black-and-red Ware the interior as well as the portion near the rim on the exterior are black and the lower exterior red, the same is not the case in certain grey-and-red ware dishes of the north. In these the interior is grey or greyish black but on the exterior the rim-portion is red and the base grey or greyish black. Is the latter variety the result of what is known as 'sagger-firing'?

In the context of technological studies, the archaeologist has to extend his begging bowl before the specialists in natural sciences, for who else but the chemist could have identified the resin in the incrustations on the Roman amphorae or who else but the botanist could have pointed out the existence of rice in the Harappan context at Lothal, by indentifying the husk used as a *degraisant* in the pottery as that of paddy? I am sure it is in the very nature of the natural scientists to extend their co-operation to the needy.

The other aspect I had in mind was the correlation of the ceramic evidence with that from the literature. I am sure there are words in the various ancient texts—Brahmanical, Jain and Buddhist—referring to many of the pottery forms we have encountered in our excavations. Is it not meant that the two types of evidence were duly correlated? God willing, the efforts may more than amply be rewarded. For, this correlation might give a clue to the vexed problem of the Indo-Aryans. I know that some efforts, deserving praise, have been made in this direction but these have not touched even the fringe of the problem. Much more concerted efforts are needed.

Lastly, I would plead for the fulfilment of two great needs. One primarily concerning the student of pottery and the other the student as well as the layman. The former need relates to the preparation of a comprehensive corpus of pottery. In the process of its preparation, the lacunae in our knowledge will also be highlighted, and this would whip us up into greater activity. For example, very little is known of the pottery used during the time of Harsha or thereafter up to the Muslim conquest. In the south there are many more gaps. The corpus will also force on us the adoption of a common terminology, particularly in respect of the description of the shapes.

The other need relates to the establishment of a museum where the visitor may have a complete picture of Indian pottery from the third millennium B.C., down to almost recent times. No doubt the Archaeological Survey of India has a collection of pottery in one of the Baradaris of the Tomb of Safdarjang at Delhi, but it has very many limitations, both regarding the contents as well as the display. At present the Survey only runs what are known as Site Museums, which, as the nomenclature shows, are attached to an excavated site or to a monument and contain material only from the place where they are located. Whether or not it would be jurisdiction of the Survey to establish a Museum of Ancient Ceramics is a matter of fresh thinking. Anyway, whosoever puts up the museum, it is doubtless a great desideratum.

I am afraid I have taken too much of your valuable time and beg your pardon for the same. I once again thank Professors Datta and Sinha, for the kind invitation, and hereby declare the seminar 'open'.

PLATE I



Arikamedu, Pondicherry : bottoms of amphorae in which Roman wine was kept.

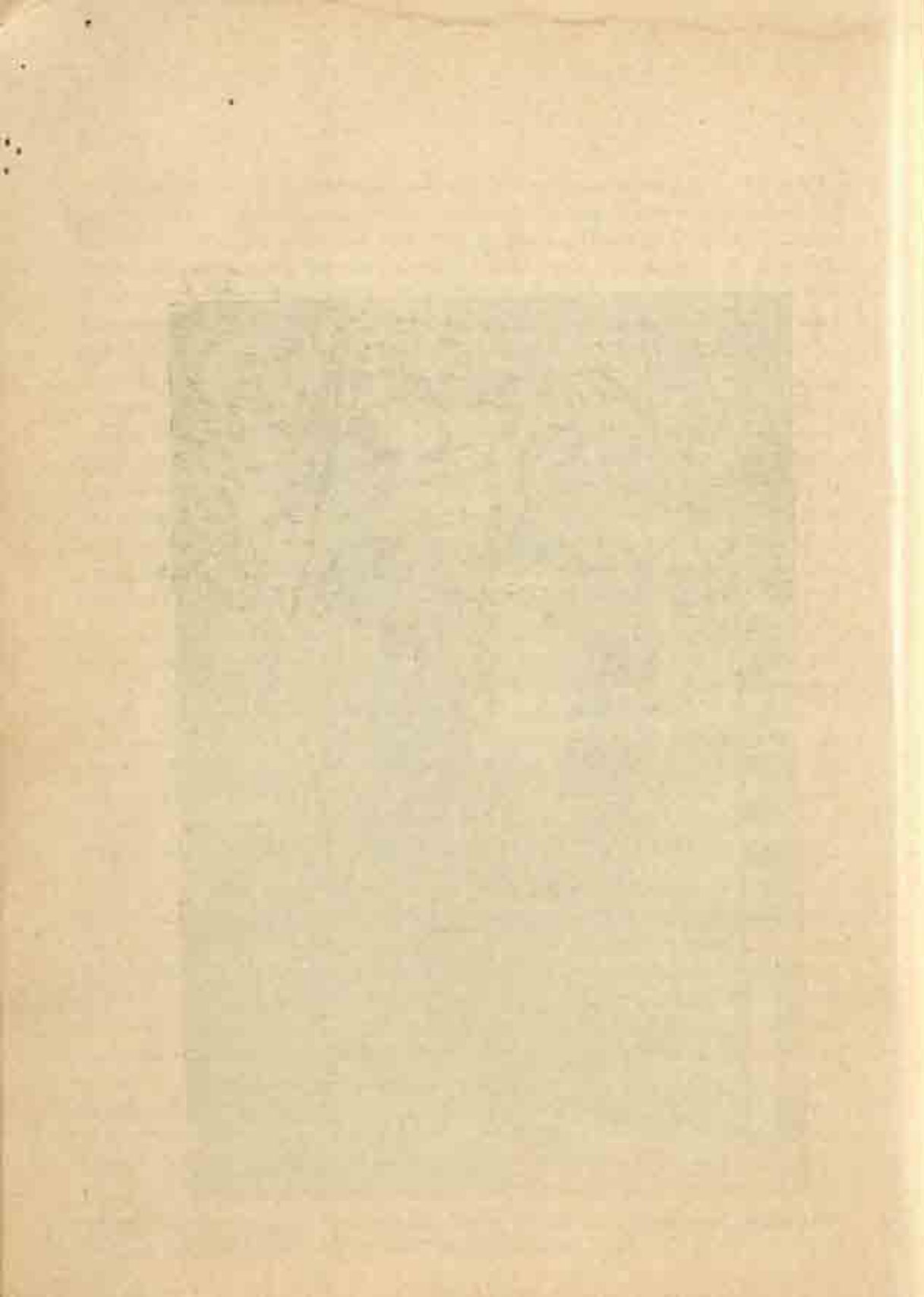


PLATE 2



Lothal, Gujarat: painting on a jar showing two birds perched on a tree, each holding by its beak a fish. Below is an animal with a short thick tail.



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PLATE 3.

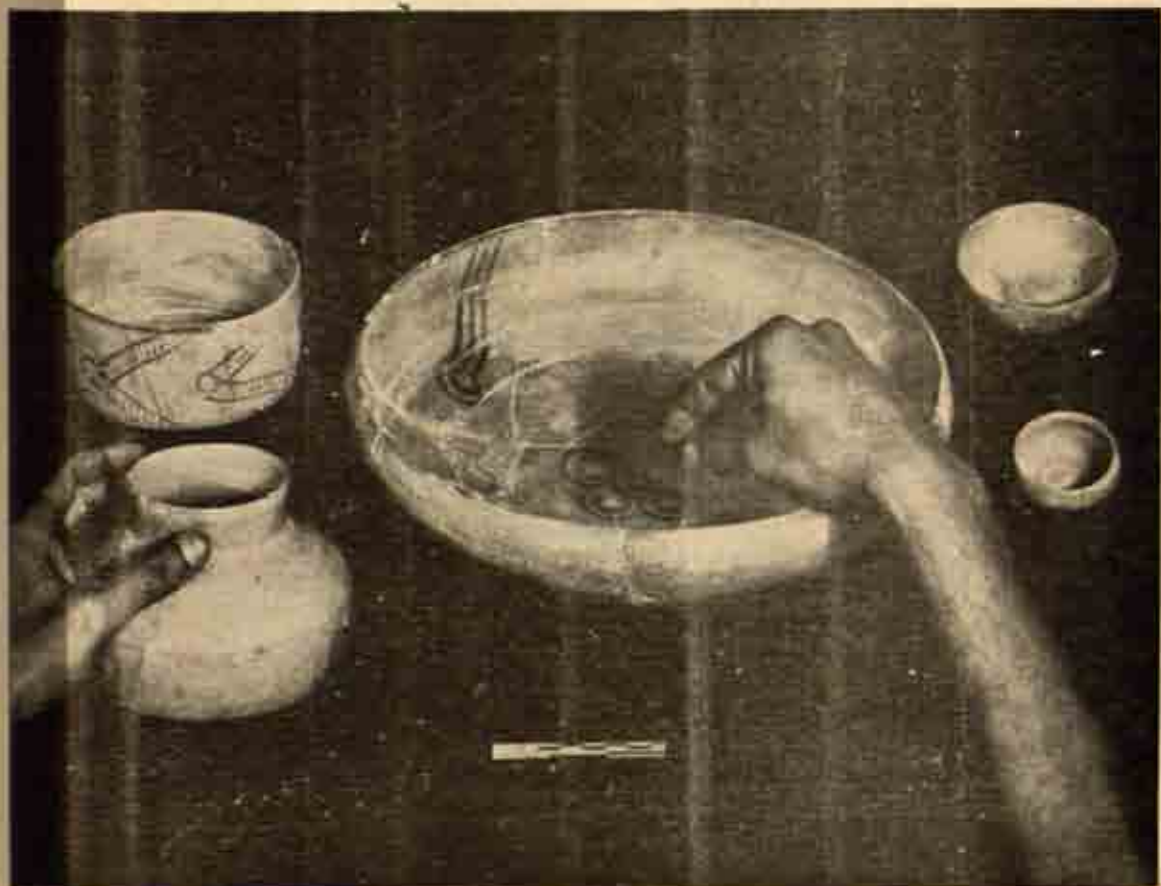


Kalibangan, Rajasthan : an inscribed potsherd.
The overlap of the symbols shows that
the direction of writing was from the right
to the left.



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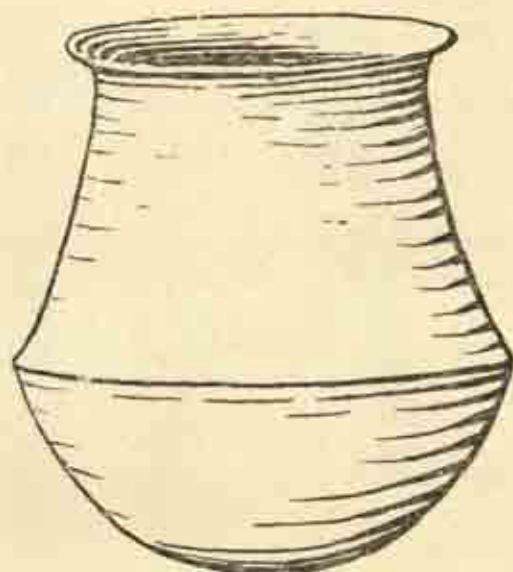
PLATE 4



A 'dining set' of the Painted Grey Ware, beginning of the first millennium BC.



PLATE 5



Prakash, Maharashtra : an earthen *lota*, found in a level datable in about the middle of the second millennium B.C. Typologically, it may well be regarded as the ancestor of the modern Gujarati and Maharashtrian *lotas* (cf. plate 6)

PLATE 6



Ahmedabad, Gujarat : a Girl holding a modern *lota* which is similar to that found at Prakash and other sites in the lower Narmada Tapi valleys, in levels ascribable to the middle of the second millennium B.C.

SOME PROBLEMS OF ANCIENT INDIAN POTTERIES

Dr. B. P. SINHA

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.¹ 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 co-operative way.² This Seminar therefore is first of its kind to focus attention on one of the many source-materials of our ancient material culture.³ 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 characteristic shapes of ancient pots, and a comparative 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.⁴

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 evidences. 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 correlated 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 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 some of us like Schlimann should start with the blind faith and following

traditions that have so powerfully moulded our life and thought for thousands of years discover our ancient Troys—Ayodhya, Hastinapur, 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 and 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 from Western U.P. to the Punjab, and down to Gujarat. Harappan 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 contributed 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, intersecting-circles, four-petalled rosette and multi-rayed sun-motif are found almost in identical representations in Harappa and Halafian wares. The use of Reserved-slip, Knobbed ware, particular types of pottery 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-continent. Carbon-14 dates do not go beyond 2,600 B. C. for the Harappan. Then often the painted designs of Harappan and Halafian are 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 Gilind. It is found in Navada-Toli and Maheshwar. It has been reported from Eran, and from Bengal at Pandurajardhippi. In Bihar both at Chirand and Sonapur it is found at the lowest occupational layer. In Chirand a few white-painted black-and-red ware in few pieces 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 Atranji Khara in occupational layer following 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 brethren 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-Aryan against other Aryan tribes. Lothal finds do corroborate co-existence of the two peoples—Harappan and Aryan. 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 suggested that from Central India this group went eastward 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 Atranji Khera with Black-and-Red ware. Iron has been found with PGW at Hastinapur and Atranji-Khera. 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. But it is only thorough examination of iron in PGW layer and 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 enigma. It is found in Atranji-

Khera in layer anterior 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 U.P. However more reliable archaeological setting is required to support this thesis. 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., and 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 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 people is to be accepted, and certainly should have closely followed Harappan, but it is not so. 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 Sonapur, 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 Sonapur and Oriup, we have beautiful pieces. It is obvious then that this region was the home of this ceramic industry. It might have spread from here with Buddhist and Jain missionaries 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 Cemetery H, Jhukar, Jhangar, Malwa-Jorwe to name a few. Their comparative study is a great desideratum.

Another problem is the foreign influence on Indian pottery of 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 other Chalcolithic sites in North India? Why Black-on-Red is conspicuous by its absence in the 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 the 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 mentioning rapturously of the golden vessels and palanquins of Chandragupta 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 could the rich dispense with the 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, as to-day, 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 pottery 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'm not quite competent to do this. I have pleaded before you the doubts and questions that arise in the mind of curious dabblers in archaeology like

me, and I have placed 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 profited by the discussions in the seminar.

SOCIOLOGY OF POTTERY : CHIRAG DILLI, A CASE STUDY

S. P. GUPTA

National Museum, New Delhi.

"I am in this locality of Malviya Nagar, on the out-skirts of the city of Delhi for the last nine years; and every year I purchase water-pitchers in the local market which is fed by the traditional potter-houses from villages almost within a radius of seven kilometres. On the 4th of April 1968 at about 8 A.M. when I heard the voice of a hawker of the earthen vessels, I felt like buying one here rather than going to the market. I did that for just fifty five paise but with a little dialogue with the vendor.

"What is your name?"

"Devi Ram, and I come from Chirag Dilli, just two km. from here" was his prompt reply.

"Is that so, then one day I would like to come to your house and see you working" I said.

"Why not, do come Babu ji"

"Your pots are beautifully painted but tell me why is that that the design over them is the same as it was years back, really I don't see any change in it. Can you not draw other floral and faunal designs?" I enquired of him.

He laughed a little and replied in a soft voice, "You have rightly observed so, but let me tell you very frankly, it really does not occur to us that we should paint differently. Painting is usually done by women at home who have always to do so much in the house that quickly they want to do the job and finish with it. They are now so adept in preparing this design that believe me in an hour or so, one woman can paint upto forty pitchers."

With a little pause and smile he added, "Don't think that our women cannot paint a tree or parrot or peacock or even men, they do all these on the walls of the house on Karwa Chauth and other festive occasions like Diwali, but that is a different story. With the every-day pottery they can't devote more time. And then what if even they paint them differently and more beautifully the pots are not going to fetch more money. You are the first person who is taking so much interest in it, for others it is just a water-vessel, it is sold for a higher price not because it is better painted

but because it is bigger in size to accommodate more water. Come some day to my house, it is quite near," saying so he whipped the donkey and went ahead followed by his five-year old child in rags, weeping and crying.

The whole thing gave me a jolt. As I relaxed in my chair, questions flowed in from all directions, and I was getting agitated for their answers.

Here is a man who tells me that a pitcher is painted in less than two minutes; how can it then be an art in the real sense? For the last nine years not a single item of the design has changed; what a conservatism? Will they ever change? Will these forms and designs ever give place to new ones? Not the paintings but the size of pots determine the price line, and it is the price line that determines the amount of time and energy the potters would like to put in making the pots. The carriers of the pots are donkeys even in 1968. The potter's son is in rags; the father cannot afford new clothes for him. Why are they so poor?

It at once became clear that with pottery are associated some of the vital questions of socio-economic life of the people. "In examining the voluminous ethnographical literature describing the manufacture of pottery, one notes with surprise how little attention has been paid to the social, cultural, and economic settings in which the work is done. Most descriptions deal with techniques and processes of manufacture and with design elements." It is really true, that "beyond telling which sex makes pots, most accounts reveal little about such things as the status of the potter in his or her society, how potters look upon their work artistically and economically...the process that contributes to stability in a tradition, which make for change, and which may be involved in the dying-out of a style...from the standpoint of archaeological interpretation, these and other "sociological" points are just as important as are styles and construction methods."

In order to find out the answers of these questions, next day early in the morning, I visited the house of Devi Ram in the village of Chirag Dilli. There are about 10 more houses in the row Devi Ram has his house. It has two rooms and a big back-yard in which he has his work-shop in the open with a partially underground open-kilns. I also met Shri Banwari Lal and a dozen other potter-men, women and children—the oldest of them, about 64 years old Kuda Ram was extremely helpful in answering questions. The results of my investigations are as follows:

The village attracted different people from neighbouring places only in 1857, purely for safety reasons, since, the war of India's Independence

was fast spreading. Their family also came from a village about 40 kms from here. For the last 60 years Kuda Ram has not seen any change either in painted designs or in pottery shapes. According to him, the pigments come from the following sources :

(1) Red for an overall wash comes from Lal Kuan, at a distance of about 8 kms. It is the disintegrated quartzite with a high amount of iron, used as 'bajari' for the pavements along the Delhi Roads. In a vessel it is soaked in standing water about 16 cm. higher than the level of the raw material. After repeated stirrings for 2 to 3 days, the quartz and other mineral particles settle down with fine red silt and red water over the whole deposit. This is used as colour.

(2) White for making designs comes from Basantpur and Mahipalpur, about 12 kms. from the village. There is a white kaolin deposit near these villages.

(3) Black for preparing designs comes from Alwar, about 140 kms. from Delhi in Rajasthan. It is from the rock deposits. Thus all the pigments used are minerals and not organic substances.

Peculiarly enough, the black paint on the pot purchased was so soft that on a slight touch it was removed with a trail of black streak. Was it a case of post-firing painting, as we the archaeologists may conclude. No, it was not. It was the usual case of pre-firing painting. The reason for this anomaly was given to me like this :

"Use the pot for two days and it will be alright. Once it is soaked in water, it is permanent."

He was right. The mineral particles which could not penetrate into the pores, got in with the capillary action. Let us now re-examine the Neolithic-Chalcolithic grey ware of the Deccan in the light of this observation and see if the red ochre paint over them falls under this category or under the post-firing paintings as claimed.³

The sources for the pigments show something interesting. The paints used are inorganic and come from a distance. Even the industry of pottery is not solely local in character; it has to depend on long distance commercial contacts for the raw material. A study of pigments and their places of origin for determining the nature of trade and commerce in this new field, and cultural contacts through it, might change our ideas regarding the dynamics of pottery in the past.

Once the colours are thus collected, now-a-days from regular dealers, the black at the rate of 25 paise per kg., white at the rate of 20 to 25 paise per kg. and red is brought on donkey backs, the paints are prepared in water and the actual work of painting done.

On the technological grounds I asked Somavati, 15 years old girl from the neighbouring potter's house as to how she paints two wavy lines making a running chain. She was amused at my ignorance, laughed a little, and then picked up a 'two-in-one brush' lying in a corner.

"Look here Babuji, in a short single handle of a margosa or 'neem' twig two tails of hair are tied up. Both are dipped in colour and then used simultaneously as a single brush; with a little swing in the hand, the chain is produced in a few seconds." And then she demonstrated it to me. She further pointed out to me that the brush may even be 'several-in-one' if required. It appears that the 3, 5 or more parallel lines seen in panels over the white painted Black-and-Red Ware of the Banas culture and over the Painted Grey Ware might have been made in this fashion.

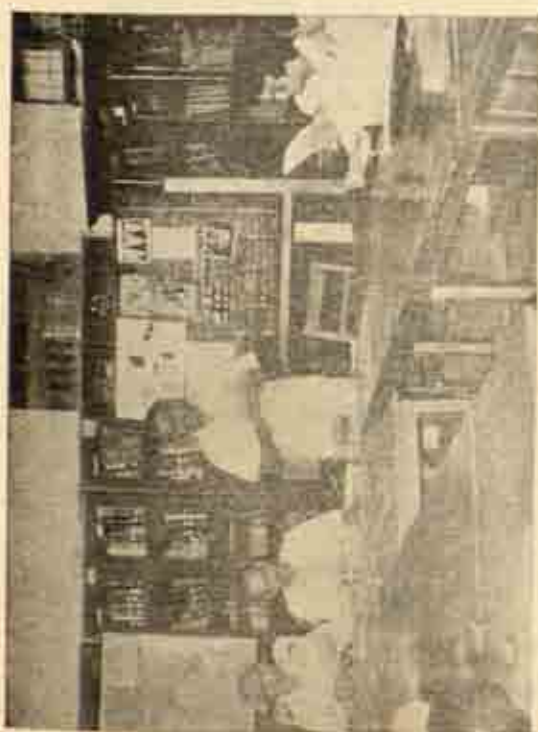
Devi Ram then took me to the kiln and the heap of cow-dung—to be used as fuel and said, "Now-a-days the cost of cow-dung has considerably gone up and the profession is not at all paying. Even the clay has to be purchased at the rate of Rs. 50 a truck."

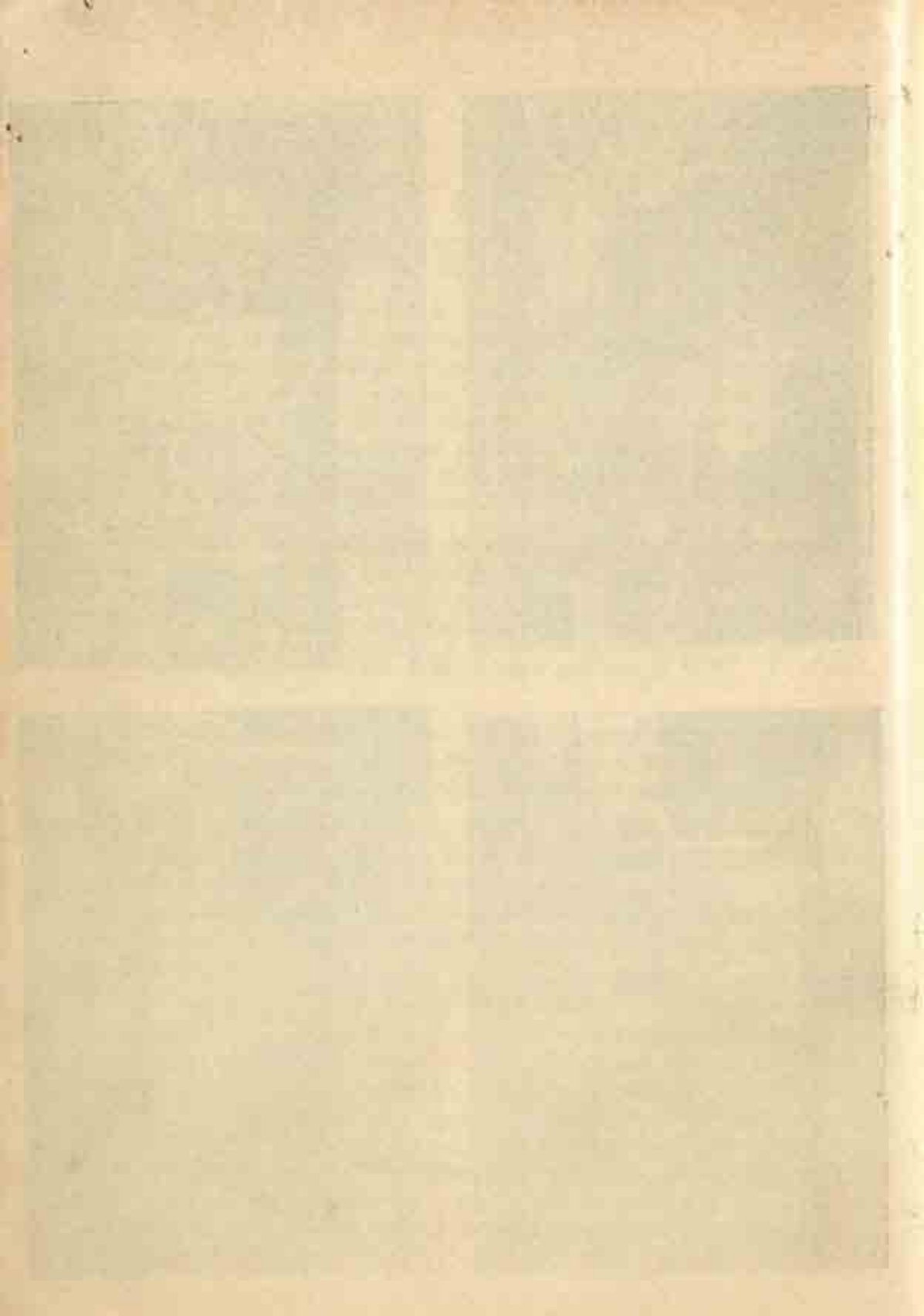
"But then why not change over to other methods of firing?" I asked him.

"Once we did it using saw-dust in place of cow-dung but probably it could not retain the temperature sufficiently long and the pots were not of standard baking. It was a dead loss. Quietly, we reverted to our old ways."

He was right, pottery-making is a tricky affair, and there are literally hundreds of points at which a slight variation, may adversely affect the result which may mean that a week or a month's labour is in vain. Economic security to him lies in following the tried processes. He becomes a traditionalist.

But in recent years with some of the potters in the city the forms of some of the pots have changed, and so the designs. The new types can be found in big shops visited by the foreigners, e.g. the Cottage Industries Emporium in Cannought Circus. Similar changes have been observed in Mexico also. Foster ascribed them to the demands of the market, and not to the genius artist who experimented for pleasure sake.⁴ Although it is true that in modern times demands of the tourists induce the dealers to ask the potters to produce new types but in the remote past such artificial demands were hardly there. The stimulus largely came either from the patronage of land-lords or abrupt inflow of a new people or new social





or religious functions or all in one. It is a complex process and it gets a big push when it becomes commercialized and a single centre of production starts feeding different markets.

Basically, the painted pots are of two types: One has only plain extra broad band round the neck, made with the help of a piece of cloth, and the other has intricate geometric designs made with brushes. However, the shapes and the designs remain the same. The reason given for it was revealing: "the former is meant for the Muslims and latter for the Hindus. The Muslims feel that we use pig-nail for the brushes, although it is wrongly assumed, we use only the nail or the tail of 'Jhatikar,' a wild small animal, still they do not purchase the painted vessels."

In fact, before this enquiry I never knew that earthen pots have their separate religions, and they are divided into the Hindus and Muslims. This communal aspect of pottery bears great possibilities in our objective studies in the sociology of pottery so far as it concerns the effects of religion on pottery. Probably, it can be used as an important source of information by social historians. In the case of prehistoric potteries, however, it cannot be used so safely.

While moving in the courtyard, I observed that some of the water-vessels have short necks while others have comparatively high ones. The reason given to me was again quite interesting from the sociological point of view, "Sir, the vessels with shorter necks are for the local population while those with higher necks are for the Punjabis who have come from Pakistan soon after the partition", explained Devi Ram. The local women arrange their vessels one above the other when they bring water from the well, but the Punjabi sisters carry them on their hips. For the former, the height of the neck is immaterial but for the latter it is of prime importance, the four fingers must conveniently support the pitcher with its neck." It is an interesting evidence of pottery giving clues for the study of different social groups in a society, each having its own habits of the way of using the pots. We, the professional archaeologists divide our pottery first into major types and then each one of them into sub-types, calling them variations. The basis of the sub-types is variations in the profile and the section. Although we do indicate these variations, we have never tried to interpret them in terms of social-structure and group behaviour, which a social historian would very much like to understand and in which studies in pottery can contribute a lot.

Devi Ram is quite energetic and takes his goods to other localities also. But when I asked him to name them, I found that none of them

is beyond 6 to 8 kms. from his village. "Only this much of distance can I cover in a day as a hawker" was his reply, "although on festive occasions I take my things even to Chandni Chowk, about 20 kms. from here, because the capacity of the local markets is limited for the mass production of these days, but that is only once in a year: after all it involves three day's of our being out of the house, staying in the market even during the night."

"But can you tell me the longest distance from where pottery comes to Delhi?" was my question.

He thought a little while and then said, "Gurgaon in Haryana, about forty kms. from here. The pots are brought in carriages drawn by horses or mules. Normally, we want to finish one transaction in a single day and return home the same night; and it is only rarely we stay over-night."

"But then is there anyone in your knowledge who is more adventurous?" I asked him.

"There used to be one", said another potter standing nearby, "He was then unmarried. He could go upto Brindaban, some 100 kms. from Badarpur, his native place. But then don't think that all the way he carried the pots made in his house. He was no more a potter. He became a trader. His own goods he will sell in the first market he gets, and then purchased a new stock in the village for the next market, and so on. But it could not work for long. The earnings were not proportionate to the trouble taken, after all potters are everywhere".

These answers are very revealing so far as they are concerned with the problem of diffusion of pottery. The actual manufactured earthen pots can hardly travel long distances, with probably, a single exception. Certain types which serve some religious purpose may travel with devotees, as the tin bottles for the Ganga water travel all the way from Varanasi to Rameshwaram, a distance of more than 2,000 kms. In the past a few Northern Black Polished pots travelled upto Amravati and Nasik, probably, as religious ware used in specific rituals. We are, therefore, pressed to think that in our archaeological interpretations regarding the diffusion of pottery over long distances, the mechanism of trade and commerce played a part certainly, but not much. Wine vessels like the amphorae constitute a different variety called "trade-potteries" and not household wares. The household wares move only with people, and migrations are certainly involved in such cases where a variety of household pottery of one place is found at another. But when the dis-

tance is more than a hundred kms., it should normally be assumed that it was the case of 'Chain-migration' rather than 'Direct-Migration'.

The problem of diffusion of the painted designs and techniques of paintings, is closely related with the entire group of pots in a ware. Since it is done by women, the marriage pattern plays a great role in it.

"How far is your father-in-law's house?" I asked Devi Ram.

"It is in a village near Ballabhagarh, some 30 kms. from here", replied he, "we cannot afford going to far off places. All our near relatives live in villages within a radius of 60 to 70 kms.

Obviously, the painted designs should normally show distinct changes beyond this radius and if they do not show it, the act of migration of people should well be imagined. Probably, too much credence has been given to the Wheeler's dictum of 'ideas have wings', and it is used and abused in all circumstances wherever we want to give short-cut explanations without toiling hard to work out the problems in details.

As a matter of fact, basic techniques of levigating the clay, wheel-rotation, firing, incision, stamping, moulding, burnishing, wash, slip, etc. travel more widely with 'wings' than the pot forms and designs which are more homogeneous and group-oriented. The latter, therefore, afford a sounder basis for regional studies. I, therefore, make a plea for sociological studies of contemporary potteries round every excavated and explored site first, and then extend it in towns and villages, so that we understand ancient India in terms of regional potteries. Studies in the potteries of modern India may be the preface for the former. A beginning has been made by Shri Baidya Nath Saraswati of the Anthropological Survey of India, only it should be more analytical, and followed by more work.

My further queries centred round the social status of the potters. "What social status, Sir, we are hardly equal to an agriculturist. We might not be untouchables like cobblers and scavengers but our work is with clay and cow-dung and, therefore, dirty. We do it because we can't do anything better. We have no land; in fact very few of our relatives are having some land, but that too does not raise the status of our relatives. First of all, the rigid caste system does not allow us to rise above a particular level in the line of hierarchy and, secondly, as a group our economy is at a very low level." That was the reply of Devi Ram. Almost similar answers were given to Foster when he interviewed some potters at Tzintzuntzam in Mexico. One of them said "ES NUESTRO DESTINO" (It's our destiny).²

But while I discussed this problem with B. B. Lal, Director-General of Archaeology in India, the latter pointed out to me that today we are all in the metal age and, therefore, the role of pottery in our life is much less than what we can imagine in a non-metallic context. It is a very pertinent point and I wish someone gets an opportunity to work out the status of potters in societies not still using metallic pots and pans. However, the Caste system in India determined the potter's status from time immemorial.

Closely connected with it is the problem of marketing. The potter has to orient his product according to the demands, but it is equally conditioned by the monetary return. The demands are various because the needs are various—cooking, religious ceremonies, containers, etc. Similarly, the return is also different. While a water vessel is sold for 50 paise, a much smaller but sturdier milk-pot is sold for 75 paise. In the courtyard I saw both the types painted equally well, but the paintings on the latter was more elaborate, and the reason for this differential emphasis on paintings done on two different types given to me by Devi Ram lies in the differential monetary return, rather than in anything else.

But in spite of it except a few, the paintings do not rise to the level of art. It is artisanship. It has degenerated to a 'job in the routine.' No pleasure is derived out of it. It is just a profession for earning livelihood. Value is attached to the size and for pots used for preparing costly things than to the paintings. Because bigger the pot, more the purchase value or specialized the use, more the money.

This is the real reason behind conservatism in pottery shapes and designs. And I have a feeling that in places where the pottery types and decorated designs are stable over a longer period, seen often in the archaeological context, the art of pottery had degenerated to artisanship. The reason in all probability was 'lower monetary return' from the sale. If that were so, the social status of the potters in most of the societies, even in the remote past, must have been awfully low. The Harappan potters' status could not be very high.

E. A. Hooton⁴ once said "When different peoples come into contact, they may fight, but they will always breed. But can this inter-marriage be recognizable in the pottery of a single site? Solheim gave a good example to show that it is recognizable. In a burial site of A.D. 600—1100 in the Sarawak delta of Borneo he discovered that for a brief period, pottery forms, especially the handles, were copies of Chinese types but were made locally. The handles did not adhere well to the vessel walls, and their production

soon ceased. In the local historic situation, women have traditionally made the pottery and Chinese men have often come into the area and married local women. Solheim suggested that perhaps the local wives struggled to imitate Chinese styles in a technique unfamiliar to them and that subsequently local born offspring had no interest in the Chinese styles, which soon died out. H. J. Fleure (1962) wrote, Early arrivals (perhaps Roman mercenaries and migrants escaping slave pressure) were some times young men who took to wife native women, so that one gets Roman features on Saxon pots.*

Such hybridization in pottery forms and designs are visible in the areas of overlap in India also, e.g. in Maharashtra the Southern Grey Ware shows elements of Northern Chalcolithic types and designs; recently S. B. Deo found some Malwa type designs on a local pottery near Nagpur.* I do not know if Malwa Channel spouted bowls can also be included into this category. So also may be the case with Painted Grey Ware, Northern Grey Ware and N. B. P. Ware. Examples from contemporary history may be found out. One has to work it out and see if Solheim's observations can be applied in all these cases also. Cross breeding in human society resulting in the hybridization of pottery forms and designs is a very interesting observation for Sociology of pottery dealt by ethnologists and Archaeologists alike.

As I was leaving the place for my return journey, I enquired of Devi Ram if his pottery forms and designs will ever die out or they have taken a doze of Amrit, nectar, and shall remain so far ever.

He laughed a lot and said, "They may die out but not with me, but perhaps with my children, who have started going to schools and aspiring for becoming 'babus like you'!"

Is he not right ?

The effects of cultural contacts of these folks with the neighbouring urban communities will certainly bring about the end of this folk-art, for nobody wants to remain at a low status, more so, when he sees that men like him lead a better life by adopting clean jobs. Those who still remain uneducated may not be able to leave this work for sometime more, but they too may search out new ways and means to earn more. And this they can do by fulfilling the new demands of the cities which require new forms, new designs and new techniques. However, in course of time, they may not be able to compete with the factory-produced ceramics of better quality and at cheaper rates.

It will be quite revealing for an archaeologist if he excavates a big city site and then digs smaller village-sites round it to observe the changes in

pottery forms and designs of the village sites. The cultural contact may account for the changes.

Acknowledgements

The author is extremely thankful to Shri Ami Lal, a local social worker and to Master Shanti Swarup Kaushik, secretary of the Primary Teachers Association of Delhi, residing in the village, for their kind help and cooperation in my studies. Thanks are also due to Shri Devi Ram, Shri Banwari Lal, Shri Kuda Ram and others for their hospitality and help in this study.

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Discussions

Sri Krishna Deva :

Whether Pottery is an art or craft? What factors are responsible for the colour of a pot? Is it due to mineral contents in the soil or is it due to firing in different condition? At Mohenjo-daro it has been observed that different colours were achieved due to variation in temperature and slip. The importance of regional variations in pottery with a view to finding out whether basic elements of a pottery travel long or near is to be stressed. Certain aspect

of pottery inspired their functional aspects such as a Handi with carinated neck and a sagsar base. Shapes and designs are important for archaeologists. Pottery of cemetery H and habitational area of Harappa showed differences in designs and certain types. It is perhaps the forms and decorative elements which guides in detecting the differences.

Sri S. R. Rao :

Technique of manufacturing pottery was experimental at Lothal. Clay is itself very fine in alluvium, so levigation was not needed at all. Amount of labour spent in manufacturing pottery should also be recognised. In the matured Harappan period, a potter could sit for a long time and paint much elaborately with great care. In the later phase they could not spend much time. It is thus time factor which makes the difference between mature and degenerate Harappan pottery, though the painting continued in somewhat the same manner. The painted pottery were mainly ritual pottery. Funerary pottery in Mysore is painted; for auspicious occasions even to-day preference is given to painted vessel. In this way the painted pottery atleast for auspicious use continued but for ordinary use unpainted simple pottery continued. Certain pottery shape and designs guide to trace the diffusions of culture. About 1,000 from Indus, Late Harappan pottery has been found in Kurnool. It is only degenerated style of painting like Lothal. Harappan ceramic style is widely distributed.

Sri M. N. Deshpande :

As regards the painting of the Neolithic-Chalcolithic Grey Ware of Deccan, this was a post fire painting. Normally the pottery itself could not travel further. People may go to long distances and produce the pottery which they made at their regional places. So some of the shapes will be the same though the technique may differ. The occurrence of Malwa ware at Daimabad may be taken for example. When Romans came to India they wanted certain pottery shapes. Local potters made them to satisfy the needs and requirements of foreign settlers.

Dr. P. L. Gupta :

The source of pigments used in painting should be studied, whether it is local or imported. The different classes of people—social or religious groups used different kinds of pottery. Muslims used Badhana and Hindus use Garuas. So pottery may represent several religious group in the Society of a certain archaeological strata.

Dr. R. C. Agrawal :

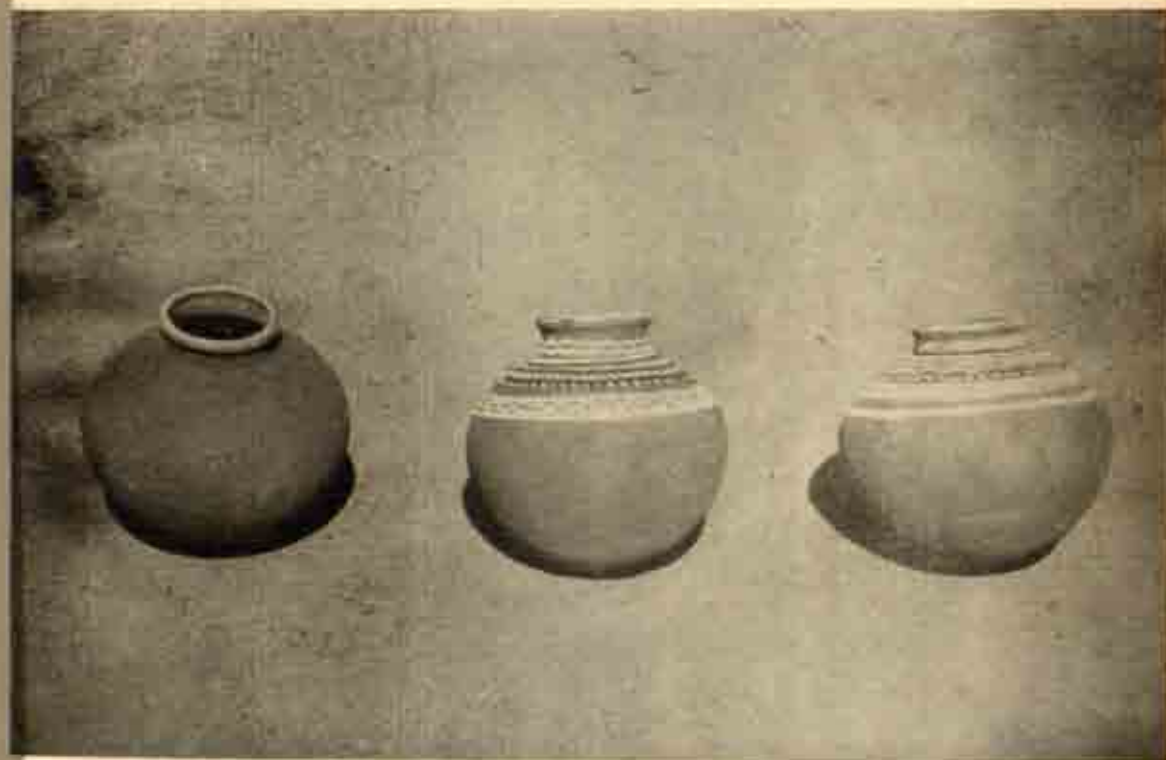
The conservative nature of pottery should be emphasised. Contemporary artistic trends or folk art might have influenced certain pottery shapes and designs.

Dr. R. C. Gaur :

The status of potter in different periods should be studied. Literary works may give guidance in this aspect of study. The Buddhist literature points out about Potter's guild. Potters appear to have attached certain importance to designs and colours whether it signifies any religious aspects is worth considering. A Pottery kiln has been exposed in P. G. ware level at Atranji-Khera. The same type kiln still continued in the locality.

Sri S. P. Gupta :

Variation in pottery shapes and designs is perhaps due to regional taste. Funerary pottery of the Baluchistan and cemetery-H are painted whereas those of R-37 are unpainted. Pottery designs moved, perhaps ideas and people moved to long distances. The Harappan culture has a national as well as international importance, as it is diffused even upto Soviet Central Asia.

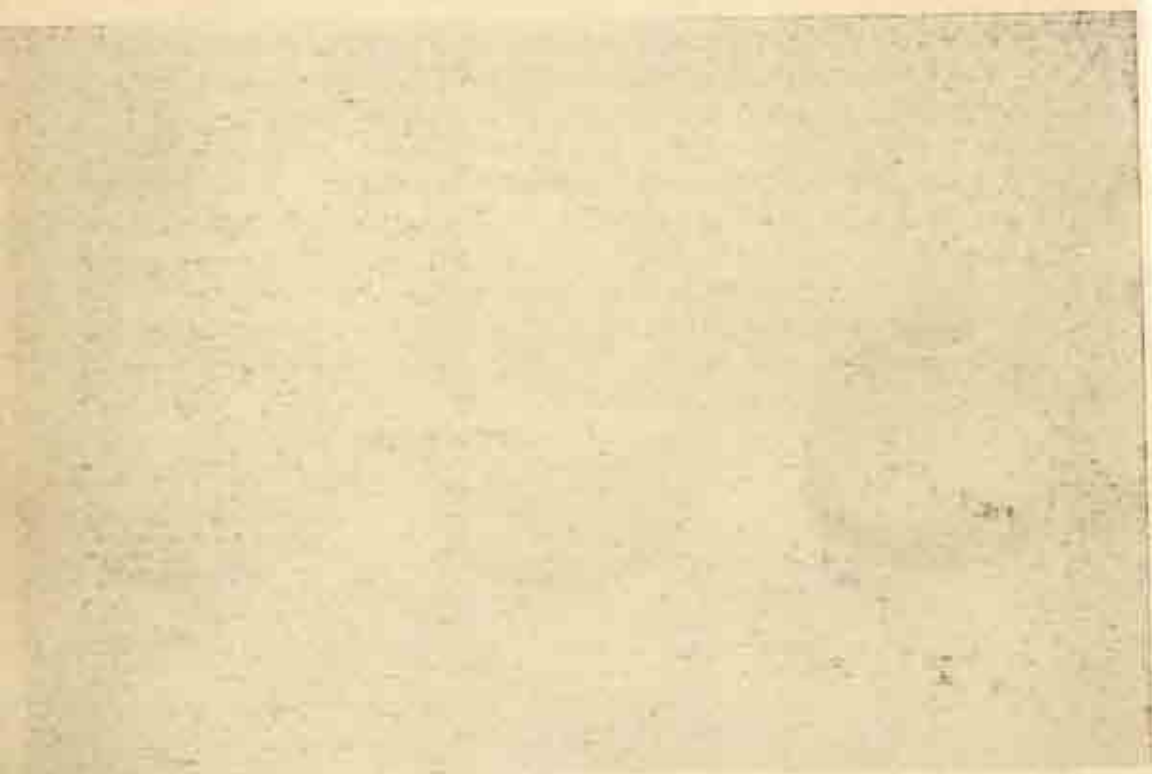


Water Vessels of three types

- (1) Plain, with only a coat of red slip painted over 3/4th of the pot.
- (2) Painted, for the Muslims with high neck; meant for the Punjabi women.
- (3) Painted, with short neck; meant for the local women.

From Chirag Dilli

Photographed on 8-4-68. (Author)



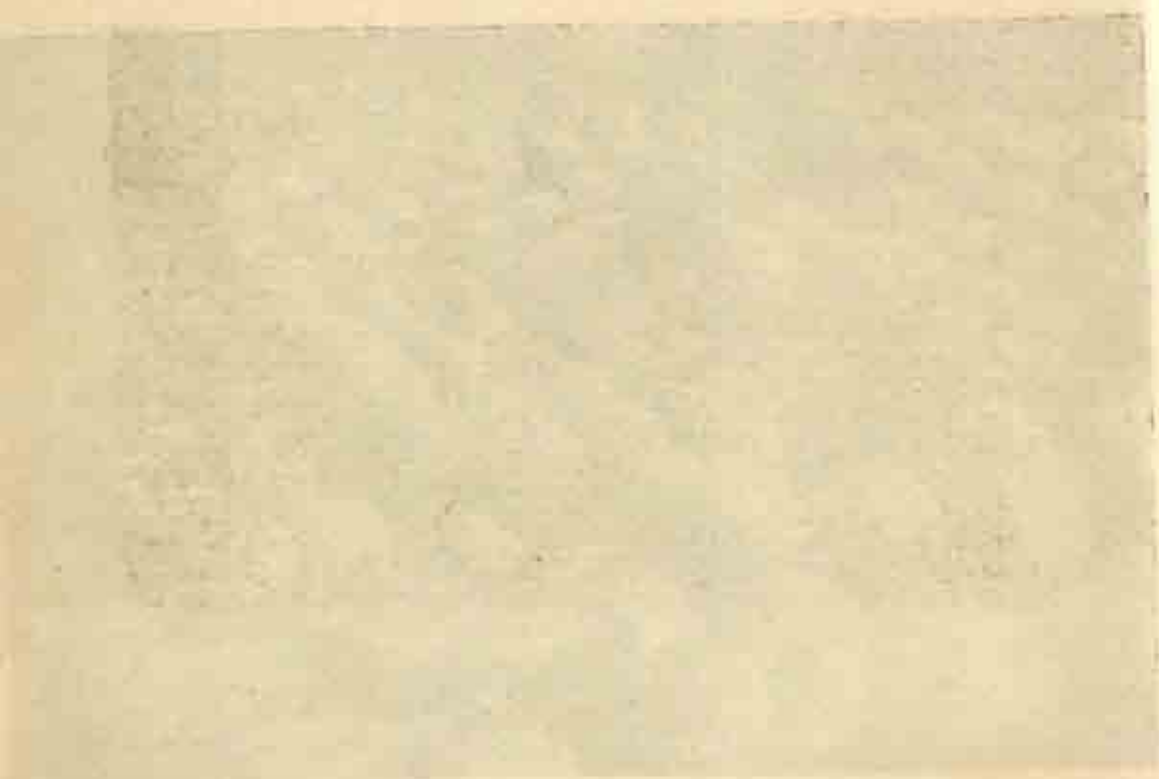
111. The first of the three is a small, dark, irregularly shaped object, possibly a seed or a small piece of wood, lying on a light-colored surface. It is oriented horizontally and has a rough, textured appearance. 112. The second of the three is a small, dark, irregularly shaped object, possibly a seed or a small piece of wood, lying on a light-colored surface. It is oriented horizontally and has a rough, textured appearance. 113. The third of the three is a small, dark, irregularly shaped object, possibly a seed or a small piece of wood, lying on a light-colored surface. It is oriented horizontally and has a rough, textured appearance.



Pots being arranged in the Kiln with Sri Devi Ram.

Observe the Cow-dung and old Shoes placed over one layer of pots; the second layer is being arranged. At Chirag Dilli.

Photograph on the 8th of April 1968 (Author)

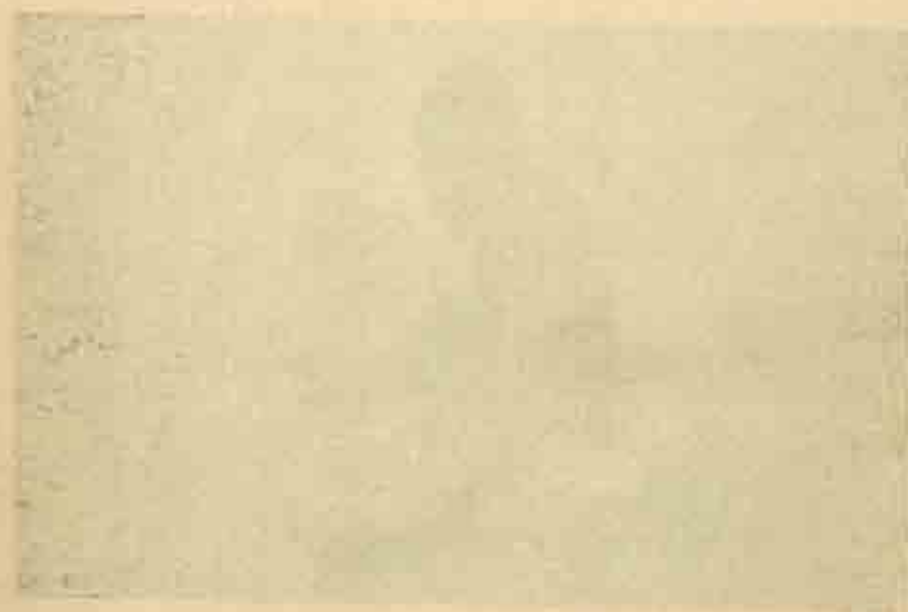


...and the ... of ...
... and ...
... and ...



Somvati at work

Observe the frieze of peacocks which she painted at my request. She has promised to prepare one with more floral and faunal designs at a cost of Rs. 2/- since according to her it will involve at least 1/2-an-hour to do that (Chirag Dilli).



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STUDY OF POTTERY—A NEW APPROACH
ABC OF ARCHAEOLOGY OF A TO Z OF ARCHAEOLOGY

M. D. KHARE.

Archaeological Survey of India.

रे माटी के कूल्हड़े, तोरा डार्ले फोरबाय।
घोट बने हें पीव को, त कत चूसे जाय ॥

—जायसी

How many of us in this distinguished gathering have tried to pose even a much simpler question to a potsherd, than that has been attempted in the above quoted couplet? If a poet could find philosophy in it, can we not at least ascertain its make and purpose by intimate handling of a vessel?

A Seminar on pottery was over due. The University of Patna deserves compliments to have realized its urgency. Since the study of pottery had all through these years been my favourite subject, I am putting forth some of the observations, reduced to writing hurriedly, which I hope, might be of some use to the present gathering of archaeologists and historians.

It is merely a repetition to say that pottery is A. B. C. of archaeology. But most of us have also felt that treatment of the subject in course of a decade of archaeology in India has been rather far from satisfactory, because of its monotonous geometrical description of the types and a note on its general features. Very rarely conclusions based on the study of pottery have helped in giving a detailed picture of the day-to-day life of its users, or in co-relating it with the social and economic conditions. It does not, however, mean that the attempts made so far in this regard are less praiseworthy. The use of chemical analysis and other examinations conducted in the science laboratories have also proved to be of enormous help.

With some of these advancements in the field of science, where a few more laboratories specifically for research work in pottery alone are of a dire necessity, a very careful, systematic and perhaps statistical study may be useful. Most rewarding result, however, in my view could be had only when the student of pottery handles each sherd patiently for a longer time than spent so far and devotes more attention in finding out its specific use.

So far, the broad classification of pottery is based on typology, leaving aside, of course, the surface treatment. New details have to be studied and worked out. Just as a bulk of potsherds, recovered from outside a wall would indicate a dump, abundance of cooking utensils in a restricted area suggest a kitchen or huge troughs found lying near a drain supposed to be a bath room, each sherd from respective groups or complexes should be studied individually and then collectively to find out, for example, as to how many of them could have been used as milk, oil or water containers.

If the number of vessels, displaying the use of the milk is more, we could safely deduce that the occupant's diet contained more of milk and its products. Similarly the use of fat or oil would suggest the taste of the people besides getting the information of the source of fat or oil. The evidence of milk, fat or oil would unfold many other associated details i.e. the occupants of this particular structure are likely to be richer in cattle or in wealth than those in whose houses such containers are less. No wonder, we might be able to prove that a milkman lived in a particular structure just as potters Kiln or goldsmiths furnace are determined. This type of study would not give a picture of the whole of the township, from one individual to the other in a distant corner of an ancient city, but would also reflect on the economic and social condition of the people in general.

The frequency of huge jars and troughs in one place and their non-availability in the other could also be due to several reasons, which may not be far to seek when studied in the context of their location, horizon, condition, contents etc.

Again, the evidence of each sherd, whether to be selected for the purpose of illustration or not, should be studied thoroughly before discarding it. Also it may not be very difficult to find out from a total number of cooking vessels, recovered from a site, to say, as to which one was used more frequently and perhaps for which type of cooking. The sootstains on the body of such a vessel, confined to a portion or otherwise extended over the surface would suggest the type and condition of the fireplace and also the type of fuel used, even when the fireplace could not be located due to restricted dig.

Similarly the variety in lugs, spouts, handles should speak of the types of vessels, on which lugs were used, to which the spouts or handles were attached. They should further be illustrated by the probable conjectures of their contents.

While coming to stratigraphy, we find that change in the pottery types and also the other associated finds, if any, usually indicates a change of the layer as well. But proper emphasis on the fact necessitating such a change in the pottery types has rarely been laid-nay seldom studied thoroughly. Does it not signify an advancement in the richness of diet, convenience of drinking or fetching water, introduction of sophisticated living with a pleasing variety of spouts and handles, storage of grains, etc. ?

A word about the standardization of the terms used in the description of pottery may not be out of place. It would be worth-while to take the help of sanskrit words for equivalent types, used in the literature implying a definite use. It would be easier to write and also to understand such uniform terms.

Further, the study of modern pottery is equally very essential. There are many sherds, which are classified, as indeterminate or whose functions are not known. The study of modern pottery of the concerning region where the earlier types with a little or no change continued to be in use, would be helpful in determining the exact use and the type of the ancient pottery. It may not even be difficult to say, after seeing the modern pottery of a place whether an ancient site exists some where in the vicinity or not. Again, the source of clay for modern pottery in the nearest habitation should be found out if necessary with the potters help and the clay subjected to detailed experiments.

Such experiments could be done in the modern laboratories, specially available for this purpose. During my short stay in West Germany, I had an occasion to take up some practical training, when I myself was able to give a sherd the appearance of N. B. P. with its ringing sound.

Since the pottery always outnumbered the other finds, serious attempts have to be made by us for deducing more and more information, which would go a long way in reconstructing the past. Such deductions, in many cases might prove to be subjective in the early stage of our adventure but will turn out to be objective with the increasing interest and subsequent confirmations made through experiments carried out in the laboratories.

Because of only one day's notice to me about this seminar, I could not arrange my thoughts in order nor devote time to the analytical aspect of pottery. However, I have ventured to give the subject a new approach, by which the pottery would not be A.B.C. of Archaeology, but also ultimately prove to be A to Z of this science. The associated antiquities should only confirm our conclusions. We are still far away from the pottery. We have to go much nearer to it, so that the past could come to present.

THE DEVOLUTION OF THE PENINSULAR 'NEOLITHIC' CULTURE— AN ANALYSIS OF CERAMIC INFLUENCES

K. V. SAUNDRAJAN

Superintending Archaeologist, Archaeological Survey of India

The effect of recent archaeological field investigation in the different parts of the Peninsula—as related to what we knew and now know in the central and northern India—is a re-assessment of our very basic outlook on the rise of semi-urban or what might be called viable and cohesive societies or communities. The Neolithic period in India—as in the rest of the world—had been taken essentially as constituting the use of polished stone tools, domestication of animals, incipient agriculture or at least foraging of edible grains, and use of pottery, hand made first and then wheel made. It was, however, only in the recent decade that it was shown that polished celt need not alone be an invariable index of the lithic tool outfit of such a community, and that a microlithic outfit seemingly functionally geared to a specific planned purpose involving collection and storage of food and animal husbandry could also come under the perview of Neolithic communities. Of course, the advent of metal (copper or bronze) would imply a revolutionary change in the set-up, but this by itself or by the concomitant painted pottery, need not water down the functionary or epochally 'Neolithic' age. By this term we are not referring to a specific tool kit but to the sum total of achievement at that time. It is, therefore, necessary to apply these principles and expedient standards to the advent of the 'Neolithic' or the early farming communities. The very absence of a truly nomadic life, notwithstanding use of stone tools alone, could indicate a positive progress. The meagre presence of pottery might confer upon such a culture situation an inchoate and indeed transitional hue, but would not place the culture context itself out of bounds to a well knit and larger community life.

In the ages before the 3rd millennium B.C., we have practically no visible sign of a truly semi-urban or advanced and gregarious social picture of human groups. The stage is usually ascribed to the fag end of the late Stone Age and Microlithic tools, if only found, were taken as the symbol of early man not given to the leisure and organisation of settled life. While certainly all microlithic cultures are not amenable to a categorisation under the progressive 'Neolithic' outlook but only to an atavism of the truly stone Age propensities with only the climate and change, resulting in a shift of the physiography of the habitat and the material and size of the tool-kit—we are still not likely to be fair to culture context like those of Langhnaj in Gujarat or the 'Teris

of Madras State, if we relegate them to a dead end of Late Stone Age hunting rigmarole. The very topographical set-up, the character of the tool-types and the subdued but extant nature of a formative organic social entity, would preclude such a sweeping dismissal. If this were so, we may have to validate their role into a forward looking and progressive format and anticipate the later vestiges of stone-metal (copper first and iron later)—outfit and painted and graffiti-marked pottery, in these barbaric Late Stone Age 'proto-neolithic societies.

It is now being realised more and more that India did not have any truly early metallic Age, either of copper or its alloy bronze. In fact, any deliberate alloying has not been indicated even in such of the tools as are truly of the bronze category, and it would seem that quite a few of such bronze objects, excluding the Indus sites including the Chalcolithic sites, could be imported or in the 'secondary' contexts. Only the copper tools, ingots and others unwittingly alloyed by the presence of ore impurities are the common finds. Only after the Indus civilization, a real hunt for exploitable copper in India seems to have taken place in some of the Chalcolithic culture communities. This casts a significant onus on the archaeologist to assess whether a given assemblage is truly chalcolithic (metallic) or only 'neolithic (pre-metallic). The problem is not just a matter of the presence or otherwise of a few nondescript lumps or even finite objects of copper or bronze. Their employment as an integral part of the culture would not be taken for granted, but would have to be established on other independent grounds. The large scale occurrence of microlithic tools along with such sparse availability of metal (copper), has, in addition to facilitating an orientation for the culture context, had complicated the situation further. Their use, while highlighting the paucity of copper (as tool or as metallurgical know-how), would seem to bear evidence of culture-trait, by the typical and technically mass-produced character of some of its types like the ribbon flake. But, when these are found in a Neolithic context and with the use of painted pottery, we have a confused picture, which does not resolve itself into basic ingredients for the culture—situation, but rather suggests a synthesis of culture-elements, due as much to the evolution of the neolithic, agro-pastoral base into something else, as the migration of mere stone or painted pottery using industries, devoid of a culture matrix of a stable kind, to absorb these elements. This temporal conjunction of two culture stages, one primarily primitive and functional group trying to raise its sociological personality to a higher order by imbibing technical differentiate that would be adequate for this, and the other, primarily technical industries or specialised groups seeking material fulfilment by being admitted into a self-sustaining society. If this principle,

as the basis, is accepted, we might visualise the pattern of diffusion of the Peninsular Neolithic culture with barely the basaltic celts, burnished grey (mostly hand-made pottery) and microliths of a lesser order—the remnants of Late Stone Age industrial survivals—becoming a comprehensive chalcolithic entity in various parts of Deccan, absorbing in each zone, the typical borrowal-traits of the area, making variant combinations, thus, with the Jorwe ware, Black and grey (or red) ware, Malwa ware, etc. The further north it goes, the more complex it becomes, although it could be maintained in some cases, that the impact of the borrowal elements was made in primary or secondary or derived contexts. For instance, in a classic site of the Tapti valley at Prakash, where as many as six different pottery fabrics had been identified by the excavator, and their horizontal strata-wise relative count with their other contemporary wares given, it is seen that the Black and grey wares (painted) get diminished in bulk from base (35 per cent in layer 53) to top 12.50 percent in layer (45), while 'Malwa ware' shows at the base 43 per cent and registers a spurt upto even 73 per cent (in layer 50) in middle levels, and diminishes later to 55 per cent (in layer 45). Jorwe ware, on the other hand, is seen augmenting itself from a mere 5 per cent (in layer 48) to 15 per cent (in layer 45), but this ware is restricted to the upper levels alone. Lustrous red ware has barely a medium of sherds, but is found to coincide with the time range of Jorwe ware. Other 'coarse, burnished and plain wares show a continuous provenance throughout the layers 53 to 45, although they are the densest in the much lower levels, and show some foreign impact (from Iran) in their mid-level, around layer 49.

The table supplied by the excavator, has, thus, a scope for meaningful application—though mainly for the vertical range of the pottery types—per se, and in combinations, which of course, would be the best use of them in a vertical excavation. The above table of Prakash Period I would show that.

(1) In the Tapti valley, around 1600 B. C. (on the basis of author's dating), there was only Painted black and grey ware, Malwa ware and coarse burnished and plain wares in the area around Prakash.

1. As a matter of fact, however, we have to give a correction in all such cases to the fact that, since mounds as a rule tend to get slopy as we go up, the area of the layerwise vertical dig becomes progressively less and less; as such, the area-incidence ratio of pottery (and for that matter of antiquities) horizontal relationship of pottery mutually will have less significance because of the unknown potentialities of the different areas of the same mound which a single slit trench could by no means represent, and thus the occupational characteristics of the society, as reflected in the layer and their pottery and antiquity density, would be better displaced only in a horizontal dig.

(2) The incidence of the peak of Malwa ware was only much later, say around 1500 B.C. in that area.

(3) Jorwa ware is at its peak only around c.1300-1200 B.C. in the Tapti valley and actually thins out in the next few centuries in the Narmada valley where, at Mahesvar, it is found in the upper levels of Period I.

(4) There was a Sialk or say North Western Indian element at Prakash, around 1400 B.C.

(5) That painted Black and grey ware is indigenous or at least well entrenched at the time of the very inception of Prakash settlement, and was co-existing with Malwa ware there, which had been in thinner strength at the beginning. But later Malwa ware starts dominating the scene, as compared to every other ceramic.

(6) Around layer 49 and 50 (c.1500 B.C.) there is the greatest spurt of activity in the site, as noted from sherd incidence of most of the categories. The decorated and burnished wares, since they get depleted after this stage, were perhaps auxiliaries to the burnished grey, painted pottery industry.

This study suggests that at least in the Tapti valley the painted Black and grey ware gets ousted by the Malwa ware very soon after inception, and the latter is indeed the chief ceramic culture of the site, except in so far as the advent of the painted Black and grey ware here from elsewhere (probably Rajasthan) goes. Thus, either way, these two pottery media were actually filling a vacuum in this area. The cultural level of the area prior to their arrival can only be guessed, and what we might possibly be somewhat sure about is that the peninsular Neolithic culture had certainly been in some shape in this area in the early stage of Period I, as suggested by the coarse, burnished and plain pottery types. If this has any meaning, it could only be that the stamina of the Malwa ware was greater here than that of the 'neolithic affiliated burnished ware. Thus, we might think that the indigenous community at a lesser urban cultural level was intruded into by the semi-urban painted pottery-using, and copper using communities from further north, already around c.1700 B.C. This is more or less the time of the Harappan culture end and dispersal of its elements elsewhere, along with the technologically skilled but unemployed groups. The Prakash pattern was taken, primarily to show what happened at a reasonably northern latitude of the Deccan, and also largely because we have very careful and scientific documentation of the material by the excavator. But the picture is certainly well supplemented by the scene observed in the Narmada valley further north at Navdatoli, in the lower Tapti valley itself at Bahal, in the Godavari valley at Chandoli, on the Bhima, at Daimabad, and further down at Maski, Tekkalakotta and Hallur, in the Krishna Basin, and even further south as on Kaveri as at T. Narasipur, and the Palar basin as at Payamapalli. Every where, we see

two striking phenomena, that there is a basal matrix, affiliated in differing degrees with a peninsular 'Neolithic' culture essentially of agro-pastoral type, and this is peacefully intruded into by copper using and painted pottery using culture groups of various categories, which certainly do not deluge the area with more metal, but rather with more stone and which do not produce, again any lasting painted tradition in the lower Deccan but rather develop into highly isolated local *milieu*, one of which is witnessed in the Cuddapah-Kurnool area at Sanganapalle, Patapadu, Pusalapadu etc. But to the extent the 'Neolithic' base gets watered down but rises seemingly in material level, we are actually witnessing a transformation of a truly 'Neolithic' society into a sophisticated semi-urban community groups. These communities, doubtless, had the best scope for appreciating Iron Age technology when it was introduced into lower Deccan, further down the corridor of time, around c.800-700 B.C., until which stage, they continued to thrive in colourful localisation and nondescript sophistication, shining, as it were, on borrowed feathers. Their own stamina for raising their level was effectively subdued by the extant chalcolithic elements in the society, involving living groups and not simply impulses. This analysis would seem to lead to the logical conclusion namely (a) that at a reasonably early stage, say, around c.1800-1700 B.C., the 'Neolithic' way of life was widely obtaining over a large part of the peninsular, particularly from Salem in the south to Eran and Banda in the trans-Vindhyan region, and as a logical metamorphosis from its survival instinct, it started accommodating the dispersals of the upper Indian areas in the Late and post-Indus civilisation schedule; (b) The Jorwe-ware by its seemingly higher chronological priority in the Narmada valley, was perhaps at its 'terminus post Quem' in the type region. It was one manifestation of the chalcolithic melange, another being that of Daimabad on the Bhima, and a third in the Kurnool area as at Sanganapalle; (c) All these were only differential processes of regional groupings, but the true 'Neolithic' pattern of culture also continued in degeneration upto the close of the first millennium B.C. in many areas; (d) No direct cultural impact of the Indus civilisation could be postulated to any of these, although it is implicit that the carriers of these 'Indus' traits had a dynastic link with the late Indus groups of both Sind-Rajasthan and Saurashtra; (e) While, strictly speaking, an advancement or spread of the peninsular 'Neolithic' may not be acceptable, since in every part of the Peninsula the 'Neolithic' culture pattern was of a resident category already between 1800-1400 B.C., the advent and diffusion of the painted pottery using communities from the north, would on the other hand, be demonstrable. In their culture-outfit, copper metallic know-how was progressively minimal and degenerate as one advanced further south, but stone element by its familiarity over a

wider area and span of time in Late Stone Age, was more evident; (f) The arterial waterways to some extent helped in the grouping of the zonal assemblages, but other factors like the physical barriers, the flora of the terrain, calling for heavier or lighter stone tools, mattered a great deal. The concentration of the more evolved and elaborate painted variety like the Nasik-Jorwe and other types in western Maharashtra is probably due to the fact that the head-waters of the rivers were more easily crossed than the lower reaches; (g) What is the most glaring of all the results is that but for quick dispersal of a variety of chalcolithic culture communities physically into Deccan, the area might have been continuing in atavism for a longer period, except in the coastal zones, and would have actually resulted in an interior versus littoral culture differentiation in its structure. The pure 'Neolithic' culture did not certainly have in it the making, sufficient for material progress. The situation is not very much different from what obtained in the early Painted-Grey ware period, particularly in the western Uttar Pradesh and Punjab, and its late manifestations when Iron had certainly become accepted as of far-reaching importance for a variety of activities in the material life of the society, and conduced to a phenomenal shift for the better, in corporate urban maturity and well being.

Thus, given two major zones of culture spread, namely, the Indus culture zone of admittedly accomplished urban prosperity and progress in Punjab-Sind-Rajasthan-Saurashtra area, and the 'Neolithic' agro-pastoral way of life in the entire Peninsula, the advent of the skilled citizens of the former into the latter produced a better application of tool-technology than what happened in the Ganga-valley in pre-Painted grey ware. The impact of Iron metallurgical mastery on both the early painted-grey ware of the Ganga-valley and the Peninsula, though similar was different in degree. It was more readily received in the Deccan and central India, as seen at Hallur or Ujjain, than the Ganga-Jamuna valley, as seen at Hastinapura or Alangirpur. It required some time by which the physical ore-centres of the Bihar region could receive attention for exploitation. It is not established also that this exploitation of the first Iron source in eastern India was only by the Painted Grey ware people. What we, however, know is that this had taken place, already perhaps around c. 700—800 B.C. On analogous grounds, Iron ore centres in the peninsular south (as in Mysore) also should have been tackled around this time, which is why we get a reasonably early c 14 date for Iron, as at Hallur which certainly did not have anything to do with Painted Grey ware for its advent of Iron. The reorientation of conventional approaches to the interpretation of archaeological data has at no time been more strongly indicated than now.

RAJASTHAN'S POST-HARAPPAN POTTERY

Black and Red ware from Ahar and Noh—

A study in its types, fabrics etc.

S. P. Srivastava*

Ahar, a village situated about three furlongs from the old Udaipur Railway station, experienced the scientific use of spade at one of the mounds for several seasons. As a result of excavations conducted there, the first occupation, which started over a thin sand deposit of natural soil underlain by the rock-beds of the Arevalli system, revealed black and red pottery as the characteristic industry of the area. This pottery had a long life at Ahar, although it has been found at several sites in Central and Western India, one of which is Navdatoli, where this pottery occurs towards the top of Period I.

The period I at Ahar may be subdivided into IA IB and IC with a view to study Black and red ware and its associated wares. IA at Ahar has in it the cream slipped, the buff, blotchy grey and red slipped with variations like orange, tan & chocolate, the coarse black and red besides painted black and red. Black and red ware, here, is very distinctive in the sense that it is painted with diverse designs in white lines, both on the exterior and the interior. IB also shows presence of all such wares, with the absence of the cream or buff ware & with only one shed of the Jorwe ware.

IC shows red washed, painted black on red, black and red, coarse red, the Lustrous Red and the blotchy grey wares. Black and red ware in the lowest phase has the texture and fabric rather coarse and the pots are polished on the exterior only. In the middle phase, this ware is finer and polished both in the interior and the exterior. A large number of them is usually painted in white but at times in black also with patterns of parallel lines and dots. In the last phase, a devolution in the ware is noticed to have set in.

In this very phase a red ware painted in black on a slipped surface appears to have been in use. Throughout this period the black and red ware was associated with a plain red ware painted with incised designs on shoulders. The pottery of period I is mostly wheel-made. It shows different techniques in shaping. Besides wheel-made pottery certain hand-made vessels, which include the storage jar with applied bands and roundels, were also recovered from here. Some of the pots revealed combination of both wheel-made and hand-made techniques. In these wares, the neck and the upper parts were wheel-turned but the rest were hand-made.

Some of the blotchy grey and red wares were very thin in fabric in the lower positions. The bottoms in several cases were made rough with the application of powdered quartz and sand. In the earliest stage, the black and red ware evinced certain special features. Dry grass or split bamboos appeared to have been used in giving effect to scooping, discernible in a uniform manner in the pottery with rounded or sagger bases.

The painted black and red is represented in the bowl with rimless straight or with convex sides. IA and IB phases present the bowl also with ribbings near the edge and also the shallow bowl with an external edge, and flared edge. These phases also present several specimens of the shallow pan and basin in them. The painted black and red ware in these two earlier phases has a variety with a brown slip.

From the point of view of decoration, the ware presents the following picture. The decoration may be classified as (a) painted (b) incised and (c) applied. The first may, again, be subdivided into two classes (a) dull white on the black and red ware and (b) black on the red washed or slipped ware. The former consists of linear patterns—strokes, lines, spirals, wavy lines, hatched diamonds and banners. These decorations are all found in phases IA and IB. The other are panelled dotted chevrons, which are found in Phases IC. The black painting on red ware shows only bands, wavy lines and loops. This is confined to IC.

Incised decorations also occur on grey and red wares. These decorations are in the form of slanting or wavy lines, supposed to have been caused with the help of split bamboo strips.

The applied decorations on wares show either wavy or plain bands and roundels mostly to the red slipped and grey wares. This type of decoration is found mostly in the wares recovered from phase IB. These decorations are either cut or excised. These are restricted mostly to red slipped and grey wares. These were probably caused by applied hands excised in a regular manner on the pots. These produced the effect of a cog wheel with sharp ends.

The black and red pottery was also recovered from the lowest phase of Navdatoli—a chalcolithic settlement on the bank of Narmada in Madhyapradesh. The carbon dating of the material at the site could place the pottery in the 18th century B. C. Again the carbon date for Ahar has also come to be 1878 B. C.

There is one more important thing to be studied with regard to black and red pottery. This type of ceramics as well as others found with it came to be associated with the material remains of the people who know copper smelting. The inhabitants of Ahar in the earlier phases were, thus living in the copper age and black and red pottery at Ahar comes to be the pottery of the copper age people. This is the cultural importance of the black and red pottery from Ahar.

Though the application of slip and the method of firing according to Dr. S. B. Deo, turned out several subdivisions among the red and the black and the pots as were fired inversely resulted in the combination of these two colours in one and the some vessel having a red outer bottom and the rim and inner surface black, the firing, in some cases, though executed in the inversed way, was not congenial to full oxydization with the result that such pots turned black and blotchy grey in parts. The grey ware represents a stage in which the Kiln allowed neither full oxydization nor complete non-oxydization. The relative abundance of the red-ware over the rest (according to Dr. Deo) suggests the adoption of the open Kiln than the closed one. The reaction of the constituents of the slip to the nature of firing resulted in the change in the form of pots, which are with deep red slip, those with a red slip highly burnished and hence very shining or glossy and those with a dull red slip. A word may be said here about the paintings on the pottery.

Paintings occurring on painted sherds in all the three phases are of three types. These are in (i) dull white on black and red (ii) black on red (iii) black on cream or buff.

The sherds painted black on red are from the top most phase and are restricted in quantity. The sherds painted black on cream or buff are very little in quantity and come from the earliest phase. The paintings in all these cases are geometrical but were resorted to before the pots were fired.

The thickness of the white paint can be felt by hand in the case of the black and red but in the case of the other ware it is not possible to do so. Though it can not be said definitely how the paintings on sherds were executed, it appears from study of the designs that some sort of indigenous brush was used for the purpose. Probably some sort of brush, preferably a bamboo splinter with pointed tip, was used for producing the designs found on the sherds. The even-thickness of bands and parallel symmetry of slanting lines are indicative of the skilled movement of artist's hand in his effort to keep the tip of the brush like apparatus uniform all through by using proper and even pressure in using it. This accounts for the fact that varying effects were produced by the artist in executing paintings on pottery. That is why some sherds have in them delicate split ends of strokes some excess of paint at the point of beginning (as in a spiral design) and some extra quantity of paint splashed in drops on the body of the pot. This last effect was caused on the basis of such an apparatus of painting as was not able to have the excess quantity.

Though the sherds show, in the main, geometrical patterns of decoration, dot decoration of chevrons is found on the pottery only in the uppermost portion. The bands, spiral and groups of lines occupy a majority of the space on the pot.

The chalcolithic black and red pottery of Ahar has found its counterparts at Darauli, Menal, Sialpure, Fachar, Tarawat and Joera in Udaipur district and at Undala, Viroli, Hironji ka Khera, Khor, Hingwani, Umand, Nangauli, Banseu, Sirdi and Keli in Chittorgadh district.

The usual shapes in black and red ware comprise the convex-sided bowl with a flared or everted rim and sometimes with a flanged shoulder, straight sided bowl with an everted rim, bowl with a carinated shoulder and everted rim and jar with a flared mouth of a bright red exterior and black interior. All these pots, like those at Ahar, were also generally, painted externally and occasionally internally in various designs with a whitish pigment. The designs consist of vertical and oblique strokes, concentric circles, chevrons, dots and intersecting areas.

As has been remarked before, black and red ware has been found at Navdatoli in Malwa also. Its recovery from Ahar and other sites in Udaipur and Chittorgadh districts in fairly large quantity helps one to surmise that the south-west Rajasthan and its contiguous area of Malwa existed as one of the centres of Post-Harappan Chalcolithic cultures between 2000 B. C. and 1000 B. C. or so. Though this area has yet to know the scientific use of spade at various sites, discovery of stray black and red pieces leads us to substantiate our assumption.

The elegance in painted black and red ware, noticeable as it is on the basis of its highly burnished surface and painting in white colour makes Dr. Sankalia feel that it was the deluxe table ware of the chalcolithic period. Similar was the position with regard to the cream slipped ware. Such pots are coated with a thick slip of cream to greenish white colour. This ware has also been called the Malwa ware. It is reddish or pinkish in appearance. This ware is remarkable for the surface paintings. It is made of gritty clay but the potter takes extra care in making the surface smooth by means of a thick slip. It is adorned by painting in black colour which exhibits a wide range of motifs.

Dr. Sankalia, on the basis of some of the shapes in the cream slipped pottery and on that of designs, suggests a close cultural affinity with similar pottery and designs in Iron. This has yet to be established on the basis of further excavations in south western Rajasthan and Malwa.

As from Ahar and Navdatoli, excavations conducted at Noh 4 miles from the city of Bharatpur on Agra road also revealed from Period II black and red (in dish and bowl variety) in a limited quantity. But the black and red ware from Noh is different from the one found from Ahar and Navdatoli. Black and red ware here is, unlike the one recovered from Ahar, unpainted. It has been found occupying a separate phase just above the ochre coloured ware in between the ochre coloured ware and the painted grey-ware. The associated pottery of this period is coarse red ware and black slipped ware. No evidence of the use of copper and stone during this period is available from this level. The earliest evidence of civilisation discovered in the region is of culture represented by pottery of ochre colour which is, unfortunately, in very small pieces. This pottery, although thick and ill-fired, is nevertheless, wheel turned and has a reddish slip.

About 1500 B. C. or so, some other people came to this region and settled down. They made pottery of a superior quality, which was distinguished by the use of black and red colours which had a lustrous black slip.

Though Black and red pottery has been found extensively in central India in the Deccan, Eastern India and in south west Rajasthan, it has also been found for the first time in the upper Ganga valley, from where its use migrated through Jamuna tributaries to the Eastern Rajasthan, particularly in the Bharatpur region at Noh. This accounts for the fact that it represents for the first time in Rajasthan at Noh an independent phase intervening between the ochre ware phase and the people, who brought this culture to the upper Ganga valley came from Central India or the Deccan, and from there the use of black and red pottery was extended to the eastern Rajasthan, in the region of Bharatpur through the people of the upper Ganga valley with such modifications in fabric and designs as local conditions of the area could enforce on them. This accounts for the fact that the black and red pottery of Noh is not a slavish imitation of black and red from the Harappan sites or the chalcolithic sites at Ahar, Navdatoli etc.

We learn from other sources that towards the closing years of the 2nd millennium B. C. the Aryans reached the upper-Ganga valley and settled down there. They made their way into Rajasthan through the Jamuna tributaries. The radio carbon dating of a charcoal sample excavated at Noh has scientifically proved for the first time the Aryan settlements in the region date back to a period before 1000 B.C.

The characteristic pottery of the Aryans is painted grey and is of a superior kind. The pot-sherds reveal a super-imposition of a new technique over the previous ones. Many new types of earthen vessels, such as bowls, vases dishes and jars have been found. Painting in black lines has been used for decoration with a rich variety of designs. The black and red pottery from Noh is the precursor of that type of pottery, which, in its improved form in later times was known as the black polished and the North black polished pottery and found its counterparts in that of the Sunga-Kushan periods. In the second-third century B.C. Black and Red ware is known from Kolhapur, Nasik, Newasa etc. and this ware, with black inside and red on the outer bottom, takes shape because of the technique of inverted firing. But this ware is associated with the copper slip and the use of microliths at Atranjikhhera in much earlier levels, but it is not so with black and red ware available from Noh. The clay used in the unpainted black and red at Noh is impure and normally ill-fired. The fine levigated clay and the fine finish of the painted grey ware and the northern black polished ware is totally absent in most of the places there. The shapes in it are mostly utilitarian and the black and red effect is mainly due to the process of inverted firing. Most of these wares were used by the common man in every day life. It may be noted here that concave carinated bowls made in black and red were with paintings executed in white colour were used by people at Ahar some three thousand and seven hundred years back from now but this upright and flaring bowl

with convex sides and round base which were found in black and red and were in use in eastern Rajasthan some seven hundred years after the discovery of black and red ware from Ahar. Convex sided bowls with rounded or ring base have survived even to this day and are used in Bharatpur area and also in Uttara Pradesh with ring base.

The painted black and red ware from Ahar, in short, was the Deluxe ware of chalcolithic period while the unpainted black and red from Noh was the pottery of the common man.

So far as the chronology of Black and red ware from Ahar is concerned, the carbon dated results of the site ascribe the beginnings of Ahar culture and so also of the associated B & R to C. 1800 and these go from 1385 to 1165 B. C. on the basis of the examination of carbon contents at 1C late level but in the case of B & R at Noh we have to arrive at the conclusion from the point of view of chronology in a different manner. It is not possible to determine the ceramic sequence of Rajasthan between the decline of the protohistoric culture and the dawn of the historical age owing to the fact that Ahar failed to give PG ware or Northern Black polished ware.

B. B. Lal proposed in 1955 that PG ware might be placed somewhere within the limits of 600 B. C. on the one hand and 1500 B. C. on the other and equated it with the pottery of the Aryans. Hastinapur PG ware was dated by him to C. pre-1100-800 B. C. Now carbon 14 dates have firmly established a time gap of about 700 years (Cs. 1750-1000 B. C.) between PG ware and the Harappans.

The discovery of black and red ware tradition in the upper Ganga valley and at Noh in Bharatpur region in the eastern Rajasthan in pre P. G. ware horizon enhances the significance of both Aharian B & R and the B & R of Noh. An examination of the black and red wares from Ahar and Noh shows that there is a genetic relationship between the two and the B & R of Noh represents a phase assignable in front of chronology to 1100-1200 B.C.

G. R. Sharma in 1960 remarked that in Kaushambi he gets an echo of Harappan craftsmanship in the architecture of the period associated with the black and red ware. If the spread of the early black and red ware represents the early colonisation of the Aryans, which might mean the spread of Anu to the eastern India and that of the Yadus to the Deccan by the time they became regular city dwellers. B & R ware tradition being earlier than the P. G. ware tradition may be taken to be the early Aryan ware, while PG ware tradition is a late Aryan ceramic tradition. Obviously PG ware covers only the latter part of Dark ages in the north folk migrations from western Asia in the first centuries of the 2nd millennium and the end of the Harappans by the middle of 18th Century B. C. and the sudden emergence of Deluxe B & R tradition ware was, probably, responsible for the introduction of B & R at Noh in early stages of the spread of upper Ganga culture in Eastern Rajasthan.

In order to study in detail the close relationship between the B & R of Ahar and that of Noh and to study if this ware used by the Harappans could trace the contacts of the Harappans and the Banasian and those of the upper Ganga valley people, large scale excavations at Gilund and Ahar (on horizontal basis) are a desideratum. Inverted firing of pottery is a specialised technique employed in this ware everywhere and since Harappan potters at Lothal were producing it, further excavations at all such sites is likely to throw more light on this contact.

Affinities with Troy and Anav established by Dr. Sankalia strengthen the circumstantial evidence for this Aryan equation.

DISCUSSION

M. N. Deshpande :

In the context of slender evidence, it is difficult to explain the movement of people. The association of the Black-and-Red Ware with the Aryan is not yet proved. At Bahal in the Chalcolithic context we get a sort of the black-and-red ware (black-and-brownish). One of such pots bears white painting and a few in the graffiti marks. Bahal is different from Nevasa, Daimabad, etc. Spouted and carinated pots i.e. typical Jorwe type, has not been found there. Pottery shows some point of contact with Ahar. Black-and-Red Ware with white painting has also been found in the Kannatoka region. For its movement we need further investigation.

R. C. Agrawal :

Dot designs have been pointed on the Black-and-Red ware of Bahal (information given by Shri Deshpande). This feature occur at Ahar in I C. It may be suggested that they are coeval.

R. S. Sharma :

Previously, a number of cultures have been associated with the Aryans and now another culture i.e. Black-and-Red ware has been included in the list. In the Indo-European languages a common name for pottery should be searched.

Sivaji Singh :

The associaton and identification of the black-and-red ware people with Aryans is based on the word Ame Potre, Nila Lohita of Atharvaveda. Its identification with the black-and-red ware should be given up, but it does not stand with any pottery. Curiously enough, in the Kashmirian version we found Sutra Nila Lohita for Mishradhan. Nila Lohita may be identified with a thread, it has nothing to do with pottery. Pottery of the early Vedic literature should be studied and identified with Indo-European languages.

S. R. Rao:

The black-and-red ware was the cultural trait in the region, as the bulk of pottery was fired here. This may not be true in another case. It may be possible that they copied the technique only and it does not form the trait there. This pottery was known even to the early historic people and adopted in burial. Perhaps the Black-and-Red ware people came into contact with Megalithic people. On the basis of pottery only we cannot associate it with any particular people. We have to consider evidence—Iconographic Linguistic data etc.

S. P. Srivastava:

The question of identifying the Black-and-Red ware with another people remains unsolved. The people will not be satisfied simply with pottery. How the culture travelled? What affinity they have with other culture? Agrawal told me that the Rajadi black-and-red ware is different from earlier culture. Ahar also differs from Noh.

B. P. Sinha:

The Black-and-Red ware is really a big problem. It is high time to publish all materials that we have on black and red ware. In Bihar we have found Black and Red ware similar to Ahar. There should be study of types and frequency. Affinity and difference with each other have to be worked out. Only then we will be able to say some thing definite about the common cultural trait. The problem of the identity of the Black-and-Red or any other pottery with or a particularly people, will not be solved merely by the study of types and fabric. It needs literary co-relation.



CHALCOLITHIC POTTERY OF EASTERN MALWA

K. D. Bajpai

The Vidisha-Dasarna area of central India, comprising eastern Malwa, is well known in the history of the country. From about 600 B. C. to the late Medieval times this region made important contributions to the political and cultural history of India.

Prior to the period of the sixteen **mahajanapadas** this region had developed a culture, the relics of which have recently come to light. The excavations conducted at Eran (Dist. Sagar) and Besnagar have shed welcome light on the protohistoric culture of eastern Malwa. The results, thereof, after a comparative study with the results of excavations at Maheshwar-Navadatoli and Kayatha, have furnished interesting account of the material-culture of eastern Malwa ranging in time from the beginning of the second Millennium B. C. to about C. 700 B. C.

The recent excavations at Besnagar have brought to light important finds bearing on the early historical period. But in so far as the protohistory is concerned, the evidence at the site, so far obtained, is meagre. The case of Eran is, however, different. The pottery and associated finds obtained at Eran, as a result of five seasons excavations work, are quite rich.

Explorations at some of the ancient sites in eastern Malwa have brought to light interesting material. At Tumain (ancient Tumbavana in the Guna district of Madhya Pradesh) early historical Black-and-Red Ware and Northern Black Polished Ware were picked up. Some of the Red sherds painted in black picked up at Besnagar. They are akin to those found from the dig at the site during 1963-64 and 1964-65, assigned to the Chalcolithic period. Due to the limited nature of excavations at Besnagar, not much could be obtained there of the proto-historic culture. A few sherds of Black-and-Red Ware, having simple horizontal bands on the exterior, are known from a painted rock-shelter called 'Putali Karar' in the Raisen district of eastern Malwa. These sherds are quite akin to the Chalcolithic pottery known from other sites.

By far the most significant discovery of the Chalcolithic pottery has come from Eran. The site has been excavated by the Department of Ancient Indian History & Archaeology, University of Saugor. During the work lasting for five seasons (1960-61 to 1964-65) twenty trenches were laid in the mounds of Eran. Out of these

four located in the main mound yielded important results pertaining in the Chalcolithic habitation. This habitation was found at the top of the black cotton soil. The maximum thickness of the habitation deposit was found 2.14 metres at the outer mounds and 9.15 metres at the main mounds.

The Chalcolithic culture at Eran was found to cover the period between C. 2000 B.C. and 700 B. C. This was followed by the early historical (700 B. C. to 1st century A. D.). These two have been called Period-I and Period-II respectively.

Period-I is characterised by the presence of microliths of various types, pottery and copper. The scarce use of copper was attested to by two fragmentary celts. A neolith piece with sharp edge was also unearthed.

The different ceramic wares of the period were dominated by the Red ware, mostly painted in black over red exterior. The painted motifs, with a few exceptions, are geometrical. A few sherds in this ware contained incised decoration. The other ceramic industry of the period was Black-and-Red Ware, painted in white over black interior, the types represented in this ware mostly being dishes. Another important ware of the period was the Grey ware which is also wheel-made. It is sometimes painted in black and rarely in red. Thinner sherds of this ware were usually of finer fabric. This Grey ware does not seem to have any similarity in fabric, types and painted motifs either with the well-known Painted Grey Ware of the Gangetic valley or with the Neolithic Burnished Grey Ware of South India. On the contrary it seems to form an integral part of the Chalcolithic Culture at the site, as it contains types and painted motifs, not different from those of the contemporary Red Ware. A few fragmentary channel spouts were also recovered. These spouts tend to indicate some sort of affiliation of these people with ancient Iran. Several types of pottery from Eran are akin to the pottery obtained from the contemporary levels at Maheshwar and Navadatoli in the Khargon district of Madhya Pradesh.

The other finds of the Period include beads of stone, shell, paste, jasper, steatite and terracotta; terracotta human and animal figurines, fragments of terracotta bangles and toy-wheels, and a very interesting circular gold piece (diam. 9"; weight 20 grains). This gold piece probably served as the medium of exchange for the Chalcolithic people. In all six floor levels were noticed in this period, the earliest one being laid immediately over the black clay. The floors of irregular shape were made of rammed yellow clay mixed with **Kankar**. Sometimes burnt clods of clay were also crushed into the floor. On the basis of other Chalcolithic sites, it can be said that the Chalcolithic people at Eran were living in ordinary huts having mud-walls. The compact floors were made with the help of mud and lime. Cow-dung seems to have been used to keep the floors smooth. The people may have been conversant with agriculture. Apart from this, they had a fairly good knowledge of pottery-making, the preparation of various types of beads of clay and some precious stones and of making implements of stone.

The most significant discovery of this period is a mud defence-wall and a moat. The defence-wall, as revealed from excavations, is 15+ feet wide and 21 feet deep. This wall contained, potsherds, copper celt and beads and other objects of the Chalcolithic period only. The discovery of the wall explains the unusual depression in between the main mound and the multitudes of mounds to the south of Eran. Almost up to the end of the Period II A (c. 700 B. C.-200 B. C.) the habitation seems to have been restricted inside the mud defence-wall, with only scattered habitation outside. It was in the period III (1st to 6th century A.D.) that the area of habitation was extended towards the south. Again in period IV (15th to 18th Century A.D.) the habitation become restricted to the main mound, where, in a late phase of the period, a massive stone fortification wall was constructed to the height provided by the previously existing mud defence-wall. The defence wall served two purposes. Firstly it enclosed the town on the southern side, providing artificial protection in that direction. Secondly the depression created by diggin the nearby area for preparation of the mud wall naturally took the form of a moat. The excess water of the river may have passed through the moat and thus saved the habitation from the floods and attacks of the outward enemies. The width and maximum depth of the moat is 120 ft. and 18 ft. respectively.

By Carbon-dating this Chalcolithic period at Eran has been bracketted between C. 2000 B.C. and 700 B.C.

DISCUSSION

R. C. Agrawal :

Prof. Bajpai has thrown a welcome light on Chalcolithic complex at Eran. The painted linear designs on the Black-and-Red ware of Eran has some affinity with Ahar. They seem to be contemporary with each other as suggested by the Radio Carbon dates. The Black-and-Red Ware with type site Ahar extended in Eastern India as far as Bihar and Bengal. What was its route of movement? Was it from west to east or vice versa? Probably it was from west to east.

S. R. Rao :

The position of Eran is very important in Indian Archaeology. Here we have an evolution of fabric like Lothal and Ahar. Eran may be terminal station in the movement of cultures. It may be proved on the basis of Chronology also. Painted designs are similar to Ahar. There are certain Harappan traditions also as for example the conception of defence-wall. The occurrence of channel-spout is very significant. Channel spout vessel have been found in the Neolithic-Chalcolithic complex also. Its evolution may be traced back to the Neolithic period. The lipped bowls of Neolithic period were further elongated in chalcolithic phase. It has nothing to do with the Iranian specimens. Similarly wine cups were directly evolved from the Harappan period. The Neolithic fellows also

started to use black-and-red ware and black-and-red, steatite etc. of Harappan tradition.

K. K. Sinha :

The presence of defence-wall at Eran is significant. It needs further investigation for any affiliation with Harappan tradition.

R.C. Gaur :

Is there any similarity between Eran and Kaitha ?

K. D. Bajpai :

So far the question of movement is concerned it was probably from West to East. According to me the origin of channel-spout may be indigenous. A defence-wall was brought to light by Deshpande at Daimabad in a Chalcolithic period as it contained materials of the Chalcolithic period only. Painted motifs on a few sherds of Eran and Kaitha agree with each other.

B. P. Sinha :

Eran may solve the problem of the route of diffusion. At Oriup, we have found a unique channel-spouted bowl in the Black-and-Red Ware with white painting on the inner side. Chirand has yielded white painted black-and-red ware similar to Ahar. Dish-on-stand with long stem has been found both in Red-and-Black and red wares. A few of them are painted in pinkish white colour. These evidences from Bihar should also be taken into consideration.

A NOTE ON THE PROBLEM OF THE PLAIN BLACK AND RED WARE IN NORTHERN INDIA

K. N. Dikshit

Introduction :

The problem¹ of the black and red ware was first discussed in a symposium organized by the Director-General of Archaeology in India in 1954, and thereafter many scholars like Sankalia, Subbarao, Wheeler, etc. have discussed this problem in detail. But in recent years the excavations at various sites,² notably at Atranjikhhera and Noh³ revealed, for the first time the chronological priority of this ware over Painted Grey ware in northern India. In this paper I have attempted an evaluation of the problem of the distribution, form, and chronology of the plain black-and-red ware. An attempt has been also made to discuss the Aryan problem with different known ceramic industries.

Distribution and chronology:

The researches done during the last 20 years have revealed the occurrence of black-and-red ware from the different chronological horizons besides association in the megalithic context. On the basis of these latest researches we may group the black-and-red ware into the following cultural categories :

1. **Late Harappa** (C. 2000-1750 B. C.) Rangpur, Lothal and Desalpur.
2. **Post Harappa Chalcolithic Cultures** (C. 1800-1000 B.C.) Ahar, Gilund, Navdatoli, Chirand, Rajar-dhibi,
3. **Pre-Painted Grey ware** (pre C. 1000 B. C.) Atranjikhhera and Noh
4. **Painted Grey ware and Historical period** (from C. 1000 B. C.) Hastinapur, Rupar and Khalau.

This black and red ware from groups 1 & 2 is painted with white pigment and was noticed for the first time in the riverine valleys of south-eastern Rajasthan.⁴ Later on it was encountered even in the late Harappan levels at Rangpur and Desalpur in Gujarat.⁵ This pottery further penetrated in the areas of Central India,⁶ northern Deccan⁷ and also in Tamilnad⁸.

This painted tradition on the pottery which has probably traversed from Central India, is further noticed in the belt of the Ganges in southern Uttar Pradesh,¹ Bihar² and West Bengal³.

The pottery from group 3 & 4 is without any painting. This ware has been reported from the excavations and explorations in eastern Punjab,⁴ Haryana,⁵ eastern and northern Rajasthan,⁶ western Uttar Pradesh⁷ and other parts of northern India.⁸ But from a majority of these sites, the other wares like slipped and Painted Grey, were also noticed.

Form :

The basic forms reported from different excavations of the typical painted black and red ware, are bowls of different sizes and depth varying from thick to thin sections, although a few restricted types already current in alien wares, were also noticed. A few selected types from different sites are mentioned below:

1. Bowl :

- (a) Shallow bowl with external ledge (Ahar)
- (b) Bowl with ridging near the edge (Ahar)
- (c) Bowl with pronounced carination and concave sides (Ahar)
- (b) Bowl with a slightly raised rim (Gilund)
- (e) Bowl or cup with outgoing sides (Navadatoli and Awra)
- (f) Ovaloid and semi-circular bowls with rounded or carinated belly and indrawn short rim (Navadatoli)
- (g) Bowl with corrugation near the top (Rajar-dhipi)
- (h) Bowl with a tongue like-channel (Rajar-dhipi)
- (i) Bowl on ring-base (Chirand).

2. Dish :

- (a) Dish (Gilund)
- (b) Doubtful fragment of a dish (Navadatoli)

3. Jar :

- (a) Jar with a short mouth and bulbous body (Gilund)
- (b) Jar looking like a rimless **batloi** (Ahar)

4. Basin:

- (a) Large basin shaped vessel with inturned rim (Ahar)

5. Dish-on-Stand:

- (a) Dish-on-stand (Menar,¹¹ lying between Udaipur and Chitor and Chirand)

The whole complex is dominated by bowls and a few of its forms like carinated bowl found their way in successive ceramic industries but, at the same time, bowl with tongue like lip seems to be derived in later phase from Malwa ware. This form also is transformed in metal (Khurdi)¹² and can still be seen persisting in the religious repertoire of modern India.

The basic forms, as reported from the excavations of groups 3 & 4, are dish and bowl. This ware is made out of well levigated clay, thin section, turned on fast wheel and well-burnt under the inverted firing technique. A few important shapes are described here:

1. Bowl:

- (a) Bowl with a vertical sharpened rim (Hastinapur II early level)
- (b) Bowl with a featureless rim (Noh and Atranjikhhera)
- (c) Bowl with slightly everted featureless rim (Atranjikhhera).

2. Jar:

- (a) Jar (Atranjikhhera)

3. Dish:

- (a) Dish with featureless rim and convex sides forming a sagger base (from nearly all the sites).

This typological comparison between painted and plain black-red ware bespeaks itself. The forms of painted black-and-red ware (Chalcolithic) were exclusively used by the other successive industries but not in the geographical limits of the plain black-and-red ware. Gaur thinks that black-and-red of Atranjikhhera has a genetic relationship with the painted black-and-red of Ahar and Gilund, but I have reasons to disagree with any such relationship on the following points :

1. The painted black-and-red bowls from Rajasthan have pronounced carination and concave sides and the fabric is also coarse whereas the bowls of plain black-and-red ware are featureless and comparatively of fine fabric.

2. The tradition of paintings on black-and-red ware was kept alive far in time and space from Rajasthan (ranging from C. 1800-1000 B. C.) i. e. Madhya Pradesh, Deccan, Bihar, and Bengal, but it is significantly absent in the neighbouring areas, in eastern Punjab, Haryana, northern and eastern Rajasthan and western Uttar Pradesh.

3. The type dish (featureless rim with convex sides) is entirely unknown to the painted black-and-red users but it was vigorously used in the region of plain and Painted Grey ware which is also the region of plain black-and-red concentration.

4. The bowls, channelled or with pronounced carination and dish-on-stand never found their way in the plain black-and-red region.

5. The Aravallies in Rajasthan has also checked the expansion of Aharians towards north and pushed them to south-east from where they got an out-let to enter in middle and lower Gangetic valley through Madhya Pradesh.

The forms in the plain black-and-red argue for a different source about the knowledge of the inverted firing and thus cannot be correlated with Ahar as postulated by Agarwal and Gaur. The bowls and dishes of plain black-and-red have a typological connection with Painted Grey ware and also reported together in excavations, so one can infer that the intrusion of Painted Grey ware was not far removed in time from plain black-and-red ware. Being technologically advanced, painted Grey ware people easily superseded the users of the plain black-and-red ware and this is the probable reason that this culture lost its entity and sank in to obscurity.²⁰

Aryan Problem :

To identify a ceramic industry with Aryans is a problem and the answer is not clear cut in the terms of any particular theory. In the absence of written records, we may go on arguing about the role of different ceramic industries in equating with Aryans but truth may remain far from us. Anyway we know about Aryan movements²¹ from literary sources but the other items of this important community are still lacking. In the beginning 27 generations of the main families of Aryans lived in the area of Sapta-Sindhu (southern Panjab and northern Rajasthan) and later on made their conquest upto Yamuna. Before I may submit my provisional observations on Aryan Problem, the current views are also mentioned here :

1. Lal has identified Painted Grey ware folk with the Early stock of Aryans.²²
2. Sankalia associated the Aryan movement with Aharians.²³
3. Sharma connected Aharians with the first wave of Aryans and Painted Grey ware as the second wave.²⁴

What is the position of the plain black-and-red ware vis-a-vis Aryans? The following facts also bring this pottery very close to Early Aryans :

1. In northern India besides Harappan pottery only Bara ware, Ochre-coloured ware, plain black-and-red ware, black slipped ware, Painted Grey ware, etc. are found.

2. The shapes in plain black-and-red ware entirely unknown to the other earlier or contemporary chalcolithic cultures.

3. The distribution of this ware has been noticed in the valleys of Saraswati, Sutlej and Ganga.

4. The place names as mentioned in Mahabharat also revealed plain black-and-red ware alongwith Painted Grey ware.

5. It is also possible that there may not be any difference between the users of the plain black-and-red and Painted Grey wares because the latter people can also pick-up the inverted firing technique. It is only at Atranjikhera and Noh that black-and-red ware has been noticed from pre-Painted Grey ware horizon otherwise both are reported together. Possibility cannot be ruled out that Painted Grey ware habitat at Atranjikhera may be later in date as is evident from the full-fledged iron industry. From Hastinapur and Alamgirpur limited use of iron is known.

6. The time limits of the plain black-and-red ware fits in well, if compared with Bogaz Keui inscription (C. 1360 B. C.).

For the proper appraisal of this problem the excavations of a few selected sites in northern Rajasthan and eastern Panjab is a desideratum. The unearthed material remains might fill up the lacuna between the plain black-and-red ware and its users possibly Aryans.

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DISCUSSION

R. C. Agrawal: We may agree with the hypothesis given by Dikshit. The shapes in the unpainted Black-and-Red ware of Atranjikhera and Noh are

quite different from the painted Black-and-Red ware of the chalcolithic period. There is an affinity with the shapes of the P. G. Ware. It is possible that the P. G. ware people at Atranjikhhera might have taken shapes of the plain Black-and-Red ware. A clear picture will emerge when more sites will be excavated. We have to find out the place where the unpainted tradition developed.

S. R. Rao : Let us take the Northern and southern plain black-and-red ware separately. In southern India, it occurred as early as 1700 B. C. It has been found at Hallur in a pre-Iranian context. The Megalithic builders used black-and-red ware and iron. They were Dravidian speaking people and seem to have come from North.

S. P. Gupta : The P. G. ware started somewhere in the west. When it arrived at Atranjikhhera, it has already developed its shapes in the Ghaggar Valley. Whether the excavation yielded plain black-and-red ware and P. G. ware side by side? Whether the P. G. ware got its shape from the plain black-and-red ware?

R. C. Gaur : The plain black-and-red ware is an earlier tradition than the P. G. ware at Atranjikhhera. Its many shapes continued in the P. G. ware. It gradually disappeared. Either it was absorbed into P. G. ware or died. There may have been derivation of shapes in the P. G. ware.

No two black-and-red ware sites are identical. At Sonpur, we have plain black-and-red ware, whereas Chirand has yielded its painted variety.

V. D. Mishra : The stratigraphical position of the black-and-red ware and P. G. ware in the Ghaggar Valley should be marked.

At Kakoria, we have collected plain black-and-red ware with OCP like sherds and microlithic blades from megalithic and habitation areas.

K. K. Sinha : From Sardargarh to Sravasti the shapes in the P. G. ware are same and the tradition continued everywhere. Atranjikhhera seems to be solitary example of its kind.

Sri K. N. Dikshit : The black-and-red ware tradition of south and north are certainly different. Knowledge of iron came from two different sources.

In the Ghaggar Valley we do not have any excavation, but the explorations show that black-and-red and P. G. ware co-existed.

At Atranjikhhera, we have developed iron tools in a good number whereas at Hastinapur, etc., only a few iron slags or tool occurred. One should not go only by one carbon date.

B. P. Sinha : We cannot definitely associate or ceramic industry with any literary known tribe. There may be first speculations then acceptance or rejection.

In Bihar, we have Black-and-Red ware from very beginning. They are plain as well as painted. Painted Grey ware has not been found excepting a few degenerated sherds at Vaisali. The Black-and-Red ware tradition continues to the beginning of the N. B. P. Ware period. Iron, which is associated with the P. G. ware at Atranjikhhera, Hastinapur, etc., appears with the Black-and-Red ware in a post chalcolithic and Pre-N. B. P. context. It is necessary to find out the sources of iron.



NATURE OF HARAPPAN WARES IN SUTLEJ VALLEY

K. N. Dikshit

Introduction :

Recent archaeological excavations and explorations carried out in northern India have presented numerous new facts and details about the distribution, form and chronology of Harappa culture, but before I discuss the nature of the Harappan pottery in Sutlej valley and assess its importance in furtherance of our knowledge, I would like to briefly put it in the broader perspective of the Harappan civilization as revealed in the excavations at Harappa, Mohenjo-daro, Chan-hu-daro, Lothal and Kalibangan. Thereafter an attempt will be made to analyse the Harappan wares of the Sutlej valley in their comparative stratigraphic perspective.¹

Extent of Harappa civilization and its salient features :

The civilization of Harappa² is known from its type site Harappa in Saiwal District of West Pakistan, but nothing is known about the makers of this great civilization which was of astonishing extent from Dher Majra in the north to Malwan³ on the south bank of Tapti estuary in the south and from Sutka-gendur⁴ on Makran coast in the west to Manpur in Ganga-Yamuna doab in the east. A few traits of Harappan culture seem to have been borrowed from Kot-Dijians⁵ and other pre-Harappan peripheral cultures present in Central Baluchistan and in northern Rajasthan⁶. It cannot also be ruled out that Harappa civilization was born possibly due to a combination of technological advances plus an even more important revolution in the socio-political organizational technique of those people⁷.

The salient features of Harappa civilization are systematic lay out of the cities, well regulated drainage system, use of standard sized burnt-bricks, steatite seals depicting the animal kingdom with pictographic or ideographic script, animal and human terracotta figurines, terracotta cakes, chert blades and weights and bronze objects. The Harappan pottery is characterized by a well-burnt black painted red ware with distinctive shapes like dish-on-stand, cylindrical vase, perforated jar, goblet, big storage jar etc. The general motifs on the pottery are intersecting circles, leaf and fish-scale patterns and human and animal figurines.

A maximum time-bracket C. 2500-1500 B.C. was proposed for this civilization but radio-carbon dates from different sites provide a shorter bracket like C. 2300-1750 B.C.⁸.

After the end of the Harappa civilization, the organized planning which was the key note of this culture, was entirely forgotten. The reasons for this sudden change must be very weighty but they have yet eluded the archaeologists.
Changes in river courses :

The tract between Ludhiana and Saharanpur, about 274 metres above sea-level, forms the present water-shed which divides the drainage of the Gangetic system from that of the Indus system, but there are evidences to prove that "some interchange took place between the easterly affluents of the Indus and the westerly tributaries of the Yamuna by minor shifting of the watershed"¹⁰. It appears that in earlier times the courses of the Punjab rivers were very different from what they are today.

The river Sutlej about 1440 kms. long leaves the Dhauladhar Range near Rampur and traverses on the foot-hills of Siwalik before reaching Rupar. It joins Beas at Hari Ke Patan and then meets Indus near Mithankot. But there is evidence that in ancient times it passed by Malaut and Abhor (District Ferozepur) and joined the ancient Saraswati near Phulra, now known as Fort Abbas and then the combined rivers passed through the middle of Bahawalpur District, where it is known as Hakra or Wahind and discharged its water through the channel of the Eastern Nara into the Rann of Kutch. The river Beas also did not meet the Sutlej at Hari Ke Patan as it does now. The ancient course of this river can still be traced near Patti, Kasur, Chunian and Dipalpur through Lahore and Montgomery (now Saiwal) Districts, now both in Pakistan, where it originally used to join the Chenab near Shujabad¹¹.

The rivers of the Punjab have been depositing enormous quantity of silt brought by them from the mountains and this mechanical-process is responsible for raising their beds to the level of surrounding plain, and consequent shifting of their channels¹². In the case of Indus system of rivers they have a tendency to shift their courses towards west. Suggestions have been made that it may be connected with the rotation of the earth but the similar phenomena has not been observed in the case of all rivers in northern India¹³.

Previous Work :

Daya Ram Sahani explored Harappa on the bank of an ancient bed of the Ravi in 1921 and, thereafter, two more sites Chak Purbane Syal and Kotla Nihang were added by M. S. Vats¹⁴, but after the partition of the country in 1947, the archaeological activities were intensified in East Punjab. Y. D. Sharma, Olaf Pruefer, B. B. Lal, R. P. Das, M. N. Deshpande, Punjab University, Chandigarh, and the author explored a few Harappan settlements on the river Sutlej and its tributaries (Map. 1).

The excavations at Kotla Nihang Khan¹⁵, near Rupar in Sutlej valley revealed goblet with painted base, jar-stand, dish, trough, dish-on-stand, handle

of a cup and handi-shaped vessel with incised chevron at the shoulder. Triangular and round terracotta cakes were also noticed.

At Rupa¹⁶, 122 kms. from Ambala just on a thin deposit of sand and pebbles, a late stage of mature Harappa culture with certain new types like dish-on-stand with drooping rim, vases with beaked and under-cut rim, shallow basin, perforated jar, cylindrical-beaker, cups etc. were noticed, where as the original types recovered in the excavations at Harappa and Mohenjodaro started vanishing. The deposit of upper levels is characterized by a new ceramic tradition. The Indus goblet with pointed base is absent but a class of incised designs, noticed in profusion at Bara, begin to appear at this place. The presence of terracotta cakes is also negligible.

These early settlements have been noticed at several places in upper Sutlej valley¹⁷.

The excavations carried out at Dher Majra¹⁸, 11 kms. north of Rupa, yielded pottery identical with cemetery-H at Harappa, besides the Harappan wares in the lowest level. Mention may be made about an incised sherd having decoration on the interior (Pruefer, Excavations at Dher Majra, Type 42).

The pottery from Bara¹⁹, 8 kms. from Rupa requires a close scrutiny as the site has played an important role in forging connections with other post-Harappan sites in Indus valley on the one hand and Gangetic valley on the other. The excavations revealed an occupational thickness of about 4.5 metres. A few important types of Bara with their paintings and incised decorations on a red sturdy fabric are mentioned here.

Pottery types :

1. Narrow-necked jar with a splayed out rim, bulbous body and rounded base (displayed in Antiquity Section, Safdarjung, New Delhi).
2. Small jars of different sizes and shapes.
3. Dish-on-stand with short stem.
4. Basin with a flat projected and under-cut rim.
5. Hollow lid with a central knob.
6. Dish with a projected and out-turned rim forming a groove.
7. Miniature dish-on-stand.
8. Goblet with a button base.
9. Large storage jars and cooking vessels with rusticated surface below the body.

Painted designs :

1. Jar with neck fully painted and also having a single or a set of parallel horizontal bands on the shoulders and belly.

2. Design appearing like a trident on the shoulder of the pot.
3. Fish-like patterns with vertical hatching.
4. Leaf patterns (not Harappan pipal leaves).
5. Sigma, wavy lines, criss-cross and triangles all having hatching.
6. Looped-arm with horizontal off-shoots on the outer side of the loop.
7. Designs with boldly drawn curving lines.
8. Design consisting of a square with incomplete circles at the corners filled up with hatching (or bastion design).

Incised decoration

1. Wavy lines, sometimes single otherwise in a set of two or three.
2. Parallel horizontal lines closely knit sometimes numbering upto 15 but generally intercepted by a set of oblique lines forming compartments or by a single or multiple wavy lines probably drawn by a comb-like instrument.
3. Sometimes the parallel horizontal bands are represented in two sets and the intermediate space is filled up with deeply cut-chevrons or lozenges or wavy lines enclosed in benticulars circlelets.

The incised designs are generally confined on the shoulders of the large vases and below the belly the pot being usually rusticated.

Recent Field Work :

The incised pottery of Bara Complex is further reported from Harraipur²⁰ on Rattanadi, about 7 kms. from Badi towards Nalagarh. The types reported are dish-on-stand, beaker, large storage jars and basin with projected rim. The sherds which have tendency to rub off easily are having incised horizontal or wavy lines.

Shri Das²¹ also noticed variants of basin with raised and splayed out rim, dish-on-stand and a few painted and incised sherds from Deheru, Manupur and Kheri Nudh Singh, along a dried up bed of Budhanala, a tributary of Sutlej. Manupur has yielded in addition a few basins of ochreous fabric.

Recently Shri Deshpande²² has picked up incised and painted sherds of Bara type from Madiala- Kalan, situated about 29 kms. south-east of Ludhiana on G.T. Road. A sherd with a crane like bird is interesting. Further west this culture complex has been noticed at Kat-Palon²³ in District Jullunder. In addition to Bara pottery, a few sherds looking like ochre-coloured ware of Ganga valley were also picked up.

31 kms. south of Ludhiana on the Ludhiana-Hissar Road, an ancient mound at Rohira,²⁴ in District Sangrur, was also found to contain this pottery. Here one sherd shows cord-impression on the exterior and wavy lines in a set of four on the interior, whereas the other incised sherds have wavy lines on the

exterior. Shri B. K. Thapar is of the opinion that similar design has also been reported from Kalibangan I and also from Harappan levels at Amri.

This Harappan assemblage has been also reported from Raja Sirkap,²⁵ 3 kms. south of Faridkot. The types picked up in exploration consist of dish, basin and perforated jar.

Discussion :

A survey of Harappan settlements in Sutlej valley revealed that these are definitely later in comparison to the mature phases of the same in Indus and Ghaggar basins but at the same time Bara pottery requires careful reassessment. How, when and wherefrom the new trait of incised decorations penetrated in Sutlej valley is a matter still to be decided, for at the sites like Mohenjodaro and Harappa incised pottery was not used and the Harappans living in northern Rajasthan from where they migrated to upper Sutlej basin also had no preference for the incised pottery of their ancestors?

In the words of Dr. Y. D. Sharma, "the position of Bara is difficult to determine." He says further that "this pottery shows a family likeness with pre-Harappan pottery at Kalibangan. But among points of divergence is its thickness and sturdiness... Also the source of its incised decoration on cooking and storage-vessels is by no means certain, even though such decoration is not quite absent at Kalibangan. Seemingly Bara has, therefore, some affinity with the pre-Harappan Kalibangan and although influenced by that tradition appears to be later than Rupar"²⁶.

1. Comparison of Bara with Harappa, Cemetery-H and Jhukar wares. Form :

1. Except the conception of dish-on-stand (also present squatish dish-on-stand in Cemetery-H) this culture truly speaking has no Harappan forms.
2. The type I of Bara can be also seen in one of the variants in Cemetery-H deposit (Vats, Harappa, Pl. LX, No. 18 type E and Prufer, Dher Majra No. 23 and 24).
3. The Indus goblets, also reported from Bara, are present only in late phases at Harappa and Mohenjodaro which itself seems to be an intrusion from outside.
4. The miniature dish-on-stand and hollow lid with central knob of Bara, were also noticed in the upper levels of Mohenjodaro (Mackay, Mohenjodaro Pl. LV No. 2 and Pl. LVII No. 7).

Painted design :

1. While comparing the painted Bara motifs with Harappans, hardly any resemblance can be sought. The typical decor of the Harappan pottery seems to be entirely unknown to these people.
2. The full neck painted tradition on Bara pots seem to have been borrowed from Cemetery-H (Vats, Harappa, Pl. LVIII b and c No. 6) and Jhukar (Mem. Arch. Survey of India No. 48 Pl. XVI No. 17).
3. The painted design No. 2 of Bara has been compared by Gordon with Cemetery-H (Gordon, Prehistoric background of Indian Culture, Fig. 10).
4. Like Bara, Jhukar also does not contain painted bird or animal decoration (although two animal examples are known from Jhukar), whereas at Harappan sites it was a regular feature.
5. The boldly drawn curving lines of Bara have an echo of Jhukar motifs (Mackay, Chanhudaro, pl. XLVII No. 26).

Incised decoration :

1. The incised decoration has been reported from the pre-Harappan levels at Kalibangan but it was found totally absent from Harappan levels.
2. The fragmentary dishes of Jhukar levels (Mackay, Chanhudaro, pl. XLVIII), all bear incised patterns mostly on the inner sides. These decorations consist of wavy lines, horizontal bands intersected by fish patterns and a set of oblique lines forming triangles. Similar decorative patterns with a slight variation can be also seen on the exterior of Bara pots, not on dishes but on cooking vessels, because on the latter, decoration is not possible on the inner side.

II. Comparison between Bara and late Harappan and Ochre-Coloured wares in Western Uttar Pradesh

A majority of Bara types can be seen in the late Harappan and Ochre-coloured pottery complex of Ganga-Yamuna doab²⁷. This ochre-coloured ware received the first archaeological attention at Hastinapur²⁸ and Bahadarabad²⁹ but the planned survey of Ganga valley from 1962 to 1965 revealed at least a dozen sites of this ware and subsequently Ambkheri³⁰ was put to excavations. This pottery was also noticed at Atranjikhhera³¹ and Ahhichhatra³² and has been circumstantially associated with Gangetic Copperhoard.

Form :

1. The vase with splayed out rim, dish-on-stand with drooping rim, basin, hollow lid with central knob and large storage jars with rusticated surface recovered from the excavations at Ambkheri have parallels at Bara and also at Harappan sites in District Saharanpur.

2. A miniature dish-on-stand reported in exploration from Jhunjhara has a striking similarity with the one found in the excavations at Bara.

Painted design :

1. A few painted sherds have been recovered from the excavations at Atranjikhara (other OCW site has yielded painted sherd) but its relationship with Bara on the basis of these limited number of sherds is different to establish at the moment.

Incised decoration :

1. A few incised designs like compartmented designs sigma, chevrons, wavy lines etc. from Atranjikhara have a remote resemblance with the similar patterns at Bara. From Ambkheri-2 and Bahadarabad only Cord-impressed designs have come to light.

Conclusion :

It is difficult to say when Harappans retired to the foot-hills of Siwalik through the fertile valley of Sutlej and survived in relative isolation. From Sutlej to Ganga, the Urban Harappa culture was supplanted by inferior cultures into a rural community as is evident by the presence of the certain traits of the post-Harappan cultures of the Indus valley like Cemetery-H and Jhukar etc. Cemetery-H sites being nearer to East Panjab seem to have influenced the settlers of these region more in comparison to Jhukar.

The region between Ludhiana and Saharanpur was the only out-let for the people living in upper Ganga-Yamuna doab to exchange ideas and cultural traits with the people living in the Indus system of rivers. It was not unlikely that this area was the meeting point of various cultures and emergence of new pottery types (pl. 3) and the technique of incised decoration were possibly the out-come of this fusion²³.

It will not be-out of place to mention a few lines about the recent excavations at Mitathal²⁴ in Chautang valley carried out by Shri Suraj Bhan Chowdhry of Panjab University, Chandigarh. The material culture unearthed revealed three phases of cultural deposit ranging from the late pre-Harappan to late Harappan with six structural periods. The upper phase seems to have connection with Bargaon²⁵, a late Harappan site in western Uttar Pradesh.

It is just an attempt to explain under what probable strains, Harappa-culture existed in Sutlej Valley. An earnest attempt should be made to co-relate the Harappan wares of Sutlej valley with those of Indus valley at one hand and with Ganga valley on the other by taking a few selected sites in Sutlej valley for horizontal digging.

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[Paper read at the Seminar on Indian Pottery organized by the University of Patna, 1968]

DISCUSSIONS

Prof. K. D. Bajpai :

It is a good and informative paper. It is desirable that detailed comparison of the Indus Valley and Ganga-Jamuna Valley Harappan materials be made. In this connection, the position of Rupar is very important and its pottery may be compared with Bara and other sites. This needs explanation as to why incised pottery does not occur at Harappa. For intensive and detailed comparative study the materials excavated at Chautha and Bara may be considered.

Dr. R. C. Agrawal :

The entire Harappan region should be intensively explored, particularly an exploration between Rupar and Kurukshetra downward, Shahjahanpur is essential and their comparison with Bara may solve the problem.

Shri M. N. Deshpande :

Incised design on pottery occurs at Bara. The region is yet to be explored. It may probably represent a reconciliation between the conquered pre-Harappan and the Pre-Harappan Kalibangan. People when conquered moved in isolation and one finds pottery with incised design. We find either Harappan form and design pre-dominant or pre-domination of pre-Harappan incised design. Bargoan is an important station in this respect. Here we find Harappan survival along with the pottery having incised design with preference given to Harappan pottery. Incised pottery designs have been found in both exterior and interior. At Bara it was only on extensor side, whereas at Kalingbanga in pre-Harappan strata both surfaces of the pot were decorated with incised design.

Sri S. R. Rao :

The nature of the Harappan movements was peaceful and they appear to have followed the policy of co-existence, with the uses of the Micaceous red or incised wares people. The incised pottery is one of the traits of Jhukar culture. One is to separate incised pottery stratigraphically.

Sri Kirshan Deva :

Sutlej valley is going to be very important for archaeologists. Harappan settlements have been found as far as Saraswati. The Sutlej Valley has, by and large, separate traits. The incised designs which occurred in this side may have been derived from Jhukar. The Sutlej is a part of the ancient Saraswati system. It was through the Saraswati that the cultural diffusion in the Ganga-Jamuna doab took place. It was likely that the Harappan Culture spread from Rajasthan, Bikaner and Chautal to the Sutlej and from there to the East Upper Ganga-

Jamuna Doab. At Katpalon and Ludhiana region, the incised pottery was a major Ceramic industry, though certain Harappan pottery also has been found.

Sri R. C. Gaur :

The problem of incised pottery may be considered with the OCP. Along with painted OCP, incised pottery has been found at Atranjikhhera. It bears similarity with Bara pottery.

Sri S. P. Gupta :

Sri Dikshit's paper is a substantial contribution to the study of the subject. The real origins of the incised designs in this region have to be determined. What was the urge to have incised designs? The OCP originated between Kanpur and Aligarh and then moved westwards.

Sri K. N. Dikshit :

Pre-Harappan traits are present in the Sutlej Valley, but it is difficult to be definite unless we get in chronological order. Rohisar has some similarity with Pre-Kalibangan. It is possible that Atranjikhhera derived inspiration from Bara.

HARAPPAN SITES IN SUTLEJ VALLEY

25 0 25 KILOMETRES

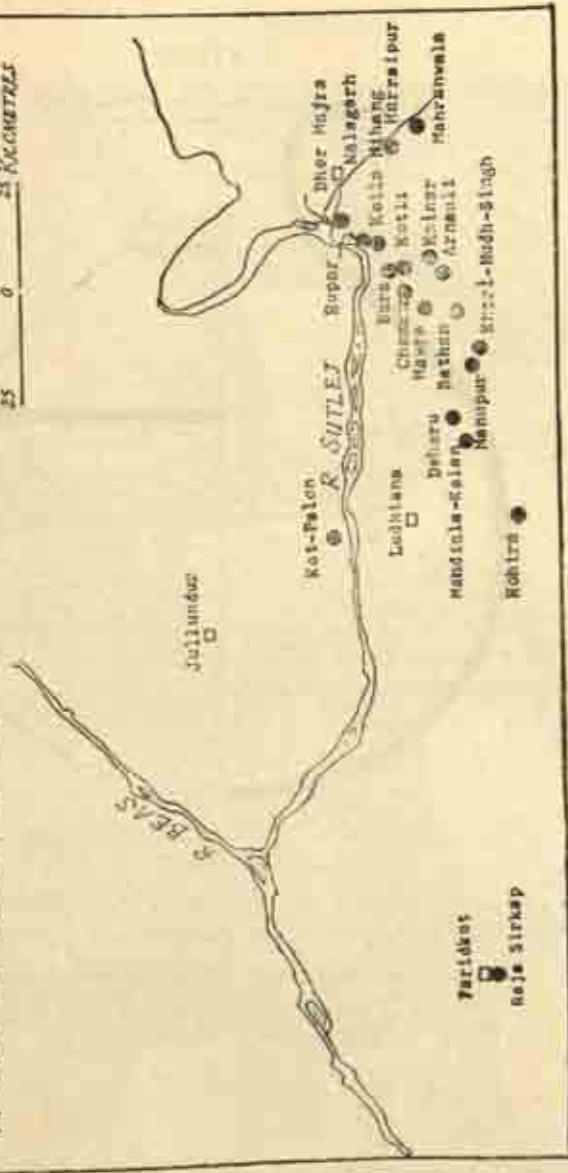
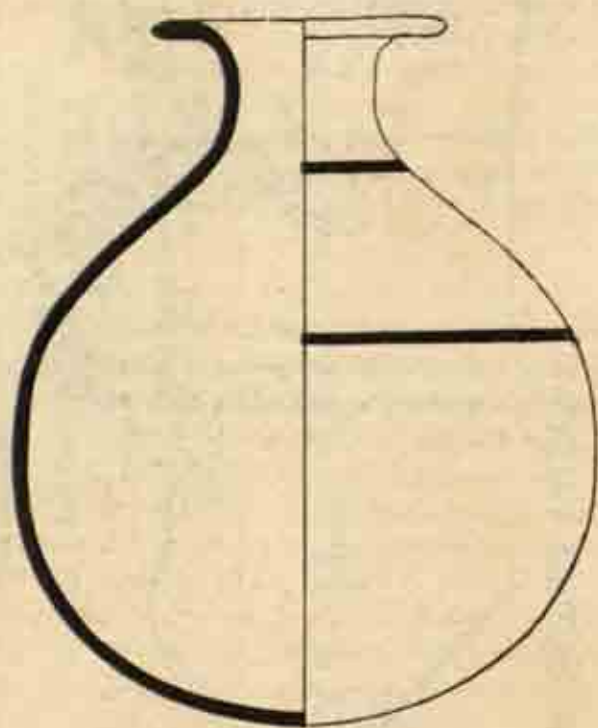


PLATE II



Jar from Bara,
East Panjab.

PLATE II



Incised sherds (surface collection) from Katpalon, Dist. Jollyndur.



THE PROBLEM OF BLACK-AND-RED WARES IN INDIAN ARCHAEOLOGY

Purshottam Singh

(Banaras Hindu University)

Archaeological researches during the past two decade have brought to light several proto-historic and early Historical cultures in different parts of this sub-continent. A characteristic feature of most of these newly-discovered cultures is the occurrence of ceramic industries which on account of the technique of what is known as 'inverted-firing' have been termed 'black-and-red ware'. Till the end of sixties, black-and-red ware had been found mainly from two contexts : one belonging to the proto-historic period from south-eastern Rajasthan with the type-site of Ahar and the other known as the Megalithic pottery found from innumerable iron-age graves and urn-fields of south India. The importance of the first was quickly recognised and its implications were discussed in a symposium¹ held by the Archaeological Survey of India in 1954. Since then, the problem was reviewed by Subbarao² in 1958 and again in 1961³. At the same time the problem was also discussed by Ramesan⁴. Since then a black-and-red pottery has been found in association with Harappan ware in Gujrat and another ware technically coming under this nomenclature has been discovered in a Chalcolithic assemblage in Eastern India. Besides, a black-and-red ware has been found associated with the earliest habitation in the Gangetic plain and still an early historical black-and-red ware has been reported from dozens of sites in central India, Gujrat and the Deccan. Hence it has become imperative to study this problem a fresh in the light of this new material.

To date, ceramic industries with the designation, 'black-and-red ware' have been reported from the following contexts :

1. A kind of black-and-red ware associated with the Harappan sites of Gujrat, Saurashtra and Kutch.
2. The Chalcolithic white-painted black-and-red ware of the Banas valley (south-eastern Rajasthan) with the type site of Ahar (However, recent excavation by Sankalia has proved that this ceramic industry is not associated with microliths and the culture represented here may be better termed 'copper-age culture') This ceramics has also been found although in limited quantity from Central India and extends as far south as Chandoli near Poona.
3. A white painted black-and-red ware found from pre-painted Grey Ware/Pre-N. B. P. levels in U. P. and Bihar and associated with the megalithic folk of the Vindhyan range.

4. A white-painted Chalcolithic black-and-red ware recently discovered in eastern India with the type-site of Pandu Rajar Dhibi.
5. An early Historical black-and-red ware found on central and western Indian sites.
6. The now-famous Megalithic black-and-red ware of South India.

The Chalcolithic Black-and-Red Wares (Ahar Fabric) :

This ceramics was first discovered from Ahar², situated on the river of the same name, a tributary of the Banas. The proto-historic remains at this site are represented by an occupational deposit of more than 20 ft. It has as many as fifteen structural sub-phases and this ceramics has been reported from all the sub-phases³ indicating a long-life of this ware. The main types include bowls with incurved on straight sides, a shallow dish-on-stand and a globular jar with high, narrow neck. The paintings have been executed in creamish-white pigment either on the exterior or on the interior or on both. The painted motifs include groups of dashes, wavy on straight lines, opposite groups of concentric arcs, cross-hatched lozenges etc. It is noteworthy that the rimless bowls with straight or convex sides and shallow have been reported from the earlier two sub-phases. Carinated bowls in this ware which are so common on central Indian sites make their appearance in the third and the last sub-phase at the type-site. Does it mean that the diffusion of this ware from its epi-centre in the Banas Valley started only in the late phase?

Another important site of this region is Gilund⁷ situated at a distance of 72 kms. N. E. of Ahar. On the basis of the association of this ceramics with microliths at this site, it has been postulated⁸ that this ceramics may have an earlier beginning.

Besides the two excavated sites mentioned above, this ware has been picked up from a dozen sites districts in Udaipur⁹ and several sites in districts Chittaurgarh¹⁰, Bhilwara¹¹, Jaipur¹², Tank¹³ and Mandaror¹⁴.

This ware has been reported from the Chalcolithic levels of several sites in Central India but on all these sites, its percentage is very less the principal ceramics being the Malwa Ware. Thus it has been found from Eran¹⁵, Navada-Toli¹⁶, Kayatha¹⁷, Manoti¹⁸, and Besnagar¹⁹. Further south, it seems to have been found from as far south as Nevasa²⁰ and Chandoli²¹, although in a very limited quantity. Hence it is precisely clear that the ware has been borrowed from south-eastern Rajasthan²². The stratigraphic position of this ware on central sites testifies to this assumption. Thus in the horizontal digging on Mound and at Navadatoli, this ware appears in sub-Period-IA while the subsequent two sub-phases yielded white-slipped ware and Jorwe wares respectively. Kayatha seems to have

an earlier beginning as at this site the Ahar fabric comes from Period-IB and a wheel-made sturdy ware precedes it at this site the story at Eran and Besnagar is slightly different as this ware has been reported from all the three phases of P. I. at the former site. In typology, a channel-spouted vase in this ware—a shape obviously borrowed from the Malwa ware—makes a distinct addition. Besides, the two sites have also yielded early historical black-and-red ware which is associated with the N. B. P., from the succeeding periods. Hence these sites are most suited for finding out relationship, if any, between the Chalcolithic black-and red ware and the ware of early historical times.

2. Black-and-Red Ware in the Gangetic Plains :

The next group of black-and-red ware has been reported from the U. P.—Rajasthan boundary (Noh²³, Dist. Bharatpur) and on several sites like Atranji-Khera²⁴ and Alamgirpur²⁵. Again, it has been found from several sites in eastern U. P. Notable amongst these are Kausambi²⁶, Sravasti²⁸, Prahladpur²⁹, Rajghat, Masaon³⁰, Sobgaura³¹ and several sites in district Basti³². Further east, it has been found from Sonpur³³ and Chirand³⁴ in Bihar. Besides, some sort of black-and-red ware has been reported from the megalithic graves of Kaimur ranges (Kakonia)³⁵, Banemilia-Bahera³⁶, and Kotia³⁷ in Varanasi, Mirzapur and Allahabad districts respectively. It is noteworthy that on all these sites it has been found in limited number and represents the earliest settled life in the region. As regards the fabric of this ware and the cultural milieu in which it has been found, it is clear that the ceramics of western U. P. is more akin to and partakes some features of Ahar fabric. Thus at Noh and Atranji-Khera, the ware has been found in a distinct cultural horizon and is sandwiched between the O. C. P. and P. G. W. respectively. In fact, in order to understand its relationship with these wares, trial digging was done at Khalaua³⁸ (Dist. Agra; 16 Kms. from Agra on the Agra-Jagner road) where it was found in direct association with P. G. W. The black-and-red ware in Bihar is associated with a Chalcolithic assemblage and has been dated to the beginning of the 1st millennium B. C. The source of this ware still remains enigmatic.

3. Black-and-Red Ware in Gujrat Saurashtra and Kutch :

In Gujrat Black-and-red Ware has been reported from two horizons : one in association with the Micaceous red ware which continues with Harappa ware and the Lusturous Red ware and the other of early historical times. Black-and-Red ware of the former class has been recorded from Lothal³⁹ (where it has been found through out the occupation) Rangpur⁴⁰ (periods IIA, B, C) Rojdi⁴¹ (Period IB), and Amra⁴². As the present evidence tends to show, this ceramics makes its appearance along with the advent of Chalcolithic phase in this region and is associated with Micaceous Red Ware. This had led Rao⁴³ to believe that the

ware was used by a local population even before Harappans came to Gujrat. This ware survives the onslaught of the mighty Harappa culture and continues to be in use as late as Rangpur III where it joins hands with the Lusturous Red Ware. Rao⁴⁴ believes that the black-and-red ware of Harappan times in Gujrat is quite different from its counterpart in the Banas valley in as much as the paintings in the former are confined only to the interior of the pot while the other has paintings on both the surface. The main types in this ware include convex-sided-bowl (which develops) into a straight-sided one in Rangpur-IIB, a small jar with a bulbous body and a bowl with stud-handle. The last named type is a diagnostic vessel of this ware. Similar view has also been expressed by Y. D. Sharma⁴⁵. But the painted black-and-red ware obtained from Period-IB at Desalpur (Dist. Kutch) is thought to have its analysis from Ahar-IB⁴⁶. Recent explanations in different parts of the region reveal that this ware has been found in association with Harappan pottery at Surkotada and several other sites in Taluka Rapar (district No. Kutch)⁴⁷, and also in the districts of Bhaunagar⁴⁸, Madhya Saurashtra⁴⁹ and Surendranagar⁵⁰. However, much spade-work has to precede before arriving on any firm conclusions in this regard. The early Historical black-and-red ware will be dealt with further below.

4. Chalcolithic Black-and-Red Ware in Eastern India :

The most recent addition to the repertoire of black-and-red wares is a ceramic industry technically grouped under this label obtained from the newly-discovered Chalcolithic culture at Pandu Rajar Dhibi⁵¹ (Dist. Burdwan) and Mahisdal⁵² (Dist. Birbhum). At the former site it begins in Period-I in a typical chalcolithic assemblage and continues in the succeeding periods as well. The ware seems to have a wide distribution in the valley of the Ajai and Kunool as it has been reported from Haraipur Solhahana⁵³, Nanur⁵⁴, and several other sites⁵⁵. The typical shapes comprise Channel-spouted bowls, carinated and convex-sided bowls with sagger base. The paintings have been done in white and include dots and oblique strokes etc. The origin of this ware is difficult to ascertain although certain typological resemblance can be pointed with central Indian Chalcolithic pottery.

5. Early Historical Black-and-Red Ware of Central and Western India :

The Chalcolithic black-and-red Ware found in association with Malwa ware and other contemporary ceramic ware in Central India gradually dies out, again to be replaced by a more dominant ware of the same label which makes its beginning round about 6th-7th century B. C. It is always associated with iron and continues to hold the scene up to a few centuries of the christian era specially in Gujarat where it is associated with Red Polished Ware. The beginning of this ware can be traced in Nagda-II⁵⁶ and Ujjain⁵⁷ and at both these sites it occurs in pre-N. B. P.

levels. In Period-I at Bilawali⁵⁸ (Dist. Dewas), it is associated with the Vesiculated ware, found earlier at Ujjain. Again it occurs at Bahal⁵⁹. On other sites of this region, notably Tripura,⁶⁰ Maheswar-Navada-Toli⁶¹. (Where it comes in Period-IV but continues in P. V. also), it is associated with the N. B. P. ware.

Moving towards Gujrat, it has been reported from period-I at Nagara⁶² (Dist. Kaira), Somnath-III⁶³, and Timbarva⁶⁴. It has also been found in association with the Red Polished Ware at Amrali⁶⁵. Further south, it has been recorded from Kolhapur, Nasik⁶⁶, and Nevasa⁶⁷ (Period IV and V). At Nasik it is analogous to the Megalithic ware. The typical shapes in central India are rimless bowl and shallow dish but other shapes like *lotas* and the *carinated handis* are also met with in the Deccan⁶⁸.

6. The Megalithic Black-and-Red Ware :

This comparatively better-known pottery has been obtained from thousands of megalithic graves and urn-fields in South India during the last one hundred years. It is made on wheel and is typically the product of inverted firing. The surface is slipped and polished and occasionally decorated with white painted designs. The main types include bowls and dishes, globular vessels, jars, tall lids and concave sided pot-stands. The paintings comprise simple linear patterns, vertical and oblique strokes, wavy lines, diamonds, loops and lattices⁶⁹. (Post-firing scratching known as 'graffiti' is a common feature in this ware.

Typological comparison between the pottery after and this ware has been noted by F. J. Richards⁷⁰ and the technical similarity between this and the pre-Dynastic and Badarian pottery of Egypt⁷¹ has also been pointed. The recent explorations in Nubia⁷² have also produced identical pots but in the absence of any firm link between these wares, the resemblance is not more than fortuitous.

The black glaze on this ware has been analysed by Plendenleith⁷³ who holds that a black colouring clay has been applied over it in the form of an Alkaline slip which could act as a flux at high temperatures. Recently the technique of firing this ware has been studied by Majumdar⁷⁴ who holds that the pottery is the result of double firing.

Chronology :

1. The earliest known Black-and-Red Ware seems to occur in pre-Harappan levels in Gujrat. Charcoal samples from Lothal IIIB, a typical Harappan assemblage, give a date of 2005-1158 B. C. Allowing atleast two hundred years for Lothal I and II, it can be argued that the black-and-red ware in Gujrat originated round about that date i. e. 2200 B. C.

2. This ceramic industry in the Banas Valley has been now securely dated to

Circa 1800 B. C. as Charcoal samples from the middle levels of Ahar-IA give a date of 1725±140 B. C.

3. Black and red ware in Eastern India has been dated to the middle of the second millennium B. C. In this context, particular mention may be made of dates from Chitand and Sonpur in Bihar which ranges between 1600 B. C. to 700 B. C.

4. The recent dates from Hallur in Dharwar put the beginning of the Megalithic black-and-red ware to the beginning of the 1st millennium B. C.

Diffusion :

5. The last question which has been taxing the archaeologist to-day is; Do all these wares have any relationship generic or otherwise, amongst them? At the first sight they do not seem to be integral part of one and the same culture. However, closer examination of the evidence by Subbarao⁷⁵, Wheeler⁷⁶, and Soundara Rajan⁷⁷ has enabled them to trace a continuity from the one source; namely the Ahar fabric. Now, as pointed out above, the earliest known Black-and-Red Ware seems to be that obtained in Gujrat and naturally, the epicentre of this ware should be looked in that region. A detailed report of the ware in these regions has not been published and hence even typological comparison between the Gujrat Black-and-Red ware and that obtained in the Banas remains to be worked out. Here it may be recalled, that dish-on-stand, a typical Harappan shape is also available in the Banas culture. The pottery obtained from the lowest levels of Chirand and Sonpur seems to have generic relationship with that of Rajghat and other sites in eastern U. P. The Black-and-red Ware in West Bengal is still an enigma. As pointed out by Wheeler and others early Historical Black-and-Red Ware of Central and Western India has largely been responsible for the Megalithic Black-and-Red Ware. However, It must be admitted that several lacuna remain to be filled even to day.

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19. *IAR* 1964-65 (cyclostyled copy) P. I-34.

20. H. D. Sankalia *et-al.* *From History to Prehistory at Navasa* (Poona, 1960) P. 240.

21. S. B. Deo and Z. D. Ansari, *Chalcolithic Chandoli* (Poona, 1965) Pp. 53-58.

Here, there is a slight discrepancy in this excavation Report. It says, "The rimless bowl is the only shape represented in this ware". P. 54. But in the drawings of this ware on Fig. 47 show two types of bowls : carinated and rimless.

22. H. D. Sankalia, 'The Copper and Stone Age pottery of Maheswar—Navadatoli.

Marg XIV No. 3 Pp. 28 ff.

23. *IAR* 1963-64 P. 28 and 1964-65 (cyclostyled copy) Pp. I-64-65.

24. *IAR* 1962-63 P. 34; 1963-64 P. 45 and 1965-66 (cyclostyled copy) I-84.

25. *IAR* 1958-59 P. 54.

Dr. Y. D. Sharma believes that like the N. B. P. Pots, this ware was also

imported rather than manufactured locally. (*of Archaeological Remains Monuments and Museums*. I Pp. 16-17.

26. G. R. Sharma, *The excavations at Kausambi 1957-59* (Allahabad, 1960) Pp. 57 and 70-71.

27. *IAR* 1964-65 (cyclostyled copy) P. 180.

28. *IAR* 1958-59 P. 48.

29. *IAR* 1962-63 P. 41.

30. *IAR* 1964-65 (cyclostyled copy) P. 1-76; 1965-66 (cyclostyled copy) P. 1-92.

31. *IAR* 1961-62 P. 56.

32. Recently several sites with this ware have been located by the Banaras Hindu University.

33. *IAR* 1956-57 P. 19; 1959-60 P. 14; 1960-61 P. 5; and 1961-62 P. 4.

34. *IAR* 1962-63 P. 6; 1963-64 Pp. 6-8; 1964-65 (cyclostyled copy) P. 1-13.

35. *IAR* 1962-63 P. 41.

36. *IAR* 1962-63. Pp. 38-39.

37. *IAR* 1963-64 P. 41.

37. *IAR* 1963-64 P. 41.

38. 1965-66 (cyclostyled copy) P. 1-78.

39. S. R. Rao, *Excavations at Rangpur and other Exploration, Ancient India* Nos. 18-19. Pp. 178.

40. *Ibid* Pp. 108-109.

41. Y. D. Sharma in *Archaeological Remains* Part I P. 32.

42. B. Subbarao, *The Personality of India* (Baroda, 1958) P. 132.

43. S. R. Rao in *Ancient India* Nos. 18-19 P. 61.

44. S. R. Rao, 'Ceramics of the Indus Valley in Gujarat' *Marg* XIV No. 3 P. 21—Also S. R. Rao in *Ancient India* Nos. 18-19 P. 109.

45. Y. D. Sharma, *op. cit.* P. 28.

46. *IAR* 1963-64 P. 12.

47. J. P. Joshi, *Exploration in Northern Kutch*, *J. of the Oriental Inst. Baroda* XV No. 1 (September 1966) Pp. 62-69.

48. *IAR* 1960-61 Pp. 7-8.

49. *IAR* 1957-58 P. 19.

50. *IAR* 1964-65 (cyclostyled copy) P. 1-19.

51. *IAR* 1964-65 (cyclostyled copy) p. 1-85.
52. *IAR* 1963-64 p. 60.
53. *IAR* 1964-65 (cyclostyled copy) p. 1-83.
54. *IAR* 1963-p. 60.
55. P. C. Das Gupta, 'The Excavations at Pandu Rajar Dhibi' (Calcutta, 1964) pp. 35.
57. *IAR* 1956-57 p. 24.
58. *IAR* 1962-63 p. 10.
59. *IAR* 1956-57 p. 18.
60. *IAR* 1965-66 (cyclostyled copy) p. 1-41.
61. H. D. Sankalia, et-al. *The Excavations at Maheswar and Navadatoli 1952-53*. (Poona, 1958) pp. 134-135; 143 and 150.
62. *IAR* 1963-64 Pp. 9-10; 1964-65 (cyclostyled copy) p. 1-20.
63. B. Subbarao, *The Personality of India* p. 133.
64. R. N. Mehta, *Excavations at Tirharva*, (Baroda, 1955) pp. 7.
65. S. R. Rao, *Excavations at Amreli* (Baroda, 1966) p. 51.
66. H.D. Sankalia and S.B. Deo, 'Report on the Excavations at Nasik and Jarwe' (Poona, 1955) pp. 60-64.
67. H. D. Sankalia et-al. *From History to Prehistory at Nevasa* (Poona, 1960) pp. 259 and 286.
68. Z. D. Ansari, 'Evaluation of Pottery Forms and Fabrics in India' *Marg* XIV No. 3. pp. 4.
69. Some of the painted motifs in this ware have been illustrated by Subbarao in *The Personality of India*. Fig. 43. Besides other motifs described here, have been noted on the pottery obtained from the excavations of Alagarai District, Tiruchchirappalli (of *IAR* 1963-64 P. 21).
70. F. J. Richards, 'Bowls from Ur and Nilgiris', *Man* XXXI No. 202 (1931) pp. 203-204.
71. H. Belfour in *Man* XXXII No. 251 (1932). p. 216
72. B. B. Lal, 'The only Asian Expedition in Threatened Nubia-work-an Indian Mission at Afyeh and Tumas. *Illustrated London News*. Vol. 242 No. 6455, April, 20, 1953.
73. H. J. Plendenleith, 'Black Polished Pottery from Urn burials in Wynad'. *Man* XXX No. 138 (Oct. 1930) p. 190.
74. G. G. Mazumdar, Paper read on the Seminar on Megaliths, Varanasi Feb. 1968.
75. B. Subbarao, *The Personality of India* p. 179.
76. R. E. M. Wheeler, *Early India and Pakistan* pp. 166-167.
77. K. V. Soundara Rajan, Community Movement in Prehistoric India. An Archaeological Perspective, *J. of the Oriental Inst. Baroda*. XII, No. 1.

Discussions

S. R. Rao : The Black-and-Red ware is a very important problem in Indian Archaeology. Its distribution both in space and time is significant. Does it suggest a common culture ?

So far as the problem of the epicentre of the Black-and-Red ware is concerned, first claim goes to Ahar, though it occurred at Lothal in earlier context, but it was not a major cultural trait there. As a crucial point of this culture, first is Ahar then Chirand in a chalcolithic context. The major pottery technique, at these two sites, is the adoption of the inverted firing, i.e. the Black-and-Red ware.

In the present state of our knowledge two major groups may be marked in the Black-and-Red ware culture :—

- (1) Ahar with simple types, and
- (2) Chirand with various types more than Ahar.

In southern India, the Black-and-Red ware occurred in a pre-Iranian context also. But it is entirely a different phenomenon. The characteristic of the south Indian Black-and-Red ware is its cracked surface. Does it mean that the clay was different? Yes, but salt was used intentionally for glazing.

It seems that there were three or more cultural groups in the Black-and-Red ware. Let us treat them as separate entities. Certain features of the culture were borrowed from Amreli. Megalithic structures were also borrowed by them.

S. P. Shrivastava : Chemical analysis of the Black-and-Red ware pots of different levels should be made. Whether the pottery in rocky context will be same as of alluvium clay.

Literary affiliation of pottery should not be neglected. A comparative study of the pottery mentioned in the Vedic and Avesta literatures should be made. Regions mentioned in the Vedas, such as Drishdavatī—Sarasvatī; Ganga-Yamuna, may be explored. The literary references should be compared with Archaeological findings.

S. P. Gupta : For nomenclature, we used some times the technique of manufacturing a particular artefact : It is better to say the Inverted firing technique pottery instead of the Black-and-Red ware.

K. D. Bajpai : We have agreed with Rao that there was one uniform set up in the Harappa culture. But so far the Black-and-Red ware is concerned, we have no empire. We should not think that it was one single culture. There were groups of two or three. We have to see and study these differences. Vedic literature and archaeological remains of various sites should be compared.

M. N. Deshpande : The surface treatment of the early Black-and-Red ware at Bahal is similar to the Megalithic pottery. We have graffiti and Black-and-Red ware, in association with burials of pre-iron context at Bahal. Burial without iron has also been found at Hallur.

We may see the movement of people from north without iron and using burial practice. With the introduction of iron, they get a new technology and adopted the megalithic technique. The megalithic Black-and-Red ware enveloped practically the whole of south India, which continues up to the Andhra period. The occurrence of the Black-and-Red ware has to be related with the north.

Purshottam Singh : When I say the epicentre of this pottery it means that the technique was started in Gujrat. The nomenclature Inverted firing pottery instead of the Black-and-Red ware will put us in great difficulties.

PROBLEM OF THE OCHRE COLOURED POTTERY

KRISHNA DEVA

The Ochre Coloured Pottery (OCP) with its variants Ochre colour ware or Ochre-washed ware was first recognized by B. B. Lal in 1951¹, while reporting on his trial excavations at the Copper-Hoard sites of Bisauli, District Badliun and Rajpur Parsu, District Bijnor. In his report he described the pottery 'ill-fired, thick, ochre-washed and rolled'. He also identified the pottery in the lowest cultural deposit of Hastinapur (Hastinapur I), preceding the Painted Grey Ware and attributed it to the authors of the Copper-Hoards, who, according to him, inhabited the Ganga Valley earlier than the users of the Painted Grey Ware.

In 1952, Y.D. Sharma² came across this ware in good quantity at Bahadarabad, near Hardwar, where he narrowly missed establishing a direct link between the pottery and the Copper-Hoard which was excavated by the canal-diggers a little earlier. In recent years this pottery has been excavated at the sites of Ambkheri and Bargaon in District Saharanpur by M. N. Deshpande,³ at Atranji Khera in District Etah by R. C. Gaur,⁴ at the well-known site of Ahichenhatra (District Bareilly) by N.R. Banerjee⁵ and at Noh near Bharatpur by Vijay Kumar⁶ of the Rajasthan Depart-

1. B. B. Lal, 1951 "Further Copper Hoards etc." *Ancient India*, VII, 20-39.
1953 "Protohistoric Investigation", *Ancient India*, IX, 91-93.
1955 "Excavations at Hastinapur", *Ancient India*, X-XI, 31-32.
2. Y. D. Sharma, 1965 "Past Patterns in Excavations at Rupar", *Lalit Kala*, I-II, 121-29.
1961 "Copper-Hoards and Ochre Colour Ware. Conference on Asian Archaeology, New Delhi.
1964 "Protohistoric Remains", *Arch. Remains Monuments & Museums*, New Delhi.
1965 *Indian Prehistory*, 1964 (Poona), 131-35.
3. M.N. Deshpande 1965 *Indian Prehistory*, 1964 (Poona) 127-29.
1967 *I.A.A.* 1963-64, 55-57.
4. R.C. Gaur, 1964 *Indian Prehistory: 1964* (Poona)
1967 *I.A.R.* 1963-64.
5. Information from MS of *I.A.R.*, 1964-65, pp. 73-75.
6. *Ibid.*, p. 64.

ment of Archaeology and Museums. At the three last mentioned sites, viz., Atranji Khara, Ahichchhatra and Noh, the pottery has been encountered in the earliest cultural deposits immediately above the natural soil, repeating the stratigraphical sequences of Hastinapur. The recent evidence from Ahichchhatra remarkably corroborates even the cultural sequence of Hastinapur, where the users of the OCP were the earliest settlers followed by those of the Painted Grey Ware. During the last five years more than ninety sites of this ware have been explored and put on the map in the Upper Ganga basin in the Districts of Saharanpur, Muzaffarnagar, Meerut and Bulandshahr in Uttar Pradesh and in the contiguous Sutlej Basin in the Districts of Ambala and Jullundur in East Punjab, mainly through the persistent efforts of K.N. Dikshit, Shankar Nath and H.K. Narain under the direction of M.N. Deshpande and the author.

Distribution

The area of the OCP is thus seen to extend from Bahadarabad near Hardwar to Noh near Bharatpur, a distance of roughly 300 Kms. from north to south and from Katpalon near Jullundur to Ahichchhatra, a stretch of about 450 Kms., from west to east. On the basis of the exploration hitherto conducted, the focal point of the OCP appears to be the Upper Ganga-Yamuna Doab, particularly the present District of Saharanpur, which claims more than 80 sites of this ware. The thick concentration of the OCP sites in this region is not without significance although it will be rash at this stage to jump to any conclusion until the adjoining districts of Uttar Pradesh, further south and east and of the East Punjab, further west, are combed with the same thoroughness which has marked the exploration activities in District Saharanpur.

Association with Copper Hoards

At the Copper-Hoard sites of Bisauli and Rajpur Parsu excavated by Lal (Lal, 1951), no copper implements were found with the OCP. At Bahadarabad the excavator (Sharma, 1961, 1964) could not establish direct association between the OCP and the Copper-Hoard, which, though unearthed a little earlier is believed by Sharma to have come from the OCP layers. Similarly a Copper-Hoard, now displayed in the Gurukul Kangri Museum, is said to have been unearthed at Nasirpur, a village about 12 Kms. south of Roorkee and 9 Kms. west of Ambkheri, which has also yielded the OCP. The trial excavations or field observations made at the above mentioned sites (with the exception of Bisauli, which is a ploughed-up and churned site) have shown them to be just single

culture sites with shallow deposits yielding exclusively the OCP. The only indisputable evidence, however, of the association of the OCP with a copper implement, to wit a copper ring of the type familiar from Pondi and Bahadarabad, comes from the controlled excavation at Bargaon on the Maskara, a tributary of the Yamuna in District Saharanpur. (Deshpande, 1965, 1967).

Association with Harappa culture

The excavated site of Bargaon proves the association of the OCP not only with the Copper Hoard but also with the Harappa culture. While the Harappa culture is represented by the finds of the typical Indus goblet, dish-on-stand, pedestalled vases, ring-stand and black-on-red painted pottery, together with a chert blade, terracotta and faience bangles, stone weight, terracotta toy cart wheel and a variety of terracotta cakes, being other equipment of the same culture, some pottery shapes and designs betray other influences and traditions. A few pottery types and paintings show marked affinity with Cemetery H, while contact with Bara is definitely indicated by incised designs on the exterior of pots, including deeply cut chevrons (as on a ring-stand), wavy lines drawn by a comb-like object and small oblique strokes. Among the pottery types influenced by Cemetery H may be mentioned sherds of jars with splayed out rim and lower portion rusticated or treated with raised bands and long-necked flasks of medium size, often of appreciably thin fabric. The cord-impressed decoration familiar from Bahadarabad is also present here. Significantly, the 'OCP' is a popular ware and comprises numerous varieties including familiar Harappan forms of the dish-on-stand, basins with beaded or beaked or everted and undercut rims, storage jars with thick clubbed rims, medium sized vases with globular body and ring or disc base, bowl-shaped lids with central knobs and miniature vessels of sorts. A red ware with a fabric neither as sturdy as the Harappan nor as friable as the OCP, but often dressed with a slip tending to be evanescent is also met with, showing both Harappan and OCP types. Fragment of a grey ware dish-on-stand has also been picked up from the surface. Bargaon thus presents the picture of a derivative Harappan culture, mixed with elements drawn from such varied sources as Cemetery H, Bara and Bahadarabad, the last being a premier

7. A similar copper ring together with a celt of thin section and a rectangular implement of an unusual type, believed to be an axe, is reported together with late Harappan pottery, from the upper layers of Mitathaj near Bhiwani in District Hissar, a site recently excavated by Shri Sura Bhan of the Punjab University under the direction of Dr. B. Ch. Chhabra (information from K. N. Dikshit of the (A.S.I.).

OCP site. The detailed analysis given above of the pottery from Bargaon is typical of the numerous sites in the Upper Ganga Doab which have yielded the OCP with or without the Harappan pottery, with but minor variations.

Among the single-culture OCP sites so far excavated, Ambkheri in Saharanpur District is noteworthy. The short but informative accounts of the excavation (Deshpande, 1965, 1967) show that although the Harappan pottery as such is absent, the derivative Harappan shapes like the short-stemmed dish-on-stand and the remaining pottery types and designs (with the exception of the incised design) from Bargaon are all present, together with some elements of the familiar Harappan equipment such as figurines including a humped bull, toy-cart wheel and cakes of terracotta. A fine de-luxe flask with a long neck, oval body and flat base from Ambkheri closely resembles a Harappan* type from Cemetery R. 37, but the fabric is much thinner. Significantly all the Alamgirpur types* (with the exception of Sharma types 15-16 and 21-24) are available at Ambkheri in the typical Ochre coloured ware. The OCP from Ambkheri is thus seen to have many more shapes than those represented at Atranjikhera and Bahadarabad and reveals striking affinities with the pottery types at Bargaon on one hand and at Alamgirpur, Rupa and Bara on the other, although the incised designs of the last site are absent here.

For a study of the Ochre-coloured Ware, the evidence from Alamgirpur⁸ is important, for here we find some of the most characteristic OCP type (Sharma types 1-4, 6, 9, 14 and 17) in Harappan fabric together with the typical Harappan shapes, such as the Indus goblet, the cylindrical beaker with slightly flaring rim (Sharma type 15), the perforated brazier (Sharma type 20) and the small bell-shaped beaker with disc base (Sharma type 16). The ring stand (Sharma type 19) and the large carinated dish-on-stand (Sharma type 5), though typical Harappan shapes are not favourites with the OCP, so is also the Jar with wide flaring mouth (Sharma type 18) which derives its form and feature of rustication of base (where present) from Cemetery H. Sharma types 7 and 9 known also from Rupa in the Harappan fabric are similarly available in the OCP. The presence of such a large number of OCP type at Alamgirpur in the Harappan fabric and the adoption of numerous Harappan and Cemetery H shapes in the Ochre-coloured Ware possibly indicates close

8. *Ancient India* III, p. 108, fig. 17, XXVII d.

9. Y. D. Sharma in *I. A. R.* 1958-59, pp. 50-55.

10. *Ibid.*

contacts between the late Harappan and Cemetery H cultures on one hand and the culture represented by the OCP on the other.

A comprehensive study of the cultural equipment including the ceramic types and decorations recovered from the late Harappan sites of the Upper Sutlej basin reveals a basic homogeneity among them with certain individual features. It is seen that besides numerous pottery shape derived from Harappa, certain characteristic Cemetery H types like the dish on stand of medium size and jars with splayed out rims and painted motifs of the star and fish, typical of Cemetery H, are common to the Sutlej sites like Rupar, Bara and Dher Maira. Further Bara has many incised designs on the exterior of jars and vases which occur in equal profusion at the Late Harappan sites of Katpalon in District Jullundur and Madiala Kalan in District Ludhiana, but with lesser frequency at Dher Majra and probably also at Rupar. It is noteworthy that these incised designs are also found on the pottery from the OCP site of Bargaon, while we have already seen how some of the popular OCP shapes were inspired by Cemetery H.

The Upper Ganga basin where the OCP sites are located thus appears to be the meeting ground of cultural influences derived from such diverse sources as the late Harappan and Cemetery H cultures and the incised ceramic traditions of Bara and kindred sites. If the people using the OCP, which represented the earliest culture of the Upper Ganga basin, be identical with the authors of the Copper Hoards, as seems very likely, they appear to have co-existed with the Cemetery H folk as well as the Harappan stragglers, who travelled with the ceramic traditions to the Ganga basin along the Ghaggar (Saraswati) and the Sutlej and mixed with the people using the OCP.

DISCUSSION

Shri M. N. Deshpande :

The so-called OCP is treated with thick slip but this is devoid of any painting. Bargaon and Ambakheri are very important sites but they differ from each other also. Bargaon is a site with marginal OCP and showed the presence of certain Harappan pottery type common to Ambakheri. Painted pottery have also been found. Chert-blades and weights, bull-headed terracotta, toy cart, terracotta and faience bangles, oval shaped terracotta and copper rings suggest Harappan advent. This should be compared and related to the Saraswati Valley and not with the Indus Valley proper. Ambakheri is a site with marginal Harappan elements.

Painted pottery and Chert blades have not been found. Remains of brick-kilns have been found but bricks were fashioned with hand. It appears that OCP people coming into the contact with the Harappan tried to make bricks. The habitation deposits contain beautiful pottery in abundance such as long-necked flask with flaring rim and flat base, bowl with slightly *out-turned* rim and bulbous body etc. Its resemblance and frequency of pottery may suggest that the people were not merely nomads and further that the habitation was not of sporadic nature and the site was subjected to severe floods. Water level is not very deep. The pottery remained soaked in water for a very long time so exposed slip came out immediately. It is distinct red pottery and OCP is an accidental name. Marginal Harappan affinities may point out that the fusion took place in this area. Mr. Gaur has found some painted sherds with OCP at Atranjikhhera but their final shapes are yet to be determined. Again about the nomadic authority at Ambakheri miles together we find sherds lying but there are certain spots with concentration. The people were not nomad. The pottery differs totally from the Cemetery H culture. At Bargaon two flasks have some affinities. Crescent painting or the shape of a fish is an intrusive element there.

Shri S. R. Rao:

Copper hoards of the Gangetic Valley may not be related with the so-called OCP. Chemical analysis shows that the lead was used in considerable number for the composition of copper hoards of Mohenjodaro and Lothal. It is conspicuously absent in the copper hoards. The crescentic axe from Lothal is some time compared with the anthropomorphic figure of the copper hoard. Technologically and typologically, they are different. The Lothal specimen is not an anthropomorphic figure. It has been found in a level approximately to 1963 B.C. At Lothal we have found 'triangular terracotta' cakes in mature Harappa phase. The phase-B has yielded oval shaped cakes which have also been found in Western U.P. It might have served the purpose of weights in fishing nets. Is it possible to make a distinction between shapes of OCP and Harappan? If so which is earlier? Fifty percent shapes in the so called OCP are typical Harappan and remaining are less Harappan (this information is from Shri K. Deva). Painting on them almost disappear probably due to flood and water-logging, but its evidence is coming out from Atranjikhhera. The OCP sites are temporary Harappan settlements. The same is the case in Saurashtra where the Harappans in the late phase made smaller temporary settlements.

Dr. R. S. Sharma:

The OCP is associated with the copper hoards but we can not say definitely unless it is proved stratigraphically. Shri B. B. Lal listed thirty-four copper hoards sites, eighteen of which were in Western U.P. and rest in Bihar etc. What happened to copper hoard sites of Bihar? If we think of copper age in U.P., what was the date and source of the copper?

Shri S. P. Gupta:

The copper ring which has been found at Bargaon by Shri Deshpande is not a typical type of copper hoards? We may neither reject nor accept its identity. The crescentic-axe referred to by Dr. Rao is definitely an anthropomorphic figure. On typological grounds it should be identified with the anthropomorphic figure of copper hoards. So far its use is concerned, an axe is used for killing bulls in Assam. It has blunted convex edge on the one side and two sharp points on the other and bears close typological resemblance with the anthropomorphic figure of the copper hoards.

Dr. P. L. Gupta:

In Bihar, Copper hoards have been found from Chotanagpur region with an exception of Monghyr. Fired spots in Bengal and Orissa also are not far away from Chotanagpur. Most of these are situated in water belt. Recently, three specimens composed of 99-100 per cent copper have been recovered from Singhbhum.

Dr. K. K. Sinha:

In Northern India we have no copper to determine the sequence. It is difficult to say whether the shapes in the OCP were derived from Harappans or the authors were the Harappan themselves unless we get a site like Rangpur.

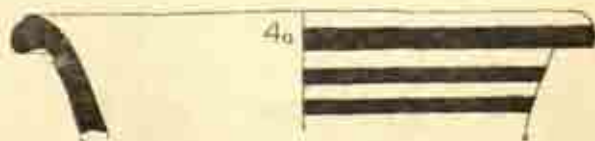
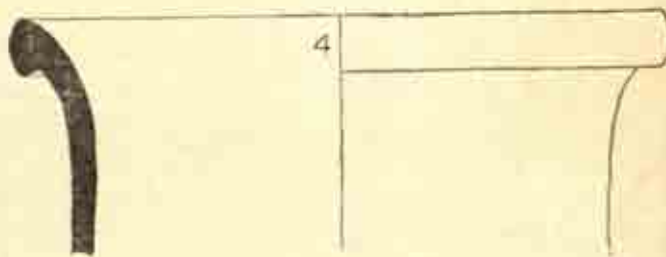
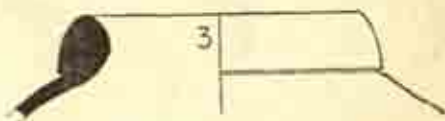
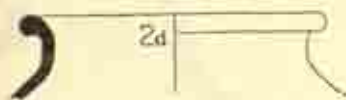
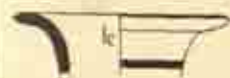
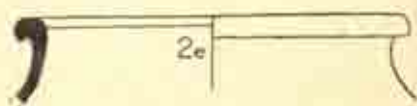
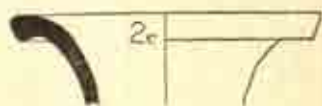
Dr. M. M. Deshpande:

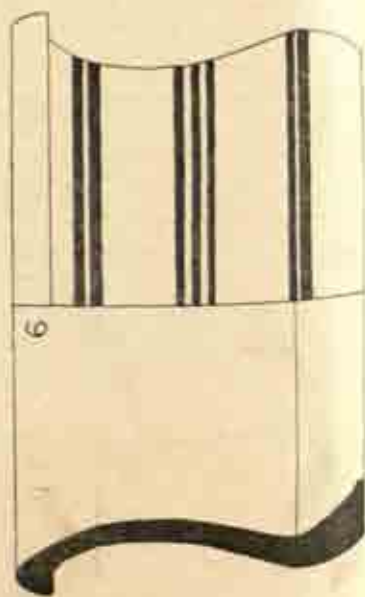
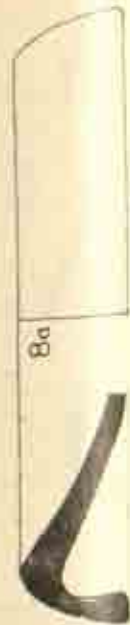
Vajra was like human figure with the eight shaped sides. The anthropomorphic figure may represent it. Sen Gupta told me that it was used probably by fishermen as a harpoon. In Bengal, more or less similar type of tool was used for fishing which later on became a decorative object.

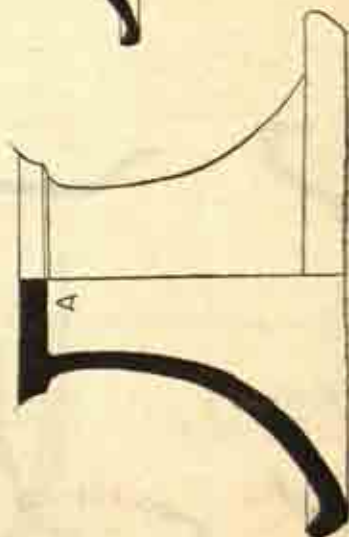
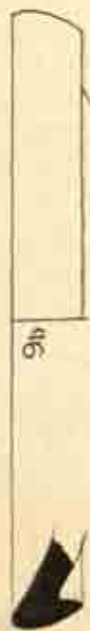
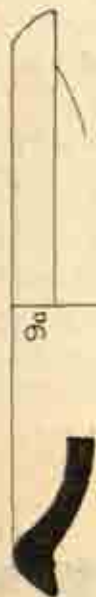
Shri Krishna Deva:

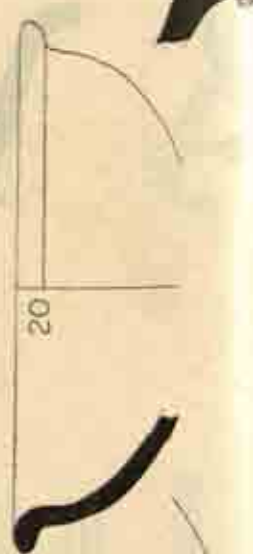
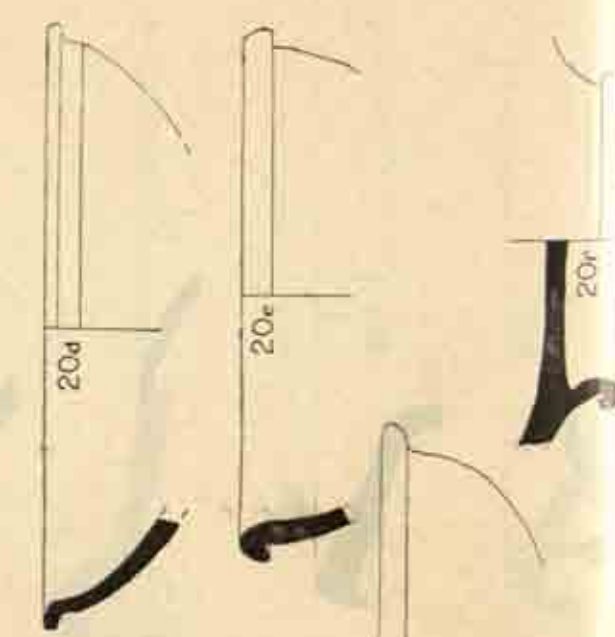
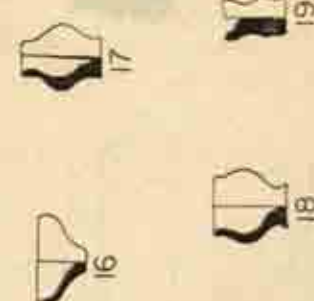
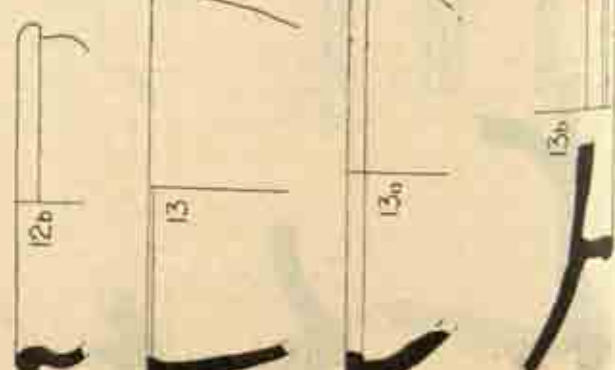
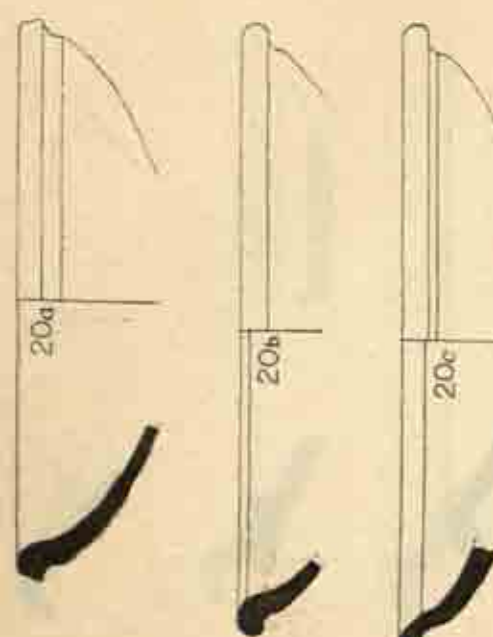
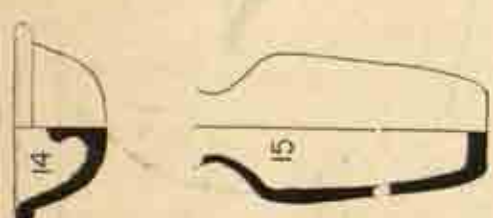
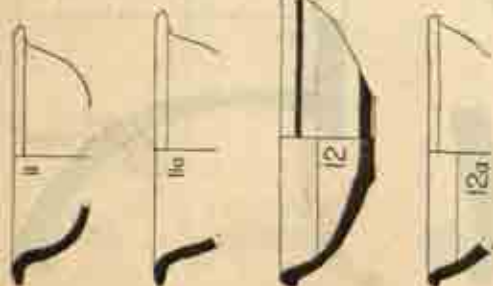
It is certain that OCP deposit at all sites is of shallow nature. It is not more than 1.5 meters in thickness. We have to observe that they were subjected to flood. When flood comes it leaves sedimentation of layers. Its identification with cultural level and signs for desertion and

reoccupation are yet to be recognised. It is a fact that Ambakheri has marginal Harappan elements and Bargaon is with marginal OCP affinity but exact nature of OCP cannot be determined unless some sites are excavated extensively. Various uses of terracotta cakes were made. At Kalibangan it was used for road making. They might have been used as a kind of offering also. Only a few copper objects have been analysed. Probably mines of Rajasthan and Singhbhum were used for copper. Bargaon specimen should be analysed. A thorough exploration is needed to solve the problem of copper hoards and its association with particular ceramic fabric in Bihar. In this respect the discovery of fresh copper hoards and the study of find spots will help us very much. The time bracket given by Wheeler i.e., 1700 to 1000 B.C. is somewhat correct for OCP. The degenerated Harappan should not be called as Harappans. Vajra is perhaps the beginning of anthropomorphic forms.



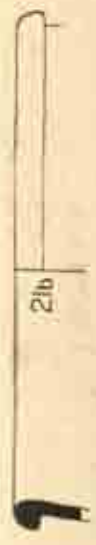








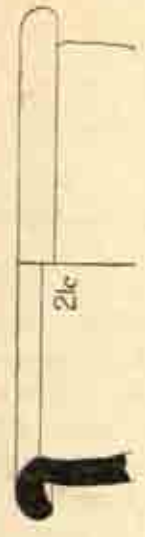
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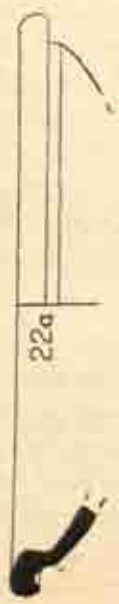
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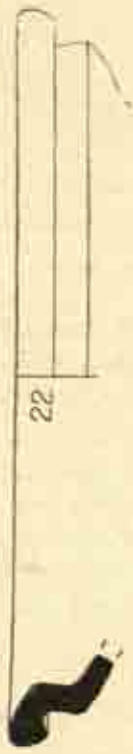
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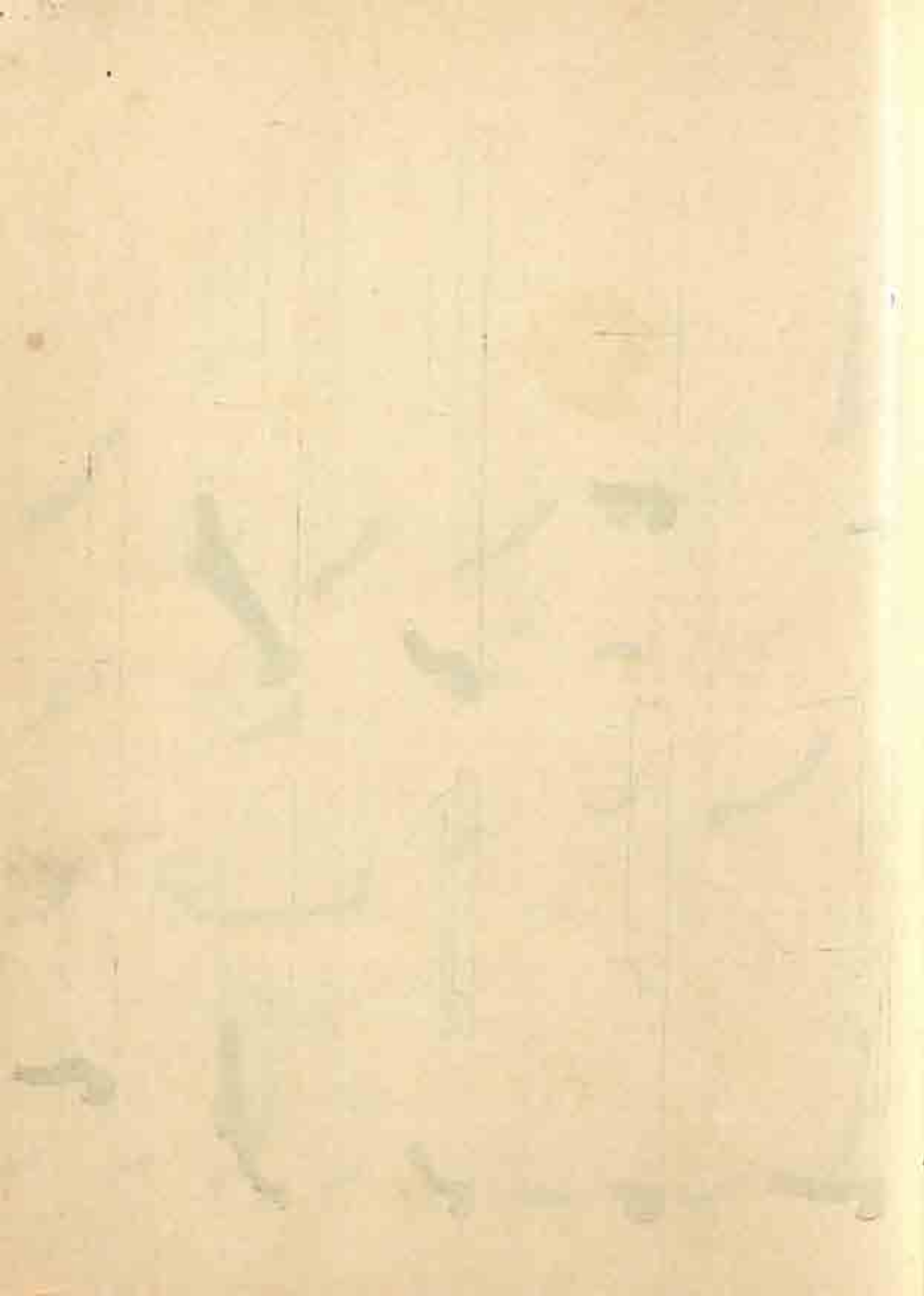
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THE OCHRE-COLOURED POTTERY

B. B. LAL.

Chief Archaeological Chemist, Archaeological Survey of India, Dehra Dun.

A. Provenance—

Excavations conducted at Rajpur Parsu and Bisauli—the Copper Hoard sites—brought to light an ochre-washed ware. When first discovered, this pottery was described as ill-fired and thick, and worn and rolled in appearance. The ware was later found in the lowest levels of Hastinapura which is about 80 Kms. from Bisauli in Badaun District and close to Rajpur Parsu in Bijnor District. The ochre-washed ware has, by inference been connected with the Copper Hoards, and has not so far been unearthed in actual association with the latter¹. The Ochre-Coloured Pottery bearing deposit of Period I at Hastinapura² was a brown clay varying in thickness from 30 to 45 cms. This soil was rather compact and hard and came out in lumps containing rolled fragments of Ochre Coloured Pottery. It was thought that the Ochre Coloured Pottery settlement was sporadic.

This pottery has also been reported from Bahadarabad³ in Saharanpur District in a possible association with the Copper Hoards. According to Sharma,⁴ the Bahadarabad pottery is red, thick and inadequately fired and it rubs off easily and compares well in texture and fabric with the ochre-coloured ware of Hastinapur. The pottery is thought to rub off easily owing to inadequate firing and the effect of long water-logging. Several shapes in this ware were found to be common in Harappan pottery with which its cultural affiliation could be assessed by Sharma on typological affinity and not merely on its texture and fabric which appeared to be deceptive.

A limited excavation of a mound at Bargaon⁵ in Saharanpur District has yielded from a 1 mm-thick occupational deposit an unslipped Ochre-Coloured Ware, as well as an ill-fired slipped ware. This ware resembles the Ochre Coloured Pottery, of which the slip usually gets separated from the surface as soon as it is washed or handled. Here the Ochre-Coloured Ware has been found associated with the Harappan ware, and typical Harappan pottery with painted designs occurs along with the Ochre-Coloured Pottery. Among the important pottery types are dish-on-stand, knobbed lid, goblet, ring-stand, and pottery with incised decora-

tion and cord-impressed designs on the exterior. Other Harappan traits are represented by terra-cotta cakes, faience-bangles and copper-rings. From the reports it is, however, not clear whether all these types occur in Harappan ware or in Ochre-Coloured Pottery. In fact a very large number of Ochre-Coloured Pottery sites have recently been located in Saharanpur District.²

At Atranjikhhera³ in Etah District, the Ochre-Coloured Pottery-bearing horizon ranges in thickness from 0.8 to 1.5 m., the average thickness being about 1 m. The two types of pottery found therein represent the Ochre-Coloured Pottery and a dull red ware.⁴ The Ochre-Coloured Pottery strikingly similar in texture to that found in the excavations at Hastinapura, Bahadarabad and Ambkheri⁵ and surface-exploration at Bhatpura and Manpur,⁶ has been described as wheel-made and indifferently fired, thick and porous in sections, and friable with rolled edges. Apart from a bright ochreous wash which rubbed off easily, the pottery showed incised designs not found at other Ochre-Coloured Pottery sites. Some red-slipped sherds also showed paintings in black.⁷ No habitation signs were noticed in this stratum, and although burnt brickbats of ochre-colour were encountered, no charcoal or hearth was found. The Ochre-Coloured Pottery stratum overlying the natural soil was overlain after a break in occupation by a Black-and-Red ware stratum and not by the Painted Grey Ware deposit, as had been reported earlier. Soil analysis is reported to have indicated a flooding and prolonged water-logging of the area. Details of the analysis have, however, not been published. The dish-on-stand was an important type.

Ambkheri⁸ mound 2 in Saharanpur District which has turned out to be a single culture site with no copper, has yielded Ochre-Coloured Pottery which has been described as ill-fired or inadequately fired and bereft of slip. A few sherds with slip were also encountered. Laboratory tests seem to have shown that the pottery was ill-fired and that the slip did not form a homogeneous part of the fabric. The important types were dish-on-stand, knobbed lid, ring-stand, sherds with cord-impressed designs and incised decoration. Terra-cotta cakes and humped bulls were other significant finds. A brick-kiln and a hearth were also encountered. The Ochre-Coloured Pottery excavated at this site, while corresponding to Ochre Coloured Pottery from Atranjikhhera and Bahadarabad in fabric, is morphologically different from the latter and shows certain affinities with the Harappan material from Alamgirpur, Bara, Bargaon and Rupa.

Excavations at Ahichhatra⁹ have revealed a 60 cm. thick deposit of Ochre-Coloured Pottery in Period I. The deposit was clayey, compact and

hard with a silty feel and appearance. The Ochre-Coloured Pottery was medium to fine in texture, red-slipped and thin in fabric, though thicker sherds were also encountered in small numbers. As the slip has invariably disappeared owing to the peeling off of the outer skin, it was not possible to say whether the pottery was painted. The dish-on-stand with a hollow stem was an important type furnishing the only connecting link with the Harappan pottery.

Noh¹⁸ in Bharatpur District has also yielded Ochre-Coloured Pottery, one sherd with incised decoration being similar to that found in the Ochre-Coloured Pottery horizon at Atranjkhera. The Ochre-Coloured Pottery bearing stratum representing period I was clayey, and was followed by a black-and-red ware deposit of period II. Similarly ochre-washed pottery has also been reported from Nasik. This pottery was rolled and weathered as a result of water-action, possibly because it was ill-fired.

B. Description—

The Ochre-Coloured Pottery of Hastinapura¹⁹ has been described as made of medium-grained clay and rather under-fired. It seems to have been given a wash of ochre of orange red to deep red colour which had a tendency to rub off easily, whether this pottery was hand-made or wheel-turned could not be ascertained in the absence of striations which had disappeared as a result of rolling.

Field work during the last 14 years has shown that this ochre-coloured ware, called Ochre-Coloured Pottery, of orange to deep red colour and found in the upper Ganga Valley is, characterised by a worn-out condition to the extent that the surface peels off by mere handling, leaving a red ochreous colour on the fingers. Described as pale-red ware of coarse to medium fabric, the Ochre-Coloured Pottery from Period I at Hastinapura is according to, Thapar²⁰ seemingly wheel-made and distinctly underfired and is treated with a sloshy wash of red ochre. The sherds, apparently rolled, were too fragmentary to give an idea of shape, but appeared to be similar to the pottery excavated at Bisauli and Rajpur Parsu. It has, however, been suggested²¹ that this name is a misnomer, since such pottery found at a site near Chandigarh²² shows that there is no wash, but the effect is due to water-logging and rolling, and that it is really a red ware having a red slip. Further, it has been²³ asserted that the colour is not due to a deliberate action by the pottery but was the result of water-logging, or because the pottery remained in the river-silt for a long time. Soon after the discovery of the Ochre-Coloured Pottery it was felt that this description was vague

and the fabric and the wash could not be readily visualized and that the wash must have been applied after firing²¹. It has lately been suggested that this nomenclature should be given up.²² Infact Ghosh²³ is of the opinion that the Ochre-Coloured Pottery is unlikely to be an industrially distinct group and has suggested that imperfect firing and prolonged inhumation in saline or water-logged soil may have contributed to the softness of the core and the surface which peels off easily.

C. Comparative Study—

A comparative study of Ochre-Coloured Pottery from the above named sites shows that so far as fabric, rolling and rounding of edges are concerned, the pottery from excavations at Ambkheri, Bahadarabad, Hastinapura and Atranjikhhera and from explorations at Manpur and Bhatpura is very similar.²⁴ However, the decoration in the form of incised designs and paintings in black, which characterises the pottery from Atranjikhhera²⁵ has not been found at other sites, although at Noh an incised sherd has been found.

It may be observed that although Ochre-Coloured Pottery has been excavated from fairly thick deposits at Bahadarabad, Ambkheri and Atranjikhhera, no habitation²⁶ layers have so far been encountered in this horizon at these sites although at Ambkheri, a brick kiln and a hearth have, however, been found.

The discoveries of Ochre-Coloured Pottery at Bahadarabad and Ambkheri, both in Saharanpur District, and Manpur and Bhatpura in Bulandshahr District have shown the prevalence of Harappan shapes in gradually degenerating form.²⁷ A large number of copper objects were found at Manpur and Bahadarabad without any stratigraphical connection with the Ochre-Coloured Pottery.*

Although a definite link has not been found, the Ochre-Coloured Pottery is thought to be a relic of refugee or degenerated Harappans²⁸ and that it represents a degenerate phase of the Harappan pottery.

It has been argued²⁹ that the Ochre-Coloured Pottery site at Ambkheri may belong to the Harappan group, whereas other sites indirectly associated with the Copper Hoards, as also Atranjikhhera, may belong to a different cultural group. The argument is based on the absence of any definite affinity between the finds from Ambkheri and Atranjikhhera. The Ochre-Coloured Pottery of Ambkheri shows distinct Harappan traits; that from Atranjikhhera appears to exhibit no such affinity. The Ochre-Coloured Pottery of Atranjikhhera is thought to be typologically distinct from the Ochre-Coloured Pottery of other sites. The Ochre-Coloured Pottery of Bahadarabad

has now been described to be non-Harappan, whereas the Ochre-Coloured Pottery from Hastinapura, Rajpur Parsu and Basauli was not claimed to show any Harappan features.³¹

D. Stratigraphy—

Whatever little Ochre-Coloured Pottery was obtained from a trench laid out near the find-spot of Bisauli Copper Hoards came from the top 30 cm deposit. As the sherds were fragmentary, featureless and non-descript, no Harappan or other affinities could be discerned. This area is almost flat level ground without any signs of a mound. The second trench, laid about 100 metres away, also yielded the Ochre-Coloured Pottery from the upper 75 cms of the deposit and no sherd came from a lower level. The pottery from Bisauli represented two types, viz. a well-fired red-slipped ware with painting in black and an ill-fired thick ware with rolled and worn-out edges. These two types of pottery from the mixed deposit were, however, placed into two categories; the worn and rolled pottery was treated as antedating the fresh and unworn pottery.³²

At Rajpur Parsu, the same kind of ill-fired, thick ochre-washed, rolled pottery came from a stratum some 2.46 metres below the surface of the 1.85 metre high mound, which corresponds to a depth of about 30–60 cms. below the surface of the flat level ground around.

The Ochre-Coloured Pottery from Ambkheri, Jhinhana, Nasirpur and Bargaon was also found from shallow deposits. At Manpur and Bhatpura, the Ochre-Coloured Pottery was found on the surface.³³

At Hastinapura, a 15–30 cm. thick deposit of Ochre-Coloured Pottery was found overlying the natural soil and underlain by the Painted-Grey Ware stratum.

Ahichhatra and Atranjikhara have yielded the Ochre-Coloured Pottery from strata underlying thick deposits of latter periods.

From the above, it would be observed that the Ochre-Coloured Pottery has generally been found from shallow deposits, but also from strata underlain by thick deposits. This observation is not without significance, so far as the rolled and weathered appearance of the Ochre-Coloured Pottery is concerned.

E. Chronology—

A few types in the Ochre-Coloured Pottery i. e. the dish-on-stand or knobbed lid are reminiscent of the Harappan culture.³⁴ It is, however, difficult to say if it bore any painted decoration which is a typical feature

of the Harappan pottery. The evidence from Atranjikhhera indicates the presence of painted designs on the Ochre-Coloured Pottery, but since this site does not appear to belong to Harappan group, the parallelism is of no consequence. Although the Copper Hoards have not been found in association with the Ochre-Coloured Pottery at any site excavated so far, it has been surmised²⁷ that the authors of the Copper Hoards were also the users of the Ochre-Coloured Pottery. Since the Copper Hoards seem to have been in existence as far back as the later Harappan times, as demonstrated by the find of a fragment of what is most likely to have been an anthropomorphic figure in Lothal IV, dated on Carbon-14 determination, to 1900 B. C., it is reasonable to conclude that the Ochre-Coloured Pottery was then in vogue and formed part of a cultural trait of Late Harappan.²⁸ It has, however, to be borne in mind that the Ochre-Coloured Pottery has not made its appearance at Lothal.

According to Sankalia's²⁹ tentative chronology, the appearance of the Ochre-Coloured Pottery represented the spread of Indus civilization in the Gangetic valley around 2500 B. C. However, in view of the radio-carbon dating of the Harappan culture, the beginning of the culture cannot be pushed beyond 2300 B. C. A date of 2500 B. C. for the east-ward expansion of Harappan culture thus appears to be untenable. Rather, the upper limit of the radio-carbon dating of 1750 B. C. would seem to represent the beginning of the break-up of the Harappan culture, and the emergence of the straggling Harappans in the Ganges valley around 1700 B. C. would be a more reasonable guess.

F. Geochronological Investigations

Soil samples from Ochre-Coloured Pottery horizons exposed at Ahichhatra, Bargaon, Hastinapura, Jnirjhana and Nasirpur have been subjected to mechanical analysis with a view to determining the mode of transportation and sedimentation of the deposited material.

For mechanical analysis, the air-dry sample was first sieved through 0.20 mm. sieve, and the material so obtained was dispersed in pure distilled water and subjected to sedimentation analysis by the hydrometer method (As per table attached).

I	Sample No.	Fine sand 0.2 mm. to 0.06mm. percent.	Coarse silt 0.06mm. to 0.02 mm. percent.	Medium silt 0.02mm. 0.006mm. percent.	Fine silt 0.006mm. 0.002mm. percent.	Clay 0.002 mm. percent.	Remarks.
		3	4	5	6	7	8
Alichehatra	—	1	8.00	47.00	45.00	—	92 percent of the material represent the coarse and medium grades.
	2	9.00	41.00	50.00	—	—	91 Ditto.
	3	13.00	45.00	42.00	—	—	87 Ditto.
	4	2.00	13.00	85.00	—	—	98 Ditto.
	5	2.00	44.00	54.00	—	—	98 Ditto.
Bargaon	1	22.00	37.00	41.00	—	—	78 Ditto.
	2	23.00	36.00	41.00	—	—	77 Ditto.
Hastinapura	1	27.00	42.00	31.00	—	—	73 Ditto.
	2	35.00	33.00	30.72	1.28	—	65 Ditto.
Jhunjharia	A1	11.00	39.00	50.00	—	—	89 Ditto.
	A2	8.00	43.00	49.00	—	—	92 Ditto.
	A3	12.00	33.00	55.00	—	—	88 Ditto.
	B1	23.00	40.00	37.40	—	—	77 Ditto.
	B2	15.00	40.00	45.00	—	—	85 Ditto.
	B3	12.00	38.00	50.00	—	—	88 Ditto.
	B4	4.00	28.00	68.00	—	—	96 Ditto.
Nasirpur	B5	4.00	26.00	70.00	—	—	96 Ditto.
	B7	4.00	58.00	38.00	—	—	96 Ditto.
	1	46.00	24.00	30.00	—	—	54 Ditto.
	2	28.00	30.00	36.88	5.12	—	72 Ditto.

These data show that the specimens are free from clay grade and are largely composed of fine sand, and coarse and medium silt. The proportion of coarse and medium silt (0.06 mm to 0.006 mm) is generally very high. In 8 specimens it is more than 90 per cent; in 5, it is more than 80 per cent but less than 90 per cent and in seven specimens only, it is less than 80 per cent. Of the 20 specimens examined, 13 specimens show a marked sorting (more than 80 per cent) in the coarse-medium silt grade. It is significant that the specimens from Baragaon, Hastinapura and Nasirpur are least characterised by this feature of sorting. The explanation for this difference between the Bargaon, Hastinapura and Nasirpur material on the one hand and the specimens from other Ochre-Coloured Pottery sites on the other must be sought in the disturbed nature of the former. Bargaon lies in flat level ground and there is no evidence of any habitation mound. The pottery from this site was found to be of a mixed type. It seems the material was considerably disturbed on account of ploughing. Nasirpur is also a disturbed site; no explanation seems to be forthcoming for a lower degree of sorting observed in Hastinapura samples. Perhaps, a larger number of samples would have to be examined before any definite conclusions can be drawn regarding the mode of transportation and sedimentation of the material from the Ochre-Coloured Pottery horizon.

The material from all these sites is thus not a flood-loam or alluvium which comprises equal proportions of sand, silt and clay. The clay-grade is absent from all these specimens including those from Bargaon and Hastinapura, and there is a high preponderance of the coarse-medium silt grade. There is, therefore, unmistakable evidence of the effect of transportation on the concentration and sorting of the material under examination.

Fluviatile deposits generally comprise all the grades such as clay, silt and sand in varying proportions and judged from this criterion, the samples in question do not appear to have been transported and deposited by water. Sections exposed at several Ochre-Coloured Pottery sites have been carefully examined for any stratification characteristic of fluviatile sediments, but the soil from the Ochre-Coloured Pottery horizon does not show any stratification or layers, but appears to represent a megascopically structureless, homogeneous material. Fluviatile deposits, on the other hand, show distinct layers of coarse and fine sediments.

What then, is the origin of the sediments constituting the Ochre-Coloured Pottery horizons at these sites? In view of marked sorting and freedom from stratification and bedding planes, it seems that the material may not be water-laid, and that flowing water may not be responsible for trans-

porting and depositing it at the Ochre-Coloured Pottery sites. The possibility of stagnant water shedding its fine, suspended-load has to be considered, but it is known that sedimentation under these conditions shows a degree of stratification and produces megascopically detectable layers. However, the possibility of wind action has also to be borne in mind, and further work in hand is likely to throw some light on this aspect of the problem. Wind-laid sediments such as loesses are free from stratification, are highly sorted, and contain more than 80 per cent of the material in the grade 0.1mm. - 0.01mm. If the Ochre-Coloured Pottery strata were wind-laid, the random distribution of the sherds at different levels within the Ochre-Coloured Pottery horizons could be explained as being due to the continuous sedimentation of wind-blown material at these sites, when Ochre-Coloured Pottery was being used.

G. The rolling and weathering of the Ochre-Coloured Pottery—

The Ochre-Coloured Pottery has generally been described as an ill-fired rolled and worn ware with a thick fabric and friable surface. The weathered surface of the Ochre-Coloured Pottery, the worn and rolled appearance of these sherds, and the peeling off of the slipped surface have generally been attributed to inadequate firing, although prolonged water-logging and contact with river-silt have also been considered to be responsible for the observed condition of the Ware. It may further be observed that the Ochre-Coloured Pottery in thin fabric⁴¹ has also been reported. ^

The literature on the subject does not give a clear picture of the processes which have produced the weathering, rolling and worn-out effect on this ware. The effect of weathering is not peculiar to Ochre-Coloured Pottery; other pottery has also been found in a weathered condition. Weather-worn pottery has been reported from the top layer of Alamgirpur-I⁴². Ochre-washed pottery in rolled and weathered condition has been reported from Nasik-I. Weathered ochre ware has also been reported from Kumrahar Period II.⁴³ Examination of this ware has shown that the surface has completely broken down due to weathering on account of prolonged action of sub-soil moisture coupled with injurious soluble salts. For the breaking down of the surface, it is not necessary that the ware should be subjected to prolonged water-logging. The conditions favourable for weathering may be present in the soil itself on account of sub-soil moisture containing carbon dioxide and soluble salts. Whether these sherds are similar to those found in the lower levels of Hastinapur and Bahadarabad is difficult to say, but the sherds from the latter sites have been found to be rather 'rolled', whereas

the Kumrahar specimens do not show such 'rolling'. The various aspects of the question of weathering of the Ochre-Coloured Pottery merit a careful examination. These are firing, water-logging and silt-action.

Firing—

It has been thought that the Ochre-Coloured Pottery shows a weathered surface on account of inadequate firing. No Scientific evidence has been produced so far to substantiate the theory that the worn-out appearance of the Ochre-Coloured Pottery is due to its having been ill-fired. A careful examination of the Ochre-Coloured Pottery would show that the pottery is mostly red or Ochre-coloured, that only the core is grey, and that the friability or incoherence is superficial and not deep-seated. The Ware possesses a fine texture indicating the use of a levigated clay such as is generally found in other normal wares. The red colour of the Ware indicates that the firing had been done at a sufficiently high temperature in an oxidising atmosphere.

Water-logging—

The weathered, worn-out appearance of the Ochre-Coloured Pottery has been attributed to water-logging, but the evidence on which this conclusion is based is not clear. If the worn-out, weathered effect is attributed to water-logging, many wares would have exhibited this sort of weathering. How is it that at Bargaon, where Ochre-Coloured Pottery has been found in association with another red pottery, the effect of water-logging is exhibited only by Ochre-Coloured Pottery and not by the other pottery?

River-silt effect—

It is probable that the so-called rolling may have been produced by the abrasion of river-silt with the Ochre-Coloured Pottery. However, only the broken edges are generally found rolled and rounded, but the body of the Ware does not show the rounding effect of river-silt. It is well-known that the pottery which has been washed by river and transported over long distances undergoes considerable erosion. It is difficult to see how river-silt could have brought about the physical weathering of the Ochre-Coloured Pottery and rounded off the edges only.

H. Probable cause of weathering—

A careful examination of the Ochre-Coloured Pottery shows that the firing conditions were sufficiently favourable and produced a coherent red

ware of usual hardness. Inadequacy of the firing, therefore, does not appear to be the cause of weathering of the Ochre-Coloured Pottery. It is also known that the well-burnt, well-made Harappan pottery from the lowest levels is fresh and strong with a hard slipped surface bearing painted designs. This pottery, however, disintegrates rapidly if it is not washed soon after excavation. The explanation is not far to seek. The pottery remained in contact with saline moisture throughout its long period of burial in the soil. An equilibrium was established between the pottery and its saline and moist environment, and there was no surface erosion or disintegration in this condition of equilibrium. Once the pottery was excavated and brought to the surface, the moisture present therein evaporated leaving the solidified salts in the pores. The crystallization of soluble salts in the new environment brought about the disintegration of the pottery.

It seems that the Ochre-Coloured Pottery remained exposed to atmosphere for a considerable length of time, and that before this stratum was sealed by later occupation, the Pottery had undergone considerable weathering as a result of prolonged exposure. When the Ochre-Coloured Pottery people were living, there was a gradual deposition of wind-blown material on the site under arid conditions and the pottery became weathered. Mounds which were strewn with well-fired pottery are known to show on the surface a reddish colour on account of prolonged exposure of the pottery under arid conditions. In view of this, it is not improbable that the Ochre-Coloured Pottery horizon has witnessed a period of prolonged exposure before it was sealed by later deposits.

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THE OCHRE-COLOURED POTTERY FROM ATRANJIKHERA AND ITS SIGNIFICANCE.

R. C. GAUR

The excavations at Atranjikhera¹ brought to light the remains of almost continuous habitation right from the early phase of the protohistoric period down to the end of the Medieval period.

The earliest (Period I) cultural deposit² at the site, lying immediately above natural soil is the characteristic pottery of Ochre-colour. In spite of several years' digging no habitation deposit of this industry could be found. The usual habitation signs such as ash, mark of burning, organic material, floor levels etc. are conspicuous by their absence. The thickness of the deposit ranges from 0.50 meters to 1.50 metres or even more, the average being 1 meter. The O.C.P. sherds are found interspersed with hard compact sandy soil mixed at places with silt and gravel. Though the main concentration of the pottery is confined to an area of about 300 sq. meters, on the eastern part of the mound, a few sherds have recently been unearthed from two other places of the mound as well. The analysis³ indicates that the area had been flooded and waterlogged for a considerable time which was ultimately responsible for the end of this culture. This phenomenon also suggested that the pottery was probably transported by water during flood time, giving it rolled edges, from a place of regular habitation which remains untraced and jumbled up in the depressions.

The general characteristics of the pot-sherds are almost the same as unearthed at Bahadarabad, Hastinapur, Anichchhatra, Ambkheri, Noh and other O.C.P. sites. The sherds vary in thickness and texture and appear so fragile that the ochrous powder comes off even if slightly rubbed. Broadly speaking the pottery is divisible into two major groups (i) Ochre coloured and (ii) Dull-red⁴. The former includes sherds of various shades such as creamy red, yellowish red and orange red, while in the second group a few sherds look greyish probably due to ill-firing. Many of the sherds bear traces of red slip which at times is quite thick and polished. There is clear evidence of the use of wheel-turned technique on a considerable scale. In spite of the fact that only a small part of the huge mound has been dug, more than ten thousand sherds have been recovered including shapes and designs. The proportion of sherds with a determinable shape was high. Although common shapes have been found at all the sites, it appears that the O.C.P. of Atranjikhera has distinct local characteristics.

Although except a miniature bowl, complete pots have not been found, yet the sherds give a fair idea of the pots and pans. The well executed pots with variety of shapes often bearing sophisticated incised designs and painting in black pigment generally over a fine-slipped surface are indicative of the fine taste of the people who used them. Though it is not easy to determine the exact use of a pot of ancient times, an attempt has been made here to classify and sub-divide them on utilitarian basis according to their shape, size, thickness and decoration. The present group analysis may be helpful in understanding their role in common life of the people.

Storage jars :

These were probably used for storing grains and dry food-stuffs. However, those with flaring rims might have been used as liquid containers. The following sub-groups may conveniently be made in this variety:

- (i) Jars with externally thickened rim.
- (ii) Jars with flaring rim.
- (iii) Jars with out-curved rim and concave neck.
- (iv) Jars with out-turned rim.

Vases.—It is not easy to distinguish between a vase and a vessel, but an attempt has been made here to divide them separately on the basis of their shapes and possible utility. The pots generally having elongated concave or vertical necks and flared or flanged or prominently out-turned or out-curved rims have been classified as vases. These pots probably were used as pitchers, water-jars, liquid-containers and for similar other purposes. Following four sub-divisions characterise the utility of the vases :

- (i) Vases with flared and vertically pointed rim.
- (ii) Vases with flared and featureless rim.
- (iii) Vases with flanged rim and
- (iv) Vases with out-turned or out-curved rim.

Vessels.—The pots of this group which look slightly different from the vases, generally have globular profile, wide mouth and short-neck. Broadly speaking these may be divided into three classes according to their size. The bigger vessels probably were used as cooking-pots and containers for food stuffs including milk and milk-products etc., while the smaller vessels might have been used as lotah. The miniature pots of this group may have been produced for either ritualistic purposes or as kitchen-aids or in some cases as toys also. Following sub-types have been counted in this group :

- (i) Vessels with out turned rim and squattish neck.
- (ii) Vessels with flared rim and short concave neck.

- (iii) Vessels with out-curved rim and concave neck.
- (iv) Vessels with vertical or slightly out curved rim.
- (v) Vessels with out curved and externally thickened rim.
- (vi) Miniature vessels.

Troughs—Under this group come basin like deep pots having vertical sides and generally splayed-out rims. In majority of the cases these pots are in dull-red. The troughs most probably were used as fodder and water pans for the domestic animals and as wash basins or water-containers.

Basins—Basins appear to be common pots of daily use. They could be used as water-pans, dinning sets, handy grain-carriers in place of baskets, curry pans etc. The basins may broadly be divided into following sub-groups :

- (i) Basins with flaring or tapering sides.
- (ii) Basins with hemispherical sides and vertically pointed rim.
- (iii) Basins with incurved sides and flattend rim.
- (iv) Basins with convex sides.
- (v) Basins with ovaliod sides and
- (vi) Basins with lipped spout.

Bowls—Bowls though look similar to basins are smaller in size. They were prbably used as dinning-sets and drinking-pots.

The following sub-grouping may be possible :

- (i) Bowls with convex sides.
- (ii) Bowls with hemi-spherical sides.
- (iii) Bowls with incurved sides.
- (iv) Bowls with tapering sides.
- (v) Bowls with vertical sides and
- (vi) Miniature bowls.

Dish-on-Stand—Although no complete dish-on-stand has been found, the sherds do indicate their existence. Pieces of dishes, stems or the middle parts and bases have been found. A few miniature pieces belonging to this group are quite interesting. In these cases virtually dish part is immediately superimposed on the base.

Lids—A few pieces of lids including those with central knob have also been unearthed.

Handled-Pots—Besides the above pots and pans, various types of handles with circular and semi-circular sections have also been found. The remains of hanales indicate that they were fixed with the pots particularly basins. These pots might have been used either as cooking-pans or liquid containers.

Incised-Designs.—As one of the decorative devices, the incised designs on the O.C.P. are a special feature at Atranjikhhera. These are quite sophisticated and rich in variety. Similar sherds however, have also been found from Lal Qila in district Bulandshahr. Although, the incised designs of this type are not known from any other O.C.P. site so far, some resemblance though of quite remote nature have been seen on a few sherds found at Bara. Recently an extension of Bara pottery has also been noticed further west upto Kat-Palon in district Jalandhar. A few of the incised sherds picked up from the sites in Eastern Punjab also offer a similar parallelism. Particular mention may be made to an incised sherd from Manpur having compartmented design, which look almost similar to that found at Atranjikhhera. Below is given a list of the main types of the incised designs observed at Atranjikhhera.

- (i) Finger-nail incision on the ribs or chords.
- (ii) Incised ribs or cords with notches.
- (iii) Simple ribs with notches or parallel lines-wavy or straight.
- (iv) Notches on one side of the rib.
- (v) Leafy or 'V' shaped pattern.
- (vi) Simple notches in a row or scattered.
- (vii) Single or double grooves with notches.
- (viii) Oblique parallel grooves with notches.
- (ix) Horizontal parallel multiple grooves with or without notches.
- (x) Grooved wavy lines on the neck.
- (xi) A row of oblique strokes on the neck.
- (xii) Zig-Zag parallel dashes or straight lines.
- (xiii) Checked or compartmented pattern.
- (xiv) Parallel or oblique angular lines.
- (xv) Parallel ribs with incised mark.

In addition to the above Incised mark which were probably made with the help of some straw, bone point or copper¹⁶ wire, there were some more devices for decoration. These included single or double plain ribs and finger made wavy lines.

Although painting tradition of the O.C.P. industry is quite simple, yet they are noteworthy. So far only two sites namely Atranjikhhera in district Etah and Lal Qila in district Bulandshahr have yielded painted sherds in Black pigment from the O.C.P. levels. Following painted designs from Atranjikhhera are worth mentioning :

- (1) Wide painting over the shoulder of vases below the ribs.
- (2) A Thick-band either on the lower part of the neck or on the body of a vase or vessels.
- (3) Parallel bands either on the neck or the body of a pot.

- (4) Parallel bands and incised ribs alternatively decorated and
- (5) Painting in criss-cross or checkered pattern on the body.

While concluding it may be added that the excavators at Bahadarabad¹¹ and Ambkheri¹² particularly at the latter site, have noticed a strong resemblance with some of the characteristic shapes of Harappan culture. However, at Atranjikhhera since the typical Harappan shapes are missing, basically it appears the industry of an indigenous people living in western U. P. in the Ganga Valley. In recent years, a large number of O.C.P. sites have been explored by the Archaeological Survey¹³ and Aligarh Muslim University¹⁴. A comparative study of the sherds from these sites show that a few shapes from the sites in the upper Ganga basin near the border of Eastern Punjab bear Harappan affinity which may be due to contact between the two groups of people in that region. Of all the sites, Bargaon¹⁵ provides an important sequence for better understanding of the problem. Here while the lower level is represented by Harappan phase, the upper level appears to belong to the O.C.P. phase. The intervening middle phase shows an overlap between the two.

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2. Cf. R. C. Gaur—Comments on the Indus civilization, Indian prehistory, 1964, Poona (1965) pp. 142–45.
3. The soil analysis was done by Prof. Fakhruddin Ahmad and his colleagues of the Geology Department of Aligarh Muslim University.
4. At Atranjikhhera dull red ware is dominating industry, while at western sites ochre coloured ware is prominent.
5. Fig. 2 and 3.
6. Several Sites of O. C. P. have been located in the district Meerut and Bulandshahr during the course of the exploration by the author.
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DISCUSSION.

Krishna Deva :

Majority of shapes and even miniature pots of Atranjikhhera have been found at other O.C.P. sites of North Western U. P. The painted designs are simple and bear close affinity with the later zone. Incised design of pottery should be published early for comparative study. Structural remains show that the people were not Nomads.

H. C. Bhardwaj :

The calcium contents in the clay is responsible for the yellowish colour of a pot. Under firing and water-logging may be another cause.

K. K. Sinha :

At Hastinapur the soil in the O.C.P. level was very hard and was in the form of small clods. It is the first habitation at the site. What were the factors responsible for the clods lower than 20 ft. from the surface?

M. N. Deshpande :

At Ambakheri, we find bits of sherds hither and thither.

K. D. Bajpai :

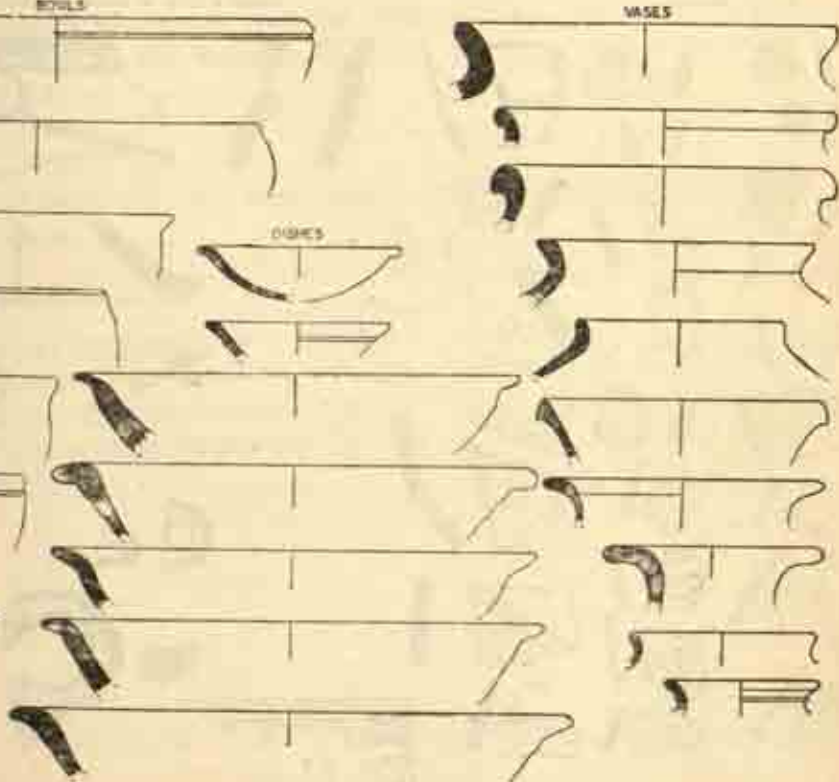
Excavation at Atranjikhhera has thrown new light on the remains of O.C.P. A comparative study of types, painting and incised designs should be made. Is there any affinity with the incised pottery of Bara? The discovery of copper in the O.C.P. level is significant. It shows the affiliation of copper with the O.C.P. people.

BOUGLS

VASES

DISHES

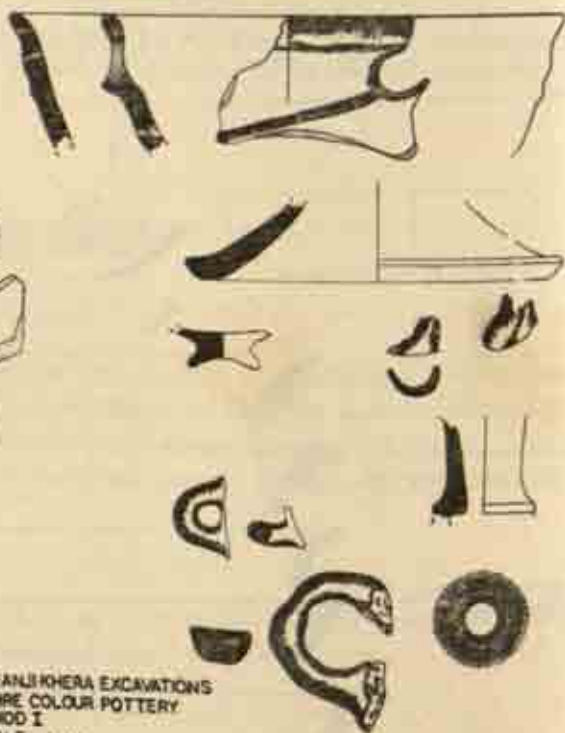
ATRAKHHERA EXCAVATIONS
OCHRE COLOUR POTTERY
PERIOD I
SCALE: 1/3
FIG. 1



DESIGNS



SHERDS & POTS OF SPECIAL FEATURES



ATRAKLIKHERA EXCAVATIONS
OOHRE COLOUR POTTERY
PERIOD I
SCALE 1/3
FIG. 2

V. D. Mishra :

Baharia in the district of Shahjahanpur has yielded two copper swords and a harpoon. We could collect O.C.P. sherds also. The shapes are identical to the O. C. P. of the known sites in the Upper Gangetic Valley.

S. P. Gupta :

It is only Atranjikhhera which gives the evidence of an independent O.C.P. culture. Other sites in the Western U. P. do not show any independent status of the O.C.P.

K. N. Dikshit :

Movements of the O.C.P. was from west to east as the excavations in the Ganges Valley show.

R. C. Gaur :

In eastern slopes more sherds have been found whereas in the west a few only. The depression in the Western slope has also been marked. We found a few bone pieces. They were examined in Baroda and identified with those of a tiger. It may suggest the presence of deep forests in the O.C.P. period at Atranjikhhera.

BLACK-AND-RED WARE IN BIHAR.

B. S. VERMA

Black-and-red ware is a kind of pottery, which is black inside and red outside,¹ taking this appearance because of the inverted firing technique applied in baking the pots. Black-and-red ware was known in Indian Archaeological literature as Megalithic ware since it was excavated from hundreds of Megalithic burials of south India and was dated roughly to the 3rd or 4th century B.C. Now, for the last fifteen years, this ware has been coming out from different excavated sites of North-Western, Western, and Central India, and as such it has assumed meaning wider than hitherto ascribed to it. Its association with the Harappan ceramic in Gujrat and post-Harappan chalcolithic assemblages in North-Western and Central India and the Pre-N.B.P. horizon of the Gangetic plains, has posed a serious problem to the archaeologists. Having been discovered from so many sites from different regions of this country, it appears that the technique of producing black-and-red ware had a long tradition right from the late Harappan culture (i.e. from 2000 B.C.) upto the post-chalcolithic culture of the north-western and Central India and further to the Megalithic culture of the Southern India i.e. 300 B.C. to 100 A.D., according to Wheeler's dating. Further, its continuity is found in the historical site at Nagarjunikonda in Andhra, i.e., upto the 3rd century A.D. So we find that this black-and-red technique of the ware had a chequered history of about 2000 years in India.

Outside the realm of Indian tradition regarding this ceramic industry, it is reported from Ancient Egypt belonging to the 4th millennium B. C. in the Pre-Dynastic Tasian, Badarian and Nagada periods where they have been described as the 'black topped ware'.² In the recent excavations near Tumas in Nubia by the Indian team headed by Sri Lal, such potteries have been discovered from the cemeteries of the C-group people and have been dated back to the 2nd millennium B.C.³ This suggests about the existence of an early relationship between Egypt and India. Then, is this relationship responsible for the introduction of black-and-red ware ceramic industry in India, Or is it an indigenous one? Only an extensive investigation can solve this problem. The area intervening Egypt and India has so far produced very little black-and-red.

The question as to who were the authors of this ceramic industry in India is not yet solved. There are some scholars who believe that the black-and-red

ware pottery belongs to the Dravadians. Dr. Subba Rao first propounded this theory⁴ and it has been supported by Saundrajan.⁵ But recently, Dr. Sinha had advanced another theory and has said that the black-and-red ware was the Aryan pottery.⁶ D. P. Agrawal, working on this subject independently has also arrived at the conclusion that black-and-red ware was the pottery of the Aryans who entered India in the first phase.⁷ However, the problem of black-and-red and Aryan is a knotty one and no categorical statement can be made at the present state of our knowledge.

Anyway, the question arises, as to how this particular ceramic industry was introduced in Bihar. Dr. Sinha is of opinion that the Aryans who entered India by sea-route came to North Bihar by river (Sadanira) and later on reached Magadha.⁸ But he is silent about the route which they followed on their journey to Bihar. Sadanira has been identified with the river Gandak which flows only in Bihar. Agrawal had tackled this problem in a different way. He is of the view (on the basis of the C-14 dating) that the black-and-red ware ceramic tradition entered Bihar via central India and West Bengal. He has stated that due to dense forest in Bengal, the Aryans could not move further eastward and as such, from there they re-coiled to Bihar and from here they moved to eastern U.P.⁹ He has reached this conclusion on the basis of younger C-14 dates of this region. Dr. Subba Rao had already hinted at the possibility of the movement of black-and-red ware into Magadha along the foot-hill of the Vindhya.¹⁰ S. P. Gupta also visualized the movement of black-and-red from Eran in M.P. to Binar directly through the central Indian ranges. He however, maintained that one wave of black-and-red starting from Rajasthan i.e. Banas going along the Chambal reached Jamuna and then to Kausambi from where it reached Bihar. How far the C-14 dating is helpful in arriving at this conclusion is again a matter of controversy. A recent C-14 dating of Chirand has been dated about seventeen century B. C. (3600 ± 100). Now the theory advanced by Agrawal does not fit in here. If Agrawal would have taken into consideration the pottery types of the sites and C-14 dating side by side, he would have perhaps arrived at a more accurate conclusion. But even the typological study does not help us much. We have no explanation regarding the differences of types in potteries of Bengal and Bihar. The lustrous painted red ware of Bengal is totally absent in Bihar. Similarly the Channel spout which is found in Bengal has not been discovered in Bihar in the chalcolithic context so far. Even in Bihar itself, we find a vast difference in the pottery types of Chirand and Sonapur. Types like dish-on-stand, footed bowl, spout, jug, lota etc. are absent at Sonpur where as at Chirand they have been found in a good number. So it has created another problem which needs solution. Contrary to this,

we find a great resemblance of types and painting in the potteries of Ahar and Chirand. More-over, the cultural deposit of the black-and-red ware at Chirand is next only to Ahar. The former has got the deposit of 6 meters whereas the latter has of 11 meters. Even the C-14 datings of both the places have come too closer. Under the circumstances, the theory advanced by Dr. Sinha appears to be more plausible, as the river route is the only solution to the problem, but the route which they followed is to be traced out.

The black-and-red ware was first reported in Bihar in the year 1956 from the excavation at Sonpur, although it was discovered much earlier from the Mahabir Ghat (old Pataliputra) excavation, associated with N.B.P. ware. Since its importance was not much emphasised then, the excavator did not pay much notice to it; he did not even refer to it in his preliminary review. This fact was detected only when the writing of the report of the site was undertaken by my colleague Sri L.A. Narayan. Later on, Sonpur site was extensively excavated by me, and more black-and-red ware pottery came out in the course of excavations. In the year 1960, the Vaishali excavation also yielded a few black-and-red ware sherds in the pre-N.B.P. strata. In the same year, in course of exploration of the mounds of Chirand and Manjhi in the district of Saran, I collected a fairly good number of black-and-red ware pottery. On examining the sherds, Dr. Sinha was so much impressed that he immediately sought the permission of the Government of India for excavation at Chirand. The excavation started at the site in early 1962 and it continued for three successive seasons. The excavation at Chirand produced far-reaching results, and a new chalcolithic site was discovered, in Bihar. Not only this, the excavations brought to light many new types of pottery in black-and-red ware as well as in other associated wares, which had hitherto been quite unknown to this region. In 1963, in course of exploration of the mound at Maner in the district of Patna, a few black-and-red ware sherds and a dish-on-stand also in black-and-red ware along with a few microliths were picked up by a band of explorers of the Department of Ancient Indian History and Archaeology, Patna University. A couple of years ago, another team of the Patna University, discovered a Chalcolithic site in the vicinity of Antichak, where a huge stupa of the Pala period was discovered, in course of exploration. Among the finds included a few black-and-red ware with paintings and a white painted bowl luted with a lipped spout at the rim portion also in black-and-red ware and a few microlithic pieces. Thus it has been found that this black-and-red ware culture was widespread in this region. It is not unlikely that if a thorough exploration is undertaken in this region, some new sites may be discovered. I may like to mention here in this connec-

tion that few days back Dr. S.N. Sahay, Curator, Department of Ancient Indian History and Archaeology, Patna University, discovered a few pieces of black-and-red ware sherds from a ditch of Kankarbagh area in Patna. But the types are more akin to that of Mahabirghat.

From the excavations so far conducted in Bihar, this black-and-red ware pottery is found from the lower most deposits immediately above the natural soil represented by Yellowish compact clay. Red ware and black or black slipped ware were the associated potteries of this ware. A few pieces of steel-gray ware have been noticed at Chirand. At all these places black-and-red ware has been found in the Pre-N.B.P. deposit, its frequency is definitely greater than its associated wares. But in the next-phase, though this ceramic industry continues along with the N.B.P. ware, its frequency became lesser and with the disappearance of the N.B.P. ware, this ware also becomes extinct, as is evident from the excavations at Sonpur and Chirand. At Vaishali, the black-and-red ware disappeared before the emergence of the N.B.P. ware as is reported by the excavator.

The fabric of the early black-and-red ware pottery of this region is on the whole from coarse to medium quality. Fine fabric is rarely met with. (Fine variety is found in the next phase i.e. with the N.B.P. ware). The clay contains large proportion of sand, and as such the section mostly are porous and, therefore, they are mostly treated with a thick slip, apparently intended to hide the coarse texture. Due to coarse fabric, the potteries of the early strata are found mostly brittle and small in sizes, and as such no complete pots in any of the wares have been found from the excavations.

Long-necked jar, vase, bowl, dish and basin were the principal types which have been found in black-and-red ware. The last one is sometimes found lipped. Bowl is very common in this ware. Majority of them have everted rims and they are of coarse fabric and are treated with a thick slip. Dish appears to have been less popular at Sonpur specially in black-and-red ware in the early phase, whereas at Chirand it is more common and has been discovered in many sub-types. Vase in this ware is very few in number. It had horizontally splayed out rim and angular neck, and treated with a brown slip. Long-necked jar with broad mouth and concave neck is very common at Chirand whereas at Sonpur, it is totally absent. Similarly dish-on-stand in black-and-red ware was reported from Chirand only, excepting of course at Maner where it was found in course of exploration. Of all the types mentioned above, the frequency of bowl, dish and basins greater and these types continued along with N.B.P. with minor

variation in rim shapes and sizes. Vase and long-necked jar in black-and-red ware disappear abruptly during the N.B.P. phase, though the former continued in red ware. Dish-on-stand also disappears, with the emergence of N.B.P. ware. Shallow and trough dishes of Chirand also disappear side by side.

Black or black-slipped ware forms the next higher percentage in this period. It is invariably of coarse fabric and porous section. This ware is as a rule treated with a black slip on both the sides. The range of types confined in this ware were bowl and dish only and their rim forms were mostly everted and out turned. Though dish whose rim is slightly inverted is totally absent at Sonpur, Vaishali as compared to Chirand where it was found in fairly good number. Of coarse fabric, it is treated with a slip. Dish-on-stand is also found in this ware. Of the types, the frequency of bowl and dish is greater and at the same time, they continued along with the N.B.P. ware.

The associated red ware industry was not much favoured during this period. Its frequency as compared with black and-red, black or black slipped ware is lesser every where. The principal types which were discovered from the excavations were vase, basin, bowls and a trough dish. Their shapes are similar to those of black-and red ware types. Besides, a few more miscellaneous types, such as spout, jug, long-necked jar, footed-bowl, dish-on-stand including those with corrugated stem, lipped basin and three legged perforated pot were the important types discovered at Chirand only. A few pieces of hand-made shallow lids-like dish are only reported from Sonpur. It is of coarse fabric and thick section.

In addition to the above noted types in the associated wares of the black-and-red ware, a few more types in cream-slipped red and steel-gray wares deserve our attention. They are a miniature sarcophagus in cream-slipped ware and a bowl (painted), lota in steel-grey ware. The former, though partially damaged, is painted in dots in cream pigment depicting a bull resembling that of a cave painting and a deer whose horns are slightly visible. All these types have come from Chirand only. From the very look of a lota (steel-grey) and that of a jug (in red ware) they appear to be of foreign origin. How these types reached Bihar is a matter of further investigation. With the discovery of a miniature sarcophagus in this region, the date of the megalithic may be switched back to much earlier i.e. about 1000 B.C., and its origin may be traced some where in eastern India. But unfortunately it is the solitary example so far discovered here.

A fairly good number of painted black-and-red ware potteries were discovered at Chirand and Oriup. It is in cream pigment and some times in white pigment painted on the red and black surface of the ware. Cream is generally applied on the red surface whereas the white on the black surface. The paintings included groups of dashes, wavy lines, straight lines and solid dots of different sizes. Dots are generally found on the neck portion of the vases (mostly of the black-and-red ware) and sometimes on the base border of dish-on-stand (red-ware). Invariably dots are very common on red ware, the associated ware of the black-and-red ware. Wavy lines and strokes are more popular on the black surface of the dishes. Paintings on the associated black-slipped ware mostly comprise dashes and strokes. It is reported from Chirand as well as from Sonpur. A solitary example of a bowl in steel-gray ware has stroke paintings on its rim. At Sonpur and Vaishali, not a single sherd of black-and-red ware was found painted.

Decoration in applique on the associated potteries of this ware is very frequent. Both at Chirand and Sonpur, we find this types of decoration represented by rope, thumb pressed, oblique strokes and criss-cross designs. They are mostly found on the shoulder-portion of vase and basin.

From Sonpur a few black-and-red ware sherds were discovered with graffiti marks, but it is not from the earliest strata. Graffiti-marked potteries from Sonpur are generally found from Period-II i.e., from the N.B.P. level. At Chirand also not a single sherd with graffiti marks was discovered from the earliest level.

The associated antiquities of the black-and-red ware culture in Bihar were bone or antler arrow-heads, stylus and pins. Most of them have been discovered in manufacturing stages. Of the stone objects, beads of semi-precious stones were very common. A few pieces of microlithic cores and tools were discovered in course of excavation. Meagre use of copper has been attested to at both the places-Chirand and Sonpur, whereas from Oriup a copper bangle has been reported from this period. Terracotta beads, mostly pear and Ghata shaped have been reported from Chirand and Sonpur. Of the figurines, a headless flattish bird with punctured decoration over its body from Chirand and an archaic female figurine from Oriup are interesting.

Iron slags were discovered just on the top level of the black-and-red ware deposit from Sonpur, whereas from Chirand a fairly good number of

socketed hoe (about 5 or 6 in number) were discovered from the top three layers of the black-and-red ware deposit. Animal and fish bone were discovered in large number.

Of greater interest were a few post-cremation pit-burials discovered at Sonpur in the second phase of this culture.

As regards their structural activities, we have not noticed any kind of remnants either of mud or brick structure. Of course, we came across with lime floors belonging to the early phase at Sonpur. Some circular floors covered with a thin layer of ash were also noticed here in course of excavations. Perhaps they used to live in circular hut which in course of time were destroyed, presumably by fire. Similarly at Chirand also, circular floors were noticed. As deduced from the discovery of a solitary chunk of reddish (probably due to fire) clay having one surface plain and the other with impressions of reeds and split bamboos, it is inferred that the people of Chirand during this phase of culture used to build their houses of perishable materials like reeds and split bamboos and got them plastered with mud. Associated with this ware, about three occupational levels were identified. Post-holes were also noticed on the floors which further suggest that they used to live in huts.

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DISCUSSION

S.R. Rao :

Certain pottery types from Chirand are very exciting and important. Neolithic sites have yielded exactly the same type of lipped bowl, which in due course turned into a Channel-spout. At Paimpalli, we get burnished grey ware, later it disappeared and red ware comes. It is happening at most

of the sites. Early potteries are blackish, then Black-and-red and then Red wares. Crude firing was responsible for grey colour. At Neolithic sites like Maski and Tekkalkotta, Black and Red and burnished grey ware peoples were using this type of lipped bowl, when we came into contact with them at Paimpalli we find this type, as in Chirand, of burnished grey ware in use. This type of lipped bowl and burnished greyware found at Chirand shows some contacts with Paimpalli and other neolithic sites. In Kurnool this type of lipped bowl is painted over red. Is it not possible that the lipped bowl which has a base of neolithic folk, borrowed blade industry and still later came into contact with the Harappan and preferred painting over red ware. The time in that case, is 1700 B.C. at Takkalkotta and painted black over red is similar to the Kurnool variety. Very little burnished grey ware occurs there, but late Harappan types such as long-necked jars continued. This type is also found at Chirand. Gradually, from 2000 B.C., from Piklihal, Uttnoor a continuous development may be marked. Chirand will be extremely important for the development of Neolithic into a Chalcolithic. Similar dish-on-stand has been found at Lothal. We find convex bowl with a stud-handle in micaceous red ware and black-and-red ware. At Chirand the type is reduced but the technique continued. Chirand is very important indeed as its pottery shows three distinct elements Neolithic, Lothal-Harappan and Aharian.

K.K. Sinha :

At this stage, on the basis of a few pottery types, the presumption that Chirand provides a neolithic base is not good. Other materials should also be taken into account. Painted tradition on the Black-and-Red ware here is different from Ahar and other Central Indian sites. Panelling arrangements is absent at Chirand and other sites in Bihar. They have a tendency to borrow the paintings of the P.G. Wares.

Dr. R.S. Sharma :

Animal and fish bones were discovered in large number. What are those Animals? At Pandurajardhibi bones of pig and Nilgai have been identified.

R.C. Agrawal :

Chirand is the landmark in the position of black-and-red ware. We have a few type sites of this ware, Ahar in the Banas Valley, Eran in Central India, Pandurajardhibi in Eastern India and now Chirand in Bihar. It is clear that we have some rich sites in Bihar similar to Ahar. Comparing with Ahar I observed that Chirand has some identical feature and it may

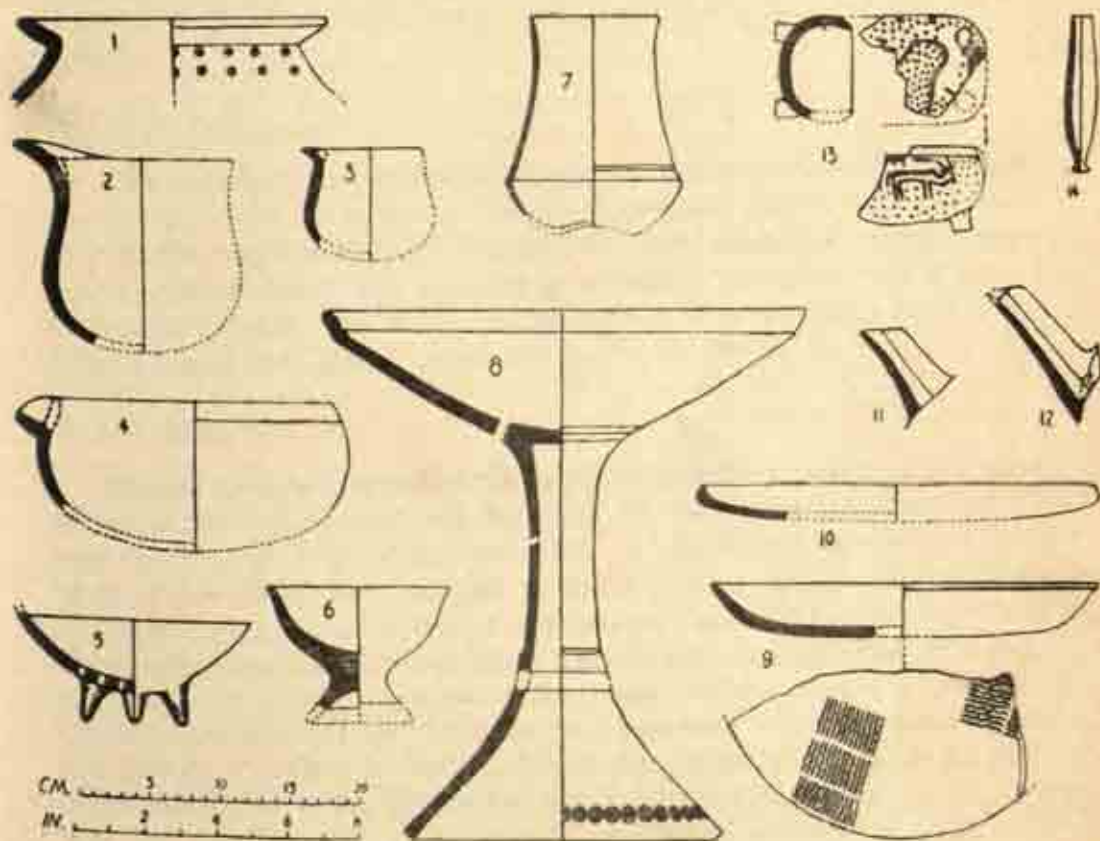
go well with it. It borrowed something from the west on the one hand and contributed new elements to the black-and-red ware cultures on the other. In the Banas Valley and in the Central India, we have similar type of line design. The grouping of sixteen or more lines on the black-and-red ware of Chirand has its beginning in early setting. The black-and-red ware phase has regional variation every where. Chirand will play an important role in it. This type (lota Water vessel in grey ware) has also been found at Ahar. Chirand has borrowed some Harappan elements also certain types in dish-on-stand and the conception of painting on it. It might be a regional variation. Lipped bowl has not been found at Ahar. Its presence at Chirand probably for religious purpose may be of a local nature. The Shape of the channel-spouted bowl of Oriup is unique. It is similar to Iranian specimen. In Eran, we find a handle in it but this feature is absent here. It was probably used for ritualistic purposes and was held in both hands so that argha water may come out for worship. Channel-spout of a different shape has been found at Pandurajardhibi. It may be a regional variation. Terracotta female figurine from Oriup is very interesting. It is the first evidence of human form in the terracotta from the post Indus-Chalcolithic period. It is a Harappan complex.

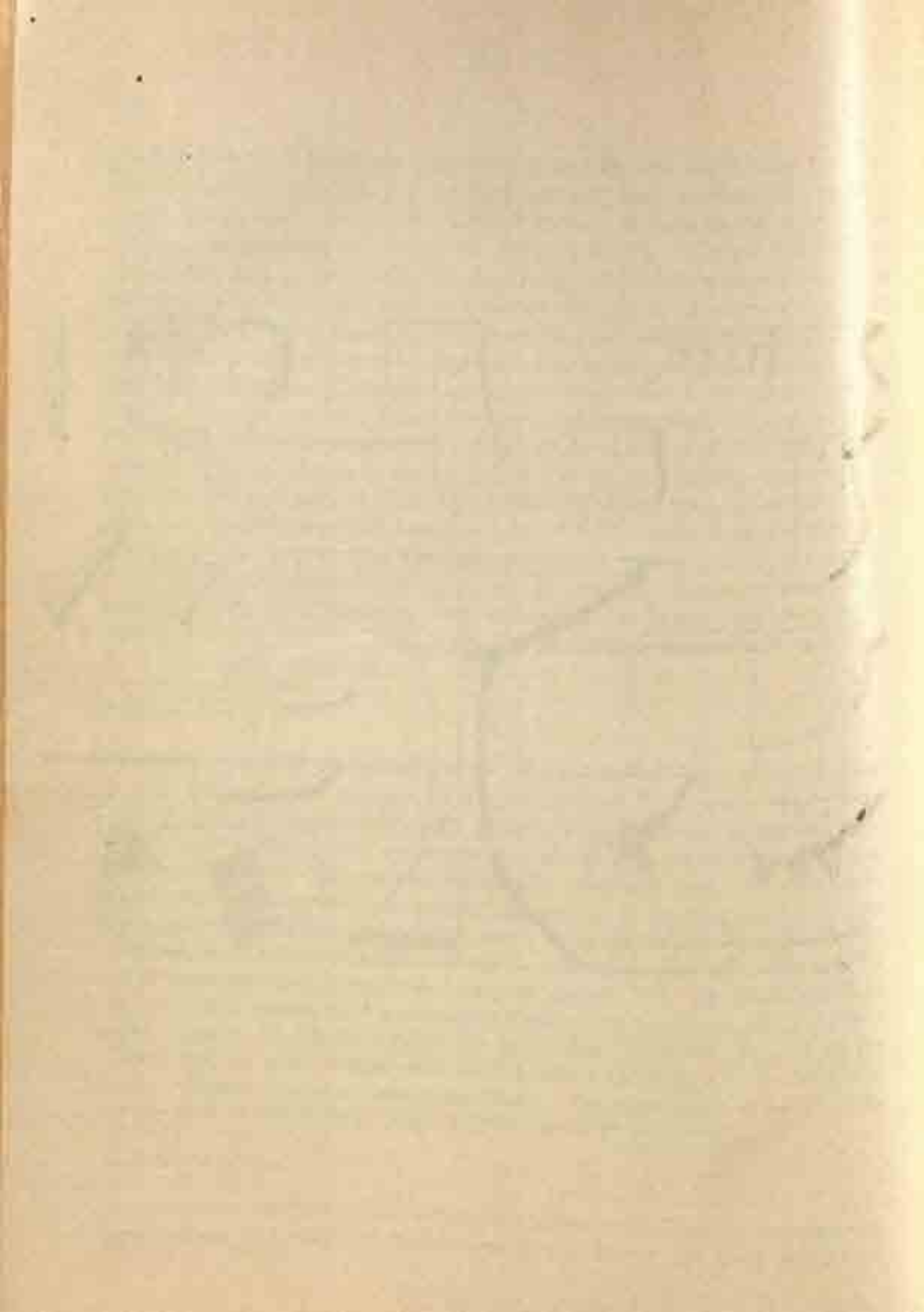
Krishna Deva :

Entire cultural equipments of the Black-and-Red Ware culture in Bihar is very interesting and shows certain individualities of its own. Fresh Radio carbon date of Chirand 1600 B.C. closes it with the Banas in time-scale also but I have a feeling that we should not go by only one carbon date. The previous date 850 B.C. is also significant. Timeless type of a terracotta female figurine from Oriup is very important. It is the continuation of the same concept of human figure which starts from the earliest chalcolithic times and occurs at Baluchistan sites, Harappa, Mohen-jo-daro etc. The dish-on-stand from Chirand may not be compared directly with the Harappan one. So far I have examined, it is extremely a derivative type from matured Harappan culture. Structural remains are interesting. It shows that the people were living in small circular huts with bamboo hatching and mudplastered walls. Further work may give more details. The appearance of iron in the upper level is noteworthy. Bone pieces should be analysed.

S. P. Gupta :

Whether the black-and-red ware came in India from outside or originated here ? There is a long gap between India and Egypt. Is there any link ?





In Israel, I saw a few pieces in a museum but they are of a different nature. There may be two routes of movements of the black-and-red ware from Rajasthan and Ahar, (a) from Chambal to Yamuna, Kausambi, Pralahadpur etc. and (b) from Eran, along the Vindhyan range, they entered into the eastern parts of the country. The earliest example of socketed-tool has come from the latest phase of Mohen-jodaro, the shape being of an axe. It is for the first time that Chirand has given the evidence of socketed hoe in India.

Shri M. N. Deshpande :

The Black-and-Red ware tradition goes to Bahal in about 1000-1600 B.C. and met there with the indigenous burnished greyware people. The occurrence of both the wares at Chirand is significant. The conception of brown-decoration reminds that it also persisted from Deccan, though in the later case the colour is black. Probably the neolithic stuff of Karnataka, influenced from Rangpur and Bahal, penetrated as far as Bihar.

Dr B. P. Sinha :

It gives personal satisfaction that scholars here have unanimously realised the importance of Chirand and Sonapur. In this region, the Black-and-red ware of crude to finer fabric dominated. It made great impact on eastern India. Some design on it appears as the P.G. ware, though the latter did not appear here except a few of degenerated variety at Vaishali. Perhaps there was a kind of give and take. Historically speaking, the course of movement was always from the west to east. When I read a paper on Chirand excavation at the International Conference at Delhi and showed some pieces of pottery to Shri A. Ghosh, then Director General of Archaeological Survey of India, he remarked that if the Chirand pottery will be mixed with the Ahar material it will not be possible to differentiate them. The Black-and-Red ware culture shows a conservative traditional society. The continuation of the Harappan tradition at Chirand is not impossible as its date goes back to 1600 B.C. which may go well with the date of the latest phase of the Harappan culture. The Black-and-Red ware was found at Lothal and then at Ahar. It has not been found from other Harappan sites of Indus Valley etc. It seems that the tradition was moving in certain restricted area. In Bihar it came through Eran and crossed ancient Sadanira river. The discovery of post-cremation burial at Sonapur in pre-N.B.P. ware context, is really significant. It may be studied in the light of the Vedic literature.

NATURE OF POTTERY COMPLEX OF BLACK-AND-RED WARE PHASE AT ATRANJIKHERA.

R. C. GAUR

The excavation brought to light a new cultural phase (period II) hitherto unknown in the upper Ganga Valley represented by the black-and-red ware deposit.¹ 1. The habitation remains of this period are interspersed between the layers of O.C.P. and P.G. ware, but on the southern side it lies just above natural soil. Another noteworthy feature is that generally an earth filling has been found between the deposits of Black-and-red ware phase. Since the filling belongs to the P.G.W. phase, it suggests that Black-and-red ware phase probably faced a flood havoc in which a considerable portion of the deposit was washed away and only a thin deposit (15 to 40 cm.) of this culture was left over. In addition to the above filling at certain places a sterile layer of fill containing the O.C.P. and the black and red ware sherd was also seen just below the black-red ware deposit. Obviously this was done by the black-and-red ware using people to raise or level the ground.

Although, stratigraphically the deposit of the Black-and-red ware lies just above the deposit of O.C.P., the two are quite different in their contents. As already has been said, the site had been flooded and remained water-logged, it could not be a fit place for reoccupation for a considerable period, and this might have compelled the O.C.P. people to leave the site. During this period soil erosion continued, unless and until the Black-and-red ware people settled down here.

The difference between the deposits of the O.C.P. and the black-and-red ware phase is so striking that there can be no doubt that the later represents a distinct cultural period. The black-and-red ware phase can also be distinguished from the succeeding P.G. ware phase, inspite of the continuation of black-and-red and black slipped pottery in the latter phase. In the black-and-red ware phase there is a complete absence of painted Grey ware, plain Grey ware, iron objects; terracotta discs etc. The succeeding period is, however, mainly characterised by the emergence of the painted grey ware and iron tools.

In view of the basic differences between the O.C.P. B and R ware phases and the P.G. ware phase it would not be unjustified to suggest that these do not represent the process of the evolution in the culture of the same

people. The pottery complex of the period comprises black-and-red, black-slipped, brownish, red slipped as well as unslipped ware. Though black-and-red is the characteristic pottery of the period, it is not easy to determine its incidence in the total complex since no clear-cut distinction is possible between the sherds of the black-slipped pottery and the broken rim piece of the black-and-red pottery. However, black-and-red and black-slipped ware together constitute about half of the total yield.

Although black-and-red ware is the characteristic pottery of this period, a study of other associated ware is equally important. A brief analysis of each industry, therefore, is given below.

Black-and-red ware

The pots of black-and-red ware generally have a burnished black colour inside and a brownish chocolate outside. The black colour varies from highly lustrous bright to rough dull. Although bright red is missing, the exterior brownish also varies in shade.

The pots of this ware like its associated black-slipped ware is of fine quality and in majority of the cases thin and well-burnt. However, some of the pots appear to have been made of impure clay on a slow wheel, as they bear a gritty core and look porous. In a few cases they are ill-fired also.

A comparative study of the pottery types found at Atranjikhhera with that of Gilund,² excavated by B. B. Lal, has shown some affinity between the two cultural deposits. Similarly some affinity of remote nature has also been noticed between the cultural deposits of Atranjikhhera and Ahar.³ However, it may be noted that while at the sites mentioned above the black-and-red pottery bears white painting, the sherds at Atranjikhhera have no painting. It has therefore, been postulated that the plain black-and-red ware industry may be a later development. However, it should not be forgotten that the plain black-and-red ware industry got its footing much earlier at Atranjikhhera than 1000 B. C. being a pre-Painted Grey ware deposit, while the Aharian ware continued upto 1000 B.C. in the Banas Valley. Plain black-and-red ware has also been reported from eastern Punjab⁴ and northern and eastern Rajasthan⁵ during the course of explorations, while at Noh⁶ it is found in the same sequence as at Atranjikhhera.

Although bowls dominate the industry, pieces of basin and dish also have been casually found. The main types of bowls are deep bowls with small flattish base with flaring and tapering sides; those with incurved rim and wide mouth and its variant with an ovaloid body and slightly out-turned rim; large

and miniature bowls with almost straight sides and externally incipient lip; its variant with convex sides having out-turned beaded rim apparently looking similar to those found at Ahar; bowls with a vertical sharpened rim having grooves on the exterior and carination towards the base; its variant in dull brownish colour without grooves, having convex sides and expanding mouth; bowls with bulging sides with out-turned internally sharpened rim with tapering edges.

Coarse black-and-red ware :

The coarse and hand made Black-and-red ware, is generally black from inside but brownish and black outside, the black portion is some times towards the rim, and in other cases towards the base. A few pots look greyish, presumably due to ill firing. In a few cases the upper portion is burnished while the lower is gritty and rough. Only vases in this ware have been found. The inner side of these pots has scratched surface which seems to have been done by scooping out the inner side with a brush of dry grass or split bamboos. These have out-turned featureless rims and carinated necks. In some cases the neck is straight and thick. Those of a comparatively better quality have an out-turned concave neck with incised oblique dash marks for decoration. The body is usually oblong. These pots seem to have been burnt at a low temperature.

Black slipped ware :

Some of the common shapes of Black-and-red ware are also found in Black slipped and Greyish ware some time with minor variations. Black slipped pots also vary from superior fine to coarser types. The shapes of Black slipped ware, not so far found in black-and-red ware, are bowl with a sharpened rim and expanding mouth having carination towards the base, the sides being convex having incised grooves externally; bowl with slightly in-turned and externally flattish clubbed rim with incised grooves; bowl with a sharpened rim and expanding mouth having carination towards the base, the sides being convex having incised grooves externally; bowl with slightly in-turned and externally flattish clubbed rim with incised grooves; bowl with an ovaloid body, featureless rim and flat base and miniature bowls. Some of the above bowls have rounded base, a few have hemispherical sides and many have grooves externally. Vases are also found in this ware. One interesting shape is a vase with an everted collared rim and a slightly carinated neck.

Red ware :

The red-ware, both slipped and unslipped, is generally wheel-turned and has many shapes. These include vases, bowls, dishes and miniature pots.

The vases, mostly unslipped and a few with slip, are drab red with out-turned beaded rim, concave neck and globular body having incised grooves on the shoulder for decoration. A few of these have an out-turned externally bevelled oblique rim, and concave neck, while others have a straight neck. Some of the bigger are similar in shape with rims slightly thickened. Most of the bowls are of slipped ware. The bigger ones generally have vertical externally thickened rim. The basins generally have almost vertical, internally thickened bevelled rim.

A few pieces of miniature bowls with convex side, featureless rim and a flat base are also found in slipped as well as unslipped red ware. One of these has a slightly out-turned beaded rim with incised lines just below it.

In the end it would be better if all pots and pans of this period are grouped according to their utility for the better understanding of the cultural trait of the people.

Storage jars—Jars are available in red ware only. Their rims either are out-turned or externally thickened. These were probably used for storing grains and other food-stuffs.

Vases—Like jars, the vases have also been found in red-ware only. These are found having out-turned, splayed or flared rims. Their necks are either concave or elongated. These pots could have been used as pitchers, liquid-containers etc.

Vessels—Vessels are available in all the three wares i.e. red, black-and-red, and black-slipped ware. These include out-turned, incurved, vertical, featureless, thickened and in rare cases even flaring rims. In red ware the fabric varies from coarse to fine, though the latter is rare. The vessels in black-and-red ware invariably are hand made and of coarser fabric. These appear mainly to be cooking pots. In black-slipped ware generally the bigger or medium size pots are not found. The miniature pots of this group belong to this fabric.

Bowls—Bowls appear as common industry of the period and probably were used as dining sets. They are found in all the three fabrics. However, in red ware the bowls do not seem popular. They are found having convex, almost straight, incurved or tapering sides.

But the bowls are quite common in the black-and-red ware. They can be subdivided into the following groups:

- (i) bowls with flaring sides.
- (ii) bowls with incurved sides.
- (iii) bowls with rounded sides towards base.

- (iv) bowls with convex sides.
- (v) bowls with partly straight and partly rounded sides.
- (vi) bowls with tapering sides.

Many of the shapes found in the black-and-red ware group are also found in the black-slipped fabric as well. However, some new and independent shapes present in both the industries. The bowls of the black-slipped were may also be divided into following sub-groups :

- (i) bowls with flaring sides.
- (ii) bowls with convex sides.
- (iii) bowls with expanding sides.
- (iv) bowls with rounded sides.
- (v) bowls with hemispherical sides.
- (vi) bowls with straight sides.
- (vii) bowls with tapering sides.
- (viii) bowls with tapering and slightly convex sides. and
- (ix) Miniature bowls.

Basins—Basins are available in red ware and rarely in black-and-red ware as well. However, they do not appear common pots. These basins are found with convex or straight or incurved sides. These pots might have been used as kitchen utensils.

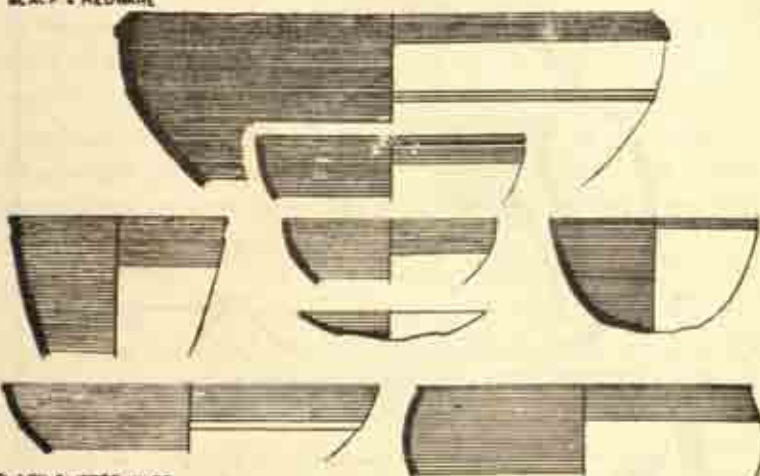
Dishes—Dishes are not found in red ware, but are available in other two industries, though quite rarely in black-and-red ware. These are of simple types and generally have convex sides. However, pieces with elliptical, sloping or almost straight sides are also present. These were probably used as dining sets.

Platter—Platters are available in red ware only. These are hand-made and bear thick section. Although the exact purpose of this type of pot can not be ascertained, it could be used for baking the food stuff.

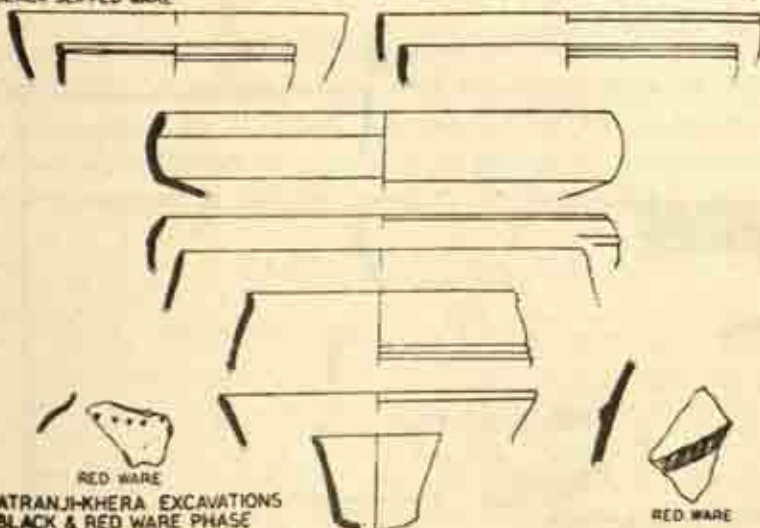
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2. Indian Archaeology—A Review 1959-60, p. 41.
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4. I.A.R. 1963-64.
5. I.A.R. 1962-63, 63-64.
- 6 and 7. Fig.-4.
8. Fig.-4A.

BLACK & REDWARE



BLACK SLIPPED WARE

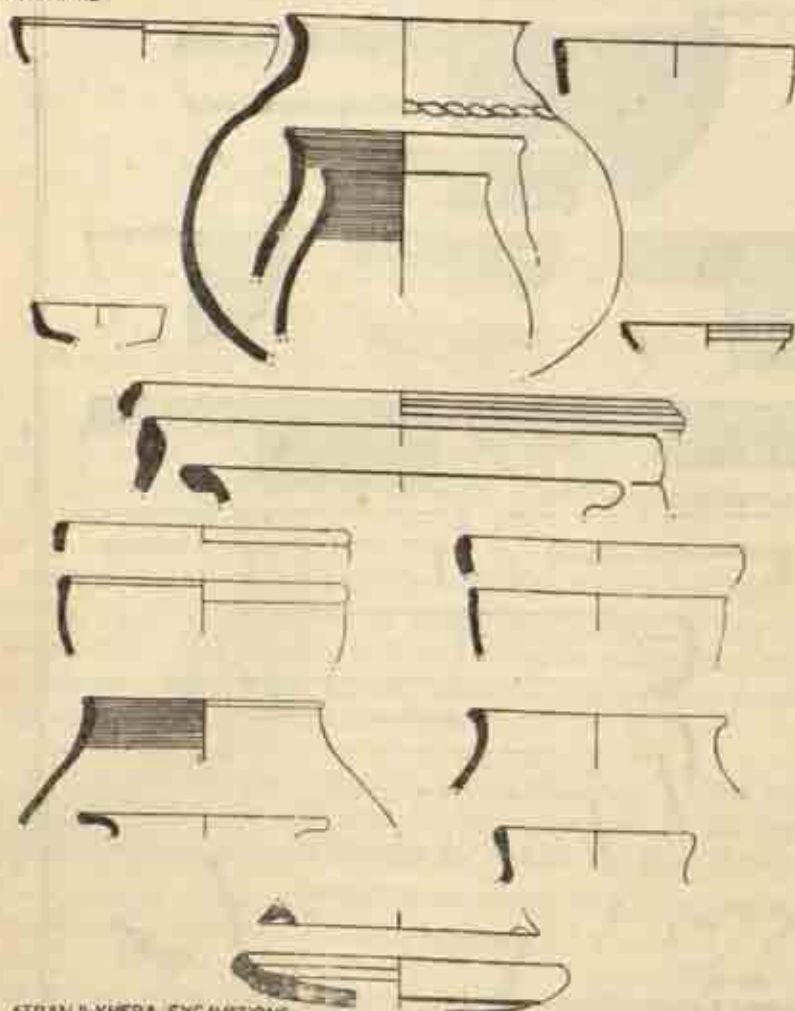


RED WARE

RED WARE

ATRANJIKHERA EXCAVATIONS
BLACK & RED WARE PHASE
PERIOD II
SCALE 1/3
FIG. 3

BLACK & RED WARE
RED WARE



ATRAJJI-KHERA EXCAVATIONS
BLACK & RED WARE PHASE
PERIOD II SCALE 1/3
FIG. 4

DISCUSSION.

R. C. Agrawal :

Atranjikhhera has yielded a clear evidence of a Black-and-Red ware phase in a pre-P. G. Ware context. It is in different complex and is similar to Noh. Gaur has suggested some affinity with Ahar. We get profuse paintings at Ahar, but it has not been found so far either from Atranjikhhera or Noh. It has no basic affinity with Ahar though certain types of the latter persisted here. It shows affinity with the P. G. Ware complex. It seems that the Black-and-red ware moved along the Chambal and entered into the Yamuna Valley in a different atmosphere.

K. K. Sinha :

They all have burnishing which continued in P.G.W. and N.B.P. The associated Red Ware should be studied. Whether it continued in the P.G. Ware level ?

R. C. Gaur :

As regards the affinity with Ahar, I have compared only a few and found certain typological resemblance. An area of about 4000 sq. mile yielded pre-P.G. Ware materials has been exposed. Sri B. B. Lal has declared the Black-and-Red ware deposit of the site as an independent phase. 50 per cent shapes do not continue in the succeeding P. G. Ware level,

SPOUTED VESSELS IN INDIA.

R. C. PRASAD SINGH.

According to Prof. Childe, "The preparation and storage of cereal food may be supposed to have put a premium upon vessels which would at once stand heat and hold liquids. A universal feature of the neolithic communities seem to have been the manufacture of pots. Pottery may indeed have been discovered before the rise of the food producing economy. It might have originated in the accidental burning of a basket plastered with clay to make it water-tight. A couple of small fragments allegedly found in the Old Stone Age layer in Kenya suggest this possibility. But it is only in neolithic times that pot making is attested on a large scale."

Like other countries making of pottery would have started during the the Neolithic Age India. Lower neolithic people of Piklihal,* Sangenkalle, Brahmagiri and others were quite content of the potteries produced simply. But with the advance of the time elaborate forms of potteries were made. Amongst these elaborate forms we have the spouted vessels.

It may be questioned what led people to introduce spouted vessels in the upper Neolithic age? The question may be explained by saying that the lower Neolithic people were responsible for the introduction of new economy. Besides a vast tract of arable land producing cereals, they had a large number of wild faunas to supplement their food. So they had not had anything to worry for their food. But the cultivation of cereals in the same plot of land and domestication of animals and their killing subsequently may have led to the shortage of food supply. The shortage of food supply caused worry to the upper neolithic people of India. They sought the help of the spirits of their ancestors to whom the nature was so bountiful. The fortune-tellers may have advised their people to offer libation to the Divine beings and their ancestors. People out of fear would have agreed to the suggestion of the fortune-tellers and decided to offer libation to the divine beings and their ancestors who being pleased could supply them food in any quantity. Since they were in distress, they had to observe economy in their offerings which may have resulted into the making of spouts and their luting in the vessels out of which libation had to be poured.

It may be questioned whether these spouts are purely of Indian origin or have they come from the west? Spouted vessels have been reported from

Tape Gawra, Susa, Giyan, Hissar, Sialk and other Mesopotamian sites in an earlier context than the Indian sites. They are dated in the Late Uruk age which according to Prof. Childe³ falls in 3200 B.C. But the Indian sites yielding spouted vessels do not go earlier than the 2000⁴ B.C. Thus we find a gap of nearly one thousand years. Like Mesopotamian Neolithic spouted vessels, Indian vessels are also made of grey ware. Thus it is not only the shape but the Mesopotamian ware as well which were introduced to India. Hence the ground is set for diffusionist to suggest some sort of prehistoric migration from Mesopotamia to India as has been done by Allchin⁵ and in course of this migration spouted vessels may have come to India. Their arguments may be strengthened with the occurrence of the spouted vessels at Luristan,⁶ Nal,⁷ Jhanymer,⁸ Brahmagiri,⁹ Nagarjunikonda,¹⁰ Tekkalkota¹¹ & Piklihal.¹² When we make a comparative study of the vessels found from Mesopotamia and India we find following differences (1) spouts from Sialk¹³ and other sites are beak like, (2) Mesopotamian spouts are thicker at the base while they are taper at the top, and (3) spouts on the Mesopotamian vessels are luted obliquely in between the neck and the shoulder, (4) spouted vessels from Susa, Hissar and others have shorter necks. While spouts from Indian sites save one from Jorwe are cylindrical, they are luted either on or below the shoulder. They occur on long necked jar as well as on flared vessels. Artistically Mesopotamian spouts are neater and have better finish than the Indian spouts which are crude and give pretty dull appearance. Hence when talking about cultural diffusion, one has to be critical like Sankalia. If the diffusion theory is to be accepted, above mentioned differences between the Mesopotamian and Indian vessels make us think that the forces of Indianisation had been quite active and hence the vessels had to undergo quite a number of changes.

Spouts are being luted on vessels, basins and bowls. Vessels coming from Brahmagiri, Nagarjunakonda, Piklihal, Tekkalkota, Nevasa, Pimpaladar and others have flared mouth while some of the vessels from Nevasa are long necked. A few vessels from Tekkalkota have blunt carination and sagged base. Spouted vessels coming from Nal have handle attached with the two ends of the mouth of the vessels.

Long necked spouted vessels are peculiar to Nevasa.¹⁴ Wide mouthed vessels from Nevasa and Pimpaladar are similar and appear to belong to one cultural group. Spouted vessels from Nagarjunikonda and Brahmagiri have close resemblance, while the spouted vessel with carination and sagger base from Tekkalkota¹⁵ stands isolated. Same is the case with finds from Nal. Thus on the typological basis it can be suggested that they represent the different sets of people living in different parts of the Indian sub-continent.

Spouts on these vessels are either cylindrical or concave. Nal specimens are funnel¹⁸ shaped. All these spouts are hand made and have been luted with the vessels. After the spout has been luted, a hole has been punched at the joint in order to pour liquid from the vessels. Spouts from Tekkalkota, Nagarjunikonda and other sites are smaller but when we come down to Nevasa we find that spouts are higher.¹⁹ At times they are in the line²⁰ of the mouth of the vessel.

Spouted vessels from Tekkalkota, Nevasa and Pimpaldar are painted. Tekkalkota specimen retains the traces of pre-firing painting. While paintings on Nevasa and Pimpaldar specimen belong to post-firing stage. They have been executed in black pigment over red background. Paintings include animal designs such as deer, dogs etc. Traingles and similar other geometrical desings are also found.

Other spouted potteries include cups, bowls and basins. Basin with cut spouts have been found from Gilund.²¹ Spouted cups known as channel spouted cups have been collected from Navadatoli²² and Diamabad²³ while bowls with cylindrical spouts have been found from Brahmagiri,²⁴ Tekkalkota,²⁵ Mohenjodaro,²⁶ Nevasa²⁷ and Diamabad.²⁸ In cases of channel spouts we find that the spouts are being made by pinching technique but majority of the bowls have spouts being luted to them. Like others, these spouts are made separately and luted into the bowls. They have been luted either obliquely on the shoulders or they luted parallel to the mouth of the bowls. These spouts are generally cylindrical in shape but the specimen collected from Oriyap deserve special attention. It is of concave shape and at its top end we find the spout going downwards. Obliquely luted spouts have been collected from Brahmagiri,²⁹ Nagarjunakonda,³¹ Tekalkota,³² Chandoli³³ and Diamabad³⁴ while spouts parallel to the mouth of the bowls have been found from Piklihal,³⁵ Tekalkota ³⁶ and Mohenjodaro.³⁷ Reporting his find from Mohenjodaro Sir John Marshall observed³⁸, "A vessel very similar in shape is known from Nubia (in) A cairn in the Kurnool district of Madras. Mr. Longhurst found a vessel very like the one under discussion and a gold feeding cup from the grave of Queen Shah-ad at Ur is made on the same line. Further, afield we have another comparison in the shape of a spouted feeding cup from Anau and lastly an almost identical cup to the one found at Mohenjodaro is known from the Italian Bronze Age but is said to be a lamp"). Thus a close study of the bowl with spout parallel to the mouth suggests a fairly wide distribution and they may represent a diffusion of culture possibly coming from the Middle East.

At times these bowls are painted. They have been painted in black pigment over red background. The painting includes geometric patterns³⁹ such as

triangles, squares, lozenges etc. hatched filled or otherwise and oblique, vertical or horizontal lines, non-geometric patterns such as hooks, loops, festoons etc. Animals such as dogs, goats etc. are drawn in a conventional manner.

Making of the spouted vessel does not end with Neolithic-chalcolithic phase in India. They have been found from Phase I and II at Sirkap.⁴² They have been found in the 6th century B.C. context at Rajgir.⁴³ A rubbish pit belonging to Sunga-Kusana Age at Chandraketugarh⁴⁴ has yielded several spouted potteries. Potteries ranging between 5th to 8th century A.D. at Rajghat⁴⁵ contain several specimens of spouted vessels. Spouted vessels sometimes with handles have been found associated with the potteries of period V at Hastinapur.⁴⁶ Spouted vessel with groovings belonging to Andhra level are reported from Kunnanur.⁴⁷ The Satvahana level at Brahmpuri⁴⁸ has given several spouted vessels when we reach the Bahmani levels at Brahmpuri and other south Indian sites and Muslim levels in Northern India, spouted vessels become quite common.

When Bruce Foote collected⁴⁹ the spouted bowl for the first time at Patpad, he called it milk bowl. Sir John Marshall⁵⁰ reporting his finds from Mohen-iodaro calls them feeding cup. According to Allchin⁵¹ metal variety of spouted bowls are very commonly used for serving Sambhar in South India. On the basis of the statements made by these scholars it may be adduced that they were used for serving liquid food to the people. When India was facing hardships during the Neolithic-chalcolithic age, Indians may have introduced them as a household gadget to stop the wastage of liquid food and thus to maintain greater economy which was possibly the need of the time.

With regard to the use of the spouted vessels Mr. Goddard⁵² has suggested that these were used to pour libations into the mouth of the dead. Prof. Wheeler⁵³ has cautioned his pupils in accepting such interpretation. According to Allchin⁵⁴ these vessels may have been used as cooking vessels. But cooking into the long-necked vessel is an impossibility. Flared mouthed vessels may be used for cooking but it would be extremely difficult to control steam in such vessels which boil the substance kept into it. At the same time none of these vessels with soots or the remains of the cereal food have been found. Hence, his interpretation of the vessel does not appear quite plausible.

On the other hand a Sanskrit⁵⁵ text written in Bengali script refers to Var-dhani-vessel with spout. The vessel is used in the Catus Sastipada Vāstu Yajña. According to the text Varanani is tied around the neck of the pitcher used as Kalasa. Another reference from the same⁵⁶ text suggests that water

should be poured into specially dug ditch in order to check the auspiciousness of the land under construction. Tying of Varuhani around the neck of the pitcher and pouring of water through them suggest religious function.

The word *pranāli*²² standing for spouted vessel occurs in the *Srauta-Sutra* and through these *pranāli* 'Soma' used to be offered to the gods in the Vedic sacrifices. Modern *Kamandalu* (vessel with a spout used by the Brahmins and ascetics for offering libations to the divine beings, are nothing but the metal imitation of the spouted vessels found from Nal. Hence it becomes obvious that these vessels were used for ritualistic ends and not for cooking and other purposes.

Thus coming to the close of our study we find that spouted vessels were introduced during the upper neolithic age in India. In case they came from abroad, they had to be Indianised on the Indian sub-continent and after being Indianized they were used for religious ends. While the spouted bowls may have been used as house-hold gadget for maintaining economy in the day-to-day life of the Indian people.

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55. I am thankful to Dr. M. S. Pandey who passed over the information to me.

TECHNOLOGY OF THE PAINTED GREY WARE

BALLABH SARAN

The significance of the Painted Grey Ware as an outstanding ceramic industry of the period following the main Harappan civilisation in India was brought out by Shri B. B. Lal in his excavation at Hastinapura and explorations of selected regions of Uttar Pradesh, Rajasthan, Haryana and the Punjab. Earlier the same ware had been recovered from two cuttings made at Ahichchhatra. In AC XV, it was the lowest level that produced the Painted Grey Ware, and sherds of the Northern Black Polished Ware were also found slightly above it. In AC V, however, only two similar fragments, complete in section were recovered from a layer below the foundation of a brick fortification. This layer also contained sherds of the Northern Black Polished Ware.

There is a closely related plain darker grey ware having similar vessel-shapes, occurring with the Painted Grey Ware, and it is surmised that this darker ware was the forerunner of the Northern Black Polished Ware. In fact, at no site the Painted Grey Ware is the exclusive industry, and invariably other associated wares in grey or even red occur along with it. There are only certain fixed forms of bowls and dishes in painted grey ware technique, though the distinctive features are very attractive, chiefly its soft grey colour, fine thin well-burnt section and profusion of painted designs, linear and dotted, generally in black. At Hastinapura, other associated pottery groups comprise a dull-red ware mainly of coarser fabric, an essentially plain red-slipped ware of finer fabric and a polished black ware.

Excavations at Sravasti and Atranjikhnera and explorations of sites in Uttar Pradesh, Haryana and Rajasthan and Bihar have resulted in accumulation of material relating to the Painted Grey Ware from more than one hundred fifty sites, in the light of which investigations are to be made for determining the relationship between Painted Grey Ware and Northern Black Polished Ware on one hand and some painted Black-and-Red Wares of the proto-history period. At Ahar, the painted Black-and-red is represented in the bowl with rimless straight or convex sides. In IA and IB phases are present bowls with ribbings near the edge and also the shallow bowl with an external edge or flared edge. There is also a variety with brown slip. The painted decoration consists of (a) dull white on the black-and-red ware, and (b) black on the red

slipped ware. The former consists of linear pattern-strokes, lines, spirals, wavy lines, hatched diamonds and slants. These are all found in phases IA and IB. Panelled dotted chevrons are found in IC.

This Painted Grey Ware, has in fact, been used as a cultural label and it is believed that this ware was manufactured exclusively by a well-defined ethnic group, possibly the Aryans who are said to have moved in certain directions in India. An attempt has, therefore, been made here to study the technology of the Painted Grey Ware after closely examining its fabric, forms, surface treatment, decorations and the methods for firing the vessels and other correlated matters. By a comparative study with other wares in India, a picture may emerge wherein its exact horizon and associations are determined with some degree of certainty.

Characteristic features :

The distinctive features of this Ware are the superior quality of the paste formed of well-levigated clay and fine thin well-burnt fabric achieved with an equally distributed heat in the kiln and a smooth grey surface, ranging in colour from ash grey to battleship-grey and sometimes buff-grey. Associated and coeval with it is a brownish red ware with a grey or buff core. The types represented are mainly straight-sided bowls, cups, and dishes with incurved and sagger or convex base. On the grey surface of the body are painted linear and dotted patterns in black, executed before firing. Instances of red-on-grey, black-on-black and bichrome painted designs are met. Sometimes the designs are executed in deep chocolate or black of an unequal tone on a yellow or pale red ground.

Painted Patterns :

The simplest pattern is the single horizontal band often repeated to serve as a border. There are groups of vertical or oblique strokes below the horizontal rim-band. The strokes are sometimes of unequal thickness and thickened towards the end where from the paint-brush started. These groups are sometimes interspersed with dots. Intersecting lines, rows of dots, dots and dashes or groups of wavy lines or such designs as Svastika, concentric semi-circles, sigmas, concentric circles with rows of lines representing hook etc. are also seen. These designs are on the exterior or outside surface of the vessel. On the inner side or base of the dishes and bowls appear spirals, groups of circles, intersecting chains, scalloped concentric circles etc. (See Lal, B. B. : Excavation at Hastinapura and other explorations, Ancient India Nos. 10 and 11, 1954 and 1955).

Subsequently some more designs were seen on sherds found during later explorations, but as, as will be explained below, that all these patterns emerge by adopting a certain technique of painting. The point to note is that geometric patterns have been adopted.

Fabrication of the Ware :

The exact manner in which the Painted Grey Ware was produced on the wheel has not been reported in details by the explorers. That the pot was polished or burnished by a smooth stone is noticed, and it has also been mentioned that stratiation marks indicate the use of a potter wheel.

My own observations of a large number of specimen of this ware lead me to think that in India there existed at least three distinct techniques of pottery making, apart from those which were fashioned by hand. All these three techniques made use of the potter's wheel. Most of the Harappan Wares and other Red Wares were thrown on a heavy wheel of stone or other material. Vessels which are round or circular in shape and symmetrical about the vertical axis are easily shaped on the potter's wheel. Vessels having thick rims of various shapes, such as, beaded ones, recurved, hooked, everted, knobbed, rolled, internally or externally beaked, collared and voluted or splayed-out ones, were necessarily fashioned on a wheel, when the clay was wet and fairly plastic. The only limiting factor is the thickness of the walls of the vessels. It is to be noted that greater thinness is difficult to be achieved by the method of throwing on the wheel, because if the clay is not sufficiently well-levigated and of desired consistency, any attempt to make the walls very thin on the rotating wheel by pressure of hand may result in complete tearing of the lump of clay. Marks of the cutting string and sometimes thumb or finger impression of the potter are found on the vessel.

The Painted Grey Ware in particular and many other Indian Wares described below were fashioned by utilizing the second technique. In this, the pot was first shaped after it had been thrown on the wheel as above. When the wet pot had hardened sufficiently to become "leather hard" i.e., when the clay had set and dried to a rather lighter tone, it is commonly returned to the wheel or attached to the lathe of some kind on which its foot may be smoothed or its walls reduced in thickness with a scraper. In that condition it may be trimmed, pared, scraped and smoothened. The walls of the vessels may be reduced to "egg shell" thickness. Polishing and burnishing may also be done and the pot coated with an emulsion to serve as a slip. Vessels fashioned in this technique are always of the "open type" i.e., the mouth is

fairly wide to allow scraping to be done from outside and inside as well. In India at present this technique is still in use in Azamgarh black potteries. It may have its origin in days when vessels in wood were fashioned on lathes. In certain parts of India, vessels of Zink alloys are fashioned likewise.

The wooden wheel was used in the third technique for production of vessels. This is in use in south India.

Correlated Industries :

All sherds of Painted Grey Ware and Northern Black Polished Ware, associated grey wares, certain Rangpur III wares, Prabhas Ware, some types in Malwa Ware, Black-and-red Wares, some of the megalithic wares, and bowls of Pandu Rajardhibi show clear indications of the adoption of this technique. Outside India, grey wares from Khurab burials have been noticed in Stein's *Archaeological Reconnaissances in N. W. India and S. W. Iran* (1937) London p. 134. Andrews³ describes the fabric, colouring and other technical features of the ceramics. He states that most of the grey bowls have been scraped or pared on the outside before firing, and several have a fine comb-like-ripple as is seen on pottery from Seistan, Anau and elsewhere. The ripple is caused by the vibrations of the scraper held against the pot while revolving on the wheel during the process of paring and thinning of the wall after the vessel has been reversed and reseat. Pottery from Shahi Tump Baluchistan and Seistan has many parallels with the Painted Grey Ware, though the characteristic dish and straight sided bowls are absent and sometimes there is a ring base which is not to be found in the Painted Grey Ware.

Causes of coloration:

The causes of grey and black coloration in this ware have not been determined with certainty. Four specimens of ancient pottery of grey colour from Shahi-Tump, Baluchistan which had a characteristic burnt appearance, had been analysed and reported by Sana Ullah.⁴ The grey colour of this pottery is due to the presence of black ferrous oxide produced by the action of reducing gases in the kiln. The iron in the grey pottery has been reduced to the ferrous state. Gordon Childe⁵, however, thinks that attribution of black or grey colour exclusively to the presence of free carbon is not justified. How much may be due to free carbon or ferrous-ferric oxide should be determined by quantitative analysis. It is quite possible that organic materials were also used in producing this effect. It is certain that reducing conditions must have existed in the kiln. Experimentally it can be demonstrated that a grey ware can be turned into a red ware if heated in oxidising conditions and vice versa if there are reducing conditions.

Multiple brush technique:

The most important consideration is that of paintings on the Painted Grey Ware. This aspect at once places it above other wares. There is clear evidence that the multiple-brush device was used in this Ware along with single brush paintings. Braidwood⁶ notices that this multiple-brush device was frequently utilized by the Near Eastern potters in the 4th Millennium B.C. The line patterns are largely influenced by a habit of holding three or four or five or more brushes at a time together. Where wavy lines have to be continued where the paint has finished all of them begin at the same place. The distance between

the lines remain constant and are parallel. The lines and dots are in constant groups of three, four, five or more. The strokes are thickened at the places from where the paint brushes started, narrowing as they proceeded further. Due to the adoption of this technique, geometric designs can be produced and there is emphasis on the mechanical aspect rather free hand drawing. Multiple-brush technique is a distinctive feature of the Pre-dynastic Pottery of Egypt.

This multiple-brush technique is attested only in the well-defined pottery groups of the Painted Black-and-red of Ahar and Gilund, Daimabad, Bahal, Oriup, Cherand, Malwa ware and associated Black Painted Wares. It is noticed in Prabhas ware and Rangpur III Ware, chalcolithic red pottery of the Malwa region, Pandu Rajardhibi and the Russet-coated Ware of South India. The significant fact is that paintings in the multiple-brush technique have been done on the inner side or the base of dishes and bowls which were flat.

Conclusion :

It is thus seen that the techniques adopted by the potters for producing Painted Grey Ware is not unique and limited to this ware only but has associations far and wide and even red ware groups and Black and-Red Wares follow the same techniques. It is more probable that various ideas about the methods of fabrication, forms to be adopted surface treatment, decorations and methods for firing were diffused through different regions. Potters in Uttar Pradesh, Haryana, the Punjab, Rajasthan and even parts of Bihar happened to adopt selected techniques for producing the Painted Grey Ware.

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PAINTINGS ON THE POST-HARAPPAN CHALCOLITHIC POTTERIES

Bhagwant Sahai

Pottery since very early times has been utilized by the village potters for expressing their artistic talents. Archaeological excavations carried on at Kalibangan in Rajasthan yielded specimens decorated with elaborate painted designs suggesting thereby the beginning of the art of painting pottery in India at least as early as the pre-Harappan period. The potters continued painting their pots with diverse designs in the early Indus civilization which flourished in the 3rd millennium B.C. Recent excavations conducted in the post-independence period at a number of sites in the northern and north-western parts of the country laid bare the remains of what has been designated as the post-Harappan chalcolithic culture, represented mainly by the black-and-red, the Malwa and the Jorwe wares. Like others of earlier period, majority of the specimens are though plain, and sometimes even without any slip, yet there are still many which display paintings executed not only on the potteries of the main ceramic industries, but also on some of those found in association with them.

The regular striations inside majority of the vessels undoubtedly suggest that they had been turned on the potters' wheels. To judge from the customs prevailing even these days, it does not seem very unlikely that the potters performed this process, while their women gave finishing touches to the pottery, and also painted the designs. After a pot had been shaped on the wheel, it was very often treated with a thick slip over it. Wares like the Malwa and the Cream-slipped are well known to have been covered with a thick slip in order to make the surface smooth. When dry, it was carefully polished with a piece of bone or a pebble. This process resulted, after firing, in a beautiful highly burnished vessel, which in first class work has the sheen, colour and appearance noticed in red Chinese lacquer. The designs several of which also occur on the pottery of other ancient countries although some are peculiar to the post-Harappan chalcolithic period, were painted on this slipped surface, or alternatively on the matt surface, with a brush or broomstick-end before firing.

Of the three main ceramic industries characterising the post-Harappan chalcolithic culture, the black-and-red ware, obtained as a result of the application of the 'inverted firing technique' in baking the pots, has been found mainly from the excavations at Ahar¹ and Gilund², both near Udaipur in Rajasthan. Besides these two, a number of other sites as well in western and central India have yielded specimens of the black-and-red ware³. What invests the pots of this ceramic industry with special significance is that they have been painted both on the exterior and the interior with

various designs, which have been drawn in white or creamish white colour. The painted designs are of extremely rudimentary character. They are not many in the beginning, though their number increases gradually. It is, however, mainly the group of parallel lines and cluster of dots which took the fancy of the potter-artists and which in combination with certain geometric forms helped them create varied patterns pleasing to the eyes. A bowl coming from the excavation at Ahar¹ is of remarkable character. Painted a little above its profile round the rim's edge, it presents a row of hatched parallelograms alternating with a group of parallel vertical lines (Fig. 1). Other notable designs painted in white over the black-and-red ware are a group of verticals along with double horizontal rows of dots (Fig. 2), a row of trapezoids with a number of dots both inside and outside, and a row of acute angles opened towards the right and entirely made up of dots² (Fig. 3). Gilund has, however, widened a little more the range of the decorative designs painted on this ware. Of these, particular mention may be made of groups of dashes, wavy or straight lines, the last being placed either vertically or obliquely in zigzags, opposing groups of dashes and concentric arcs, cross hatched lozenges, either in a continuous row or in groups separated sets of vertical lines³. The painted designs on the black-and-red ware are thus confined only to a few linear strokes, cluster of dots and geometric forms; plant, animal and human representations being conspicuous by their absence. The reasons, are, however, not far to seek. The authors of the black-and-red ware were certainly not so much artistically advanced that they could have created as elaborate designs as found on the pre-Harappan and the Harappan potteries. The black-and-red ware has been dated between cent. 1800 B.C. and cent. 1000 B.C. And, if, as suggested by Sinha⁴ and Sankalia⁵, the black-and-red ware is actually the ware of the Aryans, then it may certainly have been produced when its authors themselves had not fully established and were practically in a semi-nomadic state. It is, therefore, no wonder if only very simple designs comprising of linear strokes and cluster of dots are met with on the painted red-and black ware.

Pottery of an entirely different fabric came to light from excavations at Navadatoli⁶, situated on the Narmada, opposite Maheshwar, about sixty miles south of Indore, where it occurs as a major pottery fabric right from the first occupation and runs throughout the entire chalcolithic habitation. Excavations at Nagda¹⁰, Tripuri¹¹, Awra¹² and Eran¹³ have also brought to light pottery of the same fabric. Painted in black or light reddish black over a pale yellowish brown to dark red slip, the pottery came to be technically known as the black-on-red or the Malwa ware, on account of its occurrence throughout Malwa—an old geographical region comprising parts of Central India. Unlike the black-and-red ware, the painted designs over the Malwa ware were not limited to geometric designs,

strokes of parallel lines and dots only. Doubtlessly, they are not varied in the beginning, but soon after they assume a wider range of decorative designs which bespeak highly of the artistic taste of the Navadatolians. They were so much overpowered with the urge of painting their vessels that they did not even leave out their lids unpainted.

The designs painted upon the so-called Malwa ware from Navadatoli, however, resolve into a number of clear-out divisions¹⁴. Though variegated in forms, they are dominantly geometric. Of these, the plain and horizontal or oblique bands are by far the simplest of the designs. They have been drawn usually round the neck and along the edge of the rim, both inside and outside, and also around or across the belly or shoulder of the vessel. An inspection of the lines suggests that in certain cases they were drawn free hand or by inexperienced hands, but in majority of the cases the lines are so firm and regular that some sort of instrument appears to have been employed for the purpose. In some cases the line-points are thin, while in others they are thick; such an effect was obviously achieved as a result of the nature of the pottery fabric itself. Lattice or hatched designs at Navadatoli appear to be the most common. Diagonal lattices make their appearance in vertical bands. There are also some of the vessels which show designs difficult to make out. They include elongated triangles within triangles, partly hatched or connected with each other, and elongated triangles diagonally latticed or horizontally hatched. Such designs have been usually described as the stylized representations of leaves. Zigzags are also amongst the favourite designs which in different combinations present some very interesting and complex forms. They occur also on the red and the cream slipped wares. Straight and wavy lines, besides presenting some very simple designs, also combine to form arches which are more regular and artistic. Such designs occur invariably on the fine Jorwe-Nevsa fabric. Chevrons, solid diamonds and groups of opposed triangles are amongst the designs rarely found on the typical Malwa ware. Besides these, there are circles, circle within circles, crosses with unique and variegated designs which also find place in the decorative scheme of the chalcolithic Navadatoli ware (Figs. 4-24). Recent excavations at Navadatoli¹⁵ revealed a number of new painted designs. Of these, certain animal forms, probably antelopes, all highly stylized, and two human figures probably symbolic and double spirals are worthy of note. The band of running antelopes and group of dancing human figures seem to have found special favour with the artists of Navadatoli. At Chandoli¹⁶ as well, the decorative designs are mainly restricted to geometric forms. Lattice and loops seem to be more favourite, and zigzags frequent (Figs. 25-28). But the magnificent range of animal patterns is extremely scarce at this site, only a single piece having depicted a stylized animal.

Contemporary with the Malwa ware, there was another ware known as the cream slipped ware. The pots in this ware are found coated with a thick slip of cream to greenish white colour. Besides exhibiting a wide range of shapes than the black-and-red ware, the ware in this fabric is remarkable also for its surface paintings. The potter-artist seems to have taken great care in making the surface smooth by the application of the thick slip. Paintings which have been executed in black colour on the thick slipped surface exhibit a very wide range of decorative designs. Though not much different from those already revealed on the black-on-red Malwa ware, yet there are certain designs¹⁷ like black dots between horizontal lines and groups of dots on either side of a triangle, hollow circles between vertical lines and hollow circles between vertical wavy lines all forming panels and thick-lined hollow diamonds, which are typical to the cream-slipped ware. Besides geometrical designs as on the Malwa ware, there are also motifs of dancing human figures, running antelopes, tigers, besides stylized animals not yet identified. While the dancing human figures, spotted animals, etc. on the cream-slipped ware are restricted to the lower chalcolithic level at Navadatoli, at Gilund¹⁸ they are found from the uppermost levels only, where as well the dancing figure and animal with stippled body are noticed on the ware of this fabric. Chandoli¹⁹ has yielded sherds depicting geometric designs which are much inferior to those found at Navadatoli.

The post-Harappan chalcolithic period in the Deccan is represented by a pottery of distinct kind which after its type site has been designated as the Jorwe ware²⁰. Characterised by its metallic ring and dull matt surface, the ware is more abundant and uniform at Jorwe, Nasik²¹ and Nevasa²². Excavations at Daimabad²³, Bahal²⁴ and Prakash²⁵ have also brought to light the ware of the Jorwe fabric. Like the wares already discussed, the Jorwe ware was also painted with designs on the matt surface with black colour. There is, however, a strong bias towards linear and geometric patterns. Specimens are, however, not wanting which in a few cases indicate the presence of some plant and floral designs²⁶. Horizontal bands of one or more painted lines of varying thickness are the most common. Equally common are the simple patterns made up by connecting long horizontal line bands with closely grouped verticals or diagonals. Straight or curved diagonals or oblique brush strokes have been employed as space fillers. Zigzag patterns between horizontal line bands appear to be a favourite design for decorating shouldered globular vessels. Other designs comprise festoons, lattice or criss-cross pattern, horizontal bands of connected, cross-hatched and solid rhomboids or lozenges, cross-hatched triangles, etc.²⁷ It may, however, be mentioned that the geometric patterns on the Jorwe ware are more rigid, whereas on the Malwa ware, they show more freedom, delicacy and liquidity of lines.

Special mention must be made of the designs formed by a combination of horizontal line bands, loops or zigzags, oblique or vertical strokes. The designs though made up of linear motifs give the impression of a dense growth of grass (Figs. 29-31). It is very likely that the designs possess some symbolic value connected with the plant world. Floral and leafy patterns are also found on certain specimens though rarely. These may be included amongst the naturalistic designs²⁸. At Nevasa as well, a sherd seems to be representing a plant²⁹ (Fig. 34).

It may, however, be mentioned that at Jorwe, animal and human representations are conspicuous by their absence; but it is not so at Nevasa. Antelope is one of the animals usually represented at Nevasa³⁰ (Fig. 32). The other animal depicted is a dog or dog-like object³¹ (Fig. 33). There are specimens which show antelopes running one after another with their tails raised, which, according to Z. D. Ansari,³² may suggest their mating season. In almost all the cases, the antelopes are shown wavy horned. Apart from the realistic depictions of the antelopes and the dog, the potter-artists of chalcolithic Nevasa indulged in stylized paintings on their pottery.³³ In such stylized representations, the animals are shown in a stationary pose. They exhibit attempts at symbolising rather than drawing the animals. As such, it is rather impossible to name the animals intended to be depicted.

The painted potteries of the post-Harappan chalcolithic period, like those of the other periods, amply demonstrate the quality of mind and heart put in by the potter artists. Besides reflecting the aesthetic sense and the artistic achievements of the people who painted them, they also suggest in no unequivocal terms their capacity for selecting the right type of the clay and the pigments required for potting the vessels and painting them. Apart from hinting at the technological knowledge in the acquisition of which the artists may certainly have been required to undergo specialised arduous training, these potteries painted with various designs also serve as the index of the people for whom they were prepared—their artistic taste, their economic status, their religious learnings and ritualistic practices.

The designs painted on the potteries of the period can broadly be grouped under the geometric, the naturalistic, the animal and the human representations. The artists in course of time achieved perfection in their art, and certain of the designs painted by them seem to have been endowed with symbolic character. For example, wavy lines, long and short, may have stood for rivers and snakes, also suggesting in turn the swampy or marshy land inhabited by the people who drew such designs. Likewise, rayed discs, partly shown above an arched or wavy design, may be interpreted as representing the rising sun, which the artists may have desired to show in order to produce an effect of morning's delight. Naturally enough, in such representations, an endeavour must have been made to depict such

scenes or figures with which the artists themselves were closely associated, rather which formed a part and parcel of their daily life. Running antelope have been drawn very realistically. Though drawn in conventional attitudes, yet life seems to throb under their skin. The dynamic character of the animals coupled with their attractive spiral horns make them more impressive and lively. The chalcolithic people may have very often chased the antelopes in a bid to obtain the booty after hunting them. It is, therefore, quite natural that the antelopes formed a favourite subject for representation on the potteries. Representation of tiger on the pottery may also point to the animal which they usually hunted, and with which they were very well acquainted. Unfortunately the sherd from Nevasa depicting a dog on the painted pottery is so fragmentary that only its hind part can be seen on it. However, the appearance of a dog or a dog-like animal on the painted pottery is no little significance. Some of the sherds from Daimabad also seem to represent the figures of the dogs. The representation of the animal on the pots may indicate that the chalcolithic men had already started domesticating animals. Moreover, a dog is of considerable assistance to the hunters in their hunting expeditions. It is, therefore, no wonder if the potter-artists from Nevasa and other places thought it desirable to immortalise their constant companions by drawing their figures on the pots. Certain skeletal remains found along with the human burials at Langhnaj in Gujrat have been identified to be those of a dog. The find of a dog's jaw in a child burial at Nevasa also goes to corroborate what has been stated above. Certain of the representations on the Malwa and the cream-slipped wares have been taken as the dancing human figures. It may, however, not be unreasonable to suggest that dancing may have perhaps been included amongst the religious rituals, though it is not unlikely that it might also have a secular side. There are, however, no representations on the potteries of the period which may be taken as representing some musical instrument, nor the antiquities unearthed from different sites can be regarded as such. Hence, it would be too premature to suggest if the dancing was accompanied by musical performances. However, a study of the symbols and the figures found represented on the painted potteries of the period throws some very valuable side-light on various aspects of the life of the post-Harappan chalcolithic people.

With a modest, rather very simple beginning, the designs painted on the potteries of the period not only grew in number, but also showed firm grasp of the subject by the potter artists. The designs, as already hinted at earlier, mainly consist of geometric forms which preponderate over other kind of representations. Geometric patterns have been drawn with great ease and success by the artists of Harappa, Mohenjodaro, etc., on the black-on-red Indus valley potteries. The design composed of a series of intersecting circles, a pattern which does not appear on the wares of any other still ancient civilization, and which is somewhat bewildering to the eye forms one of the favourite decorations on the jar of the Harappa culture. As already refe-

red to, there are also on the pottery of the period representations of concentric arcs. Another favourite device on the Indus valley pottery is the tree pattern, generally placed in metopes or panels, alternating with other motifs. Some of the patterns are well defined, but others are so much degenerated that they consist mainly of verticals drawn at intervals to represent the trunks, while horizontal wavy lines denote the branches. On the Jorwe ware, as already seen, a combination of linear motifs presents the impression of a dense growth of grass. Triangles set in rows form a very effective decoration on the Indus valley pottery when they are not repeated too often. The potteries of the post-Harappan chalcolithic period also show triangles playing important part in the decorative scheme of the wares. Cross-hatching of triangles, squares or other motifs has been very often resorted to in the well known potteries from Mohenjo-daro. Cross-hatching or latticing has also been utilized as space filler or for distinguishing one geometric form from the other during the period under survey. Likewise, thick or thin bands of borders run round the jars to relieve the main decorations and to avoid monotony on the potteries of the Indus valley period. So also is the case with the potteries of the post-Harappan chalcolithic period. Even potteries from Chanhudaro belonging to the Jhukar period exhibit designs made up of group of parallel vertical lines and short linear strokes, as noticed on the painted black-and-red ware. It is, therefore, not unlikely that the painted designs that appeared on certain potteries of still earlier periods may have served as models for the potter-artists of the post-Harappan chalcolithic period.

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Discussion

S. R. Rao : It is a good resume of various geometrical and naturalistic designs painted on the Post-Harappa chalcolithic potteries. We have to consider the frequency of a particular design, its continuity and the area covered by it. A study on the regional basis should be made.

Designs may have some significance. Star has explained the wavy lines as river and group of sigmas (small wavy lines) as the group of birds. We get a few interesting designs at Lothal. One of them shows oblique strokes above a horizontal band and below, two inclined parallel lines with a wavy line in between. It may be interpreted as a boat sailing over river. Another design represents a bird having a leaf or fish. The process of stylization may be marked. We may see some continuity, where ever they occurred. Animal figure representing humped bull was painted on the pottery of cemetery H. It has also been painted on a pottery of Rangpur III with a slight variation. Representation of deer, in a stylized form, was very common, but a variation in itself may also be marked. A deer motif from Rangpur III has an affinity with Nagda I etc. Stylization was associated with a particular trend. It may represent movement of a certain tradition.

How long a particular design continues? We have representation of human figure with raised hair at Navadatoli. It was confined in a certain region and does not continue for long. It seems that certain simpler ones continue. At Lothal and Rangpur, we got some elementary designs such as wavy lines, strokes, etc. It continued for a long time in a wide area, probably due to its simpler nature.

A design represented by painting signifies very much and may help us to trace the movement of a particular style.

In Rangpur II the hatched diamond appears as an independent motif, but in Harappa it does not occur independently.

S. P. Gupta : What is stylization? It is a thing on which only the basic bare necessity of a figure is kept. If the eye or nose only is painted in a human figure and other elements have not been shown, it is stylization. This particular design should be taken independently, though how many stages the stylization had to go?

When we talk about relations with other cultures, we must take into consideration the dates. Painter has his own language in paintings. Placement of each design should also be considered. Human mind is expressing itself in different lands in different ways.

Human design with raised hair occurs only in western Asia in 3000 B. C. context and nowhere in the world.

K. K. Sinha : In different places, designs might have originated independently. Painted designs on the Black-and-Red and P. G. ware may be compared. Plant, human, and animal motifs are absent on both these wares. At Nagda, painted Black-and-Red ware of Ahar and Malwa ware co-existed. The designs on the Malwa ware seem to have been influenced from the former.

When we level and specify certain designs on ritualistic potsherd, we need more specimens. In this connection, the actual association and context

of the pot, on which the designs have been painted, should be marked.

V. D. Mishra : What is the criteria to say that the authors of the Black-and-Red ware were not a fully established peoples and were practically in a semi nomadic state ?

Krishna Deva : There are certain designs which continued from very early times. The pipal design, which ought to have some religious significance, has been found painted on the pottery from kalibangan, cemetery H, Bara, etc. Certain animals also do have some religious significance. Bull occurs on the funerary pot of cemetery-H, which may suggest its funerary and religious significance.

R. S. Sharma : How would we explain the absence of human, animal and plant designs on the Black-and-Red ware ? Dr. Sahay's statement that the people were not artistically advanced, is not convincing. Is there any possibility to attach any religious significance to the designs on the Black-and-Red ware ?

R. C. Agrawal : The study of motifs and designs is an important issue. It needs further scrutiny. To make a correction, we have to study ware-wise, layer-wise and period-wise.

M. N. Deshpande : A pot, painted with stylized design, has been found in period I B at Daimabad. It represents a human figure on the lower half portion and peacock in the middle. It is a first sort of painting in Deccan. Does it signify any magical site ?

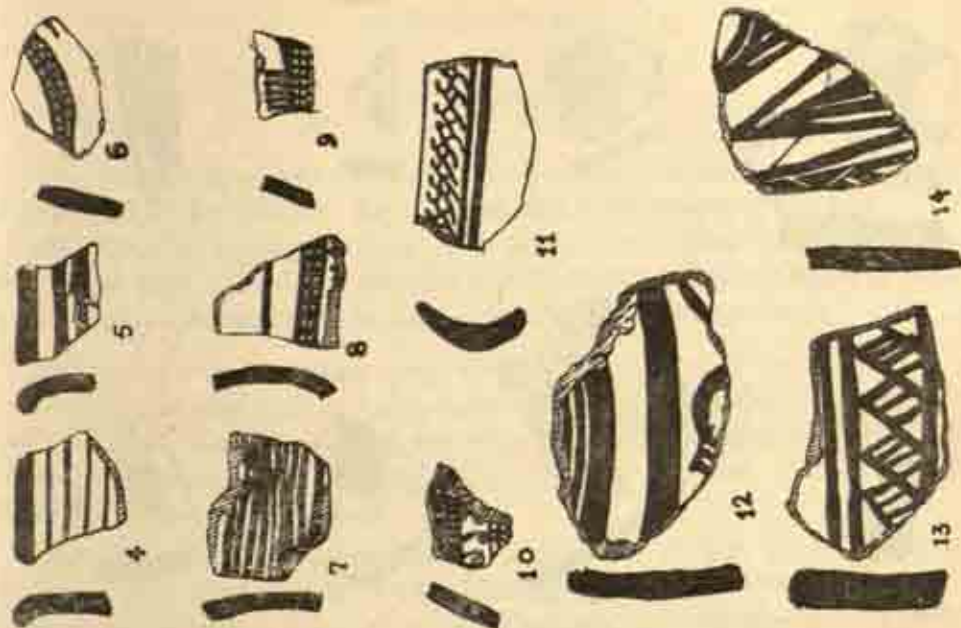
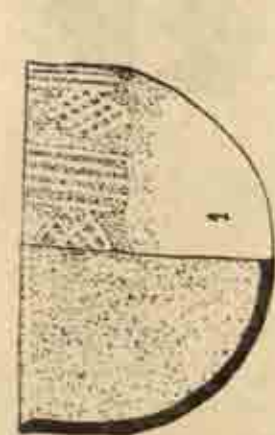
Simpler designs continued for a long time, but other motifs do not show any continuation.

S. R. Rao : We have no precise explanation for the absence of plant, animal or human motifs on the Black-and-Red ware. We may connect it with some religious belief. Perhaps they did not believe in tree-worship. Wavy lines may be taken to represent stylized form of snakes.

Krishna Deva : There is no elaborate painting on the Black-and-Red ware. It is usually painted in white pigment with elementary designs on the black surface. It seems very difficult to paint elaborate design and perhaps only simpler motif suits on the surface of the Black-and-Red ware.

K. D. Bajpai : Cave paintings should also be taken into account. Dancing human figure and bull occur there. The similar figure of bull is also drawn on the lanky-bull type coin of Kausambi.

B. P. Sinha : The problem of painted designs needs elaborate study. Dr. Sahai has given it in a nut-shell. One person can not do it. There should be co-operation. Some body should take funerary, some animal, some natural designs, etc.





DISH-ON-STAND

Madan Mohan Singh.

The dish-on-stand and simple dishes belonging to the Harappa and post-Harappa chalcolithic cultures may be regarded as the prototypes of Indian dishes or thalis. Thus the antiquity of the typical Indian dish (whether footed or non-footed) goes back to the third millennium B. C. It is remarkable that this particular type of ware retained its shape during the long period of its survival.

The Indian dish is a shallow vessel with raised sides, upright or flaring. It is a multi-purpose vessel, mainly used for consuming food, either dry or liquid. The bowl also serves this purpose and any sizeable shallow bowl may be called a dish. It makes its appearance before the dish, and both types of pottery appear to have been derived from the same source.

The distinctive thali appears in the Gangetic Valley (e. g., Ahichchhatra and Hastinapur) in c. 800 B. C., and in spite of complete change in fabric and material, the shapes continue till c. 500 B. C. (e. g., Kausambi and Varanasi¹). The shapes of this vessel in the Painted Grey Ware and the N. B. P. ware are the same. The dish is mentioned also in the literary sources belonging to this period and later, which suggests that at this stage it was not exclusively used as a vessel for taking food. Thali is derived from Sanskrit *Sthali* which is referred to by Panini² and Patanjali³ as an earthen pot used for cooking. These authorities do not refer to the footed dish as it had disappeared by the period when they flourished. It appears that the dish or *Sthali* in the beginning was used both for cooking and eating. Later it ceased to serve the purpose of cooking. The term *Karpura* is mentioned in Katyayana's *Varttika* on Panini as a vessel for eating and it has been interpreted as a bowl⁴. It is the Sanskrit *Karpura* which in course of time seems to have assumed a number of variants such as Kurava, Kulhara, Katora, etc.

The dish-on-stand makes its first appearance in the pre-Harappa phase at Kalibangan⁵. Its use becomes wide-spread in the Harappa period and later it continues in the different wares (including O. C. P. ware) of the post-Harappa chalcolithic cultures spotted from Baluchistan, Sind and Gujarat to Bengal. This distinctive pottery type has been found in several sites such as Harappa, Mohenjodaro, Chanbudaro, Lothal, Rangpur, Jhukkar, Ahar, Kalibangan, Navadatoli, Rojdi, Mehgaon, Chirand, etc. Only stems have been found at Kausambi and Pandurajardhibi. This typical dish-on-stand almost disappeared

category is the most common and it is probably due to their squatness that these vessels are better preserved than those with long stems. They are painted with broad bands of red, but the plain and long stemmed dishes are generally coated with pinkish slip without decoration. The dishes of the third category show elaborate stems. They are coated with a thick red slip. The most distinguishing feature of this variety is a ball like moulding at the top of the stem (P. II, 4). In the opinion of Marshall this ball was intended for preventing the hand from coming into contact with the hot pan. In addition to the above varieties we also find small dishes-on-stand with rough finish which may have been either toys for children or intended for rough use.

The dish-on-stand makes its appearance in Malwa in c. 2000¹⁶ B. C. in which one may observe the difference between the stand of the Sind type and that of the Malwa type. The stand of the former has comparatively a thinner neck and a broad and flared base. The latter shows a straight stem (P. III, 2) and the base is not as flared as in the case of the former. The Malwa type of dishes are shallow, with broad, flat rims, and they fall under two main types—(1) those with straight or slightly inturned sides and (2) those with slightly out-turned sides¹⁷. A thick dark red slip is applied to them and they are painted with geometrical and animal designs. The decoration is rich and sometimes extends over the whole surface of the dish. Many dishes and pedestals bear various degrees of corrugation.

The dish-on-stand is distinctive at Ahar (c 1800—1200 B. C.) both in the stone ware like pottery as well as in the Black-on-Red Ware¹⁸. Only fragments of dishes with slightly inturned rim and cut or grooved below the rim and stems were found in the levels of the stone-ware like pottery. Dish-on-stand and simple dishes are the only types in the stone ware like pottery and they continue in the succeeding painted Black-on-Red Ware. The dish-on-stand of this ware has a broad base as in many other earlier vessels of similar shape, but difference lies mainly in fabric. The connecting stem is generally hollow at Ahar (Period I c).

In eastern India also the dish-on-stand appears in about the second millennium B. C. at Chirand in Bihar where stems, bases and fragments of pans have been found in large number. A few pieces of the stem which may have been a portion of bowl or dish-on-stand are reported from Pandurajardhibi in West Bengal. The fragments of this vessel from Chirand have been found in the Black-and-Red Ware as well as in the associated Red and Black wares. The stems are generally hollow and are either corrugated or plain. Only one stem has been found in the Black Ware which shows deep corrugation. The dish-on-stand from Chirand also bears painting, and one of its speciality is that the border of the base in the Red ware is painted in dots with creamish white colour. It seems that the dish in the Black-and-Red Ware was also painted as is evident from a fragment bearing painting.

Thus the dish-on-stand was a significant pottery type associated with the life of the people of the chalcolithic cultures in India.

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Discussion

S. R. Rao : Dish-On-Stand may be divided into two types lighter and heavier, which turned into bowl-on-stand for drinking. Normally, we get lighter type having shallow dish with projected rim and carinated shoulder. The heavier type, with a regular whole in the centre, occurred even in Lothal B. Its dish part is deeper also luted together as the previous one. Corregated stem has been found in or later phase at Lothal, in Rangpur 11 B and continued at the Kurnool site also. The use of very thick parring technique may be observed at Rangpur.

K. K. Sinha : I would like to know the significance of parring technique.

Krishna Deva : You just rub the pot along the side, it will produce a kind of layer. This process is called parring-technique. It was used on the pottery of Rupar, Alamgirpur, Bara and some of the O. C. P. sites. It appears also on some the stems of dish-on-stand which was used probably on cremonial occassion. It was not for ordinary use.

I would like to know the position of survival of dish-on-stand in the P. G. ware level. Originally the name *Sthali* used for a cooking pot. At what stage the *Thali* came into use as eating vessel. In early medieval period, it was used perhaps in the sense of dish for eating.

R. C. Gaur : The perforated type of dish-on-stand has been found at Noh and Atranjikhhera with a slight variation.

R. C. Agrawala : From Ahar, in the Black-and-Red ware phase, we have a bowl-on-stand of perforated type. It might have been used for ritualistic purpose.

S. P. Gupta : The dish-on-stand with a regular hole was used perhaps for some ritualistic purpose.

Shivaji Singh : The equation of *Sthali* and dishes of stem is not correct. They are entirely two different things. The former is mentioned as a cooking pot in the Vedic literature. Dish and dish-on-stand were for two different purposes. The nearness of names should not be taken together.

S. M. Devi : In some literature, wooden *Sthali* is also mentioned, So, it is not possible to use it in cooking purpose.

M. N. Deshpande : In pottery basic type is bowl. It is just possible that *Sthali* was used to denote the basic type of pottery. When another types came, its meaning changed.

K. D. Bajpai : Dr. Singh has rightly observed that dish-on-stand was used for taking food as well as on ceremonial occassions.

for this class of pottery appears to have been taken from the silt of the Gangetic basin. On the basis of average thickness, this ware can be divided into three grades-thick, medium and thin. The pottery also shows the painting tradition of the painted grey ware. At Bahal in Khandesh and Kausambi and Sravasti in Uttar Pradesh, painted N. B. P. ware has been found which bear paintings in yellowish and light vermillion colours in the steely-blue or golden surface¹. The pottery is, therefore, unique in its character and may be highly praised as the "DE-LUXE" ware of the time. A comparison with its associated wares fully justifies its higher place in the society. It was obviously not a common man's pottery; it was used by aristocrats or members of rich families. The pottery must have been very or holy as some rivetted potteries have been found from the excavations at Rupar, Bairat, Sonapur and Kumrahar². They are repaired by copper wire or pin-rivetting. This clearly indicated that the cost of a new pot was very high. Further, it appears that the ware had inadequate supply due to limited pottings or the high cost of production which involved expensive investments.³ Its availability in lower frequency than its associated wares further strengthens the theory that it was a costly pottery.

The exact technique of its manufacture and polish has been discussed by Khan Bahadur Sana Ullah, Archaeological chemist to the Archaeological Survey of India.⁴ Later on British Museum Laboratory results were published by Wheeler. Further Dr. B. B. Lal in Dehradun and Hedge in Baroda have also experimented on it. These chemical reports also show that it was fired to a very high temperature under reducing condition, and the frequent peeling of the slip in this ware suggest, that it was fired more than once but this point needs further clarification⁵. It appears from these chemical reports that the black colour and the polish thereon were achieved because of the chemical reaction but so far no chemical analysis has been made on other shades of this pottery. It is just possible that some other chemicals may have been added to it for producing other shades but it requires further experiments and chemical analysis.

Of all the problems connected with this pottery, the place of its origin is the most crucial one since it has been found from various parts of this country. Although much has been said and discussed by various scholars on this point, yet there is a scope to say something more.

In the majority of the excavated sites, this pottery has been found in abundance with the Punchmarked coins and uninscribed cast coins. If there would have been a definite date of these coins, it could well have been dated along with them, but as a matter of fact there are various theories⁷ in respect of their date. According to these theories, the date of the Punchmarked coins ranges between 1000 B. C. and 200 B. C., but now it has been placed generally between the 5th-6th cen. B. C. & the 2nd cen. B. C. Thus, on this basis, the date of the N. B. P. ware may be placed

between the 5th-6th cen. B. C. and the 2nd cen. B.C.

The stratification of the excavation and C14 determination also go a long way in fixing the date of the N. B. P. ware, but in some cases it has been noticed that the C14 determination differs with the archaeological stratification. In this connection, it may be mentioned that the C-14 determination is a more scientific method of dating an object than the date provided by the archaeological stratification, but very few sites have so far been dated in accordance with the C14 method^{7A}.

On the basis of stratification, the Taxila evidence shows that it has been found in association with the Alexander's coin in mint condition⁸ at a depth of 6 ft. below the surface level and also at a depth of 18 ft. This may go to show that the N.B.P. ware at Taxila is pre-Alexandrian. Alexander's coins have now been dated between 330 B.C. and 300 B.C. Thus, the date of the N.B.P. ware, according to this evidence, will go back to either 500 B.C. or 600 B.C. At Rupar, which is also in Northern India, the N. B. P. ware has been found from period III. C 14 date of the early level of period III is 480-100 B.C., while the date of the post Painted Grey ware level of this period is 390-100 B. C.⁹. It is clear from this that the N. B. P. Ware of Rupar may be dated between the 5th cen. B.C. and the 3rd cen. B.C. The N. B. P. Ware of Ujjain and Mahesvara in Madhya Pradesh has been dated around the 5th cen. B. C.¹⁰. The C14 date of the N. B. P. ware at Besnagar also shows that it belongs to the 5th cen. B. C. (470 ± 100 B. C.)¹¹. At Tamluk, Bangarh, Chandraketurgarh¹² (all in the W. Bengal) and Sisupalgarh (Orissa) in the east and Amravati in the south, it may be placed between the 5th cen. B. C. and the 3rd cen. B. C. Thus, it appears that in northern, central and southern India including W. Bengal, it appeared around the 5th cen. B. C. and continued till the 3rd cen. B. C. The excavations at Atranjikhhera shows that it has been found from period IV. The C14 date of the early level of this period is 530 ± 85 B.C.¹³, that of the middle phase is 295 ± 100 B.C.¹⁴ and the lowest level of this period has been placed in 265 ± 165 B. C.¹⁵, which may suggest that the N.B.P. ware people came here in the early 6th cen. B.C. and continued till the 2nd cen. B.C. At Hastinapur, though it has been found in association with the Punchmarked coins from period III,¹⁶ yet a few sherds occur below the level of the Punchmarked coins. Since the Punchmarked coins generally range between the 5th-6th cen. B. C. it may be dated between the early 6th cen. B.C. and the early 2nd cen. B.C. The excavations at Ahichchhatra however, shows that it has been found from the transitional phase of the Painted Grey ware as a result of which some Painted ware sherds are associated with the N. B. P. ware. The C14 date of the early phase is 475-105 B. C. while that of the late phase is 160-95 B. C.¹⁷ Thus the N. B. P. ware of this site may be dated between the 6th cen. B. C. and the 2nd cen. B. C. At Kausambi, it has been

dated around 625 B. C.¹⁸ on the basis of stratification, but two dates of period III yielding the N.B.P. ware, have been determined on C14 method; the one is 440-100 B.C.¹⁹ and the other is 500 ± 100 B. C.²⁰ Thus, the N. B. P. ware at Kausambi may be assigned a date between the 6th cen. B. C. and the 5th cen. B. C. So far no C14 date has been fixed for the N. B. P. ware phase at Sravasti, though on the basis of stratification it has been placed in the 7th cen. B. C.²¹, but at Rajghat, the C14 date of period IB, yielding the N. B. P. ware, is 440 ± 110 B.C.²², which may go to show that it belongs to either the 6th cen. B. C. or the 5th cen. B.C. C14 dates so far available shows that ware in Uttar Pradesh ranges between the 6th cen. B. C. and the 2nd cen. B. C., but in Bihar, it may be assigned to an early date, both on the basis of stratification and C14. At Chirand and Sonapur, it has been found from period II which follows period IB. The period IB at Chirand has been dated around 800 B. C. on the basis of stratification²³, but C14 date is 765 ± 100 ²⁴ B. C. Thus the N. B. P. ware at Chirand may be placed in the 6th-7th cen. B. C. since the stratification does not show any break in the occupation. At Sonapur also, period IB has been dated between 850 B. C. and 650 B. C.²⁵ on the basis of stratification, but C14 determination has placed it in 635-110²⁶ B. C. which shows that it belongs to the 6th-7th cen. B. C. At Rajgir it has been dated around 2nd-3rd cen. B. C.²⁷. While at Kumrahar²⁸ it belongs to the 1st-2nd cen. B. C. on the basis of C14. The date at Rajgir is 260 ± 105 B. C.²⁹ and 265 ± 105 B. C.³⁰, and that of Kumrahar is 115 ± 100 ³¹ B. C.

Thus, it may be inferred on the basis of the above dates of the different sites yielding the N. B. P. ware that it was introduced in Bihar near about the 7th cen. B. C. became popular around the 5th-6th cen. B. C. when it spread rapidly into different parts of the country and continued till the 1st-2nd cen. B. C. The revised date of the N. B. P. ware may, therefore, be fixed between the 7th cen. B. C. and the 2nd cen. B. C., and not between the early 6th cen. B. C. and the early 2nd cen. B. C. as previously suggested by the archaeologists. In view of an early date of the N. B. P. ware at Sonapur and Chirand, it may be suggested that Bihar was the place of its origin.

The frequency, fabric and shade of this ware may also give some clue in determining the place of its origin. At Sarnath, Kausambi, Rajghat and Sravasti it has been found in large quantity, in various shades and in fine fabric, but its frequency is comparatively smaller than that of Bihar. Moreover, there are certain shades from Sonapur, Chirand and Orup which have not been found from any other place. At Taxila, Rupar, Atranjikheda, Hastinapur, Tamruk, Sisupalgarh and Amravati, it has been found in small quantity, and that also in one or two shades only. It is interesting to note in this connection that those places where it has been found in small quantity, it occurs in black shade. The frequency of the

black shade is greater even at those places where it occurs in large quantity which is indicative of the popularity of this shade and its greater demand in the society. Bihar has yielded this pottery in all the three grades (thick, medium and thin), but the finer fabric is in larger frequency. It may, therefore, be suggested on this ground as well that Bihar was the place of its origin. Further, some N. B. P. ware sherds from Sonapur show Peptisation which indicate that it was in the experimental stage while some other sherds from the same site bear gold spots on the black polished surface which probably reveal that the experiments were going on to produce this pottery in different shades and colour. This further strengthens the theory of its origin in Bihar. Besides this there is another sherd from the same site which is in black and red ware and has got the same polish on its surface that is noticed on the N. B. P. ware. This probably shows that the experiments may have been made on the Black and Red ware as well.

The N. B. P. ware has either succeeded the Black and Red ware or the Painted Grey ware. At Atranjikheda, however, all the above three types of potteries have been found. The Black and Red Ware comes from the earliest level, and the Painted Grey ware is followed by the N. B. P. ware. At Hastinapur and Kausambi, it has been found above the Painted Grey ware level. Therefore, the scholars suggested that the N. B. P. ware followed the tradition of the Painted Grey ware, both in technique and type. It is interesting to note in this connection that the Painted Grey ware is almost absent in Bihar where it has been found above the level of the Black and Red ware. On this basis it may be suggested that in Bihar, it followed the tradition of the Black and Red ware. Looking on this hypothesis, there should be two groups of the N. B. P. ware people—one who followed the tradition of the Painted Grey ware people and the other who followed that of the Black and Red ware people. But this hypothesis may not be correct in view of the fact that there is uniformity in the technique and type of all the places where it has been found suggesting some common origin. In this connection it may be noticed that a third type of pottery is noticed in association with the Black and Red ware as well as with the Painted Grey ware. This type of pottery is known to the Archaeologists as the Black-slipped ware and closely resembles with the N. B. P. ware in technique and type. Hence, in all probability, it has followed the tradition of the Black-slipped ware. The chemical reports²² also suggest that the black glaze is achieved because of a certain chemical property applied over the black surface of the pottery. It is quite likely, therefore, that experiments may have been made on the Black slipped pottery to achieve glaze or lusture on it. It may also be added that there is a great similarity between the types and forms of the potteries in the Black and Red ware and the N. B. P. ware. The bowls and dishes are some of the common types noticed both in the Black and Red and the N. B. P. wares at Sonapur and Chirand in Bihar.

The difference lies mainly in forms, sides and sizes. The potteries of period IB have the representation of mostly everted rims having concave sides, while those of period II yielding the N. B. P. ware have inverted rims. The similarity in the pottery types may suggest that the N. B. P. ware has followed the tradition of the Black and Red ware and the types (in the N. B. P. ware) like tumblers lids and slightly corrugated stands are indicative of its origin in this region.

It will not be out of place to mention here that when the N.B.P. ware reached a developed stage by the 5th-6th cen. B. C., Magadh had become one of the centres of artistic, religious and political activities. It was during the 5th cen. B. C. that Buddha went to Bodhi Gaya for meditation and got enlightenment. He, then went to Rajgriha, Vaishali and Sarnath. At Sarnath he delivered the first sermon. Immediately, monks may have been deputed to different parts of the country for the propagation of his religion, and they may have carried the N. B. P. ware pots with them. As already mentioned above, Sanchi, Ujjain, Sravasti and Taxila have yielded the N. B. P. ware. These places, by now, had become important centres of political, religious and commercial activities, and as such they were frequently visited by the kings, princess and the king's party. It is just possible that they may have carried away some of the pots with them, since we know that the N. B. P. ware was generally used by the rich families. The study of artistic activities may also be helpful in determining the place of its origin. The art of polishing probably originated in Magadh first on the N. B. P. ware and developed on stone during the Maurya period but some scholars have suggested²³ that pottery has been imported from the west. Their arguments are based on the analogy between the black-glazed ware of the Hellenistic Greece and the black-gloss ware of Arretine. The black-glazed pottery of Greece has been dated around the 3rd-4th cen. B. C. while the black-gloss ware of Arretine has been dated between 30 B. C. and 30 A.D. Thus both these types of ware are later in date than the N. B. P. ware because it has been assigned between the 6th cen. B. C. and the 2nd cen. B.C. Hence the technique of polishing does not appear to be of foreign origin. Now, since it is of Indian origin, it may have been experimented first on the pottery, and then it would have been applied on stone as is evident from the Asokan pillars bearing similar shining polish. Scholars had doubt that the polish on these pillars is of foreign origin, but Sri. N.R. Ray has almost proved that it is indigenous in character-may be a court art.²⁴ It may be possible, therefore, that it derived the technique of polishing from the N.B.P. ware which originated in Bihar. Thus these evidences also support the theory of its origin in Bihar.

There is another important point in respect of its origin in Bihar and that is the presence of iron in association with the Black and Red ware in period IB and the N. B. P. ware in period II at Sonapur and Chirand. In period IB, the iron occurs

though in small quantity in the form of socketed hoe and iron lugs, yet it is of great significance. This may indicate that they had probably adopted the iron in their use. In period II, the iron appears in large quantity in various forms and shapes like sword, javeline or spear lances, daggers, blades, arrowheads etc. which may go to show that the use of iron increased. It appears, therefore, not unlikely that the technology of forging iron was used in Bihar by the Black-and-Red ware people in about 8th cen. B. C. The use of iron increased around 6th cen. B. C., when the N. B. P. ware developed and spread. It may, therefore, be inferred that since both of them were iron using people, they may have come from the same family, and as such the persons belonging to period IB of Sonapur and Chirand in Bihar may be responsible for the evolution of the N. B. P. ware. This further supports the theory of its origin in Bihar.

The N. B. P. ware is spread over various parts of this country from Taxila in the north-west, to Bangarh and Tamluk in the east and Amravati in the south. This ware, as a matter of fact mainly occurs from the Gangetic valley with its focus in Ancient Magadh, but it has also been found in large quantity from Ujjain in Madhya Pradesh. Therefore, some scholars have suggested³⁵ that Ujjain was a separate centre of production of this ware on the ground that it was a flourishing commercial capital city in the 6th cen. B. C. They have further supported their above proposition in the light of the find of a large number of fragments of rather poor specimens including those without slip in the interior. These sherds, according to him, present a stage in the history of technology of the industry when the potters were carrying out experiments to produce the N. B. P. ware at Ujjain. Further, Maheshwar may be another centre of production, because some new fabric is noticed there. Two sherds according to him have unusual core. It is partly grey and partly brown in one and reddish in another. Therefore, he thinks that these may have been imitations of the real N. B. P. ware. It may be inferred on this basis that Mahesvara was a separate centre of production, but now the question arises whether it is contemporary to the N. B. P. ware of Bihar or it is of a later date. It is most likely that in the early stage a separate centre may have been established to meet the greater demand. Similar suggestion may also be made in respect of Ujjain and Kausambi. The Buddhist monks, traders, princess and kings may be responsible for the spread of this ware. Since, it is found mostly from the Buddhist sites it is most likely that the spread has been made mainly by the Buddhist monks.

Thus, with our knowledge of the age and distribution of the N. B. P. ware belonging to the early centuries preceding the Christian era, we can clearly see its movement in space and time towards north, east, west and south from focus in the Gangetic valley particularly Bihar in Magadh. It, therefore,

originated in Bihar, became popular in Uttar Pradesh, then spread in other parts of the country where it has been found. Thus, Bihar may be regarded as the epicentre of the N. B. P. ware.

References

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2. Marg. Vol. XIV. No. 3 p. 8 (Ansari, Z. D., Evolution of Pottery forms and fabrics).
3. Altekar, A. S. and Mishra V. K. Report on Kumrahar Excavation. p. 74.
4. Marg. Vol. XIV. No. 3, p. 37 (Nigam, J. S. Northern Black Polished ware)
5. Ancient India No. 1. p. 58 (See for detail discussion)
6. Ancient India Nos. 10 and 11 Hastinapur Excavation Report by B. B. Lal. p. 51.
7. Marg. Vol. XIV. No. 3. p. 37. According to D. R. Bhandarkar, the Punch-marked coins were current as early as 1000 B. C., C. D. Chatterjee opines that they were in circulation at least in the 8th cen. B. C. on the literary grounds (Kahapana mentioned in the Jataka); C. L. Fabri gives a still higher date on the ground that there is some similarity in some of the symbols appearing on the Harappan seals. Allan assigns them between 300 B. C. and 200 B. C. The upper limit of the Punchmarked coins, therefore, will go back to 1000 B. C. and the lower limit to 200 B. C. but now it has been placed generally between the 5th-6th cen. B. C. and the 2nd cen. B. C.
- 7A. Recently S. P. Gupta has given a complete data of C14 dates of Punch-marked coins and N. B. P. in the seminar held at Banaras.
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24. IA-A Review 1965-66. Section V. D. P. Agrawala. T. F. 336. The C^{14} date has been determined for Period IB yielding the Black and Red ware. It is followed by period II yielding the N. B. P. ware. Therefore, there should not be much difference in point of date between period IB and Period II. The cultural deposit of Period I is about 6 mts.
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26. IA-A Review 1965-66 Section V. D. P. Agrawala. T. F. 376. The C^{14} date has been determined for period IB yielding the Black and Red ware. It is followed by Period II which yielded the N. B. P. ware. The C^{14} date of Period IB at Sonapur has been determined on the basis of charred rice. The N. B. P. ware starts overlapping immediately; hence there should not be much difference in the date of this particular level of Period IB and that of Period II. The cultural deposit of Period I is about 4 mts.
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Discussions

Krishna Deva:

Types in the N. B. P. ware and possible route of its distribution may also be taken into consideration. In the early phase, perhaps trade was responsible for its distribution, but in the later phase, Buddhism played an important role, the epicentre continues to be Magadh.

Sivaji Singh:

I am very much perplexed with C-14 dates. We are using it, but its limitations should be realized. It may not be relied upon for lower dates. Associated antiquities of the N. B. P. ware phase in Magadh should also be taken into account.

Who were the people of Magadh ? Who made and traded the N.B. P. ware ? Vratyas are referred to in literary works as the people of Magadh. They are related to the silver coinage (Rajata Nidhi). It has something to do with this pottery.

R. S. Sharma:

The N. B. P. ware originated in Bihar or Magadh. If so, what circumstances led to its origin in Bihar and what will be its possible reason ? Whether the impact of its origin was felt on other cultural equipment or not. Punch-Marked coins and iron are associated with the N. B. P. ware phase in Bihar, but Dr. Sahay has not mentioned it. In Bihar it has been found in early context.

K. K. Sinha:

The Radio Carbon datings are more reliable at single culture sites like Harappa, Lothal, Kalibangan, etc. But in the gangetic Valley, where we have multiculture sites, it is not possible. In the peculiar setting of layers, even slight difference in stratigraphy will give wide gap. So far the point of cultural assemblage, raised by Sharma, is concerned, there is no dispute with me and Sahay. I have noted only reported materials.

R. C. Agrawal:

Sonepur has yielded a sherd of the Black-and-Red ware which bears the N. B. P. like polish. If so, it will be very much interesting in the development of the N. B. P. ware.

P. L. Gupta:

It should be noted that the N. B. P. ware and the Punch-marked coins have been found on ancient trade routes. The content of the Taxila hoard is not Mauryan, but it was probably deposited in the Mauryan period.

V. D. Mishra:

At Kausambi, we have much frequency of the N. B. P. ware at certain spots it is more than the associated pottery and it is also found in experimental stages. The Asokan polish should not be looked for the N. B. P. ware.

K. N. Dikshit:

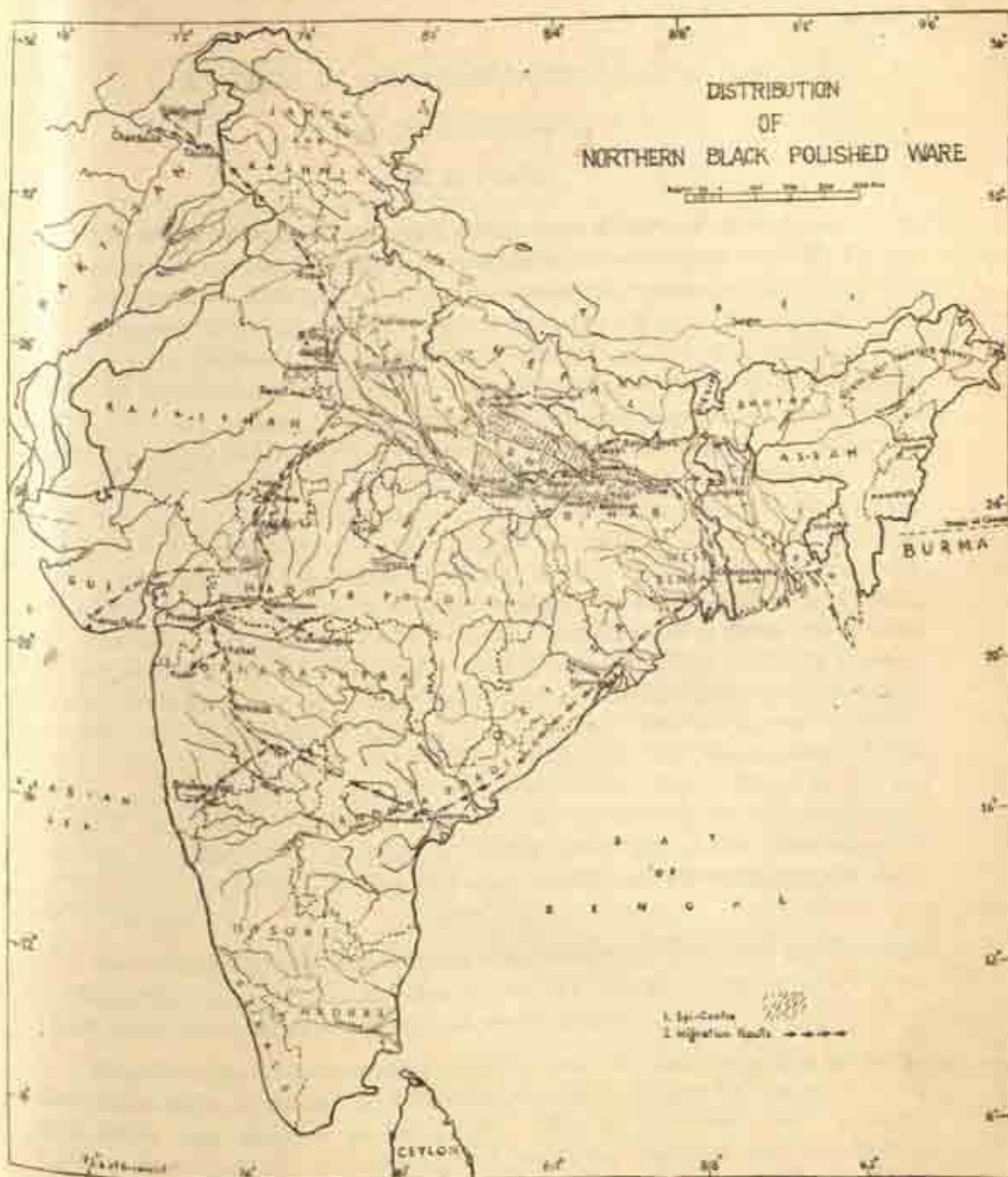
We have painted N. B. P. ware also. If its technique was derived from the Black-slipped ware, then what is the position of painting on the Lathe in Bihar. Shapes of the Black-slipped ware like hemispherical bowl, etc., which also occur in N. B. P. phase goes back to 1000 B. C.

M. S. Pandey:

Buddhism may not be related with the spread of the N. B. P. ware. According to Vinaya Pitaka, Buddhist were not permitted to use luxurious goods.

DISTRIBUTION OF NORTHERN BLACK POLISHED WARE

Scale 0 100 200 300 Miles



POTTERIES IN THE BRAHMANICAL LITERATURE

(Upto 2nd Century B. C.)

M. S. Pandey

The Brahmanical literature covers a long range of time and space. It starts some time roughly in the 16th Century B. C. and comes down to the 9th or 10th Century A. D. or even later. This paper has, however, taken into account the works which were composed till the second century B. C. only. The difficulty in dealing with such works is quite obvious. The Brahmanical literature is of sacerdotal nature. It deals more with sacrifices and rituals than with domestic problems. Even the Grihya sutras, which are expected to throw more light (as their names show) upon the contemporary society and domestic problems, are much more religious in nature. We should not therefore expect to get much material to build an archaeological edifice from such works. As the Brahmanical works cover a long range of time and were composed in different parts of the country, it is naturally expected that we would get various types and sizes of potteries mentioned therein. Here too, we are disappointed. The potteries once mentioned in the Rigveda, Yajurveda or any other works are repeated in the same tune without adding anything new to them. To be more explicit, I would like to explain that the potteries referred to in the Rigvedic Samhita occur again and again in the Brahmanas and Sutras, but we get no information about their shape, size and colour. It is true some times new names of potteries are added, but nothing is said about their types. So we are not in a better position regarding the potteries of even later times. The trouble lies in the nature of the works itself as I have already stated. In the non-Brahmanical literature, especially in the Buddhist works, which are almost contemporary of later Brahmanical literature, we find more graphic accounts of the potteries than do we find here.

The Brahmanical literature is almost silent about the technique and materials of which the potteries were made. Sometimes, but not frequently we find it mentioned that a particular ware was made of wood¹ or clay.

If the potteries mentioned in the literature could be identified with the potteries discovered by the spades of archaeologists, we could have known more about their utility and function in the society. But no step has been probably taken in this direction. Scholars of both the fields, literature and archaeology are moving on two parallel lines which can never meet. An archaeologist is sceptical about materials mentioned in the literature unless he finds out some-

thing from the womb of the earth. A man of literature relies more upon literature and gives scant respect to archaeological finds. If archaeologists and traditional Scholars work in unison, I think they will be able to throw more light upon the progress of humanity than they have done so far.

The earliest Brahmanical literature, that is, the Rigveda refers to the potteries such as Juh (जुह)², darba (दर्वा)³, Charu (चरु)⁴, drona kalasa (द्रोण कलश)⁵, tituna (तितुना)⁶, and upasachali (उपसेचली) etc. The Juhu is the regular name in the Rigveda and later literature. It was a tonge-shaped⁷ laddle in which butter was offered to the gods. The Darbi was also a kind of laddle but nothing has been said about its shape and size in the Rigveda. The Charu was a kind of kettle or pot from the Rigvedic period onwards. It had a lid called Abhidhana and hook by which it could be hung over fire. The authors of the Vedic Index explain that it was made of bronze or iron. We have to think if the people of the Rigvedic period had learnt the art of procuring iron. As Charu was used on sacrificial occasions (we do not know if it were an ordinary vessel used for domestic purposes) I think it was made of clay, because clay vessels were deemed more pure than bronze or iron.

The most famous pottery of the Rigvedic period was *Dronakalasa*. We all have heard of this vessel. It was a jar meant to store soma juice. It was probably made of wood. The Apastamba⁸ Srauta Sutra explains the *Dronakalasa* "*Dronakritih Kalaso dronakalasaḥ*". It appears that the dronakalasa had a slanting mouth like 'dona' of our days. If vessel could be made so artistically as to have slanting shape or mouth, I think it was made of clay rather than wood. The wood craft was not so perfect in those days. A Rigvedic¹⁰ hymn refers to a pottery called Titauna. The Nirukta states that it has many small holes and anything put into it for dressing spreads in the whole pottery. Dr. Satya Prakash rightly compares it with sieve as the hymn indicates.

Another Rigvedic¹¹ verse refers to Upasechani which was a spoon or cup to pour down something. I think both these potteries were made of clay.

The period of the Yajurveda shows an advanced stage of Vedic sacrifices and rituals. Naturally we come across more varieties of potteries in the Yajurveda Samhita. A few hymns of the Yajurveda give a list of vessels and utensils to be used in the sacrifices. A verse¹² states "स्रु चरमे चमसाश्चमे व्यापव्या निचमे द्रोण कलशाश्च मे वावाण्श्च मेऽ विषवणे चमे" We find here the names of varieties of pottery such as Sru (cup), Chamas (spoon), (not clear), Drona Kalasa and Adhisavana (grinding stone). Another¹³ verse speaks "कयने वापव्या प्रोति सतेन द्रोण कलशम् । कुम्भी भ्वाभ्महोय सुते स्वातिभि स्वावीरा मोति" In this verse we find utensils like Sata (basket), Kumbhi (jar); Sthali (a cooking vessel, perhaps Batalohi of our time).

At another place in the same *veda*¹⁴, we find two new varieties of pottery, they are *Chapya* and *Graha*. We have no idea about the shape and size of the aforesaid potteries. Dr. Satya Prakash in his "वैज्ञानिक विकास की भारतीय परम्परा" states that *Chamasa* was used as spoon. Prof. Keith and Macdonell in the *Vedic Index* state that *Chamasa* denotes a drinking vessel usually employed for holding soma at the sacrifice. It is frequently mentioned from the *Rigveda* onwards. It was made of wood. The *Satapatha Brahmana*¹⁵ clearly states that *Chamasa* was made of *Audumbara* wood. From the *Apastamba Srauta*¹⁶ Sutra, we learn that *Vayavya* was a kind of soma vessel. The *Chapya* was a kind of dish for eatables and *Graha* was something like scissor to catch utensils. It is pertinent to think that it was made of wood. Besides these, we find a number of pots in the *Yajurveda*¹⁷ known as *वाचवनीय*, *प्रिन्वत*, *महावीर पात्र* etc. *Adhavanitha* was a kind of vessel in which soma plant was boiled, churned and filtered. *Pirvana* was a bowl meant for milking purposes. It was made of clay and was like a deep bowl in shape.

The *Satapatha*¹⁸ *Brahmana* gives detailed information regarding the use and technique of manufacturing the *Mahayirapatra*. It was made of clay. The clay was mixed with water and it was again mixed with soft soil of ant's hill (बल्मीक दप्ता). The S. B. further states that it was placed on a mound (क्षेर). We think it was turned into a mound and then the pot was made. The upper portion of the pot was elongated given the shape of a nose, three *angulas* in length. It was one *Prodesa* in height. It was more probably a lipped pot.

The *Attarvaveda*¹⁹ refers to pots made of clay baked or unbaked. Sometimes pots were baked to the extent that they became blue and red (*Neel-Lohita*). This hymn of the *Atharvaveda*, I think, gives some hint to the art of firing potteries. The *Atharva Vedic* people seem to be well acquainted with the art of *inverted firing*, so that they could produce *Neel-Lohit* wares, that is, blue-and-red ware or more probably black-and-red ware which tallies with the *Atharva Vedic* period.

The *Atharvaveda*²⁰ adds some new names to the list of potteries already discussed. This type of pottery was *वापवन* (*stirur*). Its main function was to remove the cooked grain. The *Darbi* referred to in the *Rigveda* was used as a spoon big and deep enough to distribute cooked food in the *Atharvavedic*²¹ period (*वृहदापवनं स्यन्तरं दर्विः*). I think they were made of wood.

When we come to the period of the *Satapatha Brahmana*, we find a more graphic description of potteries. In this period greater degree of sanctity was used to the potteries made of clay, for it is stated that oblation²² of ghee may be poured with a clay pot. We find new potteries such as *Aspatra*²³ (drinking vessel), *Ritupatra* or *Panchapatra*²⁴, a few vessel having mouths on both ends, *Sukrapatra*²⁵, *Kanishthapatra*²⁷, *Suyisthapatra*²⁸, *upansw*, *Antayani*, *Agrayanapatra*²⁹ and the

like. We have no information about the shape, size and colour of these potteries. Aspatra was a kind of drinking vessel like glass. It is also called Juhu. There was a kind of jar which had nine or hundred³² holes (नव वितृष्णा, नव वितृष्णा). This type of jar was meant to be used in sacrifices only. It was filled with Parisruta and hung over Ahavaniya fire. The Parisruta leaked into the fire drop by drop. This was probably the perforated jar unearthed from the different strata belonging to the same period.

The Sutras, especially, the Kalpa Sutras and the Srauta Sutras mention a large number of potteries all to be used on the occasion of sacrifices or rituals. Most of the pots are referred to in the Samhitas and Brahmanas. Only a few are new ones and sometimes adjectival terms have been used for them. Like the Samhitas and Brahmanas, the Sutras are silent about the shape, size and colour of the potteries. If, sometimes, we come across such description, it is by chance and casual. The Kalpa Sutras refer to Potteries like उपभृत, हव्याणी, ध्रुवा, प्राशित-हरण,³⁰ इडाचमस,³¹ आज्यस्थाली,³² प्राशित्र³³ etc. of these हव्याणी was a kind of laddle with which Agnihotra was offered *Dhruba* was a big sacrificial laddle, Kalpa was a kind of dish. Some references to the potteries in the Kalpa Sutras suggest, to some extent, the classification of potteries meant for the different section of the society. *Prasitakarona* was a kind of vessel into which the sacrificial food belonging to Brahmanas was placed. *Ajyasthali* meant cooking pots, usually earthenware in the Atharvaveda³⁴ and later, meant for gods.

The Srauta Sutras refer to vessels more than thirtyone. I can simply give the names of new potteries which have not been discussed above. They are अजग्राव,³⁵ अतिप्राह्यपात्र,³⁷ अन्तर्पात्र,³⁸ अन्नाहारास्थाली,³⁹ अभिषेचनपात्र, आश्रायण स्थाली,⁴¹ आज्यग्रह,⁴² अर्तपात्र,⁴³ आपिनपात्र,⁴⁴ उक्ष्यस्थली,⁴⁵ उदकमण्डलु,⁴⁶ उदकंभ,⁴⁷ एकघनघट,⁴⁸ चरस्थाली,⁴⁹ दधिप्राह्यपात्र,⁵⁰ दोगध्र,⁵¹ दोहन,⁵² प्रचरनी,⁵³ कजिनपात्र,⁵⁴ सवनीय पात्र,⁵⁵ etc.

It is for the first time in the Srauta Sutras that one finds some indication regarding the painted potteries. Ajagava named above was soma vessel which had paintings of the udder of goats (अजस्तनं चिह्नं इत्याह). This vessel had an elongated spout through which soma was poured into the fire (मुचं प्रणाली येन अजनीयते होमभजनार्थं सोमः). Though it is not easy, yet we can try to identify this vessel with the spouted wares unearthed from different sites of the country. Ajyagraha was a laddle full of clarified butter. Artapatra was a kind of vessel meant for churning. Dधि-grahyapatra was obviously meant for curd. It was made of Audumber Wood. Dogadhra and Dohana were milk-pails,

References

1. , Apas Srauta Sutra XII. 2. 1.
2. Rig. VIII. 44. 5; X. 21. 3.
3. Rig. V. 6. 9. X. 105. 10.
4. Rig I. 1. 6.; I. 162. 13.
- 5.
6. Rig. X. 71. 2.
7. Rig. X. 105. 10.
8. Vedic Index.
9. XI. 17. 1. 5., XII. 2. 10. 68.
10. Rig. X. 71. 2.
11. Rig. X. 105. 10.
12. Yajur 18. 21.
13. Yajur 19. 87.
14. Yajur 20. 86-89.
15. VII. 2. 11. 2.
16. IX. 17. 1. 5; XII. 1. 2. 4. etc.
- 17.
18. 14. 1. 2. 17
19. 4. 18. 3.
20. 11. 3. 16.
21. Ibid.
22. 14. 2. 2. 48.
23. 1. 4. 2. 13.
24. 4. 5. 5. 8.
25. 4. 3. 1. 7.
26. 4. 5. 4. 6.
27. 4. 5. 5. 9.
28. 4. 5. 5. 11.
29. 4. 5. 5. 12.
30. 5. 5. 4. 28.
31. Asvatajana G. S. IV. 3. 1-18.
32. Kaue Sutra 81. 4. 19.
33. Vai G. S. V. 4.
34. Ibid.
35. VIII. 6. 17.
36. Ap Srauta Sutra XII. 1. 11.
37. Ap Srauta Sutra XII. 1. 15.

- 38. XIII. 13. 1.
- 39. I. 15. 9.
- 40. XXX. 9. 7.
- 41. XII. 1. 14.
- 42. XII. 7. 9.
- 43. XII. 23. 12.
- 44. XII. 4. 9.
- 45. XII. 1. 14.
- 46. II. 8. 1.
- 47. VII. 1. 8. 2.
- 48. XII. 2. 13.
- 49. I. 7. 5.
- 50. XII. 2. 1.
- 51. XV. 3. 10.
- 52. I. 15. 7.
- 53. XIV. XI. 16. 6.
- 54. VIII. 3. 6.
- 55. XII. 3. 2.

Discussion

Sivaji Singh :

In the early Vedic literature we have neither a word for pottery nor any reference of clay vessel. Vessels made of wood were used. Perhaps a sanctity was attached to it. Why wood was regarded sacred? In architecture, it took long time to switch over from wood to stone. Similarly the change over from wood to clay in making vessels took long time. Chamasa was not a drinking vessel. It has been derived from Chama and was used to offer juice in Yajna. We can not determine the exact nature of a pot without any etymological study.

"YAKSHI OR KINNARI POT FROM BEGRAM & ALLIED PROBLEMS"

R. C. Agrawala

Keeper (Archaeology),

National Museum,

Early centuries of the Christian Era in India are marked by the appearance of embossed or decorated pottery in sufficient quantity. This is very well corroborated by hundreds of potsherds bearing various designs and human motifs on them. It is now proposed to present a brief review of some of the interesting ceramic vases from India, Afghanistan and Chinese Turkestan, mainly those which depict human figurines on the randles and the spouts. The same may be divided into several categories such as :—

1. **Human heads on spouts:** A number of such spouts are preserved in Indian Museums, including the Safdaajung collections of the Archaeological Survey of India at New Delhi¹, University Museum² at Allahabad, Bharat Kala Bhawan at Varansi³ etc. One grotesque human headed spout in Grey ware from Vaisali⁴ in Bihar, has even been dated to 150-100 B. C. (period II). In contemporary Indian sculpture of course we have not come across any representation of such a spout so far. The motif of a crocodile spout, of course became very popular in contemporary Indian ceramics after the Kushana period.

2. **Bust or full human figure on the spout :** Such as one fragment containing the female figure in standing pose from Sambhar⁵, in Rajasthan. Here the hands of the lady are shown lifted upwards to left so as to touch the hole of the spout above. This gives us an idea of a lady lifting the pot on her left shoulder. One such spout has recently been excavated from layer 18 (period IV) at Rajghat⁶, near Varanasi, the lady seems to have caught the spout between her legs in a charming manner. Another pottery spout from Rajghat presents a graphic view of standing female in the art of post-Gupta⁷ period and remind us of *Sura Sundari* figures in contemporary India Sculptures.

The Gurukula Museum at Jhajjar⁸ (Haryana) preserves two fragments in the form of pottery spouts, probably prepared from the same mould and recovered from the ancient site of Naurangabad. Of these, one is in the typical *Red polished ware*. Both of them have got, below the spout portion, representation of a female bust with hands folded and placed between her breasts as also in early Indian sculptures at Sanchi, Bharhut etc.

From Ahichchhatra⁹ has been reported a ceramic fragment depicting the spout held by the lady in her hands, below the breasts of a lady. From Nevasa¹⁰ in Deccan has been excavated, in red slipped ware (phase III; 100-300 A. D.), the fragment of a globular pot having spout in the shape of a water bottle shown over a human head and supported by human hands (probably of some lady) in a charming manner. A lady associated with a gorgoyle became a very popular motif during the early-mediaeval and subsequent sculptures from various parts of India¹¹ and South East Asia.¹²

3. **Spout in the form of a human face:** Pottery jars or vessels, providing the mouth the outlet of water from the mouth of a lady, are very few from India, Afghanistan and Central Asia. Sir A. Stein has reported the discovery of one such fragment from Yotkan, near Khotan in Chinese Turkestan (Yo. 1, height 4.75 inches). It consists of the upper part of a woman, hair cut straight across the forehead and falling in two masses in front of the shoulders; breasts bare and all below missing. There is a hole through the mouth probably indicating that the figure was used as a vessel, for *ungents* of course as suggested by Stein¹³. The flat torque round the neck and the V-shaped necklace hanging below bear testimony to the impact of Indian art traditions of Kushna period on this particular fragment from central Asia. In fact we are well aware of dozens of decorated pots from the vicinity of Khotan, some are face-pots in imitation of Greek and Roman motifs, others have got animal handles while a few pottery fragments depict *Krishna Lila* scenes as well. On one pottery fragment from Khotan now preserved in the Hermitage Museum at Leningrad, can be seen Krishna garbed in Sassanian dress, including a long tunic and boots, he is lifting the Govardhana mountain on his raised up left hand. This is quite an interesting relief.

Of outstanding interest and first-rate workmanship is the tiny bluish-green glazed vessel from Begram (ancient Kapisa) in Afghanistan. Excavated by Mr. J. Hackin¹⁴ in 1939, it is now preserved as No. 57. 290 in Kabul Museum and measures about 21.3 cms. in height. Dr. Benjamin Rowland¹⁵ feels that this "particular Begram pot was probably made in some Mediterranean centre including Alexandria due to the discovery of the lead glazed technique in the first century A. D." Let us examine the pot from various angles. The front portion is comprising of a female bust, with hands folded and placed between her breasts in purely an Indian fashion, her mouth is prominently open so as to serve the purpose of a spout; the entire composition of her face, dress and ornaments are Indian, as already discussed in detail by Curtois. The bracelets containing the leaf (*patra*) motif with a *swastika* band recall to our minds the *saputra-Kayura* design in the Sunga art of Bharhut, Sanchi and Mathura. Round earlobes may well be compared with device in Indian ivories from Begram and sculptures from Mathura. This has thus preserved, for us, happy a blen-

ding of Sungan tradition of *saxatra Keyuras* and other those of the Kushana art. This vessel from Begram may therefore be dated towards the beginning of first century A. D. Indian ivory workers were quite active at Begram (*Kapisa*) at such an early date as also suggested by Dr. Rowland in the revised edition of his book *The Art and Architecture of India*, 1967, p. 66. In his own words, "one of the ivory carvings at Begram is the proto-type for the work sought in stone by the ivory carvers of Bhilsa (in India), who according to one inscription at Sanchi, dedicated a gateway and presumably their services as well." With all these Indian artistic traditions already popular and surviving at Begram, some local potter might have prepared the existing Begram glazed—pot after some inspiration from the Mediterranean specimens. The fabric, in Begram pot, is green glazed ware which was so characteristic of the Parthian Pottery from Iran, in the second-first century B.C. According to Mr. R. Chirshman¹⁶, "the technique of glazed ware already practised by the Achæmenians (who had acquired it from the Elamites) was improved on a more widely employed in Parthian Iran. The Parthian ceramists also manufactured glazed hyllons with moulded ornaments in II-I C.B.C. The green glazed pottery has also been excavated in Seleucia¹⁷ before 141 B.C. At Dura, in Mesopotamia, glazed ware was found during second-third century A.D. Glazed ware was introduced in India during the early centuries of the Christian Era, it seems to have become extinct by 4th century¹⁸ A.D.

Mr. Tarn and others believe that Kabul region remained under Greek domination until the time of the Kushanas but a recent study of the problem by J. Rosenfield, Jenkins etc., has stressed the point that during the rule of Azes kings in Gandhar, Kabul was governed by the Parthians¹⁹ who minted coins imitating those of Hermaeus. Green glazed fabric, in the Begram pot under review, may therefore owe its existence to some Parthian impact at Begram. At the same time we should not forget the early Greek pots with handles where in the female head is attached to the neck of the vases, the back portion is painted as that of a bird; portion below the neck is covered by the designs in the form of right wrist clasped by left hand.

An interesting specimen of this Greek ware and datable to 600 B. C., is now preserved in the British Museum at London²⁰. It appears that such an anthropomorphic *Siren* (half women and half bird) pot might have inspired the artist of Begram vase who further Indianised the position of hands of the woman on the front as in *Yaksha* and *Yakshi* statues at Bharhut. He seems to have improved the Greek motif by way of providing a spout²¹ at the mouth of the female figure but retaining the bird-back, as in the Greek vases. The idea of a human frontage and back that of a bird, was undoubtedly known to early Indian artists when they depicted the *Kinnaras* and *Kinnaris* in their respective works. But this particular motif in relation to earthen jars was decidedly of non-Indian origin; it was possibly derived from the *Siren*, pots of the Greeco-Roman world. A number of Alexarian

objects have been unearthed at Begram itself; it was a great commercial centre connecting East and West. We may also take due notice of the female figures (Mother goddesses) with hands on their breasts and carved on a number of bone handles from Parthian²² levels at Susa, a motif which subsequently appeared on several bone handles from the Parthian Town of Sirkap at Taxila²³ as well. *The nudity of the above figures is invariably marked on such bone handles from both the countries, thereby suggesting their close affinity with the Fertility Cult.*

It is difficult to suggest whether the Parthian bone handles had inspired the potter of Begram Yakshi-vessel so far as the depiction of a female bust in *anjali* pose is concerned. At the same time we must remember a similar pose of hands on two early-historic pottery 'spout' also from Jhajjar Museum and discussed above. A lady in this pose and associated with a pot has recently been noticed by me in dozens of pottery handles from different parts of India; most of them are datable between II-IV century A. D. A few of these decorated handles, in ceramics, were also procured from Shahri Banu²⁴ and Tepe Zargaran, both in Afghanistan; on both of them we have the figures of a lady standing in Indian garb. Gardin (*op. cit.* pp. 61-62) has identified these female figures, on pottery handles, as aquatic duties. This seems quite plausible in relation to earthen pots, which were probably used for some particular *ritualistic purposes*. In Indian literature too, some of the Yakshas and Yakshis are associated with rain and water; their cult was quite popular during the early centuries of the Christian Era. Indian sculptors faithfully carved numerous figures of Yakshis on railing pillars; the drapery fails to cover the nudity of these Yakshi figures as well. All this refers to the fertility aspect of the female figures. Other motifs, on pottery handles from Indian sites, include a lady holding a flower in right hand, Yakshi standing on crouching attendants, *Salabhanjika*, lady standing with hands stretched below etc; but *most of them present a female with hands folded and kept near the breasts as also in Begram 'Siren' pot under scrutiny.* This recalls to our minds a unique pottery fragment, the *Kaolin* clay, from Sambhar²⁵ and now preserved in the Central Museum at Jaipur, in Rajasthan. The neck of the jar from Sambhar has got a female head attached to it on the outer portion as in the Greek *Siren* pots in British Museum and discussed above. This motif seems to have been subsequently copied in Roman ceramics as well. India had far flung commercial contacts with the Western world, both by land and sea routes; Alexandrian ivories have also been excavated at Brahmapuri and Ter in India. One early Indian ivory, depicting goddess *Sri* decorating her head has been found at Pompei²⁷ in Italy; the city of Pompei itself was buried in year 79 A.D. The Indian ivory figures may therefore be dated towards the end of first century B. C. The device of decorating a pottery handle may be compared with some what identical motifs presented by pottery fragments from Khafajah²⁸, towards the end of Early dynasty III and also in the Etruscan²⁹ ware datable to about 600 B. C. The

theme became very much popular with the Roman²⁰ artists who successfully presented a number of classical themes on the metal jugs. Sometimes on the bases of handles as those of Alexandrian workmanship from Akota (Gujrat) and Brahmapuri (Deccan)²¹ in India, Begram in Afghanistan etc. It appears that Indian potters had unprovoked the above foreign motif and substituted Indian themes on their pottery handles during the early centuries of Christian Era. The cult of Yakahas and Yakshis was very popular during the contemporary period and this seems to have left its great impact on pottery handles as well. A Prakrit jaina work of the 3rd century A. D., the *Angavijja* enlists a number of vessels including *Siri-Kamsaga* (सिरिकंसग) which probably indicated metal pots having representation of goddess Sri on them. It is of course not possible to identify any tangible specimen with this literary text for want of an Indian bronze jar of this type though we may well try to identify the female on pottery vases and handles as Sri, Yakshi or some Water-goddess. The motif of a dame with well-filled pitcher is mentioned in the *Atharva Veda* and *Purna Kumbha Nari* (पूर्ण कुम्भ नारी) and as *Purnaghat Kanya* (पूर्णघट कन्या) in the *Lalita Vistara* as pointed by Dr. V. S. Agrawala in *Indian Art Varanasi*, 1965, p. 51. This may also explain, to some extent, the Indian belief in relation to the pots discussed above.

The curved handle of the aforesaid pottery jar (*surahi*) from Sambhar is most charming because of the depiction of a female figure in anjali pose on it. Excavations by N. R. Banerji at Ujjain (Madhya Pradesh) in India have proved very fruitful in the above reference. It was from period III levels (I-V century) of this ancient site that an interesting earthen pot bearing close affinity with the aforesaid Begram piece was recovered during these operations. Its importance has not been reckoned so far. Here also the front of the vase is that of a lady, while the back consists of a bird with prominent wings; the workmanship and fabric are completely Indian. The front portion of the pot measures about $4\frac{1}{2}$ inches from top of head to the belly down below. The hands of the lady therein are completely broken; the hair are falling on the back and also from sides on the shoulders, she puts on a torque touching the neck while another necklace with circular pendant is hanging below on the breasts. The potter has provided a curved handle touching the head of the lady and the neck of the vase on back and appearing just above the wings of the bird. In the Begram vase the braid of lady's hair (*veni*) is of course shown charmingly in the form of a grooved handle. The Ujjain vessel is all the more interesting because of the provision of a number of holes, in a single row, in the mouth of the Kinnari or Yakshi; this was Probably quite intentional, so as to enable a person to pour out water in several streams. It was probably intended to sprinkle water during some religious ceremony. *The Ujjain pot is decidedly a charming example of com-*

plete Indianisation of Begram motif under scrutiny. Ivory workers from Vidisha (M. P.) were quite active at Begram and it is no wonder that some one of them had carried with him some pot or sweet memories of Begram pot on his way home to India and subsequently copied the Begram device in his own manner at Ujjain at some later date. The Ujjain Yakshi—pot may be dated between II-IV century A. D. Future excavations and explorations may enable us to have more knowledge about such anthropomorphic pots and spouts from India, Afghanistan and Central Asia. In my humble opinion, the aforesaid *Yakshi-Kinnari* pot from Begram, in green glazed ware, had definite inspirations both from East West. *It was not a product of Alexandrian workmanship.* At the same time, it appears to have been manufactured at Begram or in the vicinity thereof, under the circumstances explained above. The study of figured pottery handles from India and Afghanistan is equally interesting.

APPENDIX

Provisional list of Indian Sites which yielded pottery handles with human figurines

1. Punjab : Rupar
2. Haryana : Naurangabad, Agroha.
3. Rajasthan : Nagar, Sambhar, Rairh.
4. Gujarat : Somnath, Amreli. They are in *Red Polished Ware*.
5. U. P. Ahichchhatra, Kausambi, Atranji-Khera, Shahbad and Mathura as per information from Messrs R. C. Gaur, S. P. Gupta and R. C. Sharma respectively.
6. Bihar : Basarh.
7. Andhra : Nagarjuna Konda.
8. Maharashtra : Ter (information from Dr. M. G. Dikshit). From Taxila and Charsadda in West Pakistan, We have human heads on pottery handle bases only.
A fresh scrutiny of pottery plaques in various museums in India is likely to add further information in the above reference.

Foot Notes

1. From Ahichchhatra etc.
2. From Kausambi.
3. Rai Govinda Chandra, *Prachina Bharatiya Mitti Ke Bartana* (Hindi), Varanasi, 1960, plate VII bottom.
4. Krishna Dev and V. K. Mishra, *Vaishali Excavations-1950*. Vaishali, p. 49, Plate 19 D.
5. D. R. Sahni, *Archaeological Remains & Excavations at Sambhar*, Jaipur, p. 26, Plate 4 C.
6. Unpublished specimen examined through the kindness of Dr. A. K. Narain and Mr. T. N. Roy.
7. Unpublished spout in well baked red ware from layer 13, period V of Excavations at Rajghat; size 2.25 inches only. Here the lady

- has raised her right hand while the left is stretched below, the necklace is hanging up to the breasts.
8. Examined through the kindness of Acharya Bhagwan Dev, Director of Gurukula Museum at Jhajjar.
 9. Now in the collections at Safdarjung, New Delhi. Examined through the kindness of the Director General, Archaeological Survey of India at New Delhi.
 10. H. D. Sankalia and S. B. Deo, *From History to Pre History at Nevasa*, Poona, 1960, p. 292, line drawing T. 77 B on p. 291.
 11. Specimens from Abaneri and now in Amber Museum, near Jaipur; R. C. Agrawala's paper in *Lalit Kala*, nos. 1-2, 1955-56, plate 56, fig. 12. Consult Mukhalingam sculpture also.
 12. A sculpture depicting female bust, lady holding a spout below her breasts as if tilting the pot, A. B. J. Kempers, *Ancient Indonesian Art*, Cambridge, 1959, plate 203.
 13. A. Stein, *Serindia*, Oxford, 1921, I, p. 102, plate II.
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32. Ujjain had contacts with the Western world from the Port of Bhroach (Gujrat) as well. A photograph of the Ujjain pot was kindly made available by the Director General of Archaeology in India for which the author of the present paper is extremely obliged to him. This unique *Yakshi-pot* from Ujjain has remained unpublished so far. Other photographs are available through the Kindness Mr. Taddei (Rome), Director, National Museum at New Delhi, Dr. Saty Prakash, Jaipur. Dr. A. K. Narain, Varansi, D.G.A., New Delhi etc.



Yakshi or Kinnari pot from Begram

Handled ceramic vase in blue glaze; below the handle is the bust of a female with hands folded in Indian style, back portion is that of a bird.

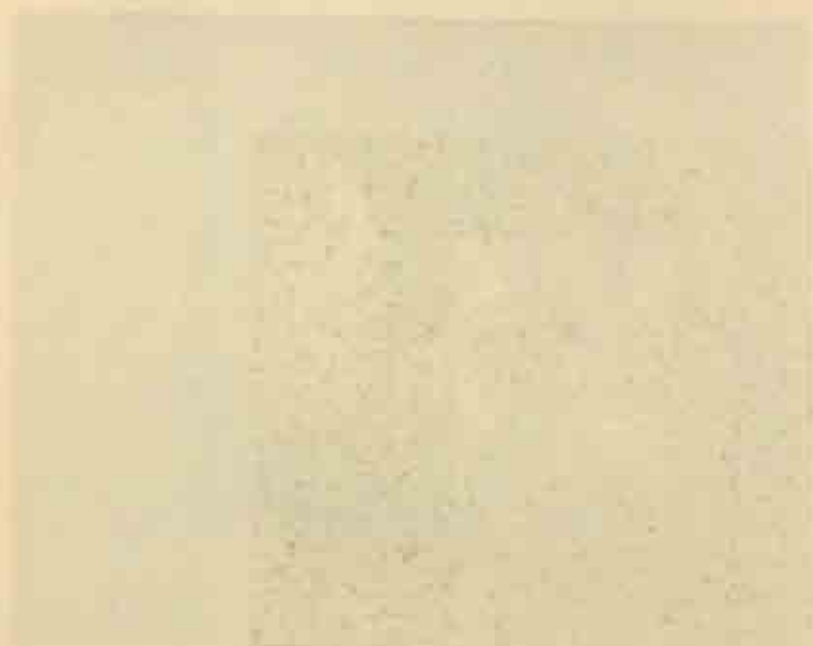
From Begram, Afghanistan, now in Kabul Museum.

(Photo after Hackin)

1413-67



Yakshi or Kinnari earthen pot from Ujjain Excavations (M.P.)
It bears close affinity with Begram pot.
(Photo D.G.A., New Delhi)



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Surasundari standing against a pottery spout from Rajghat; now in Deptt. of A. I. History, B. H. U. (Photo; Dr. A. K. Narain)





Unique *Surahi* from Sambhar; now Jaipur Museum; 3 I.C. A. D. Note female head on the long neck of female figure covering the entire handle as well (Photo Dr. Satya Prakash)



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THE NORTHERN BLACK POLISHED WARE IN BIHAR

Sita Ram Roy

As early as 1961 the author wrote a paper, entitled 'The N. B. P. Ware is the first representative Aryan pottery in Bihar', which was read in the Srinagar session of the All India Oriental Conference, '61, and in it he tried to prove that the Aryans, after their appearance on the land of Bihar, produced the Northern Black Polished Ware.¹ He still holds the same view and puts forward his arguments for the consideration of the scholars in the field.

By the time the Aryans touched the land of Bihar, their cultural development and mental achievement were far superior to those of their predecessors. Naturally their knowledge in the field of ceramic art was enriched by their constantly increasing skill inherited from their forebears. The Northern Black Polished Ware, the best example of the indigenous ceramic art of India, seems to have originated somewhere in the region covered by present Bihar and eastern Uttar Pradesh soon after that region was Aryanised.

Our discoveries in the field of archaeology have supplied enough material to bear testimony to the fact that the Aryans were highly skilled in the field of ceramic art long before they brought forth the Northern Black Polished ware, the discovery of the Painted Grey Ware from the pre-N. B. P. Ware strata in the upper Gangetic basin clearly testifies to the high skill of the Aryans in the art of pottery-making in the very early stage of their settlement on the Indian soil. This, further, suggests that the people of this race, who, even in the remote past, were able to produce such a technically brilliant pottery like the Painted Grey Ware as ranks among a very few best ceramic industries in India, must have sufficiently qualified themselves in the ceramic field long before they had touched Brahmavarta.

The movement of the Aryans from the upper Gangetic basin to the region of Bihar must have taken a few centuries. During this span of time the authors of the black slipped ware, found in association with the Painted Grey Ware at Hastinapura and suggested to be the forerunner of the Northern Black Polished Ware, must have developed their skill to such a stage as was able to give birth to the pottery like the Northern Black Polished Ware.

The archaeological field researches, no doubt, show a wide distribution of the N. B. P. Ware, i. e., from Taxila in the north-west to Tamruk in the north-east and to Amravati in the south, but the farther we move from Bihar to any direction the greater we find deterioration in fabric, lustre, varieties and frequency of the ware. From several sites of Bihar, especially from Vaisali (Dist. Muzaffarpur),

Sonpur⁴ (Dist. Gaya), Rajgir⁵ and Pataliputra⁶ (Dist. Patna) and Chirand⁷ (Dist. Saran), the Ware, under review, has been found in number and varieties representing glaze in different colours, viz., silvery, golden, jet black, metallic steel blue occasionally with reddish brown patches. Its slip, rather its glaze, seems to have reached its zenith in this region alone. A fragmentary specimen⁸ of a knobbed lid of the ware in copper or chocolate colour, lying with the Vaisali Museum, is so brilliantly glazed that it deludes one to mistake it for a brilliantly polished stone piece, and the sherd itself gives the impression of the stone ware. Such an example has not been seen elsewhere.

The typical Painted Grey Ware, which has been identified as the Mahabharata pottery by B. B. Lal⁹ on the basis of its find-spots, the names of which are referred to in the great epic in question, seems to have been the Aryan representative pottery of the upper Gangetic basin, and it belonged to a period long before the appearance of the Northern Black Polished Ware on that region and hardly to the Mahabharata time. The Mahabharata mentions about the military expeditions of the Pandavas which were sent to all quarters of our country. Bhima marched with flying colours on Kosala, Ayodhya, Uttara Kosala, Kasi etc. Krishna, Bhima and Arjuna came to Rajagriha in connection with the assassination of Jarasandha. All this suggests that the people of eastern India had social intercourse with those of Hastinapura and others and they played very important parts in the Mahabharata war. But it is surprising that no site in eastern Uttar Pradesh and Bihar could yield the ware. Probably it did not last for long, otherwise in the long run it could have travelled far and wide like the N. B. P. Ware or it was under circulation when there was no social or commercial intercourse between the north-western and eastern regions of the country. The thick deposit of the Painted Grey Ware at Hastinapura¹⁰ supports the latter inference.

The Painted Grey Ware, discovered in association with the N. B. P. Ware from Vaisali,¹¹ seems to be different in lustre and fabric from that found at Hastinapura, Ahichchhatra etc. The Painted Grey Ware of Vaisali has got the same lustre as that of the Northern Black Polished Ware, although the painted design on a sherd has got a close affinity to one of the designs noticed on the typical Painted Grey Ware found at Panipat.¹² This may suggest that the makers of the Northern Black Polished Ware probably had, by accident, come across with the sherds of the Painted Grey Ware in the latter's region and had tried the design on their best ceramic specimen, viz., the N. B. P. Ware. Even such examples are rare.

The Ramayana mentions that Rishi Visvamitra along with Rama and Lakshmana, in course of his journey from his hermitage (near Boxar) to the land of Mithila, halted near the city of Girivraja or Vasumati and narrated to his pupils the glories of the city and the greatness of its founder.¹³ Does this not suggest that

th region was Aryanised long before Rama's visit to the place? Girivraja has also been mentioned as the capital of Magadha in the Mahabharata.¹⁴ Vasumati or Girivraja has been identified with present Rajgir in the district of Patna. The study of the cultural deposit at Rajgir gives a clear picture of the human occupational sequence of the site. The excavation at the site by A. Ghosh revealed that the real occupants of the place were the Northern Black Polished Ware using people¹⁵ who were certainly none but Aryans. The earlier phase of the deposit, characterised by the N. B. P. Ware, revealed a few post-cremation burials which also, if the Satapatha Brahmana is relied upon, seem to be Aryan in character.

We are informed by traditions that Vaisali was founded by some legendary king named Visala who ruled the region sometime before ten generations from king Sumati who was contemporaneous with Rama. One may infer from this that the region was Aryanised long before the advent of Rama. The archaeological excavations of the site have proved that the real human occupation of Vaisali started with the people associated with the Northern Black Polished Ware. The occurrence of the coarse black-and-red ware from the pre-N. B. P. Ware level from (the Chakramdas area of) Vaisali and Chirand in north Bihar and from Sonpur in south Bihar may be associated with the non-Aryan culture of the region. The discovery of the polished black-and-red ware sherds from the region in association with the Northern Black Polished Ware clearly suggests that the polish on the former was due to the social intercourse between the makers of the black-and-red ware and those of the N. B. P. Ware. Can one not conclude that the region was Aryanised by the users of the Northern Black Polished Ware?

In the symposium of the meeting of the Central Advisory Board of Archaeology at Baroda in 1960, S. C. Ray was right in putting forward the fact that the Northern Black Polished Ware was in circulation in Magadha during the time of the Mahabharata, although his further argument was not convincing when he advocated that the Painted Grey Ware and the N. B. P. Ware were co-eval. Had this been the case, both the wares would have been picked up from the same strata in any site where both the wares have been found from different layers. The appearance of the N. B. P. Ware at the upper strata in the regions of the Painted Grey Ware simply suggests that the former was later in date than the latter at least in the latter's region. The fact that the motherland of the N. B. P. Ware was ignorant of the culture of the typical Painted Grey Ware at any stage may allow many a mind to infer that the Painted Grey Ware disappeared even from its motherland (i. e., upper Gangetic basin) long before the appearance of the Northern Black Polished Ware.

The cultural deposit below the Northern Black Polished Ware in Bihar, wherever examined, has yielded such a pottery as is fragile, crude and coarse. At

places the occurrence of the pottery from the pre-N. B. P. Ware level is nominal. The excavation at Rajgir (1950)¹² yielded only a few sherds from the strata below the Northern Black Polished Ware. The ware was dull red in colour, crude in making and coarse in fabric. The excavator could not be able to affiliate it to any known ceramic industry as the sherds were too fragmentary. The ceramic finds below the N. B. P. level at Sonpur, Chirand and Vaisali were coarse in character in comparison with the N. B. P. Ware. This suggests that the makers of the pottery of those days were unrefined and ignorant of the advanced art which the authors of the N. B. P. Ware applied on their ware. The polish, rather the glaze, on the ware may have reached its brilliancy long after it came into existence.

If we suppose that the N. B. P. Ware appeared long after the Aryans settled on the land of Bihar, it brings a lot of difficulties. Had they produced the Northern Black Polished Ware long after they had settled on the land of Bihar, they would have certainly brought forth some such ware as would have been highly developed in technique as was expected from the successors of the makers of the Painted Grey Ware found at Hastinapura and Ahichchhatra etc. whence the Aryans had migrated towards the east. It is quite unnatural to think that the successors of the makers of so fine a pottery like the Painted Grey Ware would deteriorate in the field in such a way that they would produce such a dull, crude and coarse ware as is discovered from the pre-N. B. P. level at Rajgir.

The fact that the real human occupation of the sites of Vaisali, Rajgir etc. begins with the Northern Black Polished Ware using people suggests that there began the firm settlement of a cultured human race like the Aryans. Had the Aryan settlement in the region began with some other ceramic industry than the N. B. P. Ware, the ware produced would, naturally, have occurred in abundance in a stratigraphic sequence and tallied, to some extent, either with the succeeding ware (N. B. P. Ware) or with the preceding one (the P. G. Ware) in type, fabric and brilliancy. Like its polish, the refinement in the shape of the black-and-red ware (fine dishes and bowls) was a later development as a result of its association with the Northern Black Polished Ware for the refined specimens of the former have invariably been found in association with those of the latter.

All this suggests that the beginning date of the N. B. P. Ware will go further back at least in its motherland. This may be decided by the radio carbon 14 dating.

The N. B. P. Ware in Bihar has been reported from Balirajagarh or Baligarh (Da bhangra district), Bodh-Gaya and Bhelewar-garh (Gaya), Buxar (Shahabad), Chirand (Faran), Dharhara (Purnea), Giriaik (Patna), Monghyr (Monghyr), Nathnagar (Bhagalpur), Pataliputra (Patna), Pirnagar Deorhi (Monghyr), Rajgir (Patna), Sonpur or Sonitpur (Gaya) and Vaisali and Katra (Muzaffarpur).

The types of the ware bear testimony to the utilitarian character of the pottery. The known shapes are dishes, bowls, handis, jars, lid, tumbler, vessels with stand bases and spout (suggestive of the spouted vessels), of which all except spout have been found in Bihar.

The N. B. P. sherds, repaired by copper-wire or pin revettings, have been reported from different sites in India, viz., Rupar (Dist. Rupar Punjab), Bairat (Dis. Jaipur), Ujjain (Dist. Ujjain) and Kumrahar (Dist. Patna). This shows that the broken N. B. P. Ware was not usually thrown away; it was used after it was repaired by copper-wire and at the same time the repair cost less than the actual production of the ware would have cost. In this practice Bihar also did not lag behind but it is difficult to say wherefrom this system began.

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DISCUSSION

B. P. Sinha :

The main thesis, that is, the N. B. P. Ware was introduced by Aryans and represents the pottery of the first settled people in Bihar, is highly speculative. Dr. Roy has identified the authors of the P. G. Ware with the Aryans of Pre-Mahabharata and Ramayana. P. G. Ware is earlier than the N. B. P. Ware in

time-scale. He believes that the region of Rajgir was Aryanized long before Rama's visit. His speculation that the N. B. P. ware was invented after the military expeditions of Pandavas and Rama's visit to Bihar has no positive evidence. If so, Rama was contemporary to Buddha. Shivaji has associated Vratyas with the N. B. P. ware. It is also a new thing. Non-Aryans were not barbarians. Harappa culture is believed to be the creation of non-Aryans. Vedic literature presents non-Aryans also who were highly advanced and a settled people. We should not use words like vagabond for them. In Bihar the authors of the pre-N. B. P. ware, whoever they may be, were not barbarians or unsettled people.

KRISHNA DEVA :

I do not agree with Dr. Roy. His hypothesis is very hypothetical and is based on slender grounds. He has totally ignored the points already stated by Dr. Sinha. The bearers of the early culture (Pre-N. B. P. ware) were not barbarians as far as their material culture goes, whereas the Aryans in the early setting were nomadic people. The identification of the P. G. Ware with Aryans is yet to be established. So the foundations of the present hypothesis is itself in darkness. When we come to N. B. P. Ware phase, we come across with many literary works which may throw light on the problem of the N. B. P. Ware. Why the N. B. P. Ware is considered to be the deluxe ware of its time? Perhaps due to its rarity and value (sentimental and ritualistic). Rivetted pottery could not have been used for daily purposes. It had no utilitarian value. Such pots were preserved as precious material. Had it a status symbol and sentimental value?

R. C. GAUR :

The identification of a culture with any people with literary reference should not be in vague terms. The identification with Ramayana and its date are doubtful. Script should be there. Writing was known to Ramayana.

SIVAJI SINHA :

I do not suggest the association of the N. B. P. Ware with Vratyas. Why are we moving around Aryan only? We may think of Nishadas, Vratyas etc. The epi-centre of the Vratyas was in Magadha. There is a stratification in literature also. I have marked four layers. Heroes of the Ramayana are early, but the composition was late. If Rama existed, he should be in the Vedic period. Vratyas were also known in the Vedic period.

R. C. AGRAWAL :

We should be very cautious in using the word Aryan. The problem of ethnic association may not be solved unless we get cemeteries. Indigenous people like Kiratas etc. may be associated with the Black-and-Red Ware also. The entire region at Ahar and Eran is inhabited by the tribal people.

B. S. VERMA :

A few post-cremation pit-burials were discovered at Sonpur in the second phase of the Black-and-Red Ware culture (Pre-N. B. P). Is there any clear cut reference to post-cremation burial in the Satapatha Brahmana ?

SITA. RAM ROY. :

I have not associated the N. B. P. ware with any race. By Aryan, I mean a firm cultural base. I only mean with the N. B. P. Ware that a firm culture had started in Bihar. had We have clear reference to the post-cremation burials in the Satapatha Brahmana.

THE N. B. P. WARE—FRESH HYPOTHESIS IN THE LIGHT OF SRAVASTI EVIDENCE

K. K. Sinha

At Sravasti deposits of three successive cultural periods were encountered. Here we shall be concerned with evidence recovered from the earlier two periods. The position is briefly as follows :

In the period-I which is pre-defence habitation, N. B. P. Ware occurs in prolific numbers and diverse shapes. P.G.W. specimens, though extremely restricted are also recovered from this period. All the specimens are undoubtedly of the same category as the P.G.W. specimens from Hastinapura. What is extremely important is that the plain red ware shapes associated with the N. B.P.-P.G.W. phase have very many common types with the Hastinapura Period-II (P.G.W. PHASE). Conversely, the N.B.P. associated Red ware types as known from Hastinapur and Rugar are totally absent from N. B. P. ware associated deposit at Sravasti; but are represented in the post-N.B.P. ware phase at Sravasti which is Period-II. So are the thick and coarse grey ware types which are characteristic of the post-N.B.P. phase at Sravasti. The limited evidence from Vaisali and Rajgir point to the same direction. Obviously, we are confronted with two distinct cultural contexts of the N.B.P. Ware—one on earlier context as represented by Sravasti and more easterly site like Rajgir and Vaisali and the other a later context as represented by Hastinapur and Rugar. Sravasti-II (post N.B.P. -phase, has been dated by the intrinsic evidence to a date bracket. 300 B. C. 50 B. C.) ? As Sravasti-II is largely coveal with Hastinapur. III (N.B.P. Ware) phase, I think at the latter side the earliest of N.B.P. Ware phase cannot be very much earlier than 4th century. B. C. As the evidence of Sravasti, supported by Rajgir and Vaisali, pointed to conclusions of kind, I tried to re-examine the problem of N. B. P. Ware in its entirety particularly the Chronology. My approach has been to study the context and to establish a comparative stratigraphy of the total assemblage as against just that of the deluxe wares alone.

Marshall¹ was the first archaeologist who discovered specimens of N. B. P. ware from the lower levels of Bhir mound. He did not take any particular notice of the ware and regarded it as a kind of the 'Greek Black ware'—though he could not have failed to notice its occurrence considerably below his so-called 'Greek' levels. Ever since a short note on the N. B. P. Ware of Ahichchhatra² appeared as an appen-

dix to the article on pottery from that site, the ware has figured prominently in recent archaeological researches in India and has since been unearthed from a large number of recently excavated sites. Before we examine the available evidence regarding the chronology and provenance of the ware, we may draw attention to some of the opinions on the subject.

Codrington* referring to the specimens of the N. B. P. Ware from Marshall's dig at Bhita⁴ (U. P.) pointed out the apparent contradiction in description of it both in terms of chronology and the fabric. Wheeler and Deva⁵ in dealing with the specimens of Ahicohhatra (which themselves did not offer clue with regard to the dating), referred to the presence of the ware at Taxila (Bhir mound). They believed the N. B. P. ware finds from this spot to be mainly of pre-Greek period. In origin it may well go back to the fifth century B. C. and it is unlikely to have survived later than the earlier part of the 2nd century B. C. In that note, Wheeler and Deva also published a list of eighteen sites, mainly in the central Ganga Valley, which had known to have yielded N. B. P. Ware from time to time. The evidence of Taxila was regarded as extremely valuable in giving a chronological limit to the N. B. P. ware. This in turn, held out hopes for dating the early Indian sites as most of the important sites were known, or likely, to produce this ware. Lal excavated Hastinapur in the wake of the above knowledge and recovered about 101 specimens⁶. Stratigraphically these were ascribable to Period III which he dated to 600—300 B. C. Although he adduced internal evidence from the Hastinapur material for the above dating—and this was by no means formidable—it is difficult to deny that he was influenced by the dating of N. B. P. at Taxila. Kausambi, too was being simultaneously excavated; here, of course, the N. B. P. ware was observed in a comparatively more precise datable context, having considerably preceded the earliest appearance of a series of datable coins in well stratified context. Lal was, thus, inclined to see in the evidence from Kausambi, a confirmation of his assumption regarding the chronology of the ware at Hastinapura. Kausambi and Hastinapura were thus thought of as having offered the final confirmation to the original postulate of Wheeler and Deva referred to above. General acceptance followed, and in its wake quite a few sites with N. B. P. ware excavated, many of which were in the Central and Western India. At these latter sites it was observed that N. B. P. ware was found in very limited quantities and it was believed to be a sort of 'deluxe' ware. In this connection it was also held that the main centre of the manufacture was in the region lying between Kausambi and Rajgir, and that it may well have been imported on the sites in outlying areas. The belief that it was a prized commodity was further fortified by the occurrence of the specimens which had been riveted by means of copper wire⁷. A slightly later date in some cases was assigned to N. B. P. ware. In the outlying areas

of the Central and Western India. Yet the general belief that it belonged to the 500-200 B. C. bracket prevailed and we need not list all those sites which have been dated into the reports on the above-mentioned assumption. The above basis of the N.B.P. dating has been questioned by Gordon⁹ who was inclined to date the Taxila N. B. P. to 400-200 B. C. He went on to a listing number of sites, where he notes the occurrence of the ware as late as 1st Century A. D. 'At Ahicchhatra, its date though again indefinite due to unreliable evidence in 3rd Century B. C. at Sar Dhari mid 2nd Century B. C. and at Maheshwar and Rajghat, it starts in the 2nd Century, B.C. and at Sisupalgarh is as late as 2nd A. D.' As for the Hastinapura material, he was not prepared to accept the dating proposed by the excavator for period III which yielded the N. B. P. ware. According to Gordon, therefore, N.B.P. cannot be dated earlier than 400 B. C., but its central point may be considerably later. Wheeler has recently modified his original view and is indeed inclined to think that the Taxila dating may not in this respect be representative.¹⁰ In this he may perhaps have been influenced by the fact that his own dig in Charsada, very near Taxila, showed N. B. P. in much later deposit and a somewhat similar situation is said to have existed at Swat.¹¹ All this has led him to assume that in the far north-west at Charsada near Peshawar (where a dozen stratified sherds of this fabric were found in 1958), at Udegram in Swat, and even at Taxila itself, its arrival should mostly be equated with the establishment of the Mauryan Empire which spread to these areas from the Ganges after 323 B. C. In other words, I would provisionally ascribe the N. B. P. ware of the north-western region of the subcontinent to the period 320-350 B. C., without prejudice to the possibility of an appreciably earlier beginning in the Ganges basin itself.

In his published work on Charsada, Wheeler has categorised Ujjain too in the region 'geographically periphery to N. B. P. centres of diffusion' and according to him it cannot be averred that 'the ware arrived there promptly in 500 B. C.' On the question of the supposed linking of the spread of the N. B. P. with the well-known historical event—the Mauryan domination, Wheeler was preceded by Y. D. Sharma.¹² Without implying any link with Mauryan domination, Subbarao was making a somewhat similar observation, when he noted that 'with our knowledge of the age and distribution of N. B. P. belonging to the Early centuries preceding the Christian era, we can clearly see its movements in space and time towards west, east and south from its focus in the Gangetic Valleys'.

The above views may be briefly summarised as follows:—

1. The N.B.P. ware was a familiar type of pottery in Northern India, particularly the central Gangetic Valley, which was also the main centre of manufacture and is dated to 6th Century B. C. to 2nd Century B. C.

2. A little later, the ware spread elsewhere and was in short supply. Presumably it was imported and regarded as a prized commodity. This spread to

outlying areas is generally linked up with the extension of the Mauryan Empire during the late 4th Cent. Or early 3rd Cent. B. C.

3 In this region of secondary spread all these sites in central and western India and Deccan which have yielded N. B. P. ware in limited number have been included. According to Wheeler, Taxila, Charsada and Ujjain are to be included in this category, but not Hastinapura.

4. According to Gordon, however, N.B.P. cannot be dated anywhere earlier than 4th Cent. B.C. and that at most of the sites it ought to be dated later than this.

A careful study of the above postulates shows that the dating and provenance of N.B.P. does not appear to have been established on a firm basis; and hence, is amenable to rather widely differing explanations. Incidentally, Wheeler's latest assumption about the dating of Taxilan N.B.P. knocks of what is almost the only archaeological basis (so far available) for the dating of N.B.P. A possible explanation for all this is that in our enquiries we have so far been laying stress on the occurrence of N. B. P. specimens only and we have not adequately tried to study the context in which they were found. At the earlier stages of our enquiry, when not many sites had been excavated, this could have hardly been possible.

Taxila—In all, twenty-one specimens of N. B. P. have been reported from Taxila and in Marshall's publication, have been listed under 'Greek Black Ware'. Out of these one from the surface near the Hathial range may be eliminated as of no value to our present study since it is devoid of any stratigraphic context, two others have been reported from the lowermost depths of the second city, Sirkap (recorded depth 18' & 17') but have not been illustrated in Marshall's report. As we do not know the nature of the lowermost deposits from Sirkap, these specimens are an unreliable guide. They are not said to be associated with any known Greek finds. Furthermore, since we cannot assume with any certainty that the 'Greek' city was raised everywhere on the natural soil, the 'Sirkap' specimens are at best an unsatisfactory guide for the later date limit. The remaining 15 specimens from the Bhir mound (First city) are stratigraphically distributed as follows:—

The specimens (Nos. 226 a & b)—Stratum I

One specimen (No. 237)—Stratum II—6 ft.
and above.

15 specimens—Strata IV & III—7 ft.
and above.

Nizamuddin Ahmad, who recently studied the material from Taxila in detail has this to say: 'Except no. 226 a, b and 227 of Marshall's series which are in fact fragments of the same vessel and are not N. B. P., all other fragments of N. P. B.

came from the depth of 11 feet, 6 and 7 feet on the Bhira mound or in other words, mostly from the Marshall's strata IV and III. But numbers 225 a, b both came from the Stratum II. These fragments are quite distinct from the rest of the Series illustrated by Marshall, though he fails to make the distinction.¹⁴ The above statement is of considerable importance and this puts a new complexion to Taxila N.B.P. which on the detailed examination by N. Ahmad does not appear to have survived in Stratum II of the Bhira mound. We can thus assume that the stratigraphical range of N. B. P. at Taxila was IV-III. We may reiterate the fact that the chronology as set out by Marshall does not call for any major amendment. Thus on this reckoning, N. B. P. at Taxila ought to be dated to 500-300 B. C. N. B. P. bowl specimen with stamped decoration closely recalls the Achaemenian silver bowls which were current during the 5th Cent. B. C., and one of these bears an Aramaic inscription of about 390 B. C.¹⁵ Before we take up this question of N. B. P. assemblage, we would like to remind ourselves once more that Stratum IV and III of Bhira mound were very sparsely excavated as compared to the next succeeding Strata II and I. Marshall has made this point very clear. This accounts for the fact that very few antiquities belonging to the earlier strata have been illustrated. In this context, we may also assume with some justification that the ware was not as scarce as is commonly implied by the occurrence of only eighteen specimens. It is, therefore, not unlikely that if the lower depths of the Bhira mound were to be excavated a little more extensively, the specimens may have been found to be more numerous. From strata IV and III, hardly half-a-dozen plain red ware types have been illustrated and except for one vessel which is analogous to another found from N. B. P. yielding levels of Sravasti, the pottery types appear to be of a localized nature. In stratum II, which according to our present analysis will be a post-N. B. P. deposit, there are a few comparable shapes. Broadly speaking, the N. B. P. assemblage at Taxila is comparable to the similar context on the eastern sites, viz. Sravasti, Rajgir, Vaisali, etc.

Sravasti, Rajgir and Vaisali—The following common circumstances of the occurrence of N. B. P. may be noted.

1. There is a common tradition of plain pottery associated with the N.B.P. and some of the examples of this are illustrated (fig.) Incidentally, most of these shapes occur in Period II of Hastinapura.
2. Northern Black Polished ware is prolific in numbers. Generally, the quality of the ware is of a high order and this is particularly reflected in the thinness of the sections which recall the thin walls of the Painted Grey Ware.
3. In the limited area exposed, the main horizon of the N. B. P. ware provides the earliest use of burnt brick structure.

4. Inscribed material and coinage are absent from the N.B.P. ware bearing levels.

5. N. B. P. ware is associated with the Black Polished ware (This ware occurs along with the Painted Grey Ware at Hastinapura).

6. The range of shapes in N.B.P. ware is not limited to bowls and dishes, although these account for a larger proportion of the collection.

7. Ring wells are a feature of the post-N. B. P. levels at Sravasti and Vaisali.

8. Human figurines are not reported from the main N. B. P. ware bearing strata, but they generally occur in the late or post-N. B. P. levels.

9. At both Sravasti and Vaisali, the defences belong to post-N.B.P. levels.

10. All the three sites share a common pottery tradition in the post-N.B.P. levels as is evident from the repetitive shapes (Fig....)

Kausambi and Rajghat—The detailed reports have yet to be published; but judging from the available evidence, the pattern does not appear to be different from that described and in respect of circumstance Nos. 2, 3 and 4 the affinities are commonly shared. At Sravasti, Kausambi and Rajghat there appears to be independent evidence to support that the main horizon of N. B. P. ware was from 500 B. C. or earlier than 300 B. C. and that its survival after 300 B. C. is inconsequential. In this respect, the Taxilan evidence is in agreement with the above observations.

Hastinapura—The following circumstances of the occurrence of N. B. P. may be noted :

1. The ware was in restricted use as is evident from the fact that two years large-scale excavation produced only 101 specimens. In this context of restricted use, one must take into account the actual area in relevant depths brought under digging. Thus at Hastinapura the main concentration was in exposing as much of the lower levels as possible in the limited operations.

2. N. B. P. specimens generally show a medium sectioned walls and have rarely, if at all, thin walls.

3. The ware is associated with structural activity in baked bricks and terracotta ring wells are a feature of the levels which have yielded N. B. P. ware.

4. Punchmarked and uninscribed cast coins are reported from the N. B. P. bearing levels.

5. Terracotta human figures, including moulded specimens, are associated with the ware.

6. Pottery occurring in conjunction with N. B. P. includes Plain red ware shapes, illustrated at nos.—grey ware types. As already stated above, these generally belong to the post-N. B. P. levels at Sravasti, Rajgir, Vaisali and Taxila.

7. Black Polished and Black and red wares occur in pre-N. B. P. levels. It has been shown in Chapter Two that Period III of Hastinapura cannot be dated much earlier than the mid-4th Cen B. C. and that perhaps it lasted well into the 2nd Cen B. C. This would be the range of the N. B. P. ware at this site.

Rupar—The report of the excavation has not been published but judging from the material furnished one can assume that the N. B. P. assemblage is similar to that of Hastinapura. (I was myself associated throughout with the digging operations, and I am inclined towards the above assumption). There is, however, one additional circumstance which needs to be noted—the occurrence of an inscribed sealing which has been regarded as of early Mauryan date. We have to take note of pitfalls inherent in an excessive dependance on the supposed early Mauryan characters. The sealing could be dated anywhere between 250-200 B. C. and in the area where the sealing was found lowest, N. B. P. yielding levels were not very much below.

Ujjain—The reports have yet to be published (but here too, I had the good fortune of being personally associated with the first two seasons digging operations. My impression is that the assemblage is comparable to that of Hastinapur and Rupar). As in Rupar, inscribed sealing supposedly with early Brahmic is associated with the N. B. P. characters. Other materials also associated with the N. B. P. and published in the interim notes are, uninscribed copper cast coins, bone arrowheads etc. of which has a known datable context earlier than 4th Cen B. C. The quality of the ware at this site appears to be inferior to those of the specimens from Kausambi, Rajghat, Vaisali, Rajgir and Sravasti. 'The ware appears to have been locally manufactured considering the find of large numbers of rather poor specimens'. Burnt brick structures and terracotta ring wells are associated with the use of N. B. P. ware.

Aliichhatra—The position of N. B. P. ware is not very clearly defined. In the area (A.C.V.) the N. B. P. ware specimens were recovered from the pre-fortification layers. This deposit also yielded P. O. W. specimens. 'This fact tends to indicate that the painted wares and black polished wares are coeval with each other'.¹⁶ In another area it was recovered from stratum V. Here, perhaps, it is not in its true context of deposition.

As a result of this brief survey, (which is further illustrated by a comparative chart) it is obvious that the N. B. P. ware is found to occur in at least two widely differing contexts—one earlier and the other decidedly later. The earlier is represented at the sites like Taxila, Vaisali, Sravasti, Rajghat, Rajgir and Kausambi, and the later at Hastinapura, Rupar, Ujjain, Navadatola, Charsada etc. Gordon is, therefore, not justified in implying a uniformly late dating for all N. B. P.

Apart from this main observation, the following other points may be made, Keeping in mind the opinions referred to above.

1. N.B.P. ware by itself cannot be regarded as a self datable criterion. It has been shown to be occurring in widely differing contexts and one must look to the associated material before coming to any conclusions about the dates.

2. The sites like Kausambi, Rajgir, Vaisali and Sravasti may be regarded as those included under primary distribution list and here, its main duration was between 500-300 B.C. with the likelihood that the ware continued later but with a considerably decreased popularity. Taxila may also be included in this list where, perhaps, the ware was imported from eastern centres. We know that Taxila, Sravasti, Vaisali and Rajgir had fairly close links.

3. The sites under secondary distribution would include Hastinapura, Rupar, Ujjain, Kumrahar, where the associated assemblage does not point to a date earlier than 350 B.C.

4. The spread of N.B.P. does not appear to have been connected in any way whatever with the extension of Mauryan domination, as suggested above. Not only does the main chronological horizon of the N.B.P. ware on sites under primary distribution appear to have antedated the spread of Mauryan Empire, the site of Kumrahar, identified with the Mauryan capital Patliputra, produced N.B.P. ware wholly insignificant in numbers and quantity, while the neighbouring Rajgir, the supposed Magadhan metropolis during pre-Mauryan times was an important N.B.P. producing centre.

5. There is also no convincing reason to believe that there was movement in time and space, i. e. the N. B. P. gradually spread out to the outlying centres from the central Ganga Valley. All that we can assert in this context is that it remained in continuing use for a very long time although losing much of its popularity at the centres where it originated, but this aspect was not necessarily dependent on time and space. There is thus N. B. P. at Rajgir belonging to the 500-300 B.C. context but at the neighbouring Kumrahar the ware has a much later datable context. There is no reason to suppose why a similar situation could not have existed in regard to Taxila and Charada and thus Wheeler's grouping of sites in a chronological bracket based on space-movement may not be justified. We are, therefore, inclined to believe that the presence of the ware at a site lying outside the middle Ganga plains should not necessarily lead us to assume a late date (example—Taxila) and conversely, not all sites (example—Kumrahar) even in the middle Ganga plains can be given the same chronological horizon as Sravasti, Vaisali, Rajgir, etc. We may assume that N. B. P. was generally a prized commodity, particularly at the sites coming under secondary distribution. We however cannot be certain if the ware was imported. As we come across widely

different grades, the question of import can be settled only if we can fix a standard quality and its distribution. While the main concentration of N. B. P. as revealed by numbers and quality is to be found in the area in which are included sites like Kausambi, Rajghat and Vaisali, we cannot be certain that the ware was not being produced else where. In fact, the wide differences, often met with but not always realized, in the degree of the surface finish would normally lead one to believe that imitation copies were being made on the sites outside the middle Ganga plains. The Taxilan gadrooned bowl in N. B. P. which has very close affinities with the Persian silver ware is a unique specimen and appears to have been manufactured outside the area mentioned above.¹ The circumstance of N. B. P. though an exceptionally high grade pottery but without any recognizable assemblage of its own, recalls to mind a some what similar position occupied by the pre-historic Samarra ware in the stratigraphical sequence of the pre-historic Mesopotamia.

DISCUSSION

B. P. SINHA :

Now we have for the first time, some clear distinction between two cultural strata of the N.B. P. ware. The N.B.P. ware should not be associated with Mauryan Empire. Whether in early context it was associated with Buddhism? Is there any evidence to show that Buddhism reached Taxila earlier than Asoka? Really it is a comparative study of specific types and its frequency in a stratigraphical context. Now we may see the direction of its spread. The N.B.P. was the deluxe ware of its time and appeared in Rajgir area. In Pataliputra, it came later than 350 B.C. Later phase may be associated with the Nandas and the Mauryas.

KRISHNA DEVA :

I am now inclined to revise my own opinion. I was considering the Mauryan period as time-scale and Magadha was the place for the distribution of the N.B.P. ware. Magadha continues to be the focus, but time-scale changes. It appears that the N.B.P. ware originated in the time of Nandas and spread due to foreign trade, etc. in subsequent periods. The Nandas have been followed by the Mauryas. Practically, the Nandas have the same position as the Pre-Mauryan Yakshas to Mauryan sculpture. The N.B.P. ware co-existed with the Mauryan empire. They were responsible for its spread, particularly in northern India. The cities of Taxila, Sravasti, Rajghat, Kausambi, Rajgir, etc. fall on the ancient trade-route and also yielded the N.B.P. ware. Pottery must have spread through the trade centres due to trade and commerce. Buddhists merely followed trade for trade sake. It is difficult to explain why Ujjain has yielded lower quality of the N.B.P. ware, though it was a big centre of trade and commerce. It needs more exploration. Taxila (Particularly Bhir mound) needs more extensive work. Small work of Wheeler in 1943 has shown that the site is very promising. Unfortunately,

only at a few places we reached natural soil. More extensive work at Bhir mound should be done. It may give an idea of town planning and cultural equipment of the pre-Mauryan period. Earlier specimen of the N.B.P. ware may not be expected at Patna. It is a much younger city than Rajgir, Vaishali, etc. In our controlled excavation at Kumrahar, the N.B.P. ware occurred in small numbers. Earliest specimen came only from trade centres—Taxila, Kausambi, Ahichhatra, Sravasti, Rajgir, etc. Hastinapura may not be important as its glory had shifted to Kausambi. The N.B.P. ware originated with the Nandas and was popularized by the Mauryas.

R. C. AGRAWAL :

Slight contact with the N.B.P. ware culture has been observed at Noh where a few sherds, contemporary to P.G. Ware phase, occurred. P.G. Ware is degenerated there. Its occurrence outside the N.B.P. ware horizon was due to contact with the N.B.P. ware sites. I would like to know the position of N.B.P. ware at Mathura. It was an important trade-centre. The whole N.B.P. ware complex has been divided into two phases. Have you got any basis to support the hypothesis in the light of other materials? Is there any archaeological evidence of association of early Mauryan and Mauryan terracottas with the N.B.P. ware? Have you got any terracotta from premauryan N.B.P. ware phase?

S.P. SHRIVASTVA :

We have two sites of the N.B.P. ware in Rajasthan—(i) Bairat and (ii) Noh. The excavation carried out by Daya Ram Sahni at Bairat was not on present lines. Interesting materials have come to light from site where we dug. It seems that the N.B.P. ware circulation must have existed there for a long time. A circular monastery, probably pre-Asokan, existed at the top of the hill. Certain bricks bear letters in Brahmi character. Asokan inscription has been found there. I think that the area must yield the Mauryan material. One could get there a few fine pieces of the N.B.P. ware having silvery, black and light greenish, polish on them and its associated pottery. These materials have not been found from stratified layers either from Bairat itself or Noh.

R. C. GAUR :

We have P.G.W.—NBP phase at Atranjikhara also, then comes the true NBP ware phase. In earlier levels P.G. ware types continue, but in the true N.B.P. ware, its shapes do not occur. In earlier levels, we have no bricks, whereas full fledged brick-structures occur in later phase.

K. N. DIKSHIT :

At Bairat, only a few sherds of the N.B.P. ware have been found. P.G. Ware types continued.

V. D. Mishra :

Bricks and ring-wells are associated with the earliest NBP phase at Kausambi. The N.B.P. ware horizon at Kausambi, Sravasti and Rajghat bear close affinity.

R. S. SHARMA :

The hypothesis of Krishna Deva that Magadha was the epi-centre of the N.B.P. ware still holds the field. So far its spread in the Mauryan period is concerned, the position of Kumrahar should be settled. Was it a capital of the Mauryas? It has yielded very poor cultural remains. We cannot determine the chronology of the period on the basis of pottery assemblage only. Total assemblage of the period should be discussed. In Eastern U.P. and Bihar the N.B.P. ware period is associated with iron and Punch-Marked coins.

S.P. GUPTA :

I feel that apart from the Mauryan Empire, we should also consider trade relations. This pottery also was distributed with the extension of empire, this was due to trade relations. Idea and conception of the epi-centre and peripheral region of the N.B.P. ware may not be proved unless we include Taxila. It may not be included in the early group.

K.K. SINHA :

So far Marshall's excavation at Taxila is concerned, it is reliable. He has been unnecessarily criticised. Irrespective of the method followed by him, his observation and authority cannot be challenged. The dating of Taxila is convincing, it should be included in early group. I still hold that the main culture of the N.B.P. ware was Magadha and area around it. Kumrahar is ancient Pataliputra, though very insignificant Mauryan remains occurred there. I feel that the Buddhism had nothing to do with the spread of the N.B.P. ware. Its main phase should be regarded after Asoka. It was of a local nature in a pre-Mauryan period. Not a single moulded terracotta human figurine has been found prior to 300 B.C. At Rajar also terracotta starts in 300 B.C.

THE PAINTED GREY WARE AT ATRANJIKHERA—AN ASSESSMENT

R. C. GAUR

The richest deposit of the proto-historic period at Atranjikhhera is of the Painted Grey Ware (Period III), which has been found in an area of approximately 650 Sq. meters. It is obvious that only a very small portion of the P.G. Ware deposit has been excavated till now. The thickness of the deposit so far excavated varies between 0.80 meters and 3.50 meters. Although the P.G. Ware has been excavated at several sites, the digging at Atranjikhhera has been significant in many respects, of which two deserve our immediate attention.

(i) On the basis of C-14 dating of 1025 B.C.* of a charcoal sample belonging to the P.G.W. levels of Atranjikhhera, a clue has been provided for the first time to infer that the P.G.W. using people settled down in the Ganga Valley around 1100 B.C. This view was further supported by two additional C-14 dates for the mid levels of the P.G.W. phase at Noh belonging to the 9th and 7th Centuries.

(ii) Atranjikhhera was first site to yield the iron tools and implements practically from all the layers suggesting that the use of iron was common throughout the P.G.W. phase. This has pushed the antiquity of iron industry at least to 1000 B.C. in the Ganga Doab.

The digging has thrown sufficient light on the habitation and cultural pattern of the period. Different floor levels with postholes have been found which helped in determining the phases of the deposit for a better understanding of the cultural complex. Among other important finds were iron furnaces (?), a potter's kiln and domestic hearths etc. The earthen pots around furnaces which explain their utility to the smith to some extent, the pots and pans near the hearths give some idea of the kitchen-pots and the dining set. A large number of rich pottery was collected from the kiln.

On the basis of the stratigraphic study of the floor levels a statistical analysis of pottery and the frequency of iron objects and other antiquities, it has been possible, even though tentatively, to divide this period into following four sub-phases.

(i) First sub-phase : Occupational deposit—between 20 to 50 cms. Frequency of black and red and Black slipped ware is greater than that of P.G. ware. Only a few small iron and copper pieces of an indeterminate nature, were found.

(ii) Second sub-phase—Occupational deposit—between 5 and 40 cms. The percentage of the P. G. sherds is the highest in this sub-phase, being approximately 10 per cent of the total. It is the richest in design and shape. The potter's kiln referred to above belonged to this sub-phase. Black and red and Black Slipped ware shows a marked decrease. Even more significant is the sharp rise in the number of iron objects, many of whom have retained their shape. The other antiquities show not only an increase in number but also greater skill of craftsmanship.

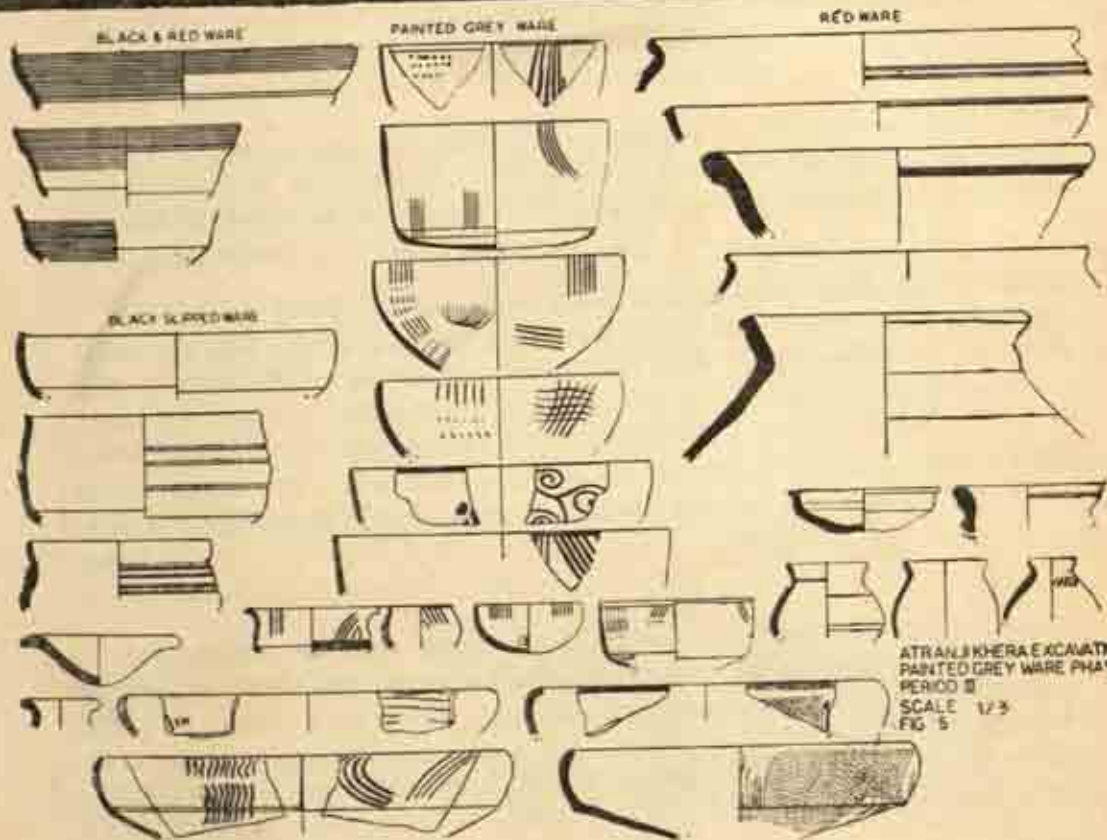
(iii) Third Sub-phases—Occupational deposit varies between 40 and 90 cms. P. G. ware sherds tend to decrease, their percentage falling to about 6%, plain Grey and Black Slipped ware show a marked increase, the latter improving in luster. The true black-and-red has virtually disappeared. The frequency of iron objects also increases appreciably.

(iv) Fourth Sub-phase : Occupational deposit—10 to 40 cms. The incidence of the sophisticated Painted Grey pottery has further declined to less than 30 percent while plain Grey and Black-slipped ware show a further increase. Iron objects reveal a greater variety and include domestic implements such as kitchen tongs. Finally comes decadent stage of the P. G. W. industry when it tends to become crude.

Although the P. G. ware also continues in the early layers of the N. B. P. ware phase gradually it declines and disappears. Stratigraphically there is no evidence of a gap between this phase and the succeeding N. B. P. phase.

Though the Painted Grey ware is the characteristic pottery of the period it seems that this was only the sophisticated ware, its incidence ranging between 3 per cent to 10 per cent of the total pottery complex. In addition, plain Grey ware, Black-and-red, Black slipped, fine red slipped and unslipped and coarse red ware, was found the latter being in the majority.

The painted Grey ware is usually of a fine quality, characterised by well levigated clay, free from impurities. The colour varies from ashy to dark grey. The shapes and designs are almost similar to those found at the other P. G. ware sites. However, some of the shapes in miniature pots and some of the designs appear to be different. Of special interest is sherd of brownish colour decorated with punched circles, almost similar to that found on a grey ware bowl from Hastinapura. The painting is generally in black and occasionally in red, chocolate, yellowish, whitish-grey and bichrome.



ATRANKHERA EXCAVATIONS
 PAINTED GREY WARE PHASE
 PERIOD II
 SCALE 1/3
 FIG. 5

The pottery finds of the plain Grey ware group in form and fabric are similar to those of the Painted Grey ware. Special mention may be made of a well burnished bowl fragment with a vertical featureless rim, having a ledged shoulder and carination towards the base, interesting pieces of miniature bowls, a piece of bowl having weakly corrugated concave sides.

The number of shapes in black-and-red ware is limited, the majority of the sherds being of an indeterminable nature. However, the shapes and other features of this Ware are similar to those found at Hastinapur and other P.G. Ware sites.

Among the Black-slipped sherds many determinable shapes are available. Generally this ware comprises bowls and dishes like those from Hastinapur. The common shapes of this ware continued from the preceding period, while some new ones are introduced. These include a bowl with vertical internally sharpened rim, corrugated sides and a flat base; a shallow bowl or lid with splayed out concave rim, with a hole in the centre and a sherd, indeterminate in shape polished externally with two incised grooves and a chain-like incised design.

Most of the red ware sherds are unslipped and of medium fabric. These, as well as, the slipped ware are similar in shape to those found at Hastinapur. The red slipped ware is like the P.G. ware in shape and fabric. However, there are some new shapes, such as medium size vases with out turned splayed rim, concave-necks, flattish base, having incised grooves on the exterior; and, a miniature pot with splayed out featureless rim, and incised decoration on the shoulder.

The ill-baked unslipped Ware includes vases, storage jars etc., some of these being decorated with impressed patterns and chord designs. In a few cases there is a carelessly executed thick black band on the rims and shoulders.

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4. Fig. 5.
5. Ancient India No. 10-11, Fig. 9-45.

SOME TECHNICAL OBSERVATIONS ON N. B. P. WARE SLIP

H. C. BHARDWAJ

The iron age deluxe pottery, the so called Northern Black Polished Ware on account of its great archaeological significance and superb quality has attracted the attention of the Archaeologists ever since it was first reported.

The ware has a highly lustrous finish and its colour shows great variations amongst the shades of black and grey. Some varieties, however, show silvery and golden shades, while others are reddish, with deep red, chocolate and sepia variations. The present paper deals only with the black variety.

Views of Earlier Workers

The identification of the colouring agent of the black coating of the N.B.P. Ware and its characteristic gloss has been a subject of enquiry for the last 25 years. The views of Sana Ullah¹, Lal², Bimson³, and Hegde⁴ are not compatible. A brief mention may be made here of their observations.

Sana Ullah reports that black coating contains about 13 per cent oxide, which is responsible for the black shade and that the coating is not siliceous glaze. He also mentions that ferrous silicate is responsible for the colour effect. The account for the lustre, he assumes the formations of ferrous-lime and ferrous-magnesia silicates, which being of low fusibility, bring about fusion of the black film, during firing. Further he holds the possibility of the deposition of carbon and tarry matter in the pores to enhance the black colour.

Lal on the basis of his observations concludes that the black gloss of the N. B. P. Ware may have resulted by some sort of postfiring treatment in which the kiln-hot pottery was coated with some organic liquid of vegetable or animal origin. He further states that the exact conditions of firing and the nature of the ferruginous material employed in its manufacture still remain elusive.

Hegde concludes that the shining black slip consists of a thin layer of black magnetic oxide Fe_3O_4 which is responsible for the colour. He also mentions the formation of glass like substance. Due to the tendency of the slip to crack he suggests that the slip was applied on baked clay.

In contrast to Hegde's views Bimbson observes that N. B. P. ware has been mistaken for Greek black gloss and she points out several differences. Thus a razor blade will run smoothly across the Greek black, whereas it will cut into the Indian black (N. B. P. Ware). While Greek black is magnetic, N. B. P. Ware is relatively non magnetic. Greek black stands the temperature of 1000°C , without any change, while Indian black shows considerable variations in its resistance to such temperature. She adds that bright gloss is not a glaze or lacquer. Microscopical examination of the ridged areas showed that the shiny surface is not confined to the raised parts, but its appearance may be related to some characteristic of the material used for the surface layer as found to be the case with Greek black gloss. The British Museum laboratory does not subscribe to the views of burnishing and its present view is that the unfired pots were dipped in a suspension of ferruginous inorganic material, probably resembling a red earth that after firing to a temperature of 800°C , the kiln was sealed, so that the pots cooled in a reducing atmosphere. According to them the precise nature of the surface layer still remains unsolved.

Main differences of the earlier results

While the views of Sana Ullah may be taken to mean that ferrous silicate is chiefly responsible for the colour effect, which might have been enhanced by the deposition of Carbon and the tarry matter; the views of Lal may suggest that post firing application of organic material on the hot pottery is chiefly responsible for the lustrous black. Hegde claims that black colour is due to magnetic oxide of iron- Fe_3O_4 and the lustre is due to glass like substance. Bimbson's observations contradict Hegde's assertions, but without providing suitable alternate explanation.

PRESENT WORK

METHOD OF SEPARATION OF SLIP

Seeing the widely different views of the various workers in the field, we took up the problem. It was soon realized that there is great difficulty in the clean removal of the slip without admixture with the body material. The earlier workers too might have met this difficulty. Despite various efforts to remove the black coating from the body, a clean separation of the slip was not possible by mechanical means (by use of sharp instruments). The material thus obtained was always adulterated by the adhering body clay.

It may be inferred that black coat is very thin and when we scrape the slip, we actually cut into the body clay.

CHEMICAL METHOD OF SEPARATION

However, successful separation of the slip by chemical method was achieved. The N. B. P. Ware sherds were treated with the minimum amount of HF just sufficient to wet the surface. Sherds were kept in a hot atmosphere for a few minutes. It was noted that slip had been disengaged by this treatment. The disengaged slip was removed by means of jet of water and was profusely washed and examined.

SOME OBSERVATIONS AND TESTS

1. Visual examination of the disengaged slip reveals that in case of black variety of the Ware, both the upper and lower surfaces of the slip are black.
2. Clean separation of the slip by chemical means may indicate that slip and body have not coalesced.
3. The treatment of slip material (chemically disengaged) with excess of hydrofluoric acid for 24 hours and further leaching with conc. hydrochloric acid do not effect the black pigment. (5).

However, the filtrate from HF and HCl leaching is positive for iron. This shows that slip has a ferruginous material.

This would mean that ferruginous material present in the slip might not materially account for the black colour of the slip, but may indicate the presence of some inert material like carbon which is unaffected by the strong chemicals.

4. The black residue (left after the above treatment) on ignition with lead chromate gives off gasses which turn lime water milky (6).

This provides direct proof of the presence of carbon in the slip, which might be substantially responsible for the black colour of the Ware. (Refer above the views of Sana Ullah and Lal who too hold the possibility of deposition of Carbon in one way or another).

5. The black residue (obtained from the slip by the above referred treatment, washed and dried) was brought before a magnet and was not found to be magnetic.

The black slip even without any treatment, was found to be very weakly magnetic (7).

6. The black paint layer does not easily burn out with a blow pipe, unless treated with hydrofluoric acid, which probably loosens the bond between the clay particles and carbon paint and thus promotes oxidation of carbon (8).

7. During the burning out of the paint layer (as mentioned above), occasional sparkling is noted. This indicates also the presence of carbon particles.
8. The detached slip after ignition when carbon has burnt off leaves a buff coloured clayey residue.
9. The petrological examination* of the slip material shows its anisotropic character. So the formation of glass like substance as reported by Hegde (refer to his views above) could not be confirmed.
10. The observation of Bimbson (refer above) that a razor will cut into India black (N. B. P. Ware), has the implication that the surface is neither covered by a glass like substance nor magnetite, since both of these have hardness of about 6 on Moh's scale. This may confirm our observations that neither there is a layer of magnetic oxide nor formation of glass.

CONCLUSION

On the basis of these examinations and investigations, we may tentatively suggest that black colour of the slip is materially on account of carbon and our experiments and observations do not substantiate the presence of magnetite or ferrous silicate.

Views of Lal mentioning the use of organic material which will deposit carbon on charring need attention. However, in view of the presence of a detachable clayey slip, post-firing application of organic liquids looks doubtful. This slip might have been obtained by the application of well levigated emulsion of refined clay and organic liquids (say plant juices) over the dried pots. After the slip was dry, the pots were fired under reducing condition. The organic matter in the slip carbonized, without burning out, resulting in a uniform lustrous black surface.

FURTHER LINE OF APPROACH

Considering the colour variations of the slip etc. it must be admitted that more comprehensive study of this ware is necessary, so as to arrive at more useful results and to find out the method of fabrication.

Further work on the study of the slip as well as body of the ware in progress in our laboratory and thin sectioning of the N. B. P. ware has also been made. The results of this examination will be published shortly. It is also intended to carry out 'Differential Thermal Analysis' in conjunction with X-ray diffraction studies.

*This observation is by Dr. B. K. Das of Geology Department of Banaras Hindu University, who kindly examined the specimens for me.

Considering the apparent resemblance of the N. B. P. Ware and Chunar pottery, as well as its pertinent location, it is intended to study the work of the Chunar Craftsman.

The author is thankful to Professor A. K. Narain, Head of the Department A. I. H. C. and Archaeology, B. H. U. for his encouragement throughout this work.

NOTES

1. M. Sana Ullah, A.I. No. 1, 1946, p. 120.
2. B. B. Lal, I.A. 1955-56, p. 56 and I.A. 1959-60, p. 120.
3. Mortimer Wheeler, Early India and Pakistan, p. 30 et al quoting the views of Miss Bimbson.
4. K. Hegde, Technical studies in N. B. P. Ware, J.M.S. 'varsity of Baroda, Vol. XI, No. 1, 1962, pp. 159-161 & Current Science Vol. 35, 1966 p. 623.
5. Mellor mentions that excess of HF acting for 20 hours dissolved magnetite completely. It is more easily dissolved by HF than any other acid. He also states that powdered magnetite is completely dissolved in H.C.I. J. W. Mellor, A Comprehensive Treatise on Inorganic and Theoretical Chemistry, Vol. XIII, part 2, p. 758.
6. A. O. Shepard, Ceramics for the Archaeologist, p. 221.
7. Here it may be mentioned that magnetite is highly magnetic and will be affected even by an ordinary magnet. Other minerals of iron (e. g. hematite, siderite etc.) are also moderately magnetic and will exhibit magnetism with a stronger magnet. So slight magnetism only shows the presence of feruginous material and not magnetite.
8. A. O. Shepard, Op. cit. p. 35.

DISCUSSIONS

B. P. Sinha:

In Bihar, we have many different shades in the N. B. P. ware. I would like to know whether various shades could be produced out by black slip. If not, is it a difference of organic material?

Shivaji Singh:

In literature, certain traditions are maintained in later period also. The application of plant-juice on dried pots has been mentioned by Bhardwaj. The Satapatha Brahmana refers to its application in a post-firing state.

S.R. Rao:

Whether the use of furrugious clay as slip was in a post-firing or pre-firing state? If there is any post-firing treatment ginger oil etc. might have been used. On the other hand, if it is a pre-firing treatment, the slip was applied with organic material. Is there any trace of organic material left?

P. L. Gupta:

At Nizamabad, 80 miles from Varanasi the glossy black pottery is manufactured. Its technique should be known and applied to scientific examination of the N. B. P. ware.

H. C. Bhardwaj:

All the organic material will give black result. If we burn a lamp, carbon material will be left. Other shades in the N. B. P. ware have not been examined.

ASSOCIATED ANTIQUITIES OF THE N. B. P. WARE WITH SPECIAL REFERENCE TO BIHAR

Lala Aditya Narain

With the emergence of a typical and entirely new ceramic known as the Northern Black Polished ware, a new era ushered in the material culture of the people of Northern India. The users of this ware brought with them a high order of technological skill which revolutionised the entire field of human activity and as a result of that we find a complete change over from the preceding way of life. This change was for the better. The use of iron in more abundant scale for varied purposes made it possible for them to lead a settled and urbanised life. Iron as a metal, no doubt, was known to the people of the preceding culture but its use was somewhat limited, as is known to us from the evidences which have come to light from the excavations at Hastinapur¹.

Stratigraphically, the N. B. P. ware has been located after the Painted Grey ware and the Black and red ware. This ware has a wide distribution. It occurs at Taxila in the North-West to Sisupalgarh in the east and Amravati in the south but its main region centres round the Gangetic valley. Its occurrence outside the Gangetic valley is comparatively small than that of the Gangetic basin. The precise date for this ware has been fixed in between C. 6th century B. C., and C. 200 B. C.

Passingly, it would be desirable for us to know the stock of people who brought about this great economic change in the society. Now, if we associate the P. G. Ware using people with the Aryans as has been done by Shri B. B. Lal on the basis of the evidences from the excavations at Hastinapur and other allied explorations, the question can be solved. It has been observed by Sri Lal that N. B. P. ware, in all probability, is an improvement upon the Black slipped ware which occurs along with the P. G. Ware. It is just possible that the ceramist of this age might have been conducting experiments on the Black slipped ware and when they acquired perfection in the technique of manufacturing the N. B. P. Ware they switched on to this new type of pottery. It is the law of science that progress is usually achieved by experimental attempts, starting with elements which are already known and mastered. This law fits well in this case. We can thus assume that the P. G. Ware and the N. B. P. Ware using people were not ethnologically different stock of people.

Let us leave this discussion here since it is a very controversial problem. To whatever stock the N. B. P. ware using people may belong, there is no denying

the fact that the period was of great prosperity. The material equipments of the period under consideration have come down to us in diverse forms from excavations, but in scanty way, yet they present a fairly reasonable picture of the economic position, agriculture, art and architecture, food habits, warfare, trade and commerce, amusements etc.

Let us begin with the ceramic complex because ceramics have been acclaimed by the archaeologists as the primary cultural equipment. The period witnessed tremendous boom in the field of ceramic activities of the wares, the most crucial is the N. B. P. ware. Made of well levigated clay and fired under very high temperature the ware presents very high lustrous polish ranging in colour from steel black and silvery to golden. The shapes so far encountered include dishes with incurved sides, bowls with straight convex, corrugated or tapering sides, lids and rimless carinated handi. To this may be added a flanged bowl² which is a rare type. Sravasti³ and Kansambi⁴ have offered to us painted and incised sherds in this ware, but this is a rare phenomenon.

On account of its beauty and durability, it enjoyed the status of the Delux ware of the period. The appearance of basically new shapes not known in the P. G. ware, reflects new ways of doing things—the adoption of new method of food production.

Black slipped ware, Red and Black Ware, Grey ware and Red ware are the associate potteries of the age which met the increasing demand for the new types.

Black slipped ware, a pottery of the precedings Chalcolithic culture continued with the N. B. P., indicating an unbroken succession at Sravasti, Atranji Khara, Rajghat, Pataliputra, Sonpur and Chirand while at Nagda, Ter, Hastinapur and Vaisali it does not occur with the N. B. P. The types in the ware are dish and bowl (both plain and corrugated). They are made of fire grained clay and are well fired. Both the surfaces of the pots are treated with black slip, and sometimes burnished. They range from fine to medium variety.

Black and red ware persisted in this period, but with some modification. This ware has been reported from many sites of Northern India. Particularly in Bihar, it occurs in all the excavated sites like Vaisali, Chirand, Sonpur, Rajgir, Pataliputra, and Oriup. The fabric becomes finer, and more new shapes such as basins, big jars and vases come into being. Invariably the pots were treated with wash or slip.

Grey ware assumes more new forms. Apart from dish and bowl lipped and plain basin and carinated rimless handi are added to the list. Majority of the vessels are plain, but impressed designs like hollow cross, wheel with spokes, concentric circles and crescented hill appear in the centre of the inner portion of the pots. Some sherds show painted designs in black.

The relative abundance of red ware over other wares suggests the more utilitarian character of the pots. The fabric ranges from medium to coarse variety although fine specimens are not at all wanting. Many new types such as storage jars, conical bowl, lid with strap handle, spouted vase make their appearance. Other types already known in other wares such as lid cum bowl, basins, lipped bowl, vase, miniature pot, dish and bowl also continue. Pots in medium and coarse fabrics are mostly unslipped. Storage jars, basins and vases are found in medium to coarse fabric with gritty core. Fine sand is freely used in such types of vessels. Bowls and dishes are made of fine grained clay and they display red, tan and orange coloured slip over the surface. Vases and jars are usually found decorated just below the rim. The decoration consists of rope design, thumb pressed design in applique method and incised designs such as crisscross, ripple mark etc. Impressed designs like triskeles, pipal leaf etc. are also found on carinated rimless handis.

Painting has also been noticed on some pots in this ware. The design consists of parallel horizontal lines, solid dots, group of sigmas and horizontal rim band. The paintings are mostly in cream pigment and are found generally on the external surface of the pots but occasionally on the inner side also.

The wares and the types discussed above allow us to draw certain important conclusions. In the first place they reflect the ceramist's understanding of the peculiar properties of the substances with which he worked—his high technological skill in the preparation of the paste for the N. B. P. Ware and the discovery of shapes, quality of pots and better firing method.

In the second place, the relative abundance of the potteries gives a glimpse of the density of population and their prosperity. Lastly the paintings and designs speak of the beliefs and concepts of the populations.

There was a good stride in the architectural activity but the picture emerging from the excavated site is not of uniform nature. The excavations so far conducted are of the nature of index excavation and due to this fact full knowledge of the building activity cannot be had in the present state. As the evidence goes, there was a tendency to bid good-bye to the age old building materials like mud and mud bricks but complete switch over to the more durable material i. e. burnt bricks had not become possible. Although there was an increasing crave for kiln bricks, which had made it debut in the later part of Chalcolithic period, yet it seems that its use was largely confined to the structures of public utility. The perplexing discovery of 250 ft. long wall at Rupaⁿ, probably an enclosure of a big edifice, a barn and chain from Hastinapur and remains of tank and well at Ujjain testify to this fact. Structures made of mud and mud-bricks still persisted. Examples of such structures are found at Nagda, Ataranji Khara, Hastinapur, Mathura and Rajghat, while

at Ujjain and Awra use of dressed stones with mud for building purposes is also attested to. Small hearths of bamboo and reed have been discovered at Chandraketugarh⁷ and Mathura⁸. It is rather surprising to note that in Bihar except Pataliputra, and Vaisali no picture of structural activity in brick has been obtained. Evidence of fortification has also been obtained from many places, like Ujjain, and Rajgriha. Fragments of polished sand stones, apparently architectural members have been unearthed at Pataliputra⁹ which speak of the knowledge of the people in stone architecture.

Buildings were laid out according to the pre-conceived plans. The discovery of terracotta ring wells, soakage jars at close intervals, brick and pottery drain¹⁰ in the habitational areas reflect, in a way, the high civic sense and sanitation arrangements.

Agriculture was the main source of people's livelihood. Vast areas were brought under cultivation. Land was irrigated by tanks and wells. The discovery of sickles and hoes points out that crops were harvested and stored in earthen storage jars. Rice, wheat and pulses were the main cereals which people consumed. The discovery of the above named cereals at Ter and Nevasa in the N. B. P. Level testifies to this fact. Rice, no doubt, was known in the preceding age but wheat and pulses were added in the dietary system of this period. That a large section of the people were non-vegetarian is proved by the discovery of a large number of bones from the different sites. This leads us to suppose that cattle were domesticated for milk and meat. Terracotta net shukers which were probably used for catching fishes further justify the non-vegetarian character of the people. Variety of shapes in the earthen Wares indicate the developing dietary laws of the people.

Barter system was in vogue for the exchange of commodities before the introduction of the coinage. People might have experienced considerable difficulty in this system in carrying out the growing trade of the country in the absence of coins. This led them to introduce coinage in India for the first time which facilitated to boost the economy of the country. Practically from each and every excavations, punch marked coins both in silver and copper and uninscribed copper coins have been exhumed in large number. These coins are of different denominations, the lowest being 56 grains in weight. Perhaps the organisation of traders' guild introduced the system of coinage.

Weights of different denominations discovered from excavations further throw light on the point that commodities were weighed and sold. These weights perhaps helped to gear up the trade. The weights made of steatite and jasper have been reported from Eran, Vaisali and Chirand and a terracotta from Jajinai¹¹ in the Kanpur district of U. P.

We may now pass on to consider artistic activities of the period. Art during the period displays the flowing linear movement and an inexhaustible rush of forms. Clay being ductile, cheap and easily available found favour with the folk artists who utilized it to reflect the popular tastes and ideas of various grades of the common folk. The clay figurines bespeak of the primitive as well as sophisticated diction. From the excavated sites yielding the N.B.P. Ware in Northern India clay figurines have come out in profusion. Bihar among the sites seems to be the most prolific centre. Pataliputra, Bulandibagh and Buxar offer very fruitful clues to the study of the stages through which the clay figurines had to pass in this period. Archaic specimens of this art have been exhumed from the earliest levels yielding the N.B.P. sherds at Pataliputra. Human figurines are completely hand-modelled and their hands and feet are represented by stump of clay, eyes either by circlets or incised lines, hair by perforations on the head or incised lines and nose by pinching out the clay thus representing complete lack of imagination on the part of artists.

Towards the late phase, face began to be pressed out of mould. Luxurious ornaments consisting of rosettes with ribbons attached to them, earlobes and heavy round neckless were displayed on the body through the applique technique. Standing female figurines wearing under garment and flouncing skirt and typical cap on the head, discovered at Bulandibagh and Sonapur in Bihar, are examples of delicate tastefulness. Objects of amusement for children in the form of clay figurines of animals such as ram, dog, antelope, elephant, horse, bull, tortoise, snake, birds and toy carts have made their appearance during the period. Examples of these animals are completely handmodelled and are invariably decorated with punch circlets, notches, deep incised lines and impressed leaf design. Majority of them are in red colour and treated with red slip but instances of gray and black coloured terracottas have also come down to us from Mathura, Ahichhtra and Vaisali. Here it is interesting to note that Buxar has yielded painted terracotta animal figurines having lozenge shaped eyes bearing horizontal strokes in yellow pigment. The discovery of a mutilated conchant bull made of sand stone from one of the excavated sites at Pataliputra points to the fact that the artists of the period knew of transforming the artistic imagination in hard material like stone.

Regarding the dress of the people we have no direct evidence except the terracotta spindle whorls which may hint at the art of weaving, but the terracotta figurines allow us to have a glimpse of the dress worn by the people in those days. Women generally used to dress themselves with aprons like modern Sari and blouse but use of skirt is also attested to. The two beautiful specimen wearing flouncing skirt from Bulandibagh and Sonpur speak of it. Though this kind of dress is totally foreign to the Indian people, yet its representation in the clay figurines speaks of the changing taste and the underlying cultural link with foreign countries.

Life in this age had become much sophisticated and this sophistication made the people to lead a comfortable and luxurious life. Accordingly, taste for various items of luxury developed. Luxurious ornaments like ear lobes, torques of different shapes, necklaces, bangles, pendants and rings made of different materials like terracotta, precious stones, glass, ivory, bone and copper began to be used by the females to look charming and delicate — a normal weakness with the females.

The rich and the poor lived side by side in the society. Those who could not afford to have precious ornaments made of stone or copper, contented themselves with earthen beads, bangles and ear studs, while on the other hand, the rich section adorned themselves with ornaments of precious stones like shell, agate, carnelian, amethyst, soapstone and also glass. Practically all north Indian sites have placed before us the relics of the above named ornaments. Beads of different shapes like barrel, spherical, triangular and in all stages of fabrication have been reported from Bharoch in Gujrat. Nagda and Sonpur have offered to us pendants made of ivory and crystal respectively. The Crystal pendent having Egyptian human face is an object which highlights the craftsman's patience and skill in engraving the human face on such a hard material like Crystal. This piece, undoubtedly, appears to be of foreign origin and indirectly hints at the trade relation with the outer world. Ear studs having a gold plate with a repouse pattern discovered at Prabhas Patan reflect the use of gold in ornaments.

The object of toiletry included antimony rods of copper, hair pins of bone, combs of ivory, terracotta flesh rubber and nail parer.

The extensive use of iron during the period hints at the advancement in the technical know-how of smelting and forging iron implements. The excavations at Ujjain have furnished us with evidence in this regard. Iron made the life more secured and dynamic. The on-rush of war equipment like lance, spear, javeline, arrow head, and dagger etc., points to the fact that people were better equipped with for defence purposes than before. Of course, the war implements must have been supplemented by bone arrow heads and terracotta sling balls which are found in profusion. Not only in the field of defence but also it appeared on the domestic scene. Pans,¹² lamps, nails, knife blades and clamps etc. are such items which are needed in daily affairs of life. Further it brought momentum in the field of agriculture and as a result of that ploughing of land and harvesting of crops became easy with iron plough, sickle and hoe. Tools for different crafts began to be manufactured such as drills, adze and chisel which boosted the wood craft of the period.

In the wake of iron, use of copper became restricted. It was now used in the production of Punch marked and cast coins and also for manufacturing antimony

rods, toys, rings and beads. Use of silver is also attested to by the discovery of silver punched marked coins from Chirand and Prabhas Paran respectively.

A large number of bone objects from almost all the excavations have been obtained. These objects have been variously called by archaeologists as bone point, stylus, arrow head etc. Perhaps bone points and arrow heads might have been used in hunting of small birds.

Of the antiquities discovered, the most perplexing is the occurrence of the polished stone celts in the early historical sites. The occurrence of these celts has been reported from Sonpur, Chirand, Vaisali and Oriup in Bihar, Jangada and Sisupalgarh in Orissa and Taxila in the north west. The late survival of these neolithic celts has posed a great problem before the archeologists. John Marshall¹⁴ while giving explanation for this has said that these stone implements might have been utilized for sacrificial and ceremonial purposes just as stone knives continued to be used until a late date for religious sacrifices by the Egyptians. But this explanation does not appear to be very sound. The only possibility according to Dr. Verma is that neolithic people were employed as labourers to cut down the forests in order to acclaim wider areas under cultivation. These neolithic people came with their tools in the Urban areas and in course of time they settled down with historic people.

Apart from the finds listed above, there are still some miscellaneous objects whose casual mention is enough. It includes seals and sealings, potter's dabber, potter's stamp, stone pestles and querns, stone disc and dice made of terracotta and bone.

Now that we have an understanding of the social, economic and religious components during the period under review, we may move on to bring out in brief the sum total of the whole picture.

At the very outset it is worth while to state that the population density was much more than before which is testified to by the mounting pottery evidence of the period. Due to better means of subsistence and living condition, population increased by leaps and bounds.

To feed the increasing population, the society had developed various kinds of industries such as ceramic, bead, ivory, bone and metal. To streamline the production of the different industries in the society, it had divided the population into different class of artisans. By this division of labour it so happened that the artisans became experts in their respective fields which enabled them to maintain the high standard of their products. The economy of the people was based on

trade and industries. Of course, agricultural produce did contribute a lion's share in it. Agriculture was no more an uncertain affair. Tanks and wells were utilized for irrigating the land and the adoption of new methods of food production enabled people to raise crops in abundance. New cereals like wheat and pulses were added in the dietary law of the populace which was supplemented by meat and fish.

The social condition becomes manifest when we glance through the variety of structures made of bamboo, burnt brick and stone. These clearly reflect social gradation in the society.

Clay figurines supposed to be of mother goddess have been reported from Mathura, Abichitra, Buxar etc. which may with some degree of uncertainty compel us to surmise that religion in one form or other existed in the society. This assumption can be further strengthened to some extent by the prevalence of special nature of pot known to the archaeologists as lipped bowl. The limited occurrence of this type of pot may point to its use on religious occasions.

Art objects of the period such as clay figurines indirectly magnifies the pristine simplicity and sophisticated diction of life. The artists during the period combined in themselves the social ideology of upper as well as lower section of the society and expressed these ideologies in the plastic art.

Above all, the most significant aspect was the extensive exploitation of iron. It assumed its dominant role practically in every field of life. Its impact was not only felt in defence, but in agriculture, domestic, industrial and architectural fields as well.

So this was the diverse picture of the complex life during the period. Now if you examine the position of Bihar in the background of above picture it will appear that there are certain points which are very striking.

(1) The N. B. P. Ware has been found from all the excavated sites in northern India but the specimens coming from the Sonpur (Gaya District) are surprisingly the best from the point of view of fabric, polish and its relative abundance in comparison to other sites yielding the N. B. P. ware. The C-14 determination^{1,2} of the earliest level yielding this pottery at this site takes back the date to the 7th century B. C. which is the earliest date known for this ware in India. Since it has been agreed on all hands that the main focus of the N. B. P. Ware is the Gangetic basin, particularly the ancient Magadha, can we not suppose that Sonpur might have been the N. B. P. Ware producing centre because this site presents variety of shades and types and also the date of this ware is the earliest known in India. If this assumption is correct we can infer that Sonpur was the place of origin of this ware and from here this ware travelled to other parts of the country as a trade commodity.

(2) The artistic quality of inexhaustible forms of clay figurines in Bihar are much more than in any other sites of the Indo-Gangetic basin. Of course, *Mathura*, *Ahichhtra* and *Kausambi* have presented a large number of clay figurines but the female figurines with flouncing skirt from Bolandibagh and Sonapur, the laughing boy and female decked with luxurious ornaments from Bulandibagh and the display of variety of head dresses in female figurines from Buxar are such examples which surpass the artistic talent of other regions.

(3) Iron implements have been discovered in abundance from the different sites in Bihar during the period, yet it is surprising that not a single smelting furnace for irons has been discovered when there is enough of iron ore present in South Bihar. Should we then suppose that iron implements were imported from Ujjain in those days where iron was a flourishing industry?

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DISCUSSIONS

R. C. Agarwal :

Detailed study of the dates of terracotta is needed. From Bihar, we have more materials. Terracottas have been found from Bulandi Bagh etc. They stand isolated in archaeological context, though they are very artistic. Human form in terracotta is rare, its evidence from Oriup is significant. Trade relations and other aspects of the culture may be supplemented by Kantilya and other contemporary works. We have to account for sociology. Why traditions stopped? Does it represent the change in the outlook of the people? We have to be very cautious when dealing with the pre-NBP Period.

P. L. Gupta :

The Paper represents a good resume of the period. What types of things come from lower, middle and late levels may be indicated? 56 grains is the standard weight of the Punch-marked coins the lowest is of 41 grains.

K. K. Sinha :

Lipped bowl is not rare as he mentions. Let us realize the limitation of field archaeology. We should be conscious of religion and cult.

Krishna Deva :

Figurines do represent the religious side of the life. *Nagas*, which continued from Pre-NBP phase, should also be included. Yakshas were also worshipped. It has been mentioned in the *Mahabharata*. Presence of stone celt had certain magical significance.

B. P. Sinha :

Actually I am also impressed by the compact manner in which the author has presented the paper. He has taken all sites in a precise and persuasive style.

POTTERY OF KAUSAMBI

(1300 B. C. to 200 B. C.)

V. D. Misra.

The University of Allahabad has been conducting excavations at the famous site of *Kausambi*, situated at a distance of 32 miles in the south-westerly direction from Allahabad, since 1949. The main areas excavated are :—

- (I) Ancient roads, lanes and residential houses of the common people near Asokan pillar situated practically in the centre of the mound enclosed by the defences¹,
- (II) *Ghositarama* Monastery, the abode of Gautama Buddha, situated near the eastern gate of the ancient city²,
- (III) Defences on the eastern side³,

And

- (IV) The palace—Complex at the south-western corner of the city⁴.

The huge mass of pottery from the site falls into five distinct groups, corresponding to the five cultural periods of the site⁵. Each group presents special features characteristic of its particular period :—

Period I (C. 1300 B. C. to C. 1000 B. C.).

The pottery of period I is predominantly red, (IA) occasionally painted in black pigment. In addition to this, there is a small percentage of sturdy Grey to Buff ware (IB), Coarse Black-and-Red Ware (IC), Coarse Black Ware (ID), and Incised Ware (IE).

Excepting a few stray examples, the pottery is wheel made, treated with a slip or wash and fired. Within each sub-group, however, the differences exist with regard to the preparation of clay, firing and general finish.

IA—Red Ware :

The most common ware is wheel-made, sturdy red ware. The slip on the ware varies from bright red to dull brownish red. The well levigated clay besides fine organic material sometimes contains straw, sand and lime particles as binding material. The core is orange red, evidently the result of uniform firing at a high temperature. Though in some thick and large vessels it is blackish. A very small percentage of the ware is painted in black pigment. The painting comprising horizontal, vertical or oblique bands, is mostly executed on the outside generally on the rim, neck and shoulder of the vessels. The important types of this group

are shallow, hemispherical and ovaloid bowls, shallow and convex sided dishes, bowls-cum-basins with ridges and prominent grooves, dish-on-stands, goblets, beakers, shallow basins, and storage vessels both large and medium sized (See Fig¹).

IB—Grey to Buff Ware :

Allied to the sturdy red ware is this group of equally sturdy sherds of grey to Buff ware with a black slip on smooth surface. Only a few types in this group are known but they are common also to Group IA. Some of the sherds in both these sub-groups show clear use of the technique of paring before firing, which is very well illustrated on stem of the dish-on-stand type (See Fig.....1.....T.....16.....).

IC and ID—Coarse Black-and-Red and Black wares :

The remaining sub-important groups of this period consist of sherds, mostly shapeless and in very fragmentary condition, of a coarse Black-and-Red and Black Wares. As compared to Sub-Group IA and IB, the clay is extremely coarse, with a larger quantity of rough organic material and very small pieces of stone used as degreasant, leaving rugged texture full of small cavities. The pottery seems to have been turned on a slow wheel and fired in an inverted position at a low temperature. There are traces of black slip on some of the sherds. The pottery of this group—though contemporary to that of sub-Groups IA and IB, seems to represent a different ceramic tradition. Some of the sherds are painted in white pigment on a black slipped surface⁷.

Thus, we have seen above the pottery assemblage of Period I of *Kausambi*, is very fragmentary and extremely worn out. A considerable number of pottery types of this period has a wide distribution in the Vindhya plateau and western India, such as at Navdatoli (periods III), Rangpur (IIB, IIC and III), Lothal (IIB), Mehagauon, Somanath, Motamachiala etc⁸.

Period II (C. 1000 B.C. to C. 900 B.C.)

The pottery from the later layers of period I of the Defences⁹ and almost the entire material from the earlier layers of the palace complex and *Ghoshitarama* monastery, constitute a distinct group which compare well with the similar types of Atranjikhern and other chalcolithic sites of central and western India and is superior in the preparation of clay, firing and finish to the pottery assemblage of period I. The entire material of this assemblage can, however, be divided into the following groups :

IIA—Red Ware :

The ware is well fired, turned on a fast wheel and is treated with a bright micaceous ochreous slip on both the sides. Some of the vessels are painted in dark

black or white pigment. The painted designs consist of horizontal, vertical bands with varying thickness and pellets enclosed within horizontal bands (see pl. . . . 1 . . .)

In some cases, the painting is confined to the rim and neck portions of the external surface only while in other the whole of the external surface seems to have been painted. There are a few cases in which the painting is executed on the inner surface as well. The ware is represented by bowls, dishes, bowl-on-stands, dish-on-stands, basins, rimless and neckless vessels, large and medium-sized storage vessels, carinated cooking vessels.

IIB-Black-and-Red Ware :

The ware, though produced on the principle of the "inverted firing" is superior in the preparation of clay, firing and general finish to its corresponding ware of period I (Sub-Group IC) which still survives in this period. It is represented by bowls, dishes and small vases See Fig 4)

IIC-Incised Ware :

Some of the sherds of red and black wares bear incised designs (See pl. II) consisting of wavy lines, triangles, zigzags, concentric circles, and inverted loops mostly flanked by horizontal lines or grooves.

Many of the pottery types of period I and II are widely distributed in central India, western India, Deccan and Gangetic valley always in the chalcolithic context. The sites which have yielded analogous types are : Navdatoli (Pd III), Nagda (Pd I), Rojdi (Pd IA-IC), Bhagatrava (Pd I), Hasanpur, Mahajan (Pd I), Amra, Savaldia, Chandoli, Bahal, Gilund, Ahar IC (Black on Red), Lothal, Rangpur (Pd II B-C and III) Prabhask, Atkora, Muski (Pd I), Brahmigiri (Pd I) Bara (P B) Alamgirpur (Pd I), Atranjikhara (Pds I and II), Bahdarabad, Kakoria and Soanpur (Pd I). It is interesting to note that in western India the comparable types occur in a late harappan or immediately post harappan context and their Harappan parentage is unfoubted. In the Gangetic valley, the most noteworthy sites yielding some of the analogous types are Atranjikhara in Etah dist.) and Kakoria, a chalcolithic-megalithic site on the Chandraprabha (in Varanasi dist.).

As in the case of shapes so in the case of painting and incised patterns, some of the painted pieces resemble very much in fabric as well as in painted motifs, their counterparts from Navdatoli III, Eran I, Rangpur IIA-III and Alamgirpur I, etc. The incised designs from *Kausambi* are also represented either in incisions or in paintings at the sites like Lothal B, Prabhask IB, RGP IIB and III, Bara I Alamgirpur I, Rojdi I, Gilund I, Ahar Ic, Brahmigiri I, Bahal I, Chandoli I, everywhere in the chalcolithic levels.

A comparative chart, showing the presence of some of the pottery types of period I and II of *Kausambi* at some of the chalcolithic sites, is attached herewith.

Period III—(9th to 6th Century B. C.)

Period III of *Kausambi* is characterised by the occurrence of the typical Painted Grey Ware (Sub-Group IIIA) and its other associated wares i. e. Black Slipped Grey Ware (Sub-Group IIIB), Plain Grey Ware (Sub-Group IIIC), Black and red ware (Sub-Group IIID) and Red Ware (Sub-Group IIIE).

IIIA—Painted Grey Ware :

The most distinct of all the wares of the period under review is the well known painted Grey ware (pl. III. .) which constitutes a homogenous group represented mainly by bowls and dishes with thin section, of well levigated clay, and with fine fabric. On the Grey and sometimes light brownish-black slipped surface are painted designs consisting of simple horizontal bands usually on the rim or on the body. Besides, the motifs also comprise groups of vertical or oblique bands or strokes, circles, loops on the body.

IIIB—Black Slipped Grey Ware :

On the ground of the statistical analysis of the pottery assemblage of the period under review, it can be safely said that the black slipped Grey Ware occupies second position after the utilitarian red ware. The ware is carefully turned on a fast wheel treated with a smooth black slip and possibly also burnished (Fig. 5.. T. 5. T. 7.). Although dissimilar in fabric, finish and firing from the well known Northern Black polished Ware, its occurrence in the painted Grey ware strata does present a stage when people were experimenting with the production of polished black ware. Its body is pervious and does not bear so much of lustre as the well known N.B.P. ware. The ware is represented mainly by bowls and dishes. The ware is also reported from the P.G.W. levels at Hastinapura¹⁰, Atranjikhhera (Pd II and III), Kakoria on river Chandraprabha etc.

IIIC—Plain Grey Ware :

Of this ware the form and fabric are the same those of the painted Grey ware and need no repetition.

IIID—Black and Red Ware :

The ware is almost similar to the corresponding ware of period II and needs no repetition here.

IIIE—Red Ware :

A fair majority of the red ware is of medium to coarse fabric. Some of the pots (large and medium sized storage jars) are hand-made only to a modified degree since the rims thereof are invariably wheel made. At the luting points dabber-marks are prominently seen. Husk and mica seem to be frequently employed as degreasing agents.

In contradiction to the above red ware, the bright slipped ware in this variety has a consistently smooth well levigated clay and is also better burnt like the plain and black painted Grey wares of the period. The red ware is generally represented by bowls, dishes, basins, large and medium sized vases, bowls-cum-vase with everted rim and small vases. Some of the types of the bright red slipped ware occur in Grey ware as well.

The excavations at the different localities of the site have demonstrated the continued occurrence of the P. G. Ware and some of the types of the other wares associated with this ware, in the early level of N. B. P. ware (*Kausambi* pd IV) as well. Thus we find no gap between the end of P. G. Ware and the beginning of the N. B. P. Ware.

The comparative study of the pottery types and painted designs from *Kausambi* on the one hand, to those from typical painted grey ware sites, viz. Hastinapur, Rupar, Ahichchhatra, Atranjikhara and others of western Uttar Pradesh and Panjab, on the other, has brought into focus the following characteristic features of the pottery of this period :

- (I) The non-painted grey wares (the Plain Grey, Black-and-Red, Black Slipped Grey and Red Wares) of this period have almost identity at the sites of Atranjikhara, Hastinapur Ahichchhatra, Rupar, etc. (Fig. 5).
- (II) Though at the sites of Atranjikhara, Hastinapur, Rupar etc. the painted Grey Ware is very rich industry, at the site of *Kausambi*, it appears to be an effete one.
- (III) It appears that the painted grey ware represents a super imposition on a non-painted grey ware pottery assemblage in the central Ganga valley.

Period IV (C. 600 B. C. to C. 1st C. B. C.)

The pottery of this period includes the well known Northern Black Polished ware (Sub-Group IVA) and other associated wares viz—thick plain Grey ware, (Sub Group IVB) Black slipped Grey ware (Sub-Group IVC), Red Ware (Sub-Group IVD), and black-and-red ware (Sub-Group IVE).

IVA—Northern Black Polished Ware.

This is the most common and distinct ware of the period. The excavations at *Kausambi* have brought to light sherds of this ware in various shades such as black, steel Grey lustrous blue, orange, tan, chocolate, brown, drab, pink, buff, cream, silvery and golden. Instances where double-colour has been achieved are not wanting.

Some of the earliest specimens of the ware, are painted with bands, strokes, dots, concentric and intersecting circles, semi-circles, arches, loops, wavy lines and

other complex motifs in black, cream, or blue mostly on tan, dark brown, drab orange and dark grey surface (Pl-IV). The continued occurrence of the P. G. Ware in the earliest level of N. B. P. ware and the occasional similarity in the painted motifs of the two show an unmistakable influence of the painting traditions of the former on the latter. It is however, to be noted that the earliest evidence of lustrous polish is not furnished by the bowls and dishes which this ware shares with the P. G. Ware. The lustrous polish appears first on the external surface of the vases and thick stems of stands of red ware.

A few sherds bear on the inside of the base stamped designs comprising circles, ring of dots, wheel spokes and taurines.

The ware is represented by bowls, dishes, basins, with collared rim, basins with spout, lids, carinated handis, globular vessels, small miniature and medium sized vases and surahis (spouted vessels).

IVB—Plain Grey Ware :

The ware is usually of medium fabric, has a thicker section and comparatively rougher surface than that obtained in the P. G. Ware of period III. The clay is definitely of poorer variety as compared to the N. B. P. Ware. It is interesting to note that painting tradition of period III still continues in a degenerate form in period IV. Bowls and dishes of this ware bear on the interior of the base stamped designs comprising raised concentric bands or grooves stylised rosettes. The types met within this ware are bowls, dishes, basins, lids, carinated vessels, vases, stands and spouted vessels. Some of the types of this ware are common to N. B. P., and red wares also.

IVC—Black Slipped Grey Ware :

It shares almost all the features of thick grey ware described above and need no repetition. The only marked difference is a film of dark black slip.

IIID—Red Ware :

Red ware associated with the N. B. P. ware is mostly of medium fabric containing sand-particles, husk and straw in the paste. The clay used is not well prepared. Due to presence of organic matter in the paste, the core often shows small cavities and fissures. It is usually treated with a red slip which is ochreous in composition.

This ware is characterised by a wide range of shapes which are strictly utilitarian such as cooking vessels, drinking vessels, water vessels, storage jars, and pots for covering purposes.

In contradiction to the red ware described above, a few sherds of red ware have a consistently smooth paste and also better burnt and smooth surfaces are treated with a bright red slip.

IVD--Black-and red ware :

Though produced by the method of inverted firing, form, fabric and texture of this ware are the same as those of the common coarse red ware described above and needs no repetition.

Decorated Sherds :

A few sherds of red ware, black-and-red ware and N. B. P. ware, have been found with incised, impressed and applique designs.

Graffiti :

The excavations in the different sectors of the site have brought to light a number of sherds with graffiti marks. The symbols on these sherds are more than forty-five in number. It is to be noted that no symbol is restricted to any particular ware or pottery types of the period. They occur frequently on all the principal wares. Thus we find that one and the same symbol occurs on more than one ceramics. Sometimes it happens so that one pot bears four or five symbols or one and the same symbol is repeated twice, thrice or more times on it. A few symbols are found in inverted position on some of the vessels, which can be explained by the way in the pot was handled at the time of the scratching of the symbol. In other cases the symbols are placed horizontally or obliquely which can also be explained in the same manner.

The symbols are mostly post firing though pre-firing examples are not lacking. Nothing definite can be said regarding the significance and meaning of the symbols in the present stage of our knowledge.

Some of the symbols (taurine, crescent and tree) also appear on early Indian coinage specially on uninscribed cast and punch-marked coins. The symbols mostly consist of signs of cross, plus, multiplication, trident, bow and arrow, taurine, parallel vertical lines, triangles, circles, squares, and a few early *Brahmi* signs (pls. VIII-IX)

The study of pottery from *Kausambi* period IV and V has furnished some very interesting and new data that throw light on the connection between India and Soviet Central Asia in Ancient times. Among such common shapes, mention may be made of conical cylindrical bowls of different sizes (See pl. X) carinated bowls with everted rim and concave neck, carinated convex sided bowls with featureless rim, carinated bowls with rounded rim and incurved sides.

These types have very wide distribution in Russian Central Asian Republics, viz-Khorezm, Sogdiana, Margiana, Northern Bactria, Southern Bactria, and Seistan (Iran). In Khorezm, the principal sites are : Koi-Kulgankala, Dingilge, Bazarkala, Kiyseilgir. The important site in Sogdiana is Afrasiab; Yazdepe, Anou and Marv in Margiana, Kalai-l-Mir, Munchaktepe and Bulkh in Northern Bactria, and Dahani-

Gul and Nad-i-Ali in Seistan (Iran). In this connection it is significant to note that the types mentioned above have been obtained from the Achaemenid levels from 6th century B. C. to 4th century B. C.

To the 2nd-1st century B.C. belong a large number of stamped floral designs from *Kausambi*, such as small sherd of coarse red ware decorated with stamped leaf on the outer surface, sherd of a coarse slipped red ware with stamped leaf design decorating the outer surface and another sherd of red ware with wavy lines enclosed by three concentric circles on the top and two concentric circles below. (pl XI).

Similar stamped designs have also been reported from the sites e.g. Koikubad-shah (south Tadazikistan)¹⁹ belonging to 3rd century B. C. and 1st century A. D. Similar stamped designs also occur at Zartepe (North Badkhis), 1st Cen. A.D.

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4. Indian Archaeology—A Review—1960-61; 1961-62; 1962-63; 1963-64.
5. For *Syenachiti* of Purusamedha—See—Excavations at *Kausambi*—1957-59 pp. 87-225.
6. On the basis of the observation made in the excavations of Defence area, a fourfold cultural sequence was proposed for the site (See Sharma, G.R.—Excavations at *Kausambi* 1957-59—Defences and Syenachiti, Allahabad (1960; p.22). However the further work inside the defences and Palace-area as well as the reassessment of the evidence of the already published report 'Excavations at *Kausambi* 1957-59, has necessitated modification of the culture-sequence. Now *Kausambi* I of the report is to be divided into *Kausambi* I and *Kausambi* II and consequently *Kausambi* II, III, and IV of the said report are to be numbered as *Kausambi* III, *Kausambi* IV and *Kausambi* V respectively. This discussion regarding the five fold cultural division is based on a note sent by prof. G. R. Sharma to Dr. H. D. Sankalia for inclusion in the revised edition of his book "Prehistory and Protohistory of India and Pakistan".

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**CHART SHOWING THE LIST OF POTTERY TYPES FROM K.S.B. PD. I
and II HAVING ANALOGY TO THOSE FROM OTHER LATE
HARAPPAN AND POST-HARAPPAN CHALCOLITHIC
SITES**

Ware	Type of Vessel	Fig. or Plate No.	No. S.	KSB Sector	Published No.	Period	Details of Comparison
1	2	3	4	5	6	7	8
Red Ware	Bowl	Fig. 1	1	Defences (1957-59)	T1	KSB Pd. I	NVT III (Malwa fabric), Br. I (A. I. No. 4, Fig. 22, T. 64).
			2		T2		
			3	...	T3	...	NVT III (Malwa fabric), B. R. I (A. I. No. 4 Fig. 22, T. 64), Nagda I (I. A. 1955-56, Fig. 7, T10).
			4	...	T4	...	NVT III (Fig. 29, T30 c).
			5	...	T5	...	NVT III (Fig. 29, T30, and its variants).
			6	...	T9	...	Similar types from NVT III and IV.
			7	...	T15	...	NVT III and IV ? (Fig. 10, T14 a).
			8	...	T16	...	NVT III and IV.
Dish	...	...	9	...	T18	...	Motamachiala I, RGP III, Amra II and NVT III & IV

Ware	Type of Vessel	Fig. or Plate No.	No. S.	K. S. B. Sector	Published No.	Period	Details of Comparison
1	2	3	4	5	6	7	8
			10	...	T24	...	NVT III (Fig. 33, T37 and its variants).
Pan	...	...	11	...	T27	...	NVT III & IV, RGP IIB, IIC (But without handles).
			12	...	T30	...	NVT III & IV, ARJI, Bahadarabad.
Red Ware Beaker		...	13	...	T33	...	RGP II B & C, NVT III, NVS III.
	Dish-on- Stand	...	14	...	T34	...	NVT III (Fig 32, T36b), RGP II, B.C. Mehagam I.
			15	...	T36	...	RGP II B. C. NVT III, ARJ I (Stem of Dish on Stand).
Red Ware Dish-on- Stand	Fig. 1		16	Defences (1957-59)	T37	KSB Pd. I	NVT III.
			17	...	T38	...	NVT III.
			18	..	T39	...	RGP IIB, ARJI. (The specimen at ARJ has a small stem).
Basin	...	...	19	...	T41	...	NVT III, IV, (Fig. 30, T31) ARJ I (rough similarity).
			20	...	T42	...	NVT III-IV and RGP IIB.
			21	...	T43	...	RGP IIC, KKR I.
			22	...	T46	...	NVT IV.

Ware	Type of Vessel	Fig. or Plate No.	No. S.	K. S. B. Sector	Published No.	Period	Details of Comparison
1	2	3	4	5	6	7	8
			23	---	T47	---	NVT III (Fig. 10, T14b), Alamgirpur I and Lothal IIB, ARJ I.
Storage Vessel	---	---	24	---	T88	---	RGP IIC, NVT III-IV.
Handi	---	---	25	---	T118	---	RGP III, KKR I, Pandu-rajardhibi I, Chandoli I, Sawalda I, Sonapur IA.
			25		T120	---	Nagina, Pandu-rajardhibi I, KKR-I, Chandoli I, Rojdi I, Sonapur IA.
Red Ware (Painted)	Bowl	Fig. 2	1	G/R (1951-1956)	TI KSB Pd. II	KSB—Defences (1957-59, Fig. 9, T7, NVT III (Fig. 23, T25), Bahurupa I (I. A. 1959-60, Fig. 14, T1 and T29), Tapti Valley (I. A. 1958-59, fig. 12, T. 16), Mehgaon I (I. A., 1957-58, Fig. 8 T9 and T10).	
			2	---	T4	---	Cf. KSB—Defences, 1957-59, Fig. 9, T8.
			3	Palace-Complex	T5	---	KKRI, Br. I (Fig. 22, T58, T59).

Ware	Type of Vessel	Fig. or Plate No.	S. No.	K. S. B. Sector	Published No.	Period	Details of Comparison
1	2	3	4	5	6	7	8
			4	---	T9B	---	NVT III (Malva fabric), Br. I (Fig. 22, T64), Nagda I. (L. A. 1955-56, Fig. 7, T10).
Red Ware (Painted)	Bowl	Fig. 2	5	Palace-Complex.	T4	KSB Pd II	Rojdi IA (Fig. 9a, T8), KKR I.
			6	---	T12C	---	Mota Machiala I, RGP III, Amra II NVT III-IV.
			7	G/R (1951-56)	T2	---	KSB Defences 1957-59, Fig. 9, T. 15, NVT III (Fig. 3-T31).
			8	Palace-Complex	T7	---	RGP IIC, KKRI.
			9	---	T2	---	---
			9A	---	T2a	---	KKRI, Br. I (A, I, No. 4, Fig. 22, T66).
			10	---	T8a	---	NVT III (Fig. 29, T30 and its variants).
			10A	G/R (1951-56)	T32	---	KSB Defences (1957-59, Fig. 9, T5), NVT III (Fig. 29, T30).
			10B	---	T32B	---	---
Beaker	---	---	11	Palace Complex	T21	---	RGP IIB, Semnath II, NVT III.

Ware	Type of Vessel	Fig. or Plate No.	No.	K. S. B. Sector	Published No.	Period	Details of Comparison
1	2	3	4	5	6	7	8
Bowl	...	...	12	G/R (1951-56)	T5	...	KSB-defence (1957-59, Fig. 10, T42), NVT III (Fig. 10, T14a-b), Lothal IIB, Alamgirpur I (I. A. 1958-59, Fig. 24, T6).
			12a	...	T7	...	Alamgirpur I (I. A. 1958-59, Fig. 24, T1 and T6), NVT III (Fig. 32 T36D).
Dish-on-stand	...	...	13	...	T15	...	KSB Defences 1957-58, (Fig. 24, T1 and 6), NVT III (Fig. 32, T36D).
			13a	Palace Complex.	T15	...	NVT III (Fig. 33, T37).
			14	...	T16a	...	RGP IIC-III.
Red ware (Painted)	Dish-on-stand	Fig. 2	15	G/R (1951-56)	T22	KSB Pd II	NVT III (Fig. 32, T36B), RGP IIB and IIC, Mehgaon I (I.A. 1957-58, fig. 8, No. 8), Bhagatrav Ia (I.A. 1957-58, fig. 6, No. 4 & 6) Rojdi I (I.A. 1957-58, fig. 71, No. B3), Tapti Valley chalcolithic site (I. A. 1958-59, fig. 12, T73), KSB Defences (1957-59) fig. 10, L. T. 34 and also from palace complex.

Ware	Type of Vessel	Fig. or Plate No.	Size	K. S. B. Sector	Published No.	Period	Details of Comparison
1	2	3	4	5	6	7	8
			16	....	T24	....	KSB Defences (1957-59, fig. 10, T35)
			17	Palace Complex	T14	....	NVT III (fig. 32, T36c). RGP IIC and III, Bhagatav I (I.A. 1957-58, fig. 7, No. 7), Hasanpur I, Pral bhasa II, Lotha IIB, Nagda I Mahgaon IB.
			18	G/R (1951-56)	T25	....	KSB—Defences 1957-59, fig. 10, T36, NVT III (fig. 26 T27c).
			19	....	T16	....	NVT III (fig. 30, T31a), Mahgaon I, I.A. 1957-58, fig. 8, T3 and 7) Bhagat, rava Ia (I. A. 1957-58, Fig. 6, No. 6) Dod (I A. 1957-58, Fig. 11, No. B-6), Alamgirpur I (I.A. 1958-59, fig. 24, T6).
	Bowl on Stand	....	20	....	T8	....	NVT III-IV.
	Basin	....	21	....	T29	....	KSB—Defences 1957-59, fig. 10, T47, Alamgirpur I, Lothal IIB—IIC.

Ware	Type of Vessel	Fig. or Plate No.	S. No.	K. S. B. Sector	Published No.	Period	Details of Comparison
1	2	3	4	5	6	7	8
		Fig. 3	22	...	T30	...	KSB—Defences 1957-59, fig. 10-T42, NVT III (fig. 30, T31), Alamgir, pur I, Mahagon I (I A. 1957-58, fig. 8 T3), Lothal lib.
Basin	Lipped Handi	...	23	...	T54	...	KSB—Defences 1957-59, fig. 11, T 83, NVT III (fig 22, T24a).
			24	...	T43	...	KSB—Defences 1957-59, fig. 12, T. 122.
Red Ware (Painted)	Trough	Fig. 3	25	G/R (1951-56)	T31	KSB Pd. II	For graffiti cf. (A. I. No. 16, Symbol No. 5, Pl. IV)
	Basin	...	26	...	T34a	...	NVT III (fig. 24, T24D).
Black and Red Ware	Rimless Handi	...	27	...	T41	...	KSB—Defence 1957-59, fig. 12, T119, NVT III (fig. 5, T5 and 5a)—and also available in Painted red ware from palace complex of KSB.
Red Ware	Storage Jar.	...	28	...	T41a	...	KKR I, ARJ I.
			29	Palace Complex	T41	...	ARJ I.

Ware	Type of Vessel	Fig. or Plate No.	Z s	K. S. B. Sector	Published No.	Period	Details of Comparison
1	2	3	4	5	6	7	8
			30	...	T49	...	KSB Defences 1957-59, pd. I, fig. 12, T113.
			31	G/R (1951-56)	T48	...	NVT—Surface (fig. 3, T3,) At—Kot (I. A. 18 1957.58, fig. 10, No. B9).
			32	Palace Complex	T31	...	...
	Medium sized vase	...	33	G/R (1951-56)	T45	...	NVT III (fig. 4, T4 and rE).
			34	...	T42	...	KSB—defences 1957-59, fig. 12, T118. 120.
			35	...	T55	...	RGP IIc—III, Somnath III, NVT II (also found in Jarwe fabric).
			36	Palace Complex	T37	...	RGP II—B, Bahadrad (fig. 27, T15).
			37	...	T33	...	Masonpur I.
			38	...	T29	...	KSB Pd. II.
			39	...	T47	...	RGP III, KKRI, Pandu—Rajar—Dhibi I, Chandoli I, Sawalda I, Sonepur Ia.
			39a	...	T46	...	Nagda I, Pandu—Rajar—Dhibi I, KKRI, Chandoli I, Rojdi I, Sonepur Ia.

Ware	Type of Vessel	Fig. or Plate No.	o Z s	K. S. B. Sector	Published No.	Period	Details of Comparison
1	2	3	4	5	6	7	8
Black and Red Ware	Bowl.	Fig. 4	40	Defences (Inner side)	....	KSB Pd. III	ARJ II.
			41	....	....		do
			42	....	....		do
			42a	....	....		do
	Dish	....	43	....	....		do
			44	....	....		do
			45	....	....		do
			45a	....	....		do
	Basin	...	46	...	...		do
	Vase	....	47	....	....		do

Painted sherds from Kau: ambi Pd. II (The Palace Area). Pl. I

- I. Sherd of a coarse red ware painted in light black over bright micaceous red slip with parallel horizontal bands. From the early level to pd. II. Similar painted designs occur on the chalcolithic pottery at a number of sites. Cf. Alamgirpur I (I.A. 1958-59, Fig. 24, T24), Rojdi I (I.A. 1958-59, Fig. 9B, T12), Nagda I (I.A. 1955-56, Fig. 6, No. 5), Sawalda I (I.A. 1959-60, Fig. 15, T21), Nevsa III (I.A. 1959-60, Fig. 10, T. 7), Eran I, NVT III, Pandurajar-dhibi I (I.A. 1961-62, Fig. 21, T4) Ahar IA (I.A. 1961-62, Pl. LXXVIA, Nos. 1, 2 and 4), Prakash I (I.A. 1954-55, pl. XXB, No. 4), Lothal A-B (I.A. 1954-55, Pl. XXVIA, No. 1, Bara I (I.A. 1954-55, Pl. X, Nos. 5, 9 and 13), Rupar I (I.A. 1954-55, VIIIA, Nos. 2 and 6), Chandoli I, Mehgam I, Bhagatrav IA, Kayatha I-III, RGP IIA, IIB, IIC and III, also at BR I.
- II. Sherd of coarse red ware, externally painted, painting motif being a row of pellets between horizontal parallel bands. From early level of Pd. II similar painted motif occurs on the pottery of Alamgirpur I, Kayatha I, Eran I, RGP IIA, IIB and III, Rojdi I, Lothal B, Prabhastatan IB and Rupar I.
- III. Sherd rimless and neckless vessel of coarse micaceous red ware, painted on (T45) the outer surface painting executed in horizontal bands in light black colour just above the graffiti consisting of three vertical lines executed after firing. From early level of Period II.
- IV. Sherd bowl-cum-basin of fine red ware, shallow internal depression forming (T8A) two marked ridges on the rims. Painting executed on inside on the rim in black colour. From early level of Period II.
- V. Sherd possibly bowl or dish of coarse red ware. Inside painted in light black over mottled surface with parallel horizontal bands. From early level of Pd. II. Analogous painted designs occur at a number of chalcolithic sites like Lothal A and B, Bara I, Rupar I, Alamgirpur I, Rojdi I, Nagda I, Sawalda I, Prakash I, Nevsa III, Eran I, NVT III, Kayatha I to III, Ahar Ic, Chandoli I, Mehgaom I, Bhogatrav IA-IB, Rangpur IIA, IIB and III.
- VI. Sherd of a bright slipped red ware painted in light black over smooth red background with thick horizontal bands. From early level of period II. Cf. NVT III, Eran I, Kayatha I-III, Alamgirpur I, Rojdi III, Nagda I, Sawalda I, Nevsa III, Ahar Ic, Prakash I, Bara I, Rupar I, Lothal AB, Chandoli I, Mehgaom I, Bhogatrav I-AB, RGP IIA, IIB and IIC.

Incised designs from Kausambi II (all from the palace area) Pl. II

- I. Sherd, coarse red ware, decorated with lightly incised criss-cross-pattern on both the sides of horizontal parallel lines. From early level of pd. II. Cf. Bara I, Rojdi I, NVT III, BR I, Gilund I, Lothal B, RGP III, Kakoria I.
- II. Base fragment, possibly of a bowl or a dish of dull red ware lightly incised series of inverted loops enclosed within concentric circles. From early level of pd. II. Similar designs occurs in the paintings on the Chalcolithic pottery at Lothal B, RGP IIIA, IIIB and III, Prabhashpatan IB, Alamgirpur I and Bara IB.
- III. Sherd, carinated vessel of coarse black ware, outside treated with a slip, decorated with incised oblique lines below parallel horizontal incisions. From Pd. II. Cf. NVT III (Fig. 56A, V1b), BR I, MSK I.
- IV. Sherd of coarse black ware, decorated with nicely incised wavy lines (zig-zags) above parallel horizontal lines. From Pd. II. Cf. RGP IIIB, III, BR I, Bara IB, Alamgirpur I, NVT III.
- V. Sherd, black and red ware, decorated with lightly incised wavy lines just above two prominent groove. From Pd. II. Cf. NVT III, Rojdi I, Bara I, Alamgirpur I, RGP IIB, Behurupa I, RGP III.
- VI. Small sherd, coarse black ware, decorated with lightly incised (zig-zags) enclosed by two horizontal lines. The incised pattern represents a triangular design. From Pd. II. Cf. NVT III, Bara I, RGP III, Gilund I, KKR I.
- VII. Sherd bright red inside and dull red outside neatly incised series of inverted loops in sets of three. From Pd. II. Cf. NVT III, Prabash IB, Lothal B, Bahal I, Chandoli I.
- VIII. Sherd of coarse black ware, decorated with deeply incised oblique parallel lines below parallel horizontal incisions. From Pd. II. Cf. NVT III, BR I, MSK I.

N. B.—This Chart of the article was prepared by my friend Sri B. B. Misra, the curator of Kausambi Museum, Allahabad University.

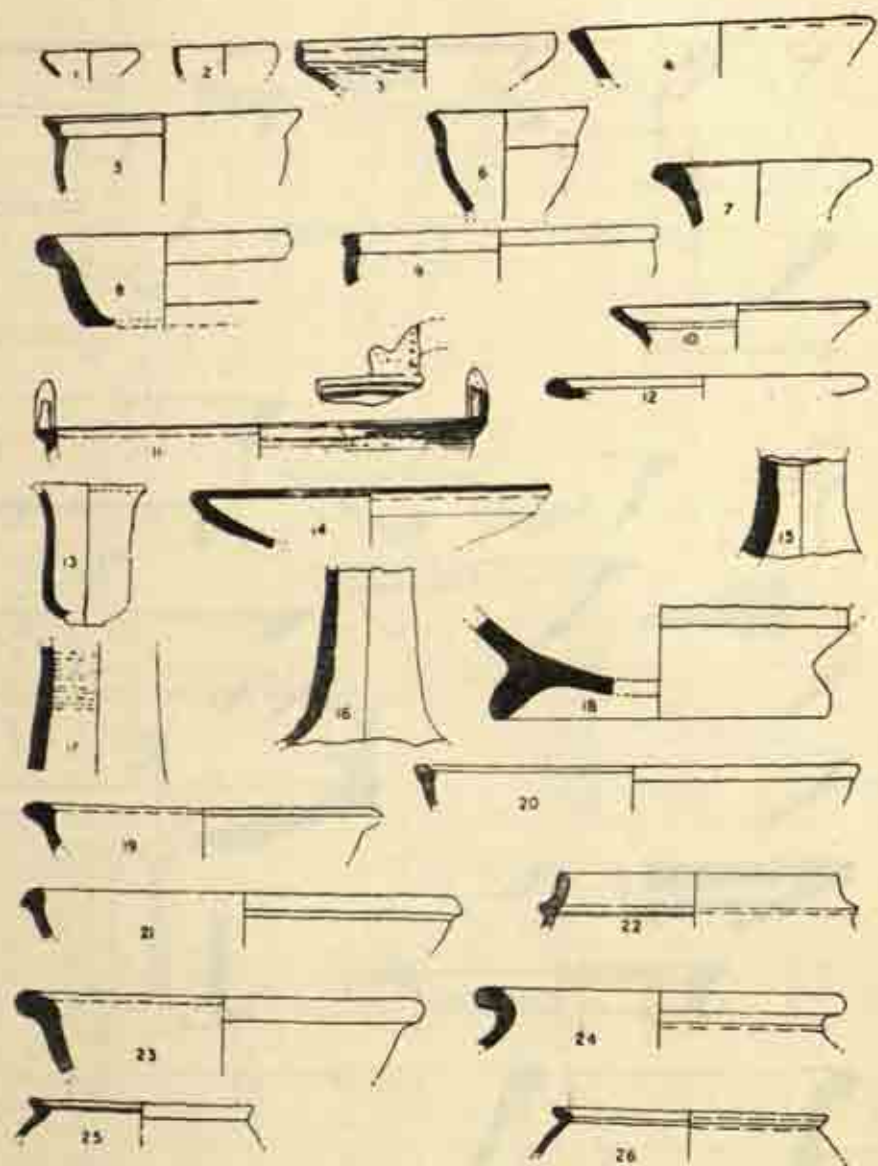


Fig. 1. KSB. I (Defences)

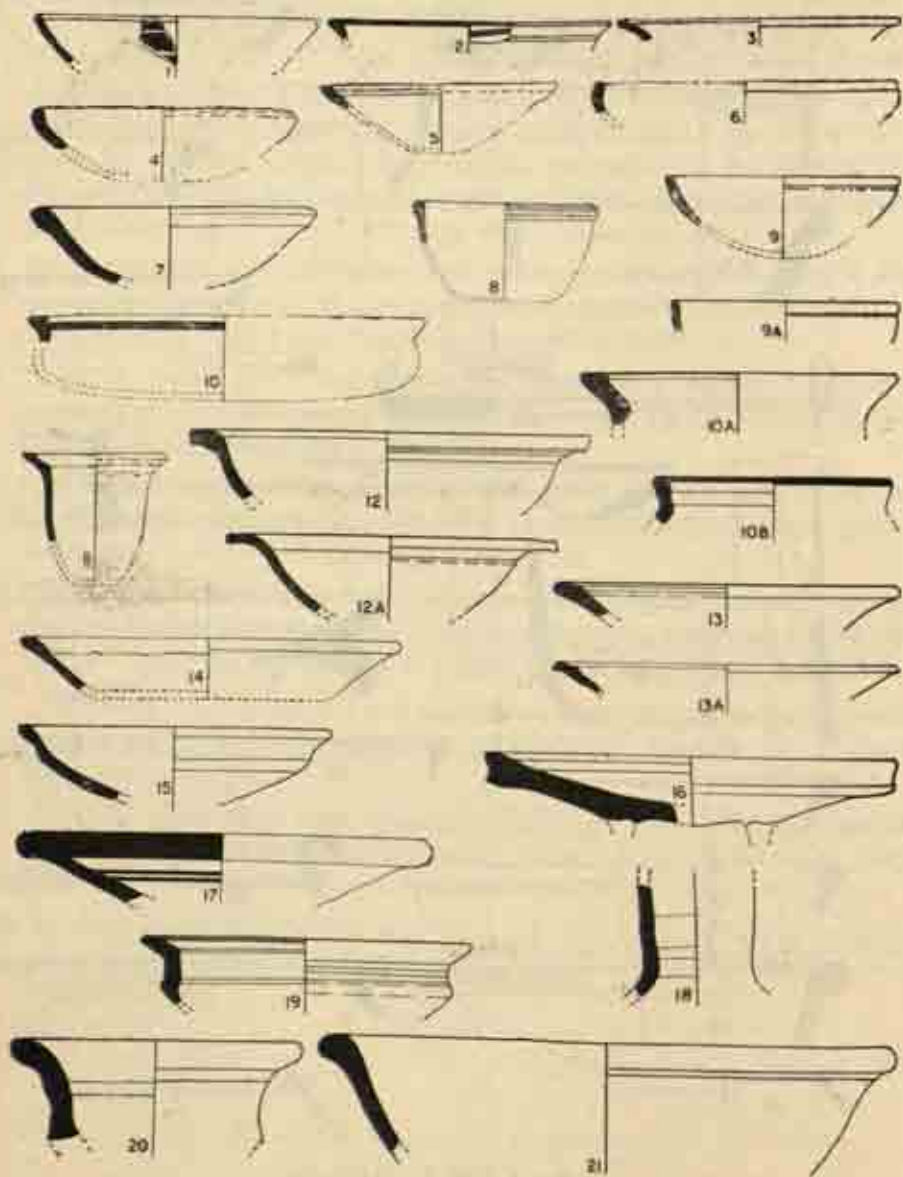


Fig. II. KSB—II

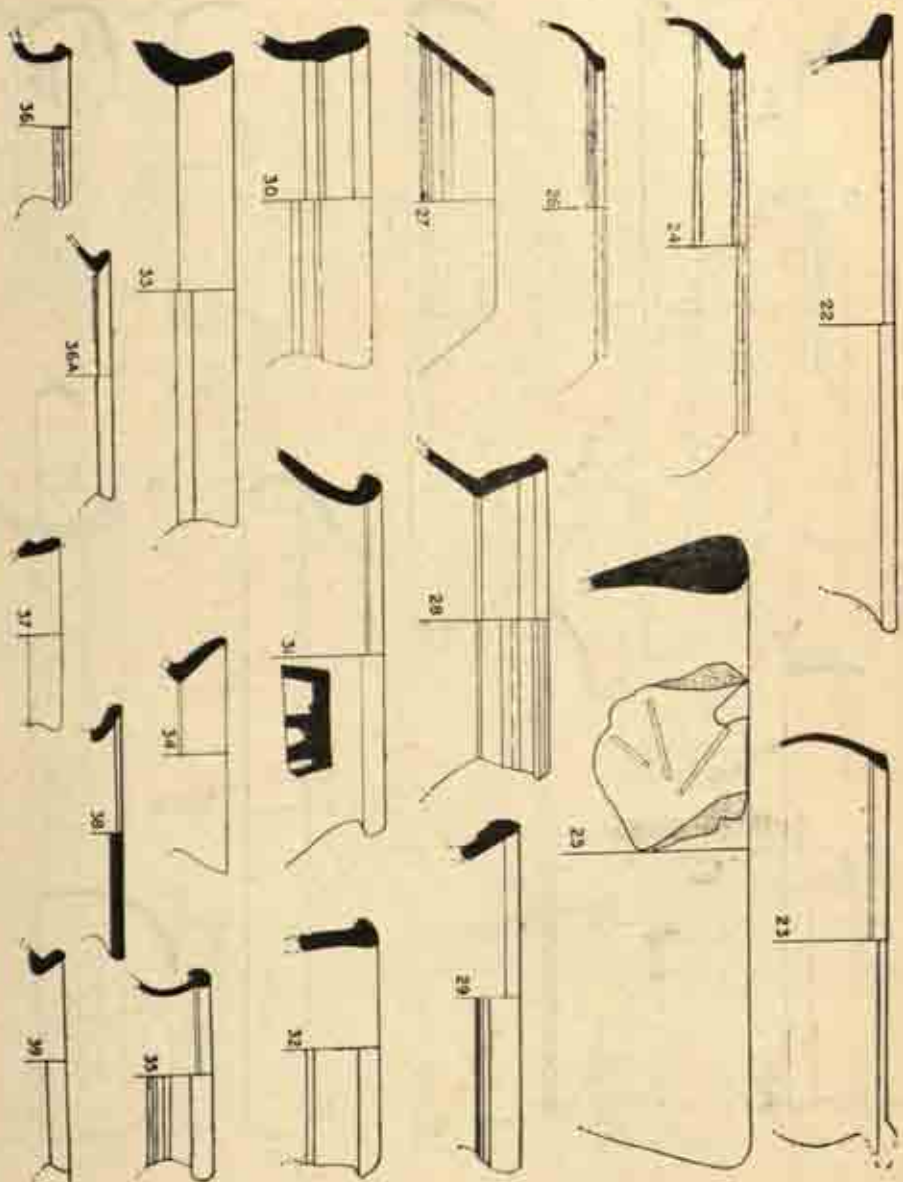


Fig. III KSB II (Cont.)

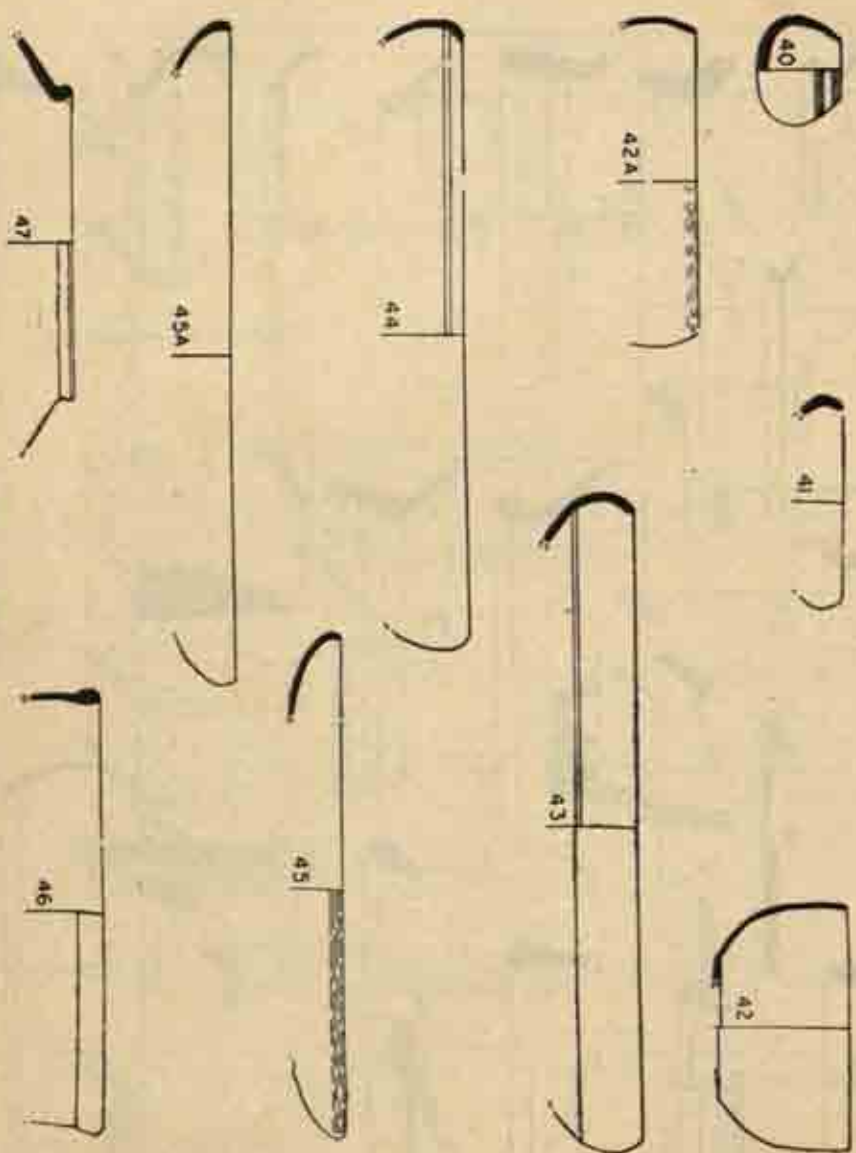


Fig. IV KSB II

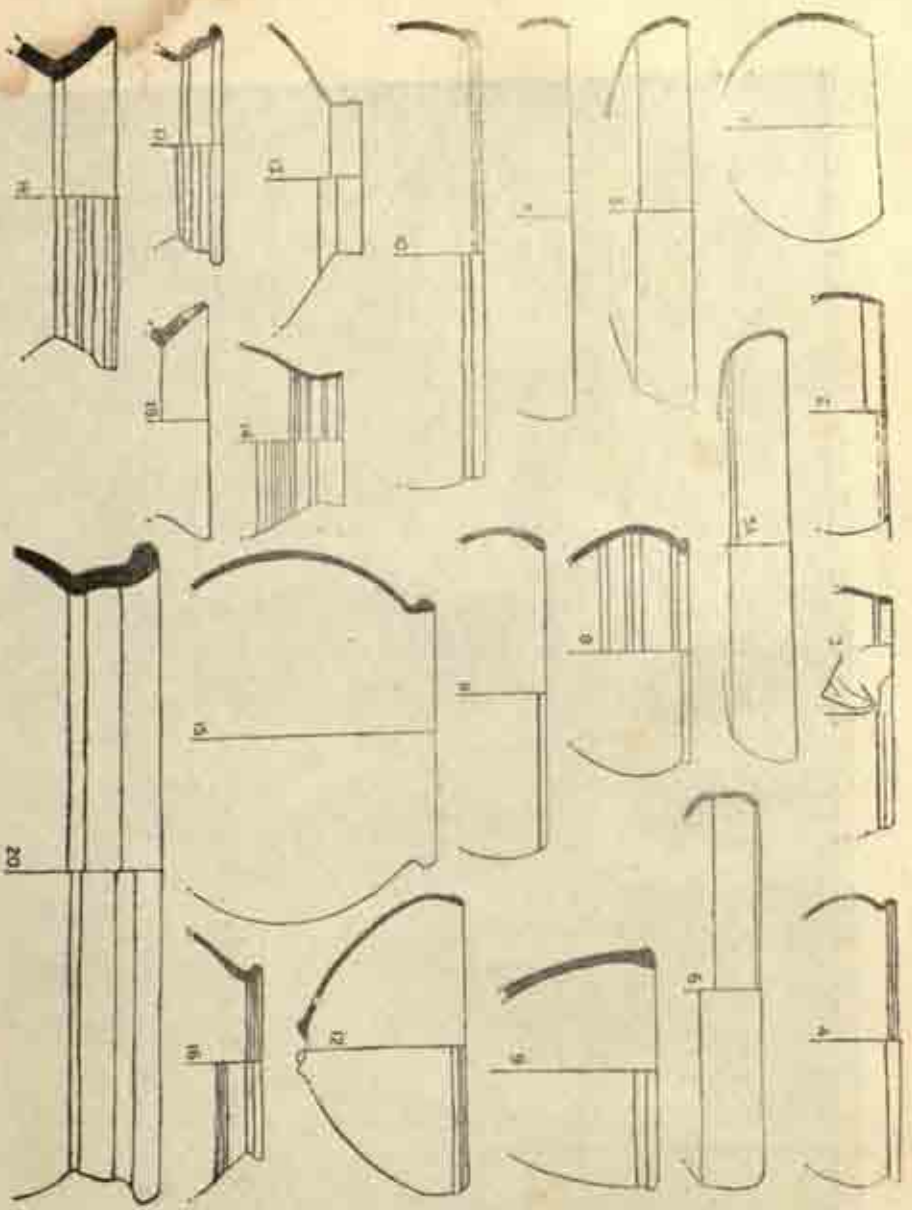
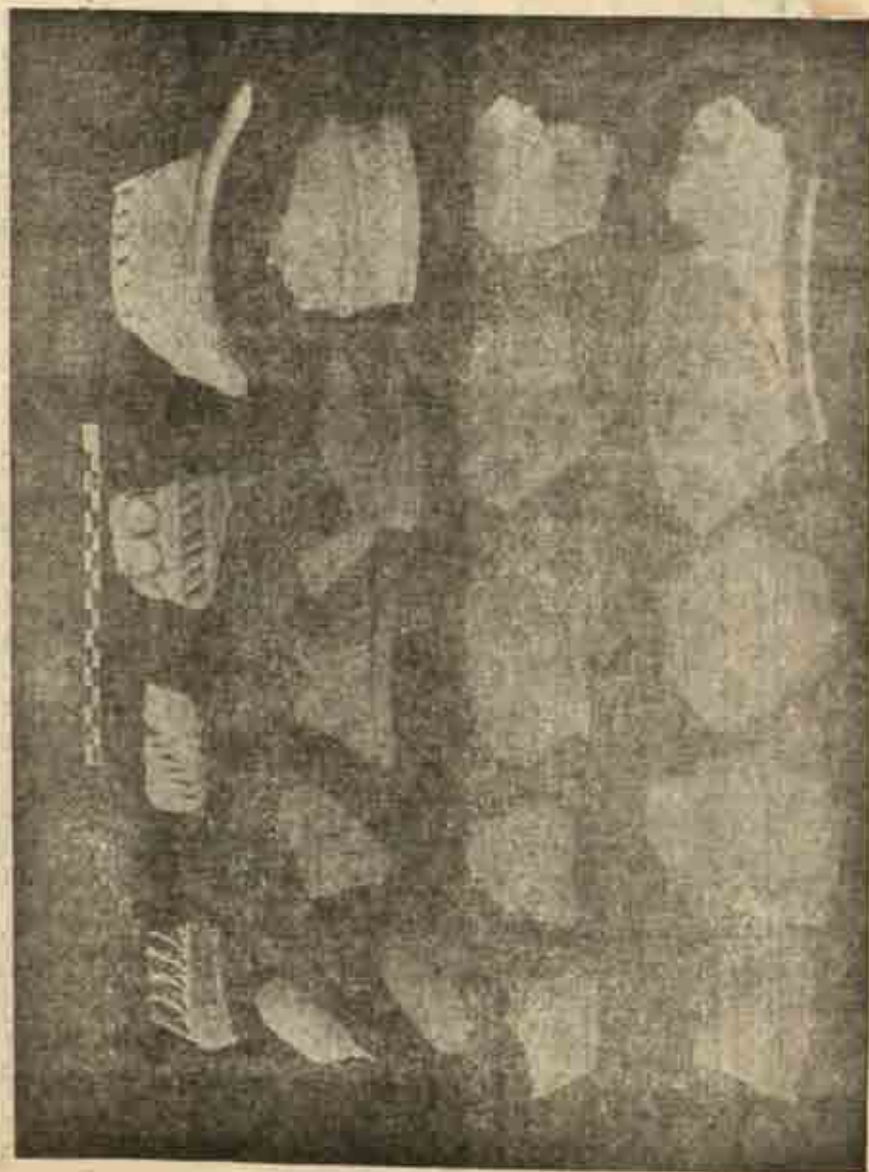


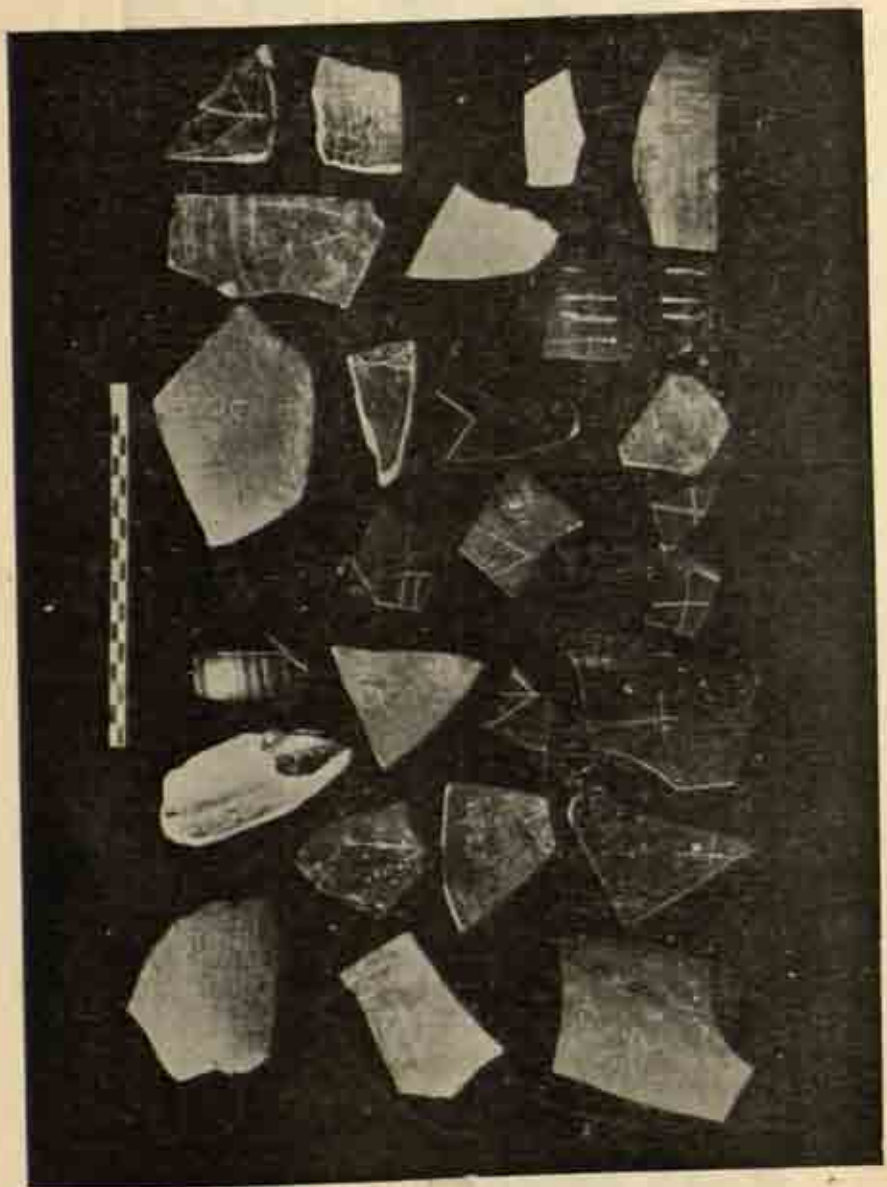
Fig. V KSB III

201

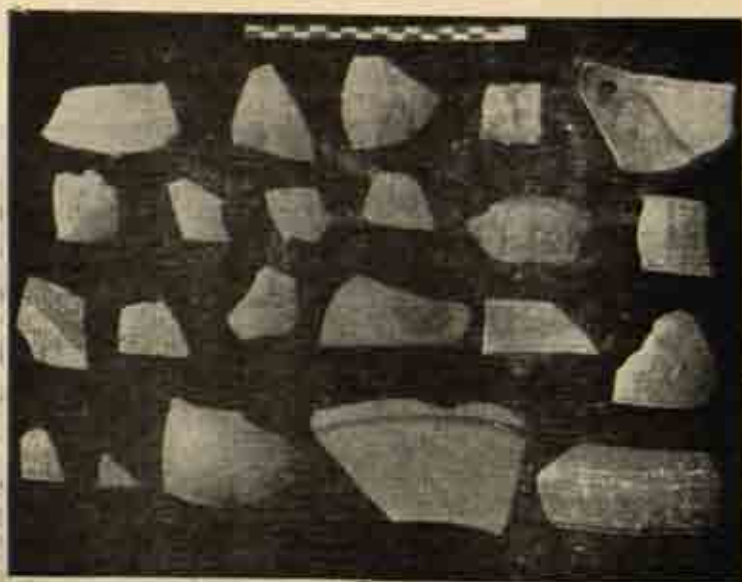
KSB IV Incised Sherds



KSB IV Graffiti



Painted Grey Ware (KSB III)

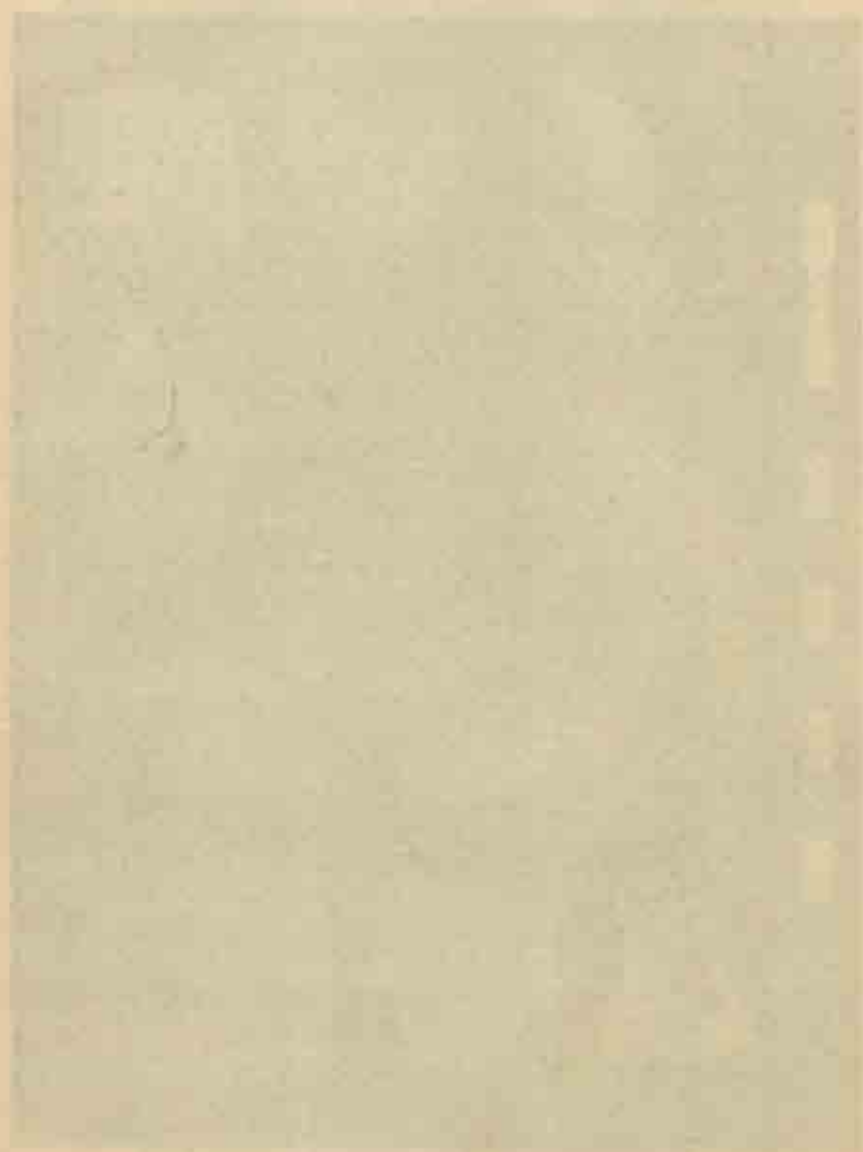


Painted NBP (KSB IV)





Decorated and Stamped Sherds from KSB



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DISCUSSION

R. C. Agrawala :

Dr. Mishra has suggested an analogy with the Black-and-Red Ware of Ahar-I and Gilund-I. It means there is Banas material at *Kausambi*. He refers to P. G. Ware phase with the Black-and-Red Ware of Ahar culture, then true P. G. W. Is it so? If it is not painted as Ahar, its comparison with Ahar culture does not stand. P. G. Ware stopped the north of Banas and we get Chausala complex of the plain Black and Red Ware.

K. K. Sinha :

Apart from Ahar and Gilund, the Harappan affinity is also not clear. If there is any Harappan affinity, one should get its typical shapes. Superficial comparison with the Harappan shapes has been made. Incised designs appear from Pre-Harappan to *Sravasti*. These conjectures have also been made in the *Kausambi* Excavation Report. He is not giving any new thing. Entire picture of habitation goes hardly beyond 600 B. C. there is slight indication of Pre N. B. P. Ware deposit.

Krishna Deva :

Kausambi is a very important site. It yielded wide range of cultural equipment. Have you co-related the materials of the habitational area with outside of the fortified area. Claim made for Harappan and Post-Harappan affinity is totally superficial. The occurrence of incised designs or defences cannot make it Harappan. Merely the existence of the Black-and-Red ware cannot suggest the presence of Ahar culture.

V. D. Mishra :

The Black-and-Red Ware has been found in *Kausambi*-I and II. The earliest Black-and-Red ware is succeeded by the P. G. Ware with an overlap. Very few pieces of Painted Black-and-Red ware occurred. It seems that Chirand was the centre and *Kausambi* was an out post. P. G. Ware at *Kausambi* is not contemporary to other sites, but it is a late affair. Prof. Sharma has not mentioned that the defences are Harappan. He has shown only affinity which may suggest the continuity of idea from one place to another.

B. P. Sinha :

Of course *Kausambi* is a very important site, but whole material should be co-related and then it may be possible after more excavations.

CERAMIC INDUSTRIES IN SOUTH INDIA

Dr. T. V. Mahalingam, M.A., D. Litt.

The origin and history of the ceramic industry in South India has great antiquity. The earliest well-known ceramic industry in peninsular India proper was the typical Black-and-red ware which made its first appearance in a number of sites in association with the Megalithic culture, though the Neolithic people knew the art of pottery and made use of it for their domestic purposes as gleaned from excavations at sites like Brahmagiri and Chandravalli, Tekkalakotta all in the Mysore State, Sanganakallu and Maski in Andhra Pradesh and Paiyampalli in the North Arcot District in the Madras State. The Neolithic pottery was very coarse and crude with red slip on both sides. But the Black-and-red ware on the other hand is a very popular variety characteristic of the Megalithic culture in India, particularly in the South. It is assigned to a period roughly from about the first quarter of the First Millennium B.C. to about the middle of the First Millennium A.D. The other major ceramic industries which were brought to light subsequent to the Black-and-red ware include the Russet coated painted Black-and-red ware, the Red ware, the Black Ware or Black polished ware, the Grey ware, the coarse Red ware, the history of all of which covers a large span of time, from the beginning of the Christian era to about the 16th century A.D. Besides the above wares, certain imported wares of Roman origin like the Arretine, Amphorae and Rouletted wares have also a unique position in the chronological history of South Indian ceramics. The imported wares seem to have found their way into the South largely on account of the trade and cultural contacts that South India maintained with the Roman empire during the few centuries before and after the Christian era.

Black-and-Red-Ware :

This was the characteristic ceramic industry of the Megalithic culture or sites. It has been found not only in the Megalithic burials but also in the megalithic occupational levels. In South India, sites like Arikamedu, Brahmagiri, Chandravalli, Sengamedu, Sangankallu, Maski, T. Narsipur, Tirukkampuliyur, Alagarai Kanchipuram, Kaverippumpattinam and Uraiyur are some of the noteworthy places of ancient culture which have yielded a large volume and variety of this ware, enabling scholars to make a detailed study of different aspects of it. The most important aspect of the pottery relates to the method of firing it in the kiln. It is placed in an inverted position (one above the other) in the kiln and fired. The interior and a portion of the top turn black due to firing under reduction while most of the lower outer portion is fired under oxidising condition, i.e. having access to the

oxygen and thus has a red or brown colour. Slip has been applied on both sides. It is generally turned on a fast wheel; salt glazing is also at times applied to this type of pottery which gives a shining but a cracked surface to the vessels. But on account of constant burnishing also the pottery gets a lustrous surface. Painted designs executed in Kaolin, incised and impressed patterns of various kinds, and graffiti marks are met with in this pottery both inside and outside.

The shapes in the Black-and-red ware indicate that they were mostly for utilitarian purpose (Fig 1 to 3). A variety of shapes are encountered though the majority of them are bowls. Several types can be seen even among the bowls with straight, globular or spherical, concave or convex sides, with rims of different varieties. The other shapes that are seen in the ware are globular pots with short neck or bottle-neck, basins and carinated vessels and a large number of dishes both deep and shallow. A peculiar type is the dish on stand with black inside the dish portion and red on the stem.

The origin and date of this pottery is a matter of great controversy among scholars; however on the basis of the evidence obtained from excavations, it may on sure grounds be assigned a date between c.500 B.C. and c.500 A.D. in south India. Its beginnings in South India may go a little earlier period, by three or four centuries.

Russet-Coated and Painted Ware :

This is one of the most interesting varieties of pottery in South India which bears kaolin paintings on the red ochre-washed surface. After the pot was made and dried leather hard, the russet-coating or ochre-wash was given. Then they were dried and the painting in kaolin was made with a variety of designs. The pot was fired in the kiln evenly. The painting took a high polish after firing shining like glass. The shapes in this ware are again mostly bowls with different kinds of rims, such as beaked, rounded, levelled or featureless ones. (fig.4). The high necked, convex bowls with narrow mouths, globular pots, flat and shallow dishes with slightly incurved or vertical sides sometimes with a carination on the profile are also met with. The painted designs are horizontal and vertical bands, wavy, lines, arches and curves, concentric circles, oblique lines, criss cross and lattice patterns and chevrons (fig. 55a) Dots in various forms also occur on the sherds. Though on the basis of the excavations at Brahmagiri and Chandravalli, this pottery is dated roughly to about 50 A.D. to 400 A.D. the evidence from Tirukkampuliyur may push the date of this ware to at least a few centuries before Christ. *Graffiti* marks are also found on this pottery. In most of the sites, it occurs along with the Black-and-red ware.

Black-Polished Ware :

This has a fine surface and thin section. It may even be called one of the varieties of the Black-and-red ware. It is fully black with polish. It is often compared

with the Northern Black polished ware (N.B.P.) which has similar characteristics. In date, it belongs to the Black-and-red ware group.

The shapes are mostly those of flat dishes with straight or incurved rims, varieties of deep and shallow bowls with straight or convex sides and carinated vessels, (fig. 6). They are mostly similar to those of the pottery of Black-and-red ware. Besides, pots with long neck and flaring mouth and several types of lids also occur in this ware. It is generally devoid of any ornamentation but moulded bands and sometimes decorated leaf pattern occur on the outside of the pottery.

Red-Polished Ware :

In the later levels of the Black-and-red ware period is seen the gradual appearance of a fine Red-polished pottery consisting mainly of pots with different types of rims. This is found to continue in the next period and seems to have been in large use, (fig. 7).

Brown-slipped ware :

Associated with the Red polished ware mentioned above occurs another ware with a brown slip both inside and outside. The shapes are mostly bowls and dishes with stray occurrence of pots.

Coarse Red ware :

Both slipped and unslipped varieties of this ware are met with. It is entirely different from the Black-and-red ware and the Red polished ware showing a general deterioration in the art of ceramic industry. It is dull red ware made of impure clay. The surface is rough and not uniformly fired. The workmanship is far inferior to that of the previous period. Bowls with broad mouth and a truncated bottom are the commonest shapes, which resemble the Kushan bowls of North India. Red ochre was found occasionally sprayed on the bowls in various designs. Incised and impressed patterns are also found on the sherds of this ware.

Grey ware :

It is dressed with a thin slip which under-reducing conditions of the kiln has burnt ashy. The fabric is very coarse. The shapes are however utilitarian in character dishes vases, lids etc. In Maski, it is reported to have occurred in large quantities and dated roughly to a period from about 1000 A.D. to 1600 A.D. This may probably be considered the last phase in the history of South Indian ceramic industry.

Imported wares :

The imported wares fall into three categories; they are: (1) Arretine ware (2) Amphorae and (3) Rouletted ware. It may be mentioned in this connection that both original varieties of these wares have been found.

Arretine ware :

This is a red-glazed ware. It belongs to a class of pottery known as *terra sigillata* meaning "Stamped Pottery" of the second century B.C. However, it has been ascribed to the first quarter of the 1st century B.C. in Arikamedu.

Amphorae :

The vessels of this ware were commonly used in the country of their origin to store wine or oil. It has a pink fabric with yellow slip. It is reported from sites like Arikamedu and Kanchipuram. It is dated to the middle of the 1st century A.D.

Rouletted :
It has a remarkable smooth surface, is thin, brittle and well burnt and has an almost metallic ring. The flat interior is normally decorated with concentric bands of rouletted pattern. It is carefully potted on a fast shell. Slip has been applied on both sides which due to firing turned black inside and showed variegated shades of grey, black, yellow or brown outside. It is dated to the end of the first century B.C. and unearthed from excavations and explorations in the following sites: Arikamedu, Brahmagiri and Chandravalli, Amaravati, Sengamedu, Nattamedu, Kaveripumpattinam, Alagarai and Uraiyur.

Graffiti Marks :

The *graffiti* marks are mere scratches found on the potsherds of the period. These scratches consist of different symbols which are variously interpreted by scholars as 'owner's marks', 'potter's marks', 'marks of authority or organisations etc.,) Though Yazdani long back catalogued and studied many of these *graffiti* marks, no satisfactory explanation or interpretation has been given to this Problem so far. Recently Lal has shown that these symbols have close similarities with comparable pottery marks from the Chalcolithic and still earlier Harappan cultures. However in the light of the fresh discovery of numerous *graffiti* marks in the course of the excavations at sites like Tirukkampuliur and Alagarai an attempt may be made to give some reasonable explanation for the occurrence of *graffiti* symbols like the sun, moon, star, river, mountain, tree, trisula, svastika, etc., which probably pertain to the religious beliefs and practices of the people in those days. They indicate that forces of nature were worshipped; yet another view is that these *graffiti* symbols may also represent totemic symbols of the tribal people who lived in different parts of the country during the period under review. These *graffiti* marks are, as mentioned earlier, found engraved on Black-and-red ware, russet coated ware and red-polished ware sherds.

On the basis of recent excavations conducted on the banks of the Kaveri in sites Tirukkampuliur, Alagarai and Uraiyur by the Department of Ancient History and Archaeology of the University of Madras together with the material available on

hand from earlier excavations the main ceramic industries of South India may be tentatively fitted into a chronological sequence as follows :

Black-and-red ware	|	...	c. 500 B. C.—c. 500 A.D.
Black-polished ware			
Russet-coated painted ware		...	c. 200 B. C.—c. 400 A.D.
Red-polished ware and Brown slipped ware.	|	...	c. 400 A.D.—c. 900 A.D.
Coarse Red ware		...	c. 900 or c. 1500.
Grey-ware		...	c. 1000 A.D.—c. 1600 A.D.
Roman wares		...	c. 100 B. C.—c. 150 A.D.

BLACK AND RED WARE SHAPES

FIG-1

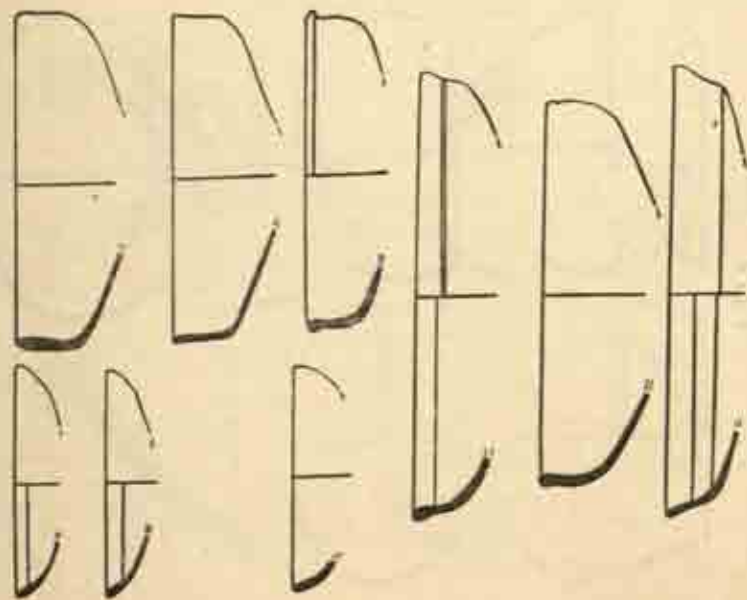


FIG-2

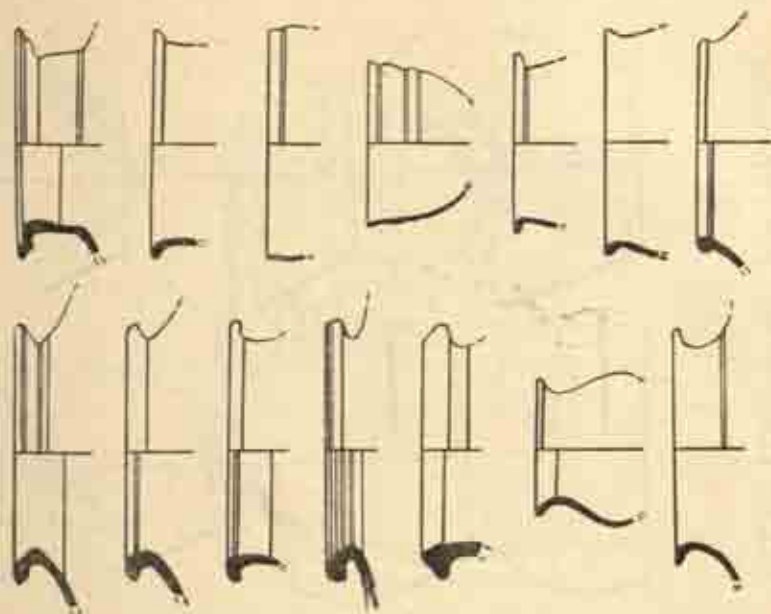
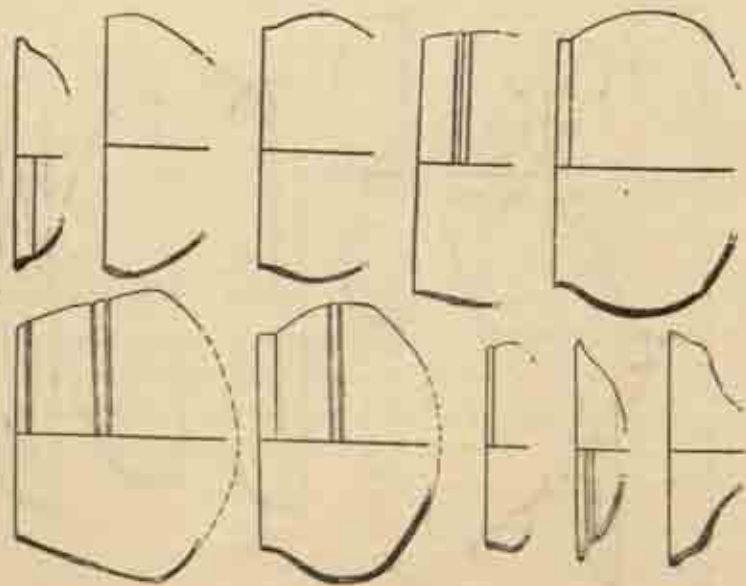


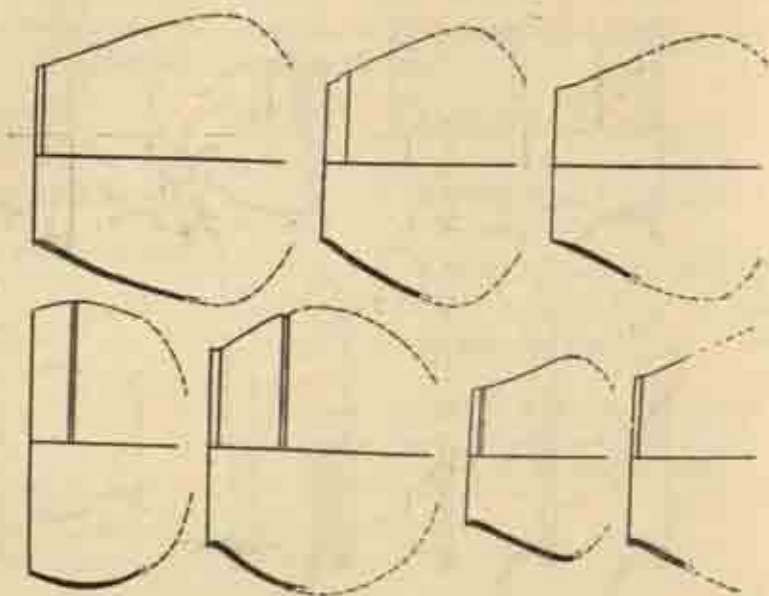
Fig. 3



RUSSET COATED AND PAINTED WARE

SHAPES

FIG-4



RUSSET COATED AND PAINTED WARE
 PAINTED DESIGNS
 FIG-5

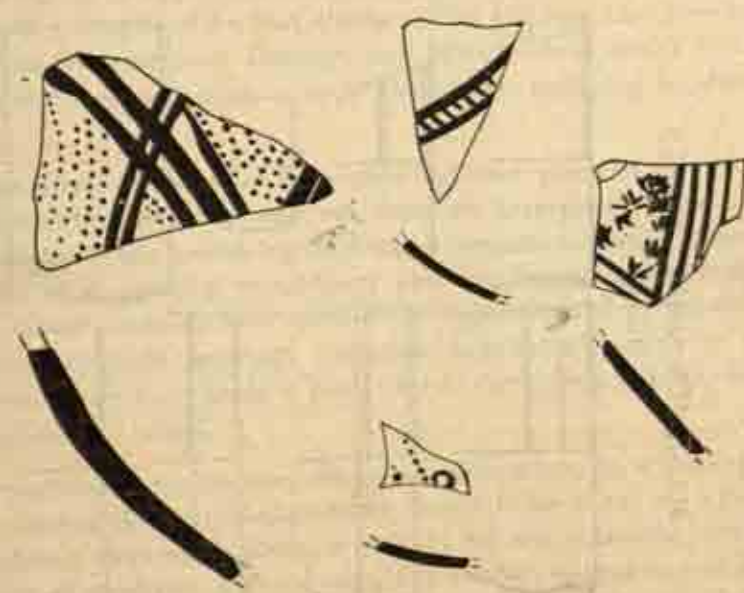
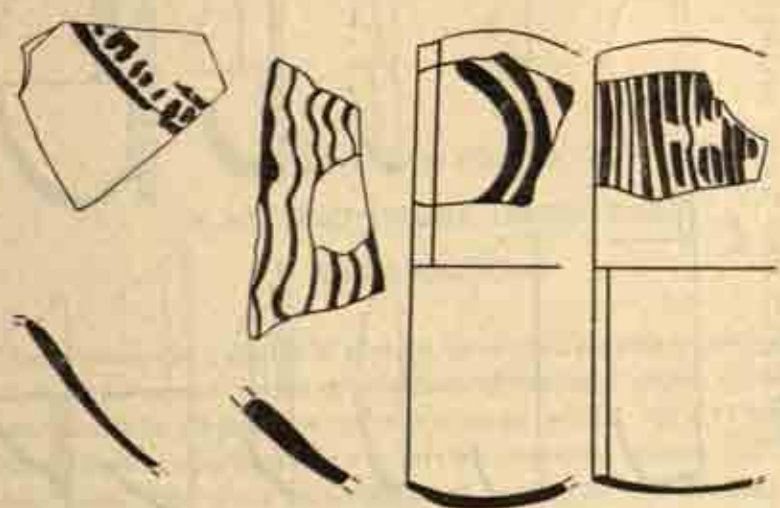


Fig. 5A



pottery (kularikas) functioning in the district¹. A potters' guild is referred to in the Kaman inscription². While the Kurnspala inscription of Somesvara refers to a potters' colony (Kumharavada)³, the Kumbauli inscription of King Vaidyadeva mentions 'Kumbhakara-bhogyabahi' and 'kumbhakara'. A kumbhakara-garta is also found referred to in an inscription⁴. It may, however, be noted that garta in association with usarah denoting some village parts appears in numerous inscriptions. Can't we assume these gartas to be referring to the potters' ditch in the villages?

The Mallar inscription of King Jajalladeva II presents a very beautiful picture of a mangala-kumbha set up on the eve of a god's worship. Siva's head has been described as the auspicious jar, the matted locks of his hair as the mango leaves placed upon the jar and dangling around it, the third eye burning on his forehead as the lighted flame of a lamp fixed on a stand, and the streams of the Ganges over his head as the water covering the jar¹. The analogy of the streams of the Ganges may very well fit in with the white stripes drawn on the outer surface of the auspicious jar. The practice of installing a mangala kalasa adorned with mango leaves and surmounted by an earthen lamp fed with clarified butter still continues while offering worship to the gods.

The practice of displaying a jar full of water (sampurna kumbha) is also alluded to for the success of one's journey (Yatra addhisu)². Usually earthen purnaghatas decorated with painted designs and mango leaves are still placed on the door way on such occasions.

The Tirumukkudal inscription of Veera Rajendra Subrahmanya (11th century A.D.) speaks of having fixed one hundred and eight kalasas draped with red cloths before a goddess on the occasion of the king's birth-day¹. Such a practice of placing kalasas covered with pieces of red cloths before the image of Durga is still followed. The very reference to a large number of kalasas being placed may suggest their clayey character. Moreover, earthen jars are considered auspicious and pure fit to be used at the time of worship.

Adisimha, a local king, who had gone on hunting expedition and who had to halt near a village during the night, is said to have demanded provisions in accordance with the custom prevalent those days¹. Mahasamantadhipati Santivarman is also seen sending a messenger to the villagers with the order to supply for the cavalry and the elephants, which was readily carried out². These and various other references picked up from the inscriptions are undoubted testimony to the potters' trade having flourished unabated and extensively, even though the metallic industry had been recording progress.

In this regard, a verse in the Deopara inscription of King Vijayasena, a ruler of the Sena dynasty of Bengal, is of great significance,

खण्डा यदि लक्ष्यति भूमिपत्रे सुमेरु मृतपिरुड विवर्तनाभिः¹⁹ ।
तदा घटः स्यादुपमानस्मिन् सुवर्णं कुम्भस्य तदीयतस्या ।

Having become impressed by the beauty of the golden kalasa (kumbha) fixed on the sikhara of the Pradyumnesvara temple, the poet's ecstasy found spontaneous expression when by a single metaphor he presents a graphic picture of a Bengal potter, some nine hundred years ago, sitting at his wheel turning on and on, placing a lump of clay at its centre, fashioning into pots of variegated forms by the application of deft strokes of his hands. The picture may still be enlarged in some of the Bihar villages where amidst fast decaying old patterns of life and cultural values, the potter's wife and the other members of the family sometimes afford assistance by way of repairing fresh lumps the potter would need another moment or by painting the pots already prepared with colourful designs, a host of village boys and girls surrounding and looking wistfully with the desire nursing if the kind hearted artisan would allow them to have some of these admirable pieces. Assistance to a potter by his wife is an age-old practice which has been alluded to even by Kalhana²⁷ and Hemachandrabharya²⁸.

The Deopara inscription is thus quite explicit on the point that the people of Bengal used earthen wares shaped on potter's wheel, one of the types commonly used being the ghata, which served as model for the golden jar or alternatively for the jar treated lavishly with the golden substance. It is also apparent that ghata and kumbha were vessels of similar type—a fact corroborated by the literature of the period.

Wheel-made pottery seems to have been in great use in the western provinces of the country. According to the Kaman inscription, the members of a potters' guild in possession of wheels were required to pay one pana every month to a local temple²⁹. It may, however, be noted that Usanasa quoted by Maskarin attests to artisans either performing one day's work every month without any remuneration or by paying one Karsapana by way of tax³⁰.

As to actual types and varieties, it has to be conceded that the inscriptions do not furnish desired informations much. Potters are no doubt required to supply earthen wares to different institutions. The Khoh and the Karitalai inscriptions of Maharaja Jayanatha refer to village artisans (karukan) who were required to offer services to the donee³¹. The Chebrolu inscription of Jaya mentions a potter having been assigned certain measure of land for supplying earthen vessels

to the local temple²², while the Tirumukkudal inscription of Veera Rajendra informs the potters to have received grains for supplying vessels to the temple kitchen, the teachers' residences, the students' hostels and the local hospital. They also supplied Kalasa to the Alavaras²³. But the actual names of the vessels which they supplied are not forthcoming from these inscriptions. Certain of the inscriptions no doubt contain the list of the types of vessels, but it is not certain if they all relate to earthen wares.

One of the commonest types frequently mentioned in the inscriptions is the ghat, a synonym of kumbha. Kumbha²⁴, chami-kara-kumbha²⁵, mangala-kumbha²⁶, and sampurna-kumbha²⁷, the variants with qualifying prefixes, have been described with reference to their utility and their material. Mangala-kumbha and sampurna-kumbha were probably decorated with the painted designs as the auspicious occasions demanded. Kumbha meant for storing water has been referred to in the inscriptions, the shape and size of which may profitably be ascertained from the artistic representations of the contemporary period. Chami-kara kumbha and suvarna kumbha may probably have been prepared on the model supplied by the earthen kumbhas. Ghat appears to be of several sizes and varieties. It may, however, be mentioned that the base of a pillar has been called a 'kumbhaka'²⁸, which appears more often as actual architectural member, sometimes plain and sometimes decorated with fluted design. The decorated jars, round in shape, obtained from the excavations, may, therefore, be designated as 'kumbhikas'. In the Mathura inscription of Huvishka, it is mentioned as ghatika meant perhaps for storing water, though its exact purport is not quite clear. R. B. Pandey translated it as water-jar²⁹. Ghatika, according to the Mreghhakatika also denotes a water jar³⁰. In an inscription of the 10th century. A. D. from Mewar, ghatika-pala is mentioned as a measure of capacity for storing liquids like milk³¹. Ghati as well is found used in the sense of a water jar; perhaps of a smaller size³². It also has been mentioned as a measure of capacity for grains³³. Panini has equated ghati and kumbha as a measure of capacity of 20 dronas³⁴.

Another popular type of earthen vessel is bhanda, very often denoting big jars for storing grains³⁵ or keeping wine³⁶. It appears also as a suffix brahamanda-bhanda. (तद्वद्व मण्ड ब्रह्मन्दायाम्) The exact type which it may have represented is, however, not clear. Sometimes, it has also been used in the sense of merchandise.³⁷

'पूयफत्तमरिक्कुलीरमुत्तिपु माद्वेषु भन्क पोररत्तु ।'

The word bhandarikā has been frequently used to denote an official in-charge of a store house³⁸. Still earlier, one of the Buddhist Cave Inscriptions of Nasik refers to bhandarikaya who was to be approached for the supply of cocon-

nuts, etc²². In the Magahi colloquial language, the *parasa khanda-bhanda* is usually used in the sense of house-hold tit-bits, including the earthen wares. In the villages of Bihar, big storage jars are still known by the word *bhandi*. They are also used more than often as water jars. It, therefore does not appear unlikely that the earthen vessels, as in our times, were also used differently according to the needs or choice of the people.

In the context of the waterjars, mention may be made of *paniyabhajana*²³. The lexicons refer to *panabhajana* as a drinking vessel²⁴; but it seems unlikely that donation of jars made of insignificant material like clay should have been made to an institution. It is just possible it may have referred to a jar made out of some costly material. *Bhajana* is a synonym of a *patra* in the *Abhidhanachintamani*. A word inscribed in Brahmi character on an earthen vase giving its name reads as *pate*²⁵, apparently standing for *patra*. Terms like *pupphaganipapapa* denoting a flower vase also occur in the inscriptions²⁶. In an inscription of the 12th century, A. D. occurs a phrase *samast aareyasameka-patra*²⁷. Phrase like *vis-norharmyamenalasilpatrachnavaichitrya-patra*²⁸ is also found²⁹. It may, however, be noted that an ink-pot is usually called *masi-kupi*, *masibhajana*, *masi-bhanda* or *masipatra*. *Kupi* meant simply a pot, somewhat hollowed out, but the difference between *bhajana*, *bhanda* and *patra* is not quite explicit. *Patra* appears to be also a pot somewhat hollowed out. The word *bhanda* may suggest clay ink-pot. Miniature pots found in large numbers in course of excavations at Paharpur and other places were presumably such *bhandas* used as ink-pots.

Among other utensils, reference to *karota* is highly interesting. An inscription belonging perhaps to the time of Kumaragupta mentions some money and two *karotas* being donated by one Anantagupta to an alms-house³⁰. *Karota* has been taken as basin or cup. Donation of earthen cups to a *sattr* does not seem likely though it is highly probable that the name may have been applied to the earthen cups or bowls well. Can't the *karota* of the inscription be equated with the *karota* of our time?

In the Mathura inscription of the time of Huviska, the word *mallaka* has been used perhaps for drinking vessels³¹. The inscription informs that five *mallakas* were required to be kept daily at the gate of the alms-house for the orphans and the needy. These *mallakas*, presumably referred to the earthen cups. In the *Mrchehhakatika*, *mallaka* appears to be a vessel of special type: *evam-brihati mallaka-pramane-kule-aham-jatah*³². In the context it has been mentioned, it seems to suggest a drinking pot narrow at the base, gradually expanding towards the profile, and sufficiently wide at the mouth. *Samsthanaka*, a low-born brother-in-law of the king, the nature of whose family is with the drinking vessels said to

have grown along with his father in prosperity just like a mallaka by virtue of the marriage of his sister with the king. In the lexicons mallika is used as synonym of kosika⁴² and chasaka⁴⁰. The Ajanta cave paintings depict drinking vessels which tally in detail with the goblets, presumably mallika.

The inscriptions referred to a special kind of water jar called galantika. The word occurs in the inscription of Vikramaditya V from the Dharwar district (galantige⁴¹). According to the Puranas, galantika seems to signify a small earthen vessel⁴³, while the lexicons suggest a pot with a hole at the bottom meant for dropping water over the linga of Siva⁴⁴, a practice still followed in the Saiya temples. Galantika may probably refer to perforated jars from different excavations.

The Purusottam plate of Ramachandra contains a peculiar word agnistika, which according to Mirashi, has been translated as a fire-pan⁴⁵. In the Ramayana as well, it has been used in the same sense, but in the Apastamba Srouta Sutra, it seems to signify a vehicle meant for carrying the fire. As fire was carried in it, it may have signified an earthen pot.

A large number of inscriptions contains the phrase bali-charu-vaisvade vagnibhotratithi. Charu is an oblation which used to be offered to the gods and the manes, and as such the vessel in which it was prepared also came to be known as charu resembling a cooking-vessel. Charusthali, according to Gobhila used to be a kind of vessel either of udubara wood or of clay⁴⁶. Earthen cooking-vessels known as charui are still used extensively in the villages of Bihar.

Some of the inscriptions like the Sunak Grant of Karmadeva from Gujarat refer to pailam⁴⁷, which, according to Buhler, denotes modern pailum in the region. Hultzsch took it for modern paili, a measure of 4 seers. Paila is a vessel of different measure capacity used still in Santhalpargana and in certain parts of Chhotanagpur, sometimes made of clay. It is narrow and flat at the base, bulging on the profile, slightly narrow and incurved at the mouth.

Another measure for capacity for grains was mutaka, current in western parts of India. In the Arthuna inscription, reference is made to a mutaka of salt⁴⁸. In the Angeri plates of Bhogavati of the year 461 Kalachuri-Chedi era also appears the word. Mirashi translated it as a basket (of corn &c). According to Monier-William, it means a basket, and apparently it would not suggest an earthen vessel. But in the Lekhapaddhati mutaka has been used in the sense of a measure for grains and liquids. In the Angeri plates⁴⁹, the phrase is 'mutaka-ghrta-satik-acha'. It is just possible it conveys the meaning of offering 'one mutaka of ghee'. In the villages of Bihar, a special kind of earthen vessel, called mutaka, mataki or

matuki is used. They are of varying sizes and shapes, built thickly and sturdy, with the mouth out-turned. These vessels are efficiently baked so that they produce metallic sound, and are usually used for storing grains, molasses, etc. Even liquids like curd, ghee or matukis. Milk kept in small sized matuki of curd is very often found mentioned in the Magahi loka-gitas.

In Gujarat, the mutaka is spelt as mudaka or muda¹⁰. Hence like pails of Bihar, mudaka may be regarded as the Gujarati version of the Bibari mutaka. Mutaka may also be equated with madaka in Marathi and mude in Kannada. In some south India inscriptions, terms like koda, solasa, bhandinga, etc occur in the sense of vessels used for measuring liquids like ghee, oil, etc¹¹. Earthen vessels are still considered suitable for storing oil, ghee, etc in the villages of Bihar. According to ancient Indian medical treatises, ghee stored in a metallic vessel for some time should not be used, as it causes one to suffer from leprosy.

A survey of the potters and the potteries in ancient India on the basis of inscriptions leaves the unmistakable impression that the ceramic industry was in a widely flourishing state in ancient time. The industry of the potters came to be organised into guilds in western and southern provinces of the country. Separate colonies of the potters also came to be established in those parts. Guilds however seem to be conspicuous by their absence in the eastern provinces of the country, so far inscriptional references are concerned. But individual potters and their art did thrive in these parts. The potters had though a wide market for their wares, yet, in the east particularly, they had to meet only the local demands.

So far the use of the earthen vessels for different purposes and occasions are concerned, the whole country was bound by a single tie of ritual performances. The custom of using earthen vessels for measuring corns and liquids was followed throughout the length and the breadth of the country and they sometimes bore similar names, and were used for similar purposes. The study of the inscriptions thus affords wide possibility for throwing very useful light on the potters and their useful handicrafts, though they belonged to different ethnic stocks in the two halves of the sub-continent.

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DISCUSSION

Krishna Deva :

Kumbhika or Kumbhaka was also a structural motif derived from earthen prototype. Mallakar may be identified with the Malin of present day. Kasravad has yielded inscribed potteries which are now kept in Indore Museum. The inscription goes back to second century and is important to determine the name and function of certain pots.

M. N. Deshande :

Size and shape of Kumbha may be ascertained on the basis of artistic activities. From Sunga to Gupta we find variation in shapes from place to place. At Karle, where originally timber was used, it was covered with earthen Kumbha. We have Bhawadi Kuwchi in marathi in the same sense. Mutaka is correctly used for measuring. In Marathi, we have the word Chaus, or small vessel for keeping milk. Modern pottery of each region should be drawn and circulated in other provinces. So we will be able to know the exact name of a particular type in different regions and we may trace the origin of its name. Whether it is Sanskrit or aboriginal ?

R. C. Agrawal :

Muta has been mentioned in Pabandha Chintamani and other inscriptions of Rajasthan. Terminology of pottery in different areas should be studied.

CONCLUDING REMARKS

M. N. Deshpande :

At the outset, I must start with appreciation, but not as a matter of ritual. I am fully satisfied by participating in the seminar and have enjoyed every minute. Study of pottery cannot be done in isolation. It needs contact and exchange of views. It is first of its kind after 1954 and due to scholarly attempt of Dr. Sinha we have shared our secrets. Such a seminar was badly needed. It is a wonderful beginning. It should be the feature of the Patna University to hold seminars on pottery. Some may come together with our reports for exchange of ideas. Such a seminar is necessary for the promotion of archaeology. Let every one of us send

their pottery found in excavation to Patna. So that a Pottery-Museum may be founded here. Then we, fired with love for the subject and archaeology, will be able to say to world, 'This is Indian Pottery'.

Ersifha Deva :

Really the Seminar came to us as a most pleasant relief from routine activity. After twenty years; I am again back to my old love of pottery. The way in which Dr. Sinha has organized the Seminar was really very fine. I am not finding words for appreciation. You all know about Vamana, who asked for some gift from the Asura King Bali and when it was granted showed his real form. That is what Dr. Sinha has shown us when he humbly says 'I am eight years old in archaeology'. He is eight years old Vamana. His scholarly character was impressed on the whole seminar. The way, in which he has organised it, shows his grip over all aspects of archaeology. Dr. Altekar has been followed by the right person. He has taken archaeology as an important part of his duty. Now he is brilliantly guiding research work in field-archaeology. His colleagues have made significant contributions to our knowledge. Here, you can call it 'Patna School of Archaeology'. I hope that results will be published very soon. Drawing of pottery-types should also be included in the report. It will be most valuable contribution to Indian archaeology. It should be bi-annual or tri-annual feature of Patna University to hold pottery Seminar.

K. K. Sinha :

Dr. Sinha has provided a feast to us. He has done in three days what has not been done in several years. Young band of archaeologists of the Patna University and other Universities have made archaeology as their goal. A very heavy responsibility falls on the shoulders of our young generation. You will have to be honest for material. Let the material speak itself. Dr. Sinha has given brilliant leadership to younger generation.

B. P. Sinha :

I am thankful to all for encouragement. There were two subjects for seminar in my mind. I felt a seminar on pottery is the need of time. But I never expected such a grand co-operation and success. But the response that I got and the tributes that I have received from a large number of good friends, are really embarrassing. From far away places, scholars were kind enough to come here. We have missed, Thapar, and Deo. I am getting all tributes from you, but a large share goes to my staff.

K. D. Bajpal :

Dr. Sinha who arranged the Seminar, should be congratulated. So far, Post-Independence Period is concerned, it is first of its kind. Here, in Patna, scholars who are associated with excavations and are working on pottery, have assembled and gave valuable information on the burning problem of pottery art. Discussions and papers read here show the high standard of the Seminar. Its publication will be useful for students of Indian archaeology. I, therefore, express my heartiest congratulation to Dr. B. P. Sinha and other participants of the Seminar.

S. R. Rao :

I was never expecting a Seminar of such a high standard. I have attended many seminars in India and outside, but never saw this type of methodical seminar. Here we find not only excavators, but University Professors and others taking great interest in widening our knowledge of ceramic industry of Ancient India. It has been viewed from different angles. It was badly needed. We were looking for this type of purposeful Seminar. Every one has benefitted here.

R. C. Agrawal :

Thanks to Dr. Sinha for arranging the Seminar. The subject has been discussed from various angles. I was associated with Late Dr. Altekar. Dr. Sinha has carried his message. We should call him an Acharya. Since we have missed Thapar and Deo, they may be requested to send their papers.

PRE-HARAPPAN PAINTED POTTERY CULTURE

— A STUDY IN SOCIO-ECOLOGICAL FACTORS —

Vibha Tripathi

During the last few years, field-work in Baluchistan, Sind and Rajasthan has brought to light groups of pre-Harappan Cultures. A predominant characteristic of all these is the presence of painted pottery of diverse shapes and designs. No two groups—howsoever near in time and space—show common traditions in the art of pottery making. The present paper seeks to relate this phenomenon of variety with socio-ecological factors. In the end, a brief reference has been made to the exclusiveness characterizing the present day tribal societies. But first a brief resume of the available archaeological data about the pre-Harappan Cultures is given. Piggot's competent summary (1950) will need substantial modification in certain areas, as a result of recent work. George F. Dales¹ (1965) has tentatively suggested grouping of the pre-Harappan Cultures under five chronological phases. Dales' A and B relating to Stone-Age Culture in the region are out of scope of the present paper.

Mundigak I KGM II, III (of Fairervis) Rana Ghundai and Sur Jungal I, Togau I, II all come under this phase C. Pottery industry improves during this phase. Metal and potter's wheel were introduced which were known to Mundigak (Afghanistan) people and Quetta valley people although at Rana Ghundai hand-made wares are found.

Phase D is said to be represented in the upper levels of the above sites as at Nal (cemetery), Amri and Kot Diji. Most important thing about the pottery of this is the introduction of multicoloured pottery technique.

In Quetta valley at Kechi Beg new type of ceramic emerges. A gray ware variety, Faiz Mohammad painted ware and 'Quetta wet ware' and 'Quetta circle stamped' wares are included.

(This paper has been prepared under general guidance of my teacher Dr. K. K. Sinha)

Next phase E is again subdivided in two. Early sub—part comprises of Mundigak III-IV Damb Sadaat II the characteristic ware of which is known as 'Quetta' ware and Rana Ghundai III a, b, intermediate phase of Amri habitation level at Nal, 'Kot-Dijian' level and 'antecedent' culture at Kalibangan. The late phase is seen at Damb Sadaat III with its ware called "Sadaat ware", surface finds at Togau and overlapped sequence of pre-Harappan and Harappan at Kalibangan. This phase is succeeded by Harappan culture, in plains of Sind.

All these cultures, for the sake of convenience, bear the vague label 'pre-Harappan'. But unlike the term 'Harappan' which implies a single homogenous culture, these are all sprawling and sparsely populated social groups. A study of pottery, collected either in explorations or in regular excavations is a revelation of distinctive and independent societies with regard to time and space "and an inherent complex criterion in that, it is subject to definite variation in technique, form and style of decoration",⁴ says Ehrich. Let us consider these 'cultures' in detail.

If we proceed from West, from Afghanistan side we are encountered with an important site known as Mundigak? (Casal, 10) which is an important habitation of pre-Harappan settlers. But here we would not study Mundigak in detail.

Near Khojak Pass joining Afghanistan and Baluchistan is Quetta³ (Fairervis, 56), an important pre-historic habitation. The earliest habitation in Quetta Valley is known from the lowest levels of Kile Ghul Mohammad. Overlying the stone age habitation here are periods II and III. Dales who feels that since pottery types of period II are met with in period III and vice-versa each one of this should not be given a separate entity and categorizes them under his Phase C. Pottery in the beginning is characterised by simple and hardly decorated ware which tends to refinement and develops into special kind of surface called 'basket marked ware'. Iranian influence can be traced on potter's industry, specially that of Chashm-i-Ali (near Thera).

Kile Ghul Mohammad IV is best represented at Kechi Beg (13 miles from KGM) and is also to be seen at Damb Sadaat* (de 'Clardi) (Mian Ghundai-Stien). Pottery is called 'Kechi Beg variety' consisting primarily of a gray ware with fine thin body with beautiful decoration. Pottery of "Kechi Beg" variety is primarily a polychrome ware. Kechi Beg white-on-dark slip, is an important variant suggested by Fairervis. Colour scheme here included the use of red, black and white; black on light to medium brown surface; red on red. Typical Kechi Beg pottery is marked by a beautiful thin walled deep vase with rows of painted designs in black and red and sometimes including white also. A bi-chrome ware (black-and-red) is also reported by Dales from Kechi Beg 'Quetta wet ware' and 'Quetta circle stamped ware' are also found here in Kechi Beg assemblage.

Another group of Quetta area can be seen at Damb Sadaat II generally designated as 'Quetta ware' and is distinguished by its bold designs in strong, thick strokes of brush, geometric designs with black on buff are favoured. Another type of ware, usually gray in colour, decorated with black or red-brown designs is also seen. Here no use of second colour is made, a feature new to Baluchistan region; the colour varies from pinkish to greenish tinge (due to firing).

'Sadaat Ware' of DS III is the latest of the pre-Harappan Quetta Group, is characterised by its naturalistic floral 'Bucranium like' designs. The ware here bespeaks the sophistication attained by people.

In Northern Baluchistan in the valley of Zhob habitation flourished at Rana Ghundai and similar material is also seen at Sur Jungal. Earliest settlers used a hand-made, crude and undecorated pottery.

New people inhabited the site (RG II) whose was a wheel turned, beautifully adorned pottery. The repertoire was marked by stylized bull and black buck motifs, the ware being popularly known as 'Bull ware'. Colour ranges from pink or buff to a dark red colour adorned with black designs. Shapes are remarkably beautiful. Makers of this ware appear to be much advanced people.

RG III was reinhabited by another people who lived for a longer duration (3 building levels). Few traits of previous period are continued but Amri like Geometric motifs with red and black are abundant. Tall beautiful 'careic like' vessels are encountered. Towards the end the style worsens.

Another groups of Zhob is represented at Periano Ghundai and Moghal Ghundai with geometric designs although few leafy patterns are also seen.

Kalat region has three important sites—Togau, Siah and Anjira (de' Cardi 1950, 59, 64)⁸. Importance of this ware lies in its peculiar pottery repertoire consisting of friezes. It is categorized into four stages. Stage A consists of single row of animals generally caprids and birds facing left. In one case dancing human figures (heads missing) are also represented. Stage A mainly consists of surface finds. Stage B comprises of a type of animals whose bodies are suppressed depicting head, horn and neck. In stage C single horn is represented in a shape of fringe. Final stage D is marked by a typical representation which can hardly be identified or even visible and according to de Cardi coincides with the beginning of painted black on black technique. (Anjira III).

At Surab sites Togau ware is seen from Siah and Anjira II onwards.

Finds from Pirak mound 6 (in 56 and then in 1963 Raikes) near Sibi (W. Pakistan) present an enigma. The Bichrome Ware found here is a class by itself hence designated as 'Pirak Bichrome Ware'. It is a coarse, heavy ware with rough surface—plain as well as painted. Plain one is either pale reddish, buff or pinkish and is hand-made whereas painted ones are thrown on slow wheel bearing a cream or whitish slip sometimes finished by wet smoothing; burnished examples are also met with. Repertoire here consists of geometric motifs mostly, favoured are the diagonal motifs—lattices, chequers, chevrons, etc., most of these are all intricate and complicated designs. In spite of the rough surface the designs and colour schemes are very sophisticated, circles or blobs, etc. rarely appear.

Importance of the ware lies in its contacts and dating. No site of Baluch hills bears any resemblance with Pirak dumb although vague comparisons have been made to Amri lowest levels, Samarra I and Nineveh III. Further complications are raised because of its early date (5000 B.C.) ascribed by Raikes. But Agrawal (D. P.) thinks "a placement younger than 3500 B.C. would appear to meet the evident occurrence of Pirak sherds in early Amri levels, laurel leaf points, and Nineveh 3 dating".

In S. Baluchistan is located the site of Nal with beautiful Polychrome style. Lower level is formed by the cemetery which was earlier (Piggott, Gordon, etc.), ascribed to a phase later than habitation area. Fine thin walls varying in colour from buff to pinkish and an off white surface with a greenish tinge, few grey and dark brown are also seen. The designs which are geometric are very delicately painted with thin brush. Remarkable is the arrangement of lines, parallels, steps or stepped cheverons, cross diamonds, circles, sigmas, etc. among the natural motifs are fish and goat or sheep, etc. This cemetery is said to have some connection with

Mundigak III Anjira III and Nindovari, etc. whereas habitation levels² can be compared to Mundigak IV, Anjira IV, Togau stage D.

Kulli is another south Baluchistan site with its remarkable landscape a having patterns in stylistic hybrid type. Animals represented are humped bulls, cows, lions (though rare) goats, black buck and fish and birds. Bulging eyes, elongated bodies partially hatched and generally alternated by plants and trees are typical of Kulli. This is generally compared to scarlet ware of Susa. It was partially contemporary with Harappa.

In the valley of Indus are two important cultures of pre-Harappans—Amri and Kot Diji.

Amri (Casal 1959-62)⁸ reveals three periods. Lowest is Amrian with fine cream coloured pottery also to be seen at Kechi Beg and generally called, Amri-Kechi Beg bichrome ware. In conjunction with it are found red ware and Togau C type wares.

Intermediate phase here, is compared with occupational levels of Nal, Mundigak IV and designs of Kulli and Mehri, Susa D and Abu Dhabi (Umm-on-Nar). A brown or red slipped ware of Kot Diji type which was present earlier but its number increases gradually. This is succeeded by a mature Harappan phase.

At Kot Diji (Khan 1965)⁹ in Khairpur Distt. two levels Harappan and Kot Dijian are excavated. Upper level (subphases 1-3) is Harappan. From layer 3a to 3c Harappan material mixed with Kot Dijian is revealed. Layers 3-16 are pre-Harappan, not at all influenced by Harappans. An evolution can be traced from lowest to upper ones. Pottery of earlier layers have simple hands varying in thickness from half to 3 ins. but slowly it developed into wavy lines, loops, roundels and simple triangle further into intersecting circles and linked roundels, etc. making appearance in Indus Valley mature phase. No Zoomorphic figure excepting a horned deity is represented.

In Rajasthan at Kali Bangan¹⁰ a pre-Harappan settlement with two mounds is excavated. Here the pottery ranges from coarse unslipped ware with a red slip confined up to shoulders to an over-all slipped ware in red and plum red or purple red with black paintings. Geometric, zoomorphic and floral patterns are represented on pots. The pottery of pre-Harappan level is characterized by six distinct fabrics labelled by Thaper, fabrics A to F. Fabric A is a coarse ware with irregular

striation marks with colour ranging from red to pinkish with black and also white (though rare). Type B is characterized by deliberately roughened surface with horizontal, wavy or tortoise shell impressions. Fabric C has a smooth surface and an all over slip of red and plum red or purple red. The surface resembles that of Quetta wet ware. Fabric D has a sturdy look and incised decoration on red surface. Fabric E is buff slipped and F, grey slipped-both are rare. The difference in fabrics C to F are "more apparent than real". Here pre-Harappan phase is succeeded by a Harappan phase.

Potter's art thus is a manifestation of the pre-Harappan societies which evolved from an embryonic stage of village culture to a complex life. Conjectures might be made regarding their economic and social patterns since several other materials besides pottery are also available like architectural remains, beads, terracottas, seals, figurines (revealing their faith) but pottery constitutes the major evidence. They developed from huts to uniformly oriented mudhouses, from stone and bone tools to copper and bronze implements, from coarse and crude handmade wares to highly sophisticated ceramic industry. Theirs was an agricultural economy and people of Baluch and Sind region were not blessed with a favourable climate and soil. Even today population of the region is semi-nomadic. Theirs was a self sufficing society. Their location was such that they could not move out much, climate of those bleak and desolate deserts debarred them from the social contacts from villages to villages. Trade and commerce were very limited rather nil since movements were restricted and avoided. People on Porali in Edith shahr complex hardly knew their neighbours on Dasht and Hab. The culture thus remained unmixed and unseasoned with any outside flavour. These were small villages whose people were leading an isolated life and remained reserved and thus maintained their individuality and independence. Pottery painting of no two places bears resemblance although all of them were familiar with the same animals and plants but the black buck at Rana Chundai does manifest a different style from that of Kulli. The Kulli bull does not resemble any and forms a class by itself. If we try to relate two places which depicted triangles on the pot, it would look rather strained or superfluous, since "each panel is like a complete word consisting of individual items which serve as letters. A whole design is like a sentence expected to convey a complete idea". (S.P. Gupta). They shut themselves in their own natural barriers and remained mere pockets of cultures than serving as constituents of a single "Pre-Harappan culture." They all originated, flourished and ended themselves in their own barriers seemingly unaware of what was happening elsewhere.

The area of distribution of these cultures is very small if compared to Harappans but still their contacts are very limited. In one place (Nal) we see beautifully

embellished and delicate paintings with a thin brush. Animals are painted in most naturalistic fashion. On the other hand we can look back to Quetta, characterized by bold strokes of brush, or most stylized animals at Kulli. In spite of the fact that some of them were contemporaries, they distinguished themselves from their neighbouring folks in every respect.

This naturally gives rise to certain queries. Why in spite of a shorter span of space were their contacts limited and variety larger? What factors are responsible for the isolation and indifference of these people?

Geography and ecological factors come first in the mind as a probable cause of the isolation and the corresponding independent efflorescence in the painted pottery cultures.

The location of Baluchistan on the map shows that it is an extension of the Iranian plateau which has hardly any high mountain range and suffers from lack of perennial water sources, small rivulets are there, soil again lacks natural minerals, most of the region is desert, climate is arid and dry. Furthermore, Beluchistan is marked off from Indus plains by Kirthar and Sulaiman Ranges irrigated by Rivers Zhob, Beji, Pishin Lora, Hab, Porali and Dasht, etc. The capping of Kirthar hills from Kalat plateau on which are territories of Kharan, Jhalwan and Makran which are archaeologically very rich. The basin of R. Zhob (N. Baluchistan) and Quetta area are shelters of many pre-historic cultures.

Let us consider the ecological factors one by one which affect the cultural life and also account for the variety and richness in painted motifs on pottery.

"Climate is often the measuring stick of human society." Extremity is characteristic of weather of this region—extreme heat and freezing cold. Annual rainfall in Baluch-Sind is hardly 10", all falls in 10-20 ins. contour. To protect themselves against sun, sand and seasons of extreme cold they took refuge in homes and hardly ventured to go out. Since they had no occupation other than food production, they developed an aesthetic sense and painted beautifully in natural way unaffected by other people.

Soil is another important factor to affect the ways and means, habits, nature etc. of a particular class of people. Mostly Baluch soil is barren and unproductive, it is only on the banks of rivers that cultivation is possible and cultures are seen to have sprouted up there. This all round aridity of land might have led to a preference for geometric motifs in general. Kolwa is the economic back-bone of Baluchistan

today And in this region on river Dasht is located the famous pre-historic site of Kulli. This is very well depicted on their works of art. The landscape panels depicting grazing bulls, healthy cows under or near trees, floating fishes, and birds are fascinating. Animals are hardly represented without trees and plants. Although geometric motifs are not absent but marked preference for landscapes indicate the different ecological and climatic condition of Kulli.

Rivers as we know were a great unifying factor since they facilitated transport and eased communication, commerce and trade. No big river system irrigates Baluchistan as a result of which small villages were inhabited on the banks of these small rivers on rivulets and their contacts were confined to that particular cluster of habitation on that particular river.

If we contrast these peasant communities with the subsequent civilizations which flourished in plains of Indus the point would become still more pronounced. The culture which flourished in the valley of Indus is designated as a civilization with its important centres at Harappa and Mohenjo-daro which are also said to be two kingdoms which governed the whole culture. The importance of this civilization said to be extensive in an area of 8400,00 miles they retained their uniformity and a standard pattern of life. This standardization is seen in every aspect of life—religious, political, economic and social. There was a highly evolved social pattern, economically divided into two classes ruling or rich class and artisan or labour class. Arts and crafts were blossoming in full in those prosperous days. The uniformity of patterns, form and fabric leads to a tentative hypothesis that there were guilds or some organisation of potters' families or also of other crafts. These brought about the standardization and an appreciable degree of uniformity in design motifs etc., notwithstanding local variations. Some intersecting circles, conchshell shaped designs, comb patterns, wavy lines, etc. are seen all over Harappan phase. Natural motifs are more favoured by Harappan-peacocks and fish motifs were very common. Human representations are a rarity and so are the caprids.

The scholars accuse Harappan culture of monotony. But the beautiful work of art (dancing female figure of bronze, ascetic, beautiful seals, etc.) tells us that they were not devoid of artistic sense. But more important is that Harappans were utilitarians of the first order whose painted pottery could not match the rich variety as those of peasant communities. They produced things on large scale and focussed their attention on usefulness, beauty came as a by-product. The standardization and set pattern of life goes with all round development of society.

The same cycle of variety and local variation is repeated in chalcolithic cultures of central and western India and also latter in early historic cultures. Society again became diffused, several groups of cultures came into existence. The chalcolithic cultural group of Malwa with its peculiar self slip and paintings executed in thin purplish to brown black pigment is easily distinguishable from Jorwe-Nevasa ware which on the other hand has a characteristic red pottery painted in black although it is also seen on other sites of Godavari, Pravara basin but a wider extent of each group is an indicative of cultural advancements made by the cultures as time advances. Ahar ware again represents a distinct style and so does Maheshwar and Navadatoli.

If we look towards the living primitive societies hidden from the glister of modern culture we might find a glimpse of the past pre-historic cultures in living form. Although there is some impact of time on them but, fundamentally they have remained unchanged. There are a large number of these people in distant hills or forests still residing, e.g. Santhals (Bihar), Oraons, Mundas, Has, Kharias (Chota-Nagpur), Bhuiyas, and Soars (Orissa), Kadars (Tamil), Nagas and Khasis (Assam), Bhils and Kalhakarais, Dhangar and Todas of Nilgiris. These are all conservatives and no contacts social or economic are made with each other. Analogous to pre-Harappan societies they too lead a solitary and isolated life; Abhor travel, practise their cultural monds and taboos strictly.

In the end we may conclude by saying that compulsion of environmental situation coupled with lack of urge for inter-group contacts throw up a large number of independent cultural groups in pre-Harappan Baluch, Sind and Rajasthan. It is represented by their individual painted pottery tradition. The situation appears to be reversed with the coming up of Harappans. With a complex developed society standardization becomes the keynote: local variation become few and refinement in painted motifs is definitely in a lower key than in some of the pre-Harappan groups. This cycle appears to be repeated in subsequent periods as well.

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THE PRE-HARAPPAN POTTERY OF KALIBANGAN: AN APPRAISAL OF ITS INTER-RELATIONSHIP

B. K. THAPAR

1. INTRODUCTORY

Ever since its discovery in the twenties of this century, the Indus Civilization or more appropriately still the Harappa Culture, after the name of the site where its characteristic elements were first recognized, has continued to pose problems, notably of its origin. During the last two decades or so, considerable work has been done in this direction, but the beginnings of this Civilization have still remained partly obscure. A certain amount of indicative, though inconclusive, evidence, however, points to Iranian influences for its ancestry. In these investigations, many theories have derived their main support from ceramic evidence, although this in itself is not a definite basis for inter-relationship of cultures. The present paper attempts to analyse the nature of the ceramic evidence as revealed by the excavations at Kalibangan. The comparative study, however, is rendered difficult by the diversity of terminology of the pot-fabrics of the comparable period in Sind, Baluchistan and the Indo-Iranian Borderland, including Seistan, Iranian plateau and Helmand basin of Afghanistan.

2. MATERIAL EVIDENCE

The excavations at Kalibangan revealed a culture-sequence in which the true Harappa Culture was preceded by an antecedent culture. The latter has vaguely, though inappropriately, been termed as the Pre-Harappan Culture. An apt designation, however, would be after the periodization of the site, viz., Kalibangan I. Be that as it may, the pottery of the pre-Harappan deposits (Period-I) was characterized by six fabrics which were labelled, for the sake of convenience, as Fabrics A to F. The distinctive features of each fabric have already been described elsewhere in some detail and need not be repeated here. Suffice it to mention that among these, Fabrics A to D are marked by certain individualities which make them easily distinguishable from the other fabrics as

also from the subsequent Harappan pottery itself. Fabric A was thin in section, showing irregular striations and often luted necks. Its dull-red surface was painted in black, combined at times with white. Fabric B, though more carefully potted, showed roughened or rusticated exterior (on the portion below the shoulder). With horizontal combings or tortoise shell or dendritic impressions. It was further diversified by painted designs in black or black combined with white. Fabric C had a smooth slipped surface in shades of red or plum-red and was painted in black. Fabric D was marked by thick sturdy section, a recurrent shape being the basin, showing obtusely incised designs on the inner sides and single or multiple rows of cord-impression on the outside. The painted decoration, wherever existing, was in black medium. Among Fabrics E and F, the difference was more apparent than real and lay in the colour of the surface-dressing (respectively buff and grey), some of the forms being common to other Fabrics. In frequency, Fabric A showed the highest percentage, followed in a regression by Fabrics B, C, D, E and F, the last two being somewhat un-common. Being current throughout the occupation, these fabrics did not represent any evolutionary series, nor different ethnic endogamous groups, but may have resulted largely from specific uses to which these were put. The classification of the fabrics is essentially based on purely technical characteristics. How far these divergent fabrics can be ascribed to local growth and development without interference or stimulus from outside still remains to be established.

3. COMPARATIVE STUDY

Besides Kalibangan, three more sites (Amri in District Dadu, Harappa in District Montgomery, and Kot Diji in Khairpur Division, all in West Pakistan) have furnished evidence for the existence, in a stratigraphic sequence, of an occupation-deposit yielding alien ceramics immediately underlying the Harappan strata. In addition, comparable material is available from sites in Zhob-Laralai, Ornach valley, Quetta, and Kalat regions of Baluchistan, Helmand basin of Afghanistan and Iranian Sistan. Before attempting a comparative study, however, it would be worthwhile to recall in this connection the disarming though canny remarks of H. Frankfort, 'the diversity of opinion as to the meaning of similarities or dissimilarities between pot-fabrics is even more regrettable, and, in fact, the use of ceramic evidence considerably surpasses its use.' Admittedly, the following pit-falls are inherent in such ventures: (i) the available clays and fuels in different regions can cause variations in pot-fabrics; and

(ii) the comparison of a single element without considering the complex of which it may be a part, or of the decorative theme, unrelated to the form of the pottery could be unreliable. Unless, therefore, one has a first-hand knowledge, at least by handling if not by digging of all the ceramic industries under investigation, the study, as in the present stage of inquiry, is likely to be partly subjective, compelling us to the utmost carefulness in depending upon the interpretative evidences of the published material. Although a correct assessment of the inter-relationships of the pottery of Kalibangan I must await a detailed comparative analysis; only the broad outlines are indicated below. In this preliminary study, both the technical characteristics—clays, surface-treatment; potter's wheel, firing and also the shapes and ornamentation have been taken into consideration.

It may be stated at the outset that as an assemblage, comprising all the six Fabrics, the pottery of Kalibangan I remains unparalleled. Among fabrics, this is particularly true of Fabric A which, as stated earlier, is the dominant ceramic of the Period. At the same time, no continuous or gradual improvement of technique is discernible in pottery of this Fabric during the period of its currency at the site. Its antecedent stage has, therefore, still to be ascertained. Further investigations in the contiguous regions of Sind and Punjab in West Pakistan may perhaps give us some evidence in this direction. The surface-decoration of Fabric B resembles that of the Wet Wares, including the Quetta, Periano and Khojak Parallels Striated, specific resemblances being available at Sur Jangal, Dabarkot in the Loralai and Periano Ghundai in the Zhob Districts of Baluchistan and Amri and Kot Diji in Sind. Fabric C is commonly met with at Amri, Harappa (pre-defence deposits), and Kot Diji. Fabric D, showing *inter alia* an exclusive decorative element of sharp-ridged incisions of various patterns including wavy, criss-cross, etc., is paralleled at Amri and perhaps also at Kot Diji. As stated earlier, Fabrics E and F were distinguished more by their surface-colour than by any other technical characteristic. Their affinities, therefore, may not be of much significance. However, the occurrence of buff and grey fabrics is no doubt reported from sites of pre-Harappan affiliations in Sind and Baluchistan. No multi-coloured pottery tradition either bichrome-red-black or polychrome as available on sites in Baluchistan (Amri, Nal, etc.) was met with at Kalibangan. The occurrence at the latter site of a typical bichrome black-white on Fabrics A, B and F, adds an important but problematic element.

Coming to shapes, of which the range in the whole assemblage is rather limited, we find that short-necked globular vases, dishes-on-stands, pedestalled bowls or chalices, bowls with tapering or convex sides, heavy jars with ledged or flanged shoulders and wide basins are known variously at Amri, Harappa, (pre-defence deposits) and Kot Diji in West Pakistan and Mundigak in Afghanistan.

In ornamentation, quite a few designs occurring on the pottery of Kalibangan I correspond to those on the pottery from Amri, Harappa (pre-Harappan deposits) Kot Diji, and sites in the Quetta and Zhob-Loralai regions including central parts of Baluchistan, Mundigak in the Helmand basin of Afghanistan and Shahr-i-Sokhta in Iranian Sistan. Notable comparable designs include thick bands; pendant loops; fish-scales; wavy lines; symmetrically-joined semi-circles, giving the effect of pendant concave-sided triangles; latticed triangles; opposed triangles, wavy verticals; dot tipped hanging triangles; latticed semicircles, etc. and such fillers as radiating lines (six or eight-armed) ending in solid discs, lenticulars, butterfly or the double axe motif, and depictions of fish, humped cattle, ibex and crab-like animals.

4. CONCLUSIONS

From the style of vase-painting and the technical knowledge displayed, it is evident that this pottery reached the site fully-grown from abroad. The present material leads us to conclude that towards the latter half of the third millennium B.C., the village-farming communities of the Iranian Borderland were moving out into the alluvial plains, and under different ecologies of the regions of their settlement, had developed regionalization. Thus, while the communities in each region (Quetta, Zhob-Loralai, central Baluchistan, the Indus basin, eastern Iran, the Helmand basin and northern Rajasthan) shared between themselves basic elements, including the generic obligation to northern (and also perhaps southern) Iran and Afghanistan, they evolved their own pattern in each region. This would perhaps explain the marked variation in pot-fabrics in each region.

This correlation of the above-mentioned assemblages would indicate that the pre-Harappan Communities appeared in northern Rajasthan somewhat later than on sites in Baluchistan and the lower Indus valley, as though reflecting a 'sloping horizon' of cultural level from west to east. The available radiocarbon

dates from Mian Ghundai (Damb Sadaat-I : 2530 ± 360 ; Damb Sadaat II, 2427 ± 360) Amri (Period IB : 2900 ± 115 , Period IC : 2665 ± 110); Kot Diji (Early level : 2605 ± 145 ; Late levels 2335 ± 155 ; 2255 ± 140 ; 2690 ± 140) and Kalibangan (Early Phase : 2370 ± 120 ; 2290 ± 120 ; 2255 ± 95 ; 2105 ± 105) support this hypothesis. In the light of such evidence, as can be garnered from the comparative study, and subject to difficulties mentioned above, it can be postulated that, in time-range, Kalibangan I would correspond to Damb Sadaat II, Rana Ghundai III, Sur Jangal III, Anjira IV, Mundigak III-IV, Kulli-Mehi, Nal, Amri II, Kot Diji (Middle and Late-levels) and Harappa (pre-defence deposits).

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THE HARAPPAN CERAMIC WARES AND THE DEVOLUTION OF THE HARAPPA CULTURE

S. R. Rao

We all know that the Harappan ceramic wares are uniform throughout the vast region covered by the Harappa Civilization, but underlying this uniformity certain regional variations in fabric and typology are becoming increasingly clear in Gujarat and, to some extent, in the Sutlej-Ghaggar basin also. It is therefore necessary to distinguish the Harappan-wares (those types and fabrics which are common to the Indus valley cities and other mature Harappan sites outside the valley) from the associated 'local' wares such as the Black-and-red ware and Micaceous red ware of Saurashtra, and the incised ware of the Sutlej valley. Another point which should be carefully considered is the line of distinction to be drawn between the Indus style, or to use another term, the "Imperial style" of painting earthenware, from the Provincial Style. In Gujarat, which was a maritime province of the Indus Empire the Harappans developed a new style wherein animals were drawn in a more realist way than in the Indus style. Very often folk tales such as the story of 'the cunning fox and the crow' formed the subject matter. This style is more pleasing because animals and plants are highly realistic and the artist has avoided monotony and overcrowding of space usually resulting from a repetition of designs.

In the case of certain Harappan sites outside the Indus valley it is observed, that all the major Harappan ceramic types such as the goblet, beaker, dish on-stand, dish with projected rim, S-shaped vessel, small-necked jar with a bulbous body, perforated cylindrical jar and trough or basin, occur in the sturdy red ware, as well as a buffish red ware. The latter fabric is not indicative of any new cultural stream. On the other hand, the Archaeological chemists report, both in the case of Rangpur as well as Lothal, clearly says that the buffish colour of the pottery is due to the incomplete oxidation of the lime-contents of the clay. As such the occurrence of a buff ware or buffish red ware at Harappan sites need not cause doubt as to the maturity attained by the culture, so long as the types are characteristically Harappan and other Harappan artifacts are found at the site. The colour of the ware depends on the clay used and the conditions of firing also. It is therefore wondered whether the classification of the Kulli, Amri-Nal, Quetta and other cultures into Red ware and Buff ware cultures has any rational basis. Wheeler has also doubted it. I would like to raise one more question about the associated wares. The black-and-red ware found at the Saurashtrian Harappa sites are anterior in date to the central Indian chalcolithic black-and-red ware. As matters stand at present, we must consider the indigenous people of Saurashtra who used the Micaceous Red Ware (with its characteristic bowl with or without a stud-handle)

as the Authors of the black and red ware which now serves as a link between the Harappa and post-Harappa chalcolithic cultures on the one hand and the Megalithic culture on the other.

As a sequel to the discovery of a number of Late Harappan sites in the Indo-Gangetic basin and Gujarat, it has become necessary to distinguish the Harappa wares from the degenerate Harappa wares. Apart from the inferiority of the fabric (firing, surface-treatment and decoration) the absence of certain true Harappan ceramic types such as the pedestalled goblet and beaker and the presence of the pointed goblet should be taken note of. The so-called ochre coloured-ware which is suspected to have been associated with the 'Copper-hoards', is in reality the ill-fired Harappan red ware used by the Harappa refugees in the western Gangetic valley as they moved out of their original home. In Saurashtra and the Narmada estuary also the degenerate Harappa ware occurs at a large number of Late Harappan sites. The report on the excavations at Rangpur makes a clear-cut distinction between the mature and degenerate Harappa wares. It is high time that on the basis of ceramic evidence obtained we designate the Harappa sites recently found in Meerut, Saharanpur and Ludhiana districts including Bara, Alamgirpur, Ambkheri and Bargaon as Late Harappan settlements instead of calling them as Harappan.

Then comes the question of the devolution of the Harappa Culture. It is abundantly clear that the Lustrous Red Ware Culture of Gujarat was evolved in two stages from the mature Harappa Culture. Some of the evolved Harappan ceramic types like the high-necked jar and carinated bowl are found in the upper Narmada valley, Godavari, and even in the Tungabhadra valley. You will all be surprised to know that the diffusion of Harappan technology can be traced now as far south as Singanapalli, Ramapuram, Sevavaram and other sites in Kurnool district. My exploration (only a fortnight ago) has confirmed the existence of a neolithic people who had borrowed certain Harappan techniques. They used perforated jars, the bowl with featureless rim, the high-necked jar, the stemmed bowl (with a lustrous red surface) and more than all the disc-beads of steatite and parallel-sided blades, all characteristic of Late Harappan sites in Gujarat. They are found to have painted the hand-made wares in a typical Late Harappan style (Lothal B) with wavy lines in groups, cross-hatched panels, zigzags and loops. In view of the fact that some of the Neolithic sites in the Deccan are dated as early as 2300 B.C. and the Neolithic-chalcolithic settlements of the Tungabhadra Valley flourished in 1800-1200 B.C. period, it is quite probable that the Harappan technologists moved down to the south from the Narmada-Tapti valleys in the late-or-post-Harappan period to the Deccan wherefrom they used to get gold and steatite formerly. Further investigations in this direction are in progress.

Discussion

Sri S. P. Srivastava :

Whether we have to give any importance to local physiographical aspects? So far Rajasthan is concerned, in desert we do not find use of bricks. Even to-day bricks are not used in Jaipur. I would like to know whether bricks found at Lothal were imported or locally manufactured? Unless we excavate Bikaner area also, the excavation at Kalibangan only may not be conclusive. We found some of the Harappan design still painted in the Ghaggar area. Whether the difference of clay in Gujarat, Rajasthan and Punjab area go to show something regarding the fabric of a pot.

Prof. K. D. Bajpai :

Spread of Harappan culture in different regions and their uniformity in certain aspects may go to suggest that there was no political unity. However, more evidences are to be awaited to prove this hypothesis. So far Saurashtra is concerned, some original forms and technique were not known to Harappans in the Indus Valley.

Sri K. K. Sinha :

We need not think of Indus empire. The uniformity in pottery and civic arrangements could have happened by diffusion of cultural traits or through guilds.

Sri Krishna Deva :

Sri Rao's paper is a substantial³ contribution to our knowledge. We may agree with him that the indigenous pottery i.e. Micaceous ware did exist at Lothal even before the arrival of the Harappan. Certain doubts need clarification such as whether Micaceous ware was manufactured out of local soil. Does it contain mica or it was imported? Either the Harappans brought the soil from outside or dug deeper in the same locality to obtain it or does the local soil contain mica. The Grey Ware that has been found at Mohenjo-daro, Rupar, and Lothal may be considered as a variation of Red Ware due to firing atmosphere in the Kiln.

Dr. R. C. Agrawal :

Who were the indigenous people, whether the users of Micaceous red ware or black-and-red ware? The Black-and-Red Ware of Ahar and Lothal have certain differences. Their relationship should be ascertained. The earliest Black-and-Red ware phase at Ahar does contain micaceous red ware. It is interesting to refer here the presence of mica mines in Dilwara and other regions of Rajasthan.

Sri S. P. Gupta :

About the degeneration of Harappan shapes, fabric and painting, this may be observed that by 2000 B. C. there was movement of Chalcolithic people in the whole near-east. The painted pottery traditions die out. It was felt everywhere in India even in Turkmen or Soviet Central Asia. It is a cultural phase when painted designs are not given any importance. Kalibangan is a pure and simple Harappan settlement. The difference may be just regional. It seems Kalibangan is later than Lothal.

Sri S. R. Rao :

There was uniformity in material culture as well as in the religious practices for 500 years. There was no change in the Society. Now what factors were responsible for this uniformity? Could trade be responsible for this? Was the merchant who ordered people in the locality for hundred years to follow uniform patterns in making houses, streets and other aspects of culture? In my opinion there must have been some kind of administrative authority. Planned cities of a uniform nature and well regulated international trade were possible only if there was a central and imperial authority to control the problems. The problem of Aryans in this connection is difficult to be solved. By Aryans we mean certain ethnic, linguistic or national group. Where ever in Western Asia the Aryans are identified, they are associated with certain object such as Battle axe etc. They were fire worshippers and horse riders. At Lothal and Kalibanga, the people were fire worshippers. At Lothal there is evidence to suggest the presence of horse also. We can not say that the entire population were Dravidians or Aryans but it was of cosmopolitan nature. One of the reasons for the good pottery in Indus plain, or Sarswati and Ghaggar valley is the availability of fine alluvium clay. At Rangpur levigated clay is present below 7 to 8 ft. even to-day, but the potter do not take the trouble to go deeper. Bricks were manufactured most probably locally. At Rojadi and Desalpur stone is available in plenty but it was not used in buildings, probably due to certain tradition. Local soil at Lothal contain mica. There is a difference between Black-and-Red ware of Rojadi and Lothal. The former which is later than Lothal does not show much difference with Ahar.

Dr. B. P. Sinha :

There was co-existence of different cultures at Lothal. We may agree with Sri Rao that there was a central authority in Harappan culture which maintained the civic administration.

LITERARY REFERENCES TO POTTERY

(Circa 6th to the 2nd century B.C.)

Brajdeo Prasad Roy

1. The period under review marks a landmark in the economic history of ancient India. The necessities of life caused different industries to be developed and the potters-art also was not neglected. The very rich literature of this period contains numerous references to potteries in accidental ways because this literature either is purely religious or pertaining to different branches of secular learning like polity and grammar. Some of the Brahmana and the Aranyaka works, the early Buddhist literature, the Astadhyayi of Panini, the Kautilya Arthashastra, the Varika of the Katvayana, the Grihya and the Sroutasutras, the Patanjali Mahabhasya and the Manusmriti along with a few older portions in the Ramayana and the Mahabharata are very helpful to us. The early Jain literature namely the Kalpa and Acharanga sutras, which also have undergone a process of change and a series of redactions also furnish valuable information. A large number of the Punch-marked coins and the railings and Toranas of the Sunga period bearing the figures of pots, and hundreds of earthenwares unearthed from different archaeological sites also corroborate the literary references so much so that they prove the activities of the potters-art and their skill in moulding beautiful pieces of earthenwares.

2. **The potter :** - The literature of this period refers to the potter, his status in society and the importance of his profession. By the sixth century B.C., we see the existence of the potters-villages¹. Their profession was so highly esteemed that even the Katriyas and the Sresthins also did not get social humiliation in professing it. Panini refers to Kulala and Kaulalika which mean potter and the earthenware respectively². The general term for a potter in the Jain literature is Bhandara (Bhandakara). The Jain monks often stayed with the potters and saw many things regarding their art, so naturally this literature contains many information regarding their art. The potter's workshop was known as Karmasala,

Kumbhakarapaka was the place where the earthenwares were baked, Ingaradaha was the place where the pots were fired, in Indhanasala fuels were stored, in Bhandasala burnt earthenwares were stored and Panyasala was the shop in which pots were kept for sale.*

Patanjali gives more details regarding the potter. He mentions that the persons went to them for giving orders for earthenwares of their own likings*. Besides the ordinary potters moulding small vessels, there were skilled potters known as the Mahakumbhakarasa to mould big jars and other types of big earthenwares.*

3. **Technique** :— Further, our literature furnishes information regarding the technique of manufacturing the earthenwares. More attention was given to the preparation of clay. If it contained too large grits, it would not model easily nor yield a handsome or serviceable pot, hence coarse materials were eliminated. On the other hand, if the clay contained no grit, it will stick to the finger, in moulding, and will crack in firing. To avoid this danger, some gritty materials like sand, powdered stone or shell chopped straw, and other like things were* added.

The Jataka stories mention that the potters brought cowdung* and clay lumps of clay (Matika) were kneaded with water, and were mixed with ash and dung (Gomaya) in order to make the clay soft. The early Jain literature also furnishes somewhat a similar information. Sauratthiya (Saurastrika) was a particular type of clay peculiar to Saurashtra*.

After the preparation of clay, its lump was placed on the wheel (Chakka-Chakra) which was constantly turned, and vessels of different types were moulded by skilful hands. While the pot was on the wheel, the potter applied a thin coat of very fine liquid clay in order to smoothen the surface of the pot by filling the pores etc. The pot in which the fine liquid was kept was termed as the Ayamanchiya (Atanchika).¹⁰ Patanjali informs that the potter, after preparing the clay, took its lumps and with them moulded small and big jars.*

The wet vessels were dried and baked (Sukhopetva pachimva) and made ready for consumption¹¹. The unbaked earthenwares were not serviceable on account of their nature as these were too weak and soluble in water. On account of this, the Mahabharata differentiates a unburnt jar from the burnt one in a simile that a weak king perishes away very soon like a unburnt jar dropped into the water¹². The

pottery fired the earthenwares but the literature under study does not refer to the process of firing.

4. **Types** :— The literature under review furnishes many names and types of earthenwares which may be classified into many groups such as the water pots, domestic pots, winepots, storage jars, measuring pots, pots for religious use, and flower pots,

Water pots —

The Satpatha Brahmana refers to *Ninahya* * which was a water pot. It was buried underground up to its neck. Perhaps it was done in order to keep the water cool. *Kumbha* * was the most popular type of the water jar which is frequently referred to in the Jataka stories. Panini refers to the *Udaka-Purayittavya* pots of different types, all coming under the term *Kaulalika* **, the earthenwares. Kautilya also has referred to *Kumbha* as a water jar. He informs us that its model was imitated for building the *Vapra* around the city, and its particular portion was known as the *Kumbha-Kuksika*, as its middle portion was outstretched like the middle portion of *Kumbha* *. Besides this he mentions other uses of this earthenware. Hundreds of *Kumbhas* filled with water were placed in front of the houses and the offices of the State to quench the conflagration in the cities during the summer **. Many *Kumbhas* filled with water were placed in the judicial courts and the witnesses took oath before them to speak the truth **. Furthermore, he instructs the city guards to bury the empty *Kumbhas* under the ground by the side of the city walls in order to counteract digging of mines by the enemy into the city **.

The early Jain literature also refers to the *Kumbha* and its miniature form *Kumbhi* as water jars with rounded bases.

In the *Mahabhasya* of Patanjali many references to the *Kumbha* are found. According to him, on the occasion of the performance of the *Mahabharata* sacrifice, some maid servants having *Kumbhas* filled with water on their heads danced to the north of the *Marjalliya Mandapa* **. He refers to the *Mahakumbhas* and the *Kumbhis*, big and small jars for storing water **. Manu also refers to the *Kumbha* as the water jar **.

Ghata also was a water jar. It is frequently referred to by the Jatakas and according to Patanjali *Ghata* and *Ghati* are the equivalent terms for the *Kumbha* and *Kumbhi* respectively **. Numerous *Ghatas* filled with water were placed around

the sacrificial altars²². Ghatas were used for crossing rivers as these floated on the water and sometimes four Ghatas were used for this purpose²³. Manu²⁴ also refers to Ghata and instructs the king to impose a fine of one Masa on the person who steals away the Ghat, kept on a well for the public use. In the Sutra literature Manika²⁵ has been referred to as a big jar of water, which may be equated with the Mahakumbha or the Mahaghata.

Kalasa also was a term for the water jar which is referred to by Panini²⁶, and according to him its miniature form Kalasi was equal in size with the Ghata. So, it seems that Kalasa was bigger in size than the Ghata or Kumbha. The early Jain literature also refers to Kalasa and its miniature form the Kalasik-Kalasila.

In this literature, different types of water pots have been referred to such as Gayari-Gagari, Kayala—a big Ghara, Karaga—a small water jar, Madaka or the present-day Mataka. The term Udagadroni denoted a small pot, a series of which was tied to a wheel for drawing water from a well. Vatta was the present-day Batta or the Chukara for drinking water especially in the social festivities. Gallola was a spouted small water pot which may be identified with the Garua.²⁷

Domestic utensils—The Taṭṭhira²⁸ Samhita refers to the term Parinaha, which denotes the household utensils.²⁹ Manu also refers to the same term for the same.

Sthali³⁰ has been referred to in many Jataka stories as well as in the Astadhyayi of Panini as a cooking vessel. Patanjali refers to the Sthalipulaka-havi to be offered to the Gods, it was a pot in which rice was cooked, and in this connection he refers to the famous phrase 'Sthalipulakanyaja'³¹. This pot may be identified with the present-day Batlohi, but built with clay. The practice of designating utensils on the basis of their capacity or the quantity that could be cooked in them, has been referred to by Panini (Parimanapachah)³². Patanjali³³ also mentions its different sizes on the same basis such as Droni, Patrina, Adhiki, Achitani and Dvikuljina.

Ukha or Ukhya was a cooking pot and Panini refers to it as a frying pan.³⁴ It may be identified with the present-day earthen Karahi. He refers to its different sizes on the basis of its capacity.³⁵

There were special types of pots for cooking particular things and were

termed as Pachana.³⁰ Patanjali refers to the Mansapachani⁴⁰ or a pot for cooking meat, but its exact shape is unknown to us.

Karpara was a cooking pot. Katyayana refers to the Karpara-Odana or the cooked rice which was left behind in the pot known as Karpara.⁴¹ It may be identified with the present-day Khappara, a small karahi like device which is used as dish also.

Different types of dishes were used by the people. Panini refers to some special terms applied to food leavings when served in different types of utensils.⁴² Katyayana refers to the plate leavings by the terms Sarava and Mallaka. Sarava was a pot in which food was served for eating. Kautilya refers to Sarava in the workshop of goldsmith. Again he refers to the Saravame-khala or the girdle of Saravas which a thief was forced to wear around his waist and walk through the streets.⁴⁴ Patanjali informs us that a little things were kept in a Sarava, hence it is apparent that it was small in size. Saravas were earthenwares and were used in sacrifices.⁴⁵ Mann refers to Sarava⁴⁶ as a pot in which meal was served. These references show that Sarava was a pot used for different purposes. It was of different sizes ranging from the size of a big parat to a cup-like device. The Mallaka was a term for food leaving in the pot known as Mallaka or Mallaga. Its exact shape is unknown to us.

The early Jain literature refers to different types of the toasting pan such as the Tavia-Tapika or the present-day Tava which is shallow. It was made of clay. The term Avavakka also denotes a toasting pan Avapakya.⁴⁷

Different types of Thalis must have been used but in literature references to them are lacking. The archaeological excavations have brought out many types of dishes which have concave bases with raised sides which either are vertical or intumed.

Besides cooking pots and different types of dishes, bowls also are referred to in many works. These were small concave pots with broad mouths, and were used mainly for drinking water, liquids or for eating meals in them. They might have been used also as intermediary vessels. The most popular term for a bowl is Kapala as its shape was like that of a skull. Panini⁴⁸ refers to it along with Sarava and Kautilya mentions it in the workshop of the goldsmith.⁴⁹ He informs that it was used for begging alms.⁵⁰ Patanjali refers to it as a cooking pot in which

Parodala was cooked which was known as the Kapalacharu.⁵¹ Different types of Kapalas have been unearthed from many archaeological sites. The appropriate term Kattoraga for a bowl is used in the Jain literature which may be identified with the present-day Katora.

The early Jain literature is very informative as it contains numerous terms denoting different types of domestic utensils. Kusula was a big pot in which food was kept, in Kandu sweets were prepared and Kuntala was a pot in which food was served.⁵² Suphani was a pot in which milk was heated, Mathaniya-Mathanika was a pot in which curd was churned. Pari and Sinaga were the pots in which cows were milked.⁵³ Besides these, different types of lids such as Padipillana Pratiprerana, Pindhana, Pihana and Dhakani have been referred to. Idna also was a covering lid. Iddaraya was the lid for covering the cooked food.⁵⁴ But their exact shapes are unknown to us.

Special care was given to the purification of the earthen wares. Manu says that impure pots should be purified by heating them on the fire, but the earthen-ware impurified with blood, urine and meat cannot be purified even with this process, hence must be discarded.⁵⁵ Patanjali informs us that odd earthenwares were replaced with the new ones.⁵⁶ Manu instructs to discard the broken⁵⁷ earthenwares but the early Jain literature informs us that the Jain Bhiksus used to repair broken⁵⁸ vessels. Such pieces of pots have been unearthed from many archaeological sites which are repaired with copper-wires.

Wine pots :—In ancient India, wine in its various forms was a favourite drink of the people and different types of wine pots were used for drinking it. Some of them have been referred to in the literature under review. Kautilya refers to the poisonous Madyakumbhas or winejars to be offered to the republican people causing their destruction on the occasion of the outbreak of war against them.⁵⁹ Patanjali also refers to the Ghata for storing wine.⁶⁰ In the Jain literature also,⁶¹ different types of jars have been referred to such as Jambula, Paraya, Bhumbhala and Sandia-Saundika. The Uvachha, Karliya, and Katalanka were the pots which were to serve wine. The Tokkana was a pot with which wine was measured. Chasaga⁶² Patanjali⁶³ also gives the same information. Further, he refers to Patra an earthen-ware with which soma was offered to the Gods, it was known as the Nestra also.⁶⁴

Many drinking cups have been discovered from many archaeological sites which are of different sizes and shapes.

Storage jars :—In the literature under review, different types of storage jars have been mentioned. These were considerably high having pointed base and tapering lower body. On account of their being very heavy these were not easily portable, hence either were sunk in the ground or made to rest on a specially made stand.

The terms like Bhandagara and Kothagara are derived from the terms Bhandas and Kothas which mean the storage jars. The Jataka stories frequently refer to them. The Mahabharata⁶⁵ uses the term Bhandas as a storage jar. Kautilya refers to the Bhandas in which gold and other things were stored in the Bhandagara. He uses a special term "Bhandikadhikarani"⁶⁶ denoting a method adopted by the goldsmiths for stealing away the gold pretending to keep it in the Bhandas. To guard against this, he instructs the Suvarnadhyaksa to examine the Bhandas carefully and punish them properly if found guilty.⁶⁷ He refers to the "Niksepa-bhajas" in which oil, ghee and curd were stored.⁶⁸ In order to maintain accuracy, he instructs the Accountant-General to maintain an accurate account of the Bhandas in the Bhandagaras in order to guard against the "Bhajas-vismas" a term denoting the stealing away the things in a Bhandas by replacing it with a smaller one. Manu also refers to the Bhandas as storage jars and instructs the king to punish those persons who steal away or break⁷⁰ them. These Bhandas may be identified with the present-day Handiyas. A large number of such Bhandas have been unearthed from many archaeological sites.

Besides the Bhandas, Kumbha, Kalasa and Ghata also were used as the storage jars. Patanjali also refers to them in which ghee and oil were stored. These were cleaned with brush and hot water.⁷¹

Kusula as a storage jar is referred to by Panini.⁷² It was a large cylindrical vessel for storing grains. Kautilya also refers to it which was made either of wood or clay. It was known as the Kotha⁷³ also. Patanjali mentions it by the name of Kandu⁷⁴ also. After storing corn in it, its mouth was covered with moistened soil, but a provision was already kept in its lower portion to bring out the corn by having a hole known as the Kusulabala.⁷⁵ Kusuli was the miniature form of Kusula. The Kusula may be identified with the present-day big Thali.

Other types of storage jars like Kupa and Sala are referred to by Panini.¹⁶ The former was a form of storage jar resembling a well consisting of a series of rings arranged one above other. The latter was a masonry structure of store room specially built for the purpose.

Panini refers to Ustrika¹⁷ as a storage jar. It seems to be a heavy and very tall storage jar with narrow mouth. Perhaps, it was a big Surahi¹⁸ like device.

Measuring pots:—In ancient times, corns were measured in earthenwares, which were known as the Manabhandas¹⁹. Kautilya instructs the Superintendent of Markets to examine the correctness of such Bhandas and to impose fine on the sellers who use incorrect measuring pots. Different types of the Manabhandas are mentioned in the literature under review, such as :

Adhaka— It is mentioned by Panini²⁰. It was equal to 16 Kudavas or 256 grains. It was known as the Patra²¹ also. Kautilya also refers to it as a measuring pot which contained 1/4th of a Drona.²² Patanjali²³ also refers to it in the same sense.

Kamsa was another type of the measuring pot. It has been referred to by Panini²⁴. It contained eight Prasthas of the corn. Mantha²⁵ was a measuring pot which contained four Kamsas of corn.

Khari was used for measuring large heaps of corn. It was a higher unit than the Drona²⁶. According to Kautilya it was equal to sixteen Dronas²⁷. Panini and Patanjali have referred to its many small and big sizes such as the Ardhakhari and Dvikhari²⁸.

Drona and **Dronis** of different sizes have been referred to by Kautilya.²⁹ According to Patanjali a Dronapatra was equal to four Adhakas³⁰.

Kudava was a measuring pot which contained 1/4th of the Prastha³¹. According to Patanjali, it contained one handful of corn³². It had its many big and small sizes.

Prastha³³ contained four Kudavas of corn. Panini refers to Ustrika³⁴ as a measuring pot which contained ten Kumbhas of corn. Mention Ghata³⁵, Patrika and Patrika³⁶ as the measuring pots. According to Patanjali Kutijika was a measuring pot which contained one Kulaja of corn and Sastaka³⁷ was a special pot

to measure the Sadbhaga. Kumbha as a measuring pot contained twenty Dronas of corn¹⁰² and was termed as the Mahabhanda. Patanjli¹⁰³ and Manu¹⁰⁴ also refer to the Kumbha as the measuring pot.

Pots for religious use :—On the occasion of the performance of sacrifices different types of pots were used. Kumbhas, Ghatas and Kalasas were placed on the sacrificial sites as the auspicious pots. On the special occasions, different types of earthen wares were used as the Vandana Kalasas are used for this purpose.

The Brahmins, Buddhist and Jain monks were allowed to use only the pots made of either clay, wood or gourd. Kamandala was such a pot which was used by them. The Jain literature refers to some other types or pots for monastic use such as the Patigaha. The Jain monks were allowed to use other vessels termed as Tapparaga and Tappara and Tappanga which exact shapes are unknown to us. The Khatanga was a peculiar bowl used by the Jain monks while begging when they were undergoing a punishment for a fault¹⁰⁵. Manu mentions that the ascetics must not use metallic and lustrous pots (Tatjasant patrahi)¹⁰⁶.

Flower pots—The finer tastes of the people are indicated by the fact that there were certain pots which were used as flower pots such as Pindalaga and Puppachhajja. The Singla (Srngika) denoted a syringe with which water was sprinkled on flower plants.¹⁰⁷ Artistic representations of flower pots are depicted on the Toranas of the Stupa at Sanchi which are like the Ghata or Kalasa but with wide mouth and broad base.

5. Decoration—A large number of the earthenwares unearthed from many sites exhibit the skill of the potter-painters, but in the literature under review, we get only scanty references regarding the technique of paintings on them. The Kusa Jataka shows that the potter's skill was exhibited in the preparation of the earthenwares were coloured and decorated with many colours and motifs respectively (Nanarupant samutthapesa). The Jain¹⁰⁸ literature refers to paintings on the earthen wares. Kalada was the particular pot in which colour was kept.

Some pots were coated with oil. The excellent coating material consisted of sesameum oil mixed with ash. It was rubbed with cotton on the surface of the fired pots. After it, the pot was rubbed with a polishing stone known as Ghuttaka. Such polishing stones were available at Bhoganagara which was situated somewhere between Pava and Valsali. Then, the pot was kept in the sun for drying and after that the ash was washed away and another coating over the pot. This process continued from two to five times.¹⁰⁹

The foregoing details indicate that the Indian potters moulded different types of earthenwares. The Indian pottery with its long history reveals surprising range of shapes, sizes and motifs worthy of illustration in a Corpus. At one end of its series is the giant Kusula and at the other the tiny Chaska. In literature different types of earthenwares are referred to and thousands of the earthen pots have been unearthed from the archaeological excavations. Now, it is our sacred duty to identify them taking the help of both these sources. This would enhance the development of the study of pottery as a separate branch of learning which, at present, is in its infancy.

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 97. K. A. 2. 19.
 98. Mahabhasya, P. 22 (On Panini 4. 1. 3)
 99. Manu. 8. 320.
 100. Deo, S. B. Op. cit. p. 41.
 101. Manu. 6. 153-154.
 102. Deo, S. B. Op. cit. P. 38.
 103. Ibid. P. 34.
 104. Ibid. P. 35.
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ANCIENT INDIAN POTTERY—TYPES

(Based on literature, Circa 5th to the 2nd century B.C.)

1	2	3	4	5	6	7
Water-Pots	Domestic utensils	Wine-pots	Storage-jar	Measuring-pots	Pots for religious use	Flower pots
Gayari- Gaggari Ghata Ghatti Gallola Kumbha Kumbhi Kalasa Kalaatika Kayala Karaniga Madaka- Mataka Mohaka- mbha Manika Ninabya Udagdroni Vatta	Avapakka-Avapakya Iddaraya Idun Kandru Kapala Karpasa Kattoraga Kusula Mallaka Mathanika Manasapachani Pachana Padipittan Pari Pindhana Saraya Sinaga Sthali Sophani Tavla-Tapika Ukha	Bhumbhala Chasaka Ghata Jamtula Kariya Katalanika Madyakumbha Parrya Potra (Nestra) Sandiga Saundika Saraya Takkana Uvachya	Bhanda Ghata Kalasa Koetha (Kanda) Kumbha Kupa Kusula Kusuli Kleapabha- jana Sala Ustrika	Adhaka (Patra) Ardhakhari Drona Droni Dytkhart Ghata Kansa Kansika Khari Kudava Kuljika Kumbha Mahabhandu Mantha Patrika Patrina Prastha Prastaka Ustrika	Ghata Kalasa Kamandala Kapala Khatanga Kumbha Mahayira Patigha Tuppanga Tupparanga	Ghata Kalasa Kumbha Pindalaga Puppachhajja Sringika

DISCUSSION

B. P. Sinha :

It is really an excellent paper. We were missing certain new points. Now we have ample literary evidences from Vedic Period down to the second century B. C. It should be co-related with the potteries from archaeological context.

ROMAN POTTERY IN INDIA

M. N. Deshpande

While we were aware of the commercial contact between India and the Mediterranean world between the first few centuries of the Christian era and of the finds of a number of Roman coins at several sites in south India, it was not until Sir Mortimer Wheeler, pointed out to the great possibility of dating indigenous south Indian cultures with the help of Roman pottery that Indian archaeologists took seriously to the study of Roman pottery and other associated finds. The study began with the excavations at Arikamedu in 1945 which provided conclusive evidence of direct cultural contact with the Roman world. The excavation brought to light three distinct wares : (i) Arretine Ware, (ii) Rouletted Black Ware, and (iii) Amphorae.

Before we consider the significance of these and alike wares, it is proposed to give below a brief account of these ceramic industries in their place of origin and to study their dispersal in India.

ARRETINE WARE

The term 'Arretine'² is used for a soft and delicate red-glazed ware with shades varying from red to yellow-red with the lustre rivalling that of 'sealing-wax'. This ware was current from the last quarter of the 1st Century B.C. to the first half of the 1st Century A.D., and is named after the place of its manufacture 'Arretium' (modern Arezzo) in Italy. It was also manufactured at other centres in Italy, viz. Puteoli, Modena and Rimini. The term 'Terra Sigillata'³ meaning pottery with stamped designs applies and covers Arretine Ware, as the Arretine is also decorated by a process whereby the unbaked pot is pressed into a stamped mould. Terra Sigillata, however, has a slightly earlier origin going back to the 2nd Century B.C., resembling the Campanian Ware which preceded it in being coated with a black glaze in imitation of metal. The change from black to characteristic red glaze took place about the beginning of the 1st Century B.C.

The production-technique of the Arretine ware inherits the ancient technique practised from the Mycenaean Period through the Hellenistic Period of decorating the pot in relief by means of a mould. It is stated that 'it is merely a natural and logical end-product in the evolution of ceramic art from the Mycenaean Period

Paper read at the Seminar on Indian Pottery, organized by the University of Patna, 1968.

down to Roman times."⁴ The Megarian bowls of Greece and Asia Minor also inspired the production of decorated hemispherical vessels of Arretium. The process employed in the production of these bowls consisted of preparing a mould by means of a stamp, the mould being later fixed and placed in the centre of potter's wheel and the wet clay thrown inside the mould with the lip added free-hand. The pot shrank in size as it dried, facilitating its removal from the mould.

In the Indian context, Arretine Ware was first noticed at Arikamedu⁵ in the cutting AK-II in four layers of sandy estuarine mud-deposit and the excavator thought that the duration of the deposit may be little more than 30 years and the latest Arretine ware on this site may belong to the last phase of the production of the ware, i.e., A.D. 45-50. Except for a tiny fragment of a sherd with leaf-pattern probably of Dragendorff's form II, the sherds represent undecorated cups and dishes in some cases even without normal rouletting. The excavator surmised that these features were the symptom of lateness and therefore concluded that A.D. 20-50 would be the inclusive period for Arretine pottery at Arikamedu.

The main southern site AK-IV produced Sigillata ware along with stamped sherds immediately underlying the brick-wall of the early phase. Among the 22 shapes described in the report three bear potter-marks VIBII, (probably VIBIE, possibly VIBIF) ITTA and GAMVRI. The types consist of flat dishes with straight or carinated sides with a base. One sherd has rouletted rim while another with a ring of fine rouletting on upper surface. There is also a dish-like-bowl and a carinated cup represented by a sherd approximating to a stamped example of Claudine date (A.D. 41-54). One fragmentary sherd, yellow with red veins may be described as marble vase probably produced by Arretine potter as early as 1st Century A.D. In previous excavations, at the same site, French archaeologist had brought to light a sherd of imitation or provincial Terra Sigillata of reddish grey fabric with light red glaze and a very rough external rouletting. Another fragment belongs to a class of fine ware with leaf-pattern impressed from mould.

ROULETTED WARE

The technique of impressed decoration practised during the Hellenistic period gave rise to rouletted decoration which consisted of revolving a toothed-wheel on the wet surface of the pot and producing symmetrical picked decoration. This tradition was adopted in Sigillata ware till late Roman period and pottery was decorated on the inside and outside.

Rouletted sherds were found in stratified context at Arikamedu and their first appearance is placed towards the end of 1st Century B.C., or the beginning of the 1st Century A.D.⁷ In fact, they were found in all the strata of all the excavated sites at Arikamedu. The ware is stratigraphically and chronologically co-extensive with the amphorae but it preceded and outlasted Arretine ware by an appreciable

margin. The excavator has also pointed out that it is relatively more abundant in the pre-Arretine and Arretine layers of the Northern Sector, signifying that the type became less popular after the middle of the 1st Century A.D.

As a result of careful study of the ware, the excavator has described the ware as "carefully potted on a quick wheel from a fine well-levigated clay which burned grey or, more often, greyish pink, the grey colour being due to the reducing condition under which the pot was fired. Before firing, it was usually treated inside and outside with a slip which, on being subjected to an inverted firing, turned black inside and showed variegated shades of grey, black, yellow or brown outside. Occasionally both faces are covered with black-slip and rarely with brown." He has further made a five-fold classification of the ware depending on the shades of the slip. The interior surface was burnished and in some cases it approximated to the lustre of the N. B. P., though it was decidedly inferior. The pre-Arretine sherds usually had a brighter polish. The type is confined usually to flat dishes with inward curved rim, the beak or the pronounced nature of inward projection accounting for different types. The exterior surface has grooving. The rouletting marks are usually on the interior in the form of concentric designs. Besides the dishes, there are shallow bowls, some without the internal rouletting.

The rouletting designs consist of minute triangles; diamonds or parallelograms; wedges or uprights crescents; ovals or dots; or an eye-shaped device which is like attenuated diamond. The design with triangle is very common occurring in all-strata.

Rouletted sherds have been reported from Chandravalli and Brahmagiri, at the former place it is associated with two denarii of Tiberius (A.D., 14-37) and two fragments of imported red-glazed ware of Arretine type.

It has been also reported from Sisupalgarh,⁹ the specimens from the upper level having an inferior grey fabric being presumably of local manufacture.

The value attached to this ware can be adjudged from one of the sherds found rivetted with an iron-pin at Kesarapalli¹⁰ in Andhra Pradesh. For the distribution of the Ware, attention is invited to Appendix I.

AMPHORAE

The Amphorae is a high two-handled pot with a neck. While a number of varieties of this Ware are available in classical period meant for use at public festivals, weddings and funerary purposes, it became a standard vessel for transporting oil and wine during the Roman period. Instead of the footed variety of the classical period, pear-shaped and conical types in coarse fabric predominate the Roman period. The amphorae has usually a long cylindrical body with a pointed base, a long narrow neck and two straight-handles. The amphorae pitched internally to preserve the wine¹¹. The pointed varieties usually found in Roman

period were used for storage in cellar with the pointed base fixed in the ground, but when meant for transportation a tripod was used for putting them in position. Its use was very extensive in Roman period and at Porta del Popolo and Pompeii 12 they were found in great number, at the latter place a hundred vases were found in a house.

In the Indian context Amphorae sherds are found at Arikamedu, 13 Kanchipuram, 14 Kolhapur, 15 Nevasa, 16 Ujjain, Ter, Junnar, 17 Dwarka, 18 Devnimori, 19 Nagara, besides Taxila 21 in west Pakistan. The Taxila example must have travelled by the land route, while the South Indian specimens were transported by Roman traders. At Kanchipuram nearly 50 conical Amphorae were recovered in broken condition, and of these three were found in a row (pl. I). This would suggest that these vases were brought in large numbers and travelled in and from ports like Kaveripattinam and were used by Roman traders who had settled down at inland trading centres.

The amphorae vases found at Nevasa, numbered 63 of which 10 were handle pieces. The sherds are of creamy yellow to light brown colour, heavy and show a mixture of very fine sand in the clay. Among the handle pieces mention may be made of those with oval section having two grooves on the exterior. But the varieties of handles reported from Arikamedu have either plano-convex section or with a groove on the exterior. One of the amphorae sherds at Arikamedu was found along with pottery group 'A' which contained a Terra Sigillata sherd stamped with ITTA.

Before we conclude this study of Amphorae it may be pointed out that *The Periplus* contains quite a number of references to the import of wine in India along with other objects from the Mediterranean world.²²

LOCAL WARES

Besides direct importation of pottery from Mediterranean countries under Roman influence, we have to deal with local varieties which came to be produced under Roman influence. This influence was exercised by the Romans who were settled down at coastal and inland emporia and who wanted for their use the types of wares they were accustomed to use in their country. Local inhabitants probably also evinced interest in these new ceramics and the village potter produced such imitation wares for the consumption of the sophisticated class. The first quality of these wares is their fine texture and the use of well-levigated clay for the production of pottery with polished red surface. The most important type to be copied was the so-called sprinkler which is in fact a flat based elliptical jar with a high, narrow neck having a small perforation and a vertical spout at the shoulder. (Pl. II) Its prototype in bronze was found at the Brahmapuri 23 mound at Kolhapur along with other objects of Roman importation. This vessel became popular specially amongst Buddhist community for many sherds of this type have been found from the accumulated debris of cisterns attached to western Indian caves like Pitalkhora, Kanheri, Karle, Junnar, etc., as also at other Buddhist sites like Devanmori, etc. Its sculptural representation (Plate III) is also met with in a

slightly evolved form in the *Mahayana Chaitga* Cave no. 26 where the sprinkler is shown along with a tripod over the platform on which the *Mahaparinirevana* figure of Buddha is carved. The flagon of wine held by a foreigner lady and depicted on the ceiling of Cave no. 1 at Ajanta also has a long neck and similar shape suggesting that the type was popular with foreigners and also with Buddhist laity. It is well known that a large number of donations to western Indian caves came from Yavanas who were no other than the Roman traders, settled down in western India.

As regards the local imitation of Arretine ware particularly with stamped decoration, it will be worthwhile to study the pottery from Ter collected by a local enthusiast, Shri Ramlingappa Lamture and who was good enough to place the material at the disposal of the writer for purposes of study. This pottery clearly suggests that the stamped decoration on the vessels was produced out of a mould in which the pot was pressed while it was still wet. These pots, however, being near spherical in shape, two moulds were used as suggested by a clear line of junction left on the surface of the pot (vide no. A, B and C of fig. 1). This technique apparently was adopted by the local potter to produce the types of pots the Yavana traders sought after. It is analogous to the technique of Terra Sigillata about which reference has already been made earlier. The decoration usually consisted of tongue-shaped or leaf shaped pattern around the base with geometrical pattern appearing just below or on the carinated portion of the pot. This decoration was also copied on terracotta lamps (no. D of fig. 1) found at Ter. The tongue-shaped decoration radiating from the base has analogous in Terra Sigillata.

The use of stamps sometimes containing figures of animal or human-beings were also noticed (pl. IV). It is not unlikely that the cylinder seals found at Ter, Ellora, etc., were used for the decoration of the pottery under Roman influence.

Some classical traits also came to India along with Romans and applique decoration on vases came to be copied. Some sherds from Ter with grotesque applique figures on posts represent this contact (nos. and F of fig. 1). In this connection attention may be drawn to the find of the head of Hercules on the handle of a vase of Greek Black Ware.² Lids with female figurines (no. G of fig. 1) from Ter are also suggestive of this contact. A lid with a crouching lion on top 26 (pl. V) is another very interesting object from Ter. The lion figure measuring 0.10 m. in length and 0.75 m. in height stands on a base of a lid which must have been used as a cover for a funerary urn.

The Red Polished ware²⁷ found at several sites in Saurashtra and Gujarat like Vadnagar, Baroda, Amreli, Devnimori, Somnath, etc., in a horizon assigned to the Christian era may also be the result of Roman contact. Systematic excavation of a few more sites would help in putting this pottery in a proper context and provide further clues of Roman contact. The sprinkler type as already pointed out earlier is found widely diffused at a number of sites in northern India and this diffusion may have been caused by its popularity with the Buddhist community and consequently it continued over a long period of time, the later types not having the typical Red Polish of the early period.

It may not be out of place to point out that the predilection for stamped decorated pottery seen during the Gupta period was the indirect result of the local imitation of stamped pottery during the period of Roman contact. The excavation of Devnimori²⁸ where remains of a Buddhist settlement were uncovered has also brought to light clear evidence that Red polished ware and black pottery of the Arretine type continued to be used in the 3rd-4th century A.D., and that among these was the extraneous element provided by an amphora. Among the indigenous types is an interesting assortment of stamped and decorated ware which shows continuity of tradition from the early centuries of the Christian era almost up to the Gupta period. The mould-made pottery of the Gupta and of subsequent periods from Ahichchhatra²⁹ also has decorative devices derived from some of the earlier ones that were in circulation prior to the second Century A.D. While some of the decorations were, no doubt, derived from symbols such as are found on Indian coins and sculptures from the 1st Century B.C. to the third Century A.D. as suggested by Shri K.C. Panigrahi, these appear to have been also derived from the large variety of decorations inspired by the Roman contact.

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- 3 The term Semian as applied to this Ware by Archaeologists is now obsolete. It was formerly employed for a class of Sigillata perhaps made in Samos.
- 4 Oswald, F., and Pryce, T.D., *op. cit.*, p. 234.
- 5 Wheeler, R.E.M., 'Arikamedu, an Indo- Roman Trading station on the East Coast of India', *Ancient India* no. 2, p. 35.
- 6 Wheeler, *op. cit.*, pp. 39-40.
- 7 Wheeler, *op. cit.*, p. 46.
- 8 Wheeler, *Ancient India* no. 4, pp. 237 & 278.
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- 10 *Indian Archaeology - A Review*, 1961-62, P. 2.
- 11 Dr. B. B. Lal of Archaeological Survey of India who examined the black deposit from the inner surface of amphora sherds has reported that it represents a resinous, asphalt-like matter which may have been used as coating for reducing the porosity of the pot. He further states that it was equally likely that the black incrustation might have been found as a result of sedimentation from the liquids con-

tained in pot in the course of storage (From History to Prehistory at Nevasa, 1960, p. 527). Hedge's analysis also confirms the results of Dr. B. B. Lal (Excavation at Devnimori, p. 77).

12 Walters, H. P., History of Ancient Pottery, Vol. II, pp. 60-61.

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24 Sengupta, R., Repairs to Ellora Caves, Ancient India, no. 17, pp. 46-47.

25 Marshall, Taxila, Vol. II, pl. 130, fig. F 26B.

A similar figure has also been reproduced on an earthen pot from Khotan, Central Asia now in Hermitage Museum, Leningrad. Cf. S. P. Gupta, Terracotta Vessels and Figurines from Khotan JOI, Vol. XV, I, no. 2, 162, p. 173.

26 Deshpande, M. N., Classical influence on Indian terracotta art, in Bulletin of International Congress on Classical Archaeology, Paris, 1965, pp. 603-610.

27 For distribution of the ware see Appendix II, which contains only a select list of sites.

28 Mehta, R. N., and Chowdhary, S. N., op. cit. pl. XII, and figs. 34 and 35.

29 Ghosh, A., and Panigrahi, K. C., Pottery of Ahichchhatra, Ancient India, no. 1, pp. 41-55.

APPENDIX I.

Rouletted ware has been found at the following places:—

Andhra Pradesh:

1. Amaravati
2. Dharnikota
3. Kesarapalli
4. Kondapur
5. Maski
6. Mukhlingam

Madras:

1. Kanchipuram
2. Kaveripattinam
3. Sites in Cauvery Basin
4. Uraiyur

Uttar Pradesh:

1. Rajghat

West Bengal:

1. Atghara
2. Baral
3. Berachampa
4. Chandrakhetugarh
5. Harinarayanpur
6. Tamluk.

APPENDIX II

A select list of sites containing Red-Polished Ware:—

1. Gujarat:

Hanumandharo (District Amreli); Aledhar, Bhagali, Chand-gadh, Jilada, Keriya old, Khalavad, Khodiyar, Laliyo, Mokavana, Nehur, old Rampura, old Tarpada, Patna (Paliyad), Patna, Ranigam, Sonpari (District Bhavnagar); Kalavad (District Halar); Dwarka (District Jamnagar); Dhank Caves (District Junagadh); Hirnay and Jaina Kandorna (District Madhya Saurashtra); Khakhara Bela-2 (District Rajkot); Shamlaji (District Sabarkantha); Arena, Bhadaria, Boricha, Divrana, Khadvar, Khalej, Sutrapada, Talala, Una, Uparkot, (District Sorath); Dhatva (District Surat); Vallabhipura (District Surendranagar)

2. Madhya Pradesh:

Eran (District Sagar) and Maheshwar (District Nimad)

3. Maharashtra:

Ellora, Pitalkhora (District Aurangabad); Prakash (District Dhulia) Bahal (District Jalgaon); Ter (District Osmanabad); Kalyan (District Thana)

4. Mysore:

Herakal (District Bijapur)

5. Rajasthan:

Nagari (District Chitorgarh)

DISCUSSIONS

B. P. Sinha : The Roman Rouletted ware has been found in Bengal, Andhra and Madras and now it comes even from Rajghat in U.P. I think probably Bihar may also yield it as it is situated between Bengal and Rajghat. In this connection, the discovery of numerous sprinklers at Chirand, Sonpur, etc., is significant.

At Chirand five structural period dating from 2nd Century B. C. to 2nd century A. D., have been recognized. It yielded sprinklers and a Buddhist monastery. In the same chronological horizon at Kumrahar, Kushana terracottas have been found. The Kushanas might have got these things from Roman contact by land-route.

S. R. Rao : The Arretine ware is definitely Roman in all cases. Moulding was known perhaps when the Roman began to come here. The Red polished ware is not at all Roman. From first century B.C. to 4th or 5th century A.D., we get Red polished ware. Amreli has yielded about 45 types and it is a major industry there. In Saurashtra, we have plenty of sites yielding this pottery. It occurred before the advent of the Romans in about first century B.C.

Sprinklers is not a Roman type, but is an indigenous and a Buddhist vessel. Types in this ware do not occur in typical Roman pottery. Wheeler has written to me, in a private communication, that it is not a Roman pottery.

It is an indigenous pottery so far as its technique, fabric and shapes are concerned.

R. C. Agrawal : Rao is worried for date. Evidences show that our contact with the Roman world was earlier than 1st century B.C.

Indian ivory, with the figure of Lakshmi has been found at Pompei. Panini refers to trade with the Greek and Roman world. The absence of Red polished ware at the sea-ports like Baroach and Sopara is important. Is there any evidence to identify it with Roman pottery?

Penetration of Romans may be seen at Devanimori, where one-faced pot, a characteristic Roman pottery has been found.

R. S. Sharma : To show Roman contact with India, only one aspect, i.e., the pottery, has been discussed here in a beautiful manner. Other material such as Roman glass found at Arikamedu and Sirkap and coins may also be taken into consideration.

The date of the Arretine ware in Rome is 30 B.C. to 40 A.D. The Rouletted ware is important for dating and contact as it has been found in a pre-Arretine level at Arikamedu.

Romans must have sent different kinds of trade commodities. Is it possible to make a co-relation with these?

Most Roman trade was carried with western coast. Early Roman coins have

been found in south India, in Malabar coast, Andhra and then in the western part of the country.

K. K. Sinha : Subramaniam has brought to light an inscription of Roman and believed it to be of 2nd century B.C.

Terracotta figurines of Roman contact which have been found in south India, are totally absent in North India.

In Northern India, probable land route was taken for trade.

Krishna Deva : Rajghat has yielded Rouletted pottery. Many designs of Greco-Roman devices, such as figure of Heracles, Roman heads, etc., have been found, which reinforced Indo-Roman contact.

S. P. Gupta : About inscription, its find-spot and exact date should be known.

At least three routes were followed for Roman trade-eastern, western coasts and third by overland route. They went to Khotan also.

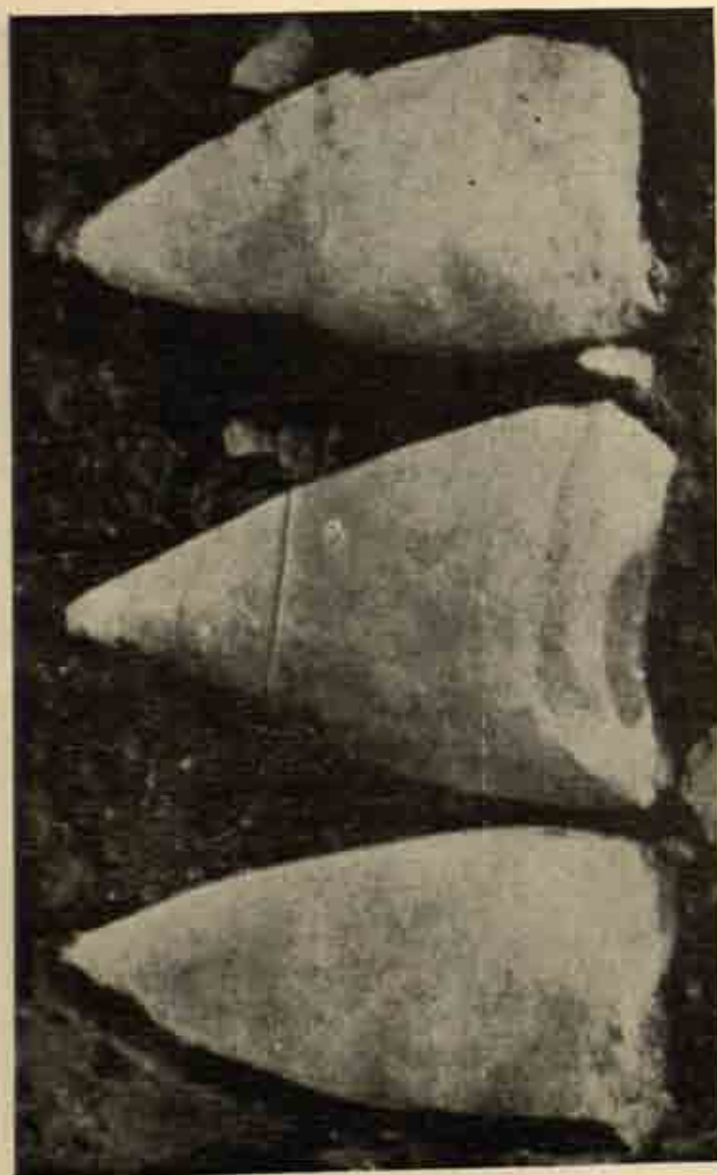
The lustre of the Red polished ware might have been derived from Black slipped ware. Sociologically, new people came and were diffused in our culture.

S.B. Sharan : Roman materials are available in south Arabia, but the Rouletted ware is absent there.

M. N. Deshpande : Ter was an important trade centre. Dikshit has discussed the glass from the site.

I have called the Red polished ware as local. Local potters were catering the needs of the Yavanas and then copied some of the shapes and fine paste as terracottas. At Kondepur, we find kaolin clay. Wherever Romans went, they found out the clay which bear close resemblance with their own. Red polished ware is rich in Gujrat.

South Arabia has not been explored fully.



AMPHORAE FROM KANCHIPURAM

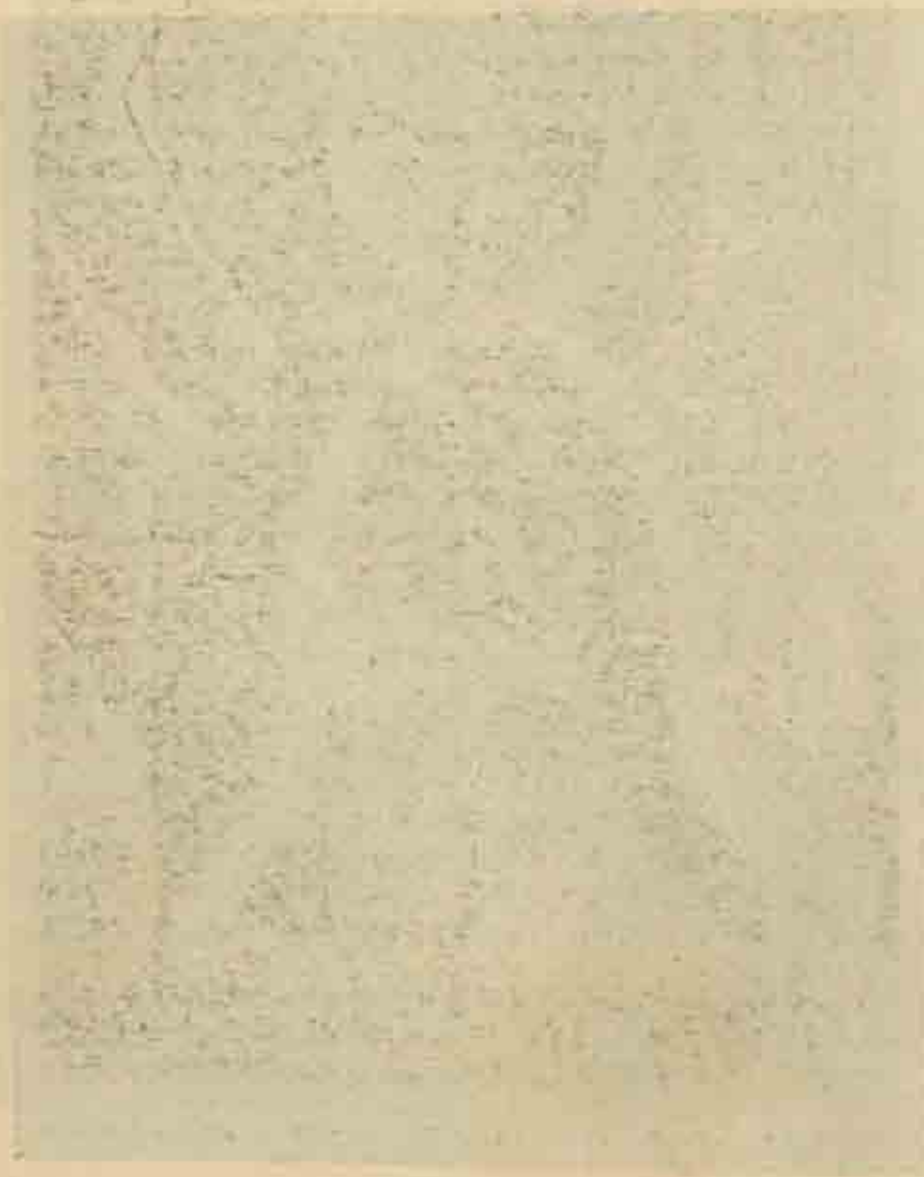


SPRINKLER NECKS AND SPOUTS FROM TERA



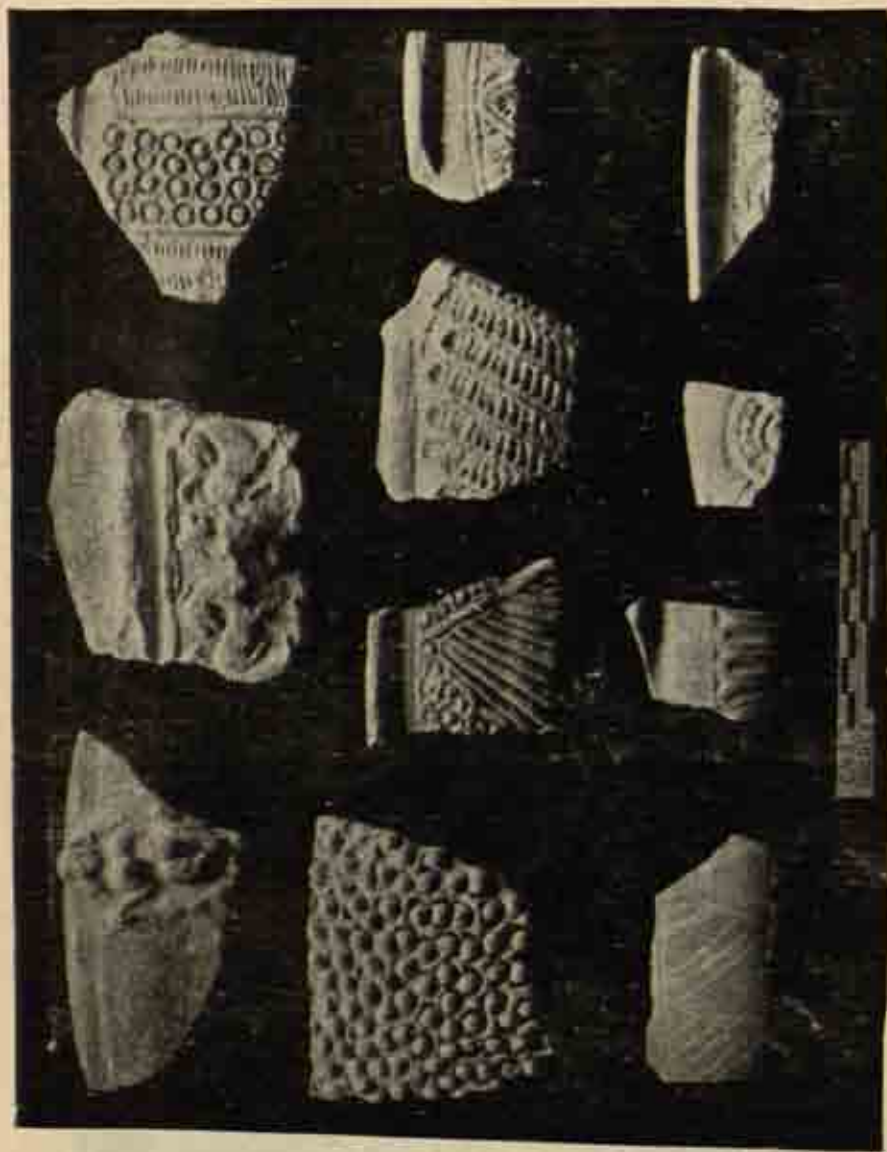
TERRACOTTA LID WITH CROUCHING LION ON TOP
TER (Dist. Usmanabad, Maharashtra)

THE UNIVERSITY OF CHICAGO
LIBRARY

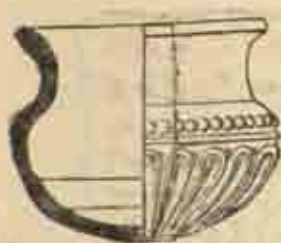




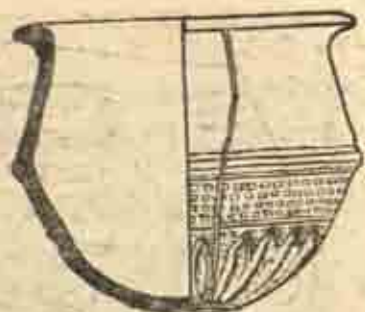
SPRINKLER CARVED ON THE PEDESTAL OF THE MAHAPARINIRVAN
Figure of BUDDHA (Ajanta Cave 26)



STAMPED WARE FROM TER



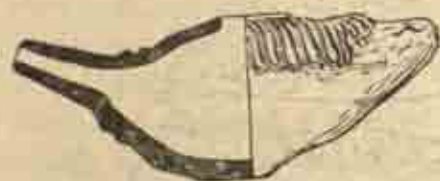
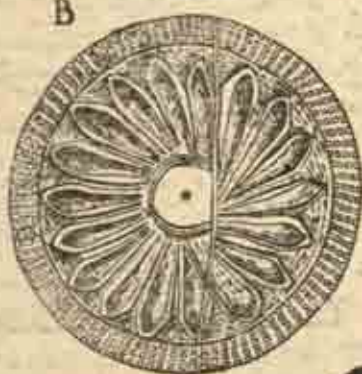
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B



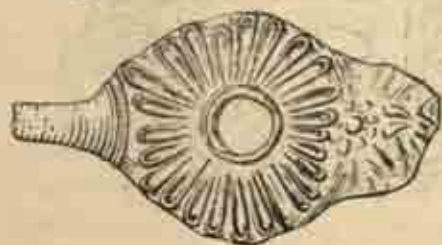
C



D

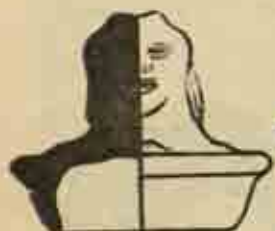
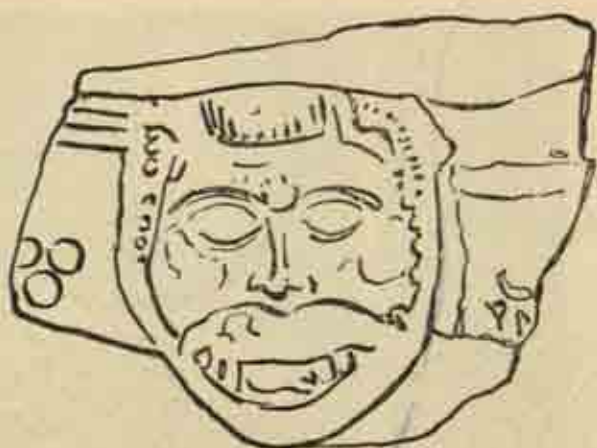


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1 2 3 IN.



ASSOCIATED ANTIQUITIES WITH THE BLACK-AND-RED WARE (CHALCOLITHIC PHASE)

Naseem Akhtar

In the post-Harappa period, many new cultures, characterized by their distinctive pottery industries, came on the scene of Western and Central India. The Black-and-Red ware culture, which emerged in South eastern Rajasthan, seems to be earliest in the series. It has been named by archaeologists as the Banas or Ahar¹ culture as its main focus, with type site² Ahar, seems to be in the Banas-valley. The influence of this culture has been felt on all the neighbouring and contemporary cultures. The bearers of this ceramic technique reached even in the upper and middle Gangetic-valley. The earliest known evidence of this potting technique in India, has come from Lothal³, where it has been found within the matured Harappa culture. Its position at Lothal and other Harappan and Late Harappan sites seems to be of a subsidiary nature. Whereas in the post-Harappa period, in the valley of Banas, it secured its independent cultural status. However, its presence at Lothal and a few Harappan elements, observed in the chalcolithic Black-and-red ware culture, may be taken as a link and cultural overlap between these two.

The Black-and-Red ware constitutes only one of its components. To know the exact nature of the culture, it is necessary to make a study of its associated antiquities and their manifestations on the life of the people. Hence, on the available data, excavated from various Black-and-Red ware culture sites of the chalcolithic phase, an attempt has been made here.

The richest yield of the material remains of the period is of course its pottories. The chief ceramic industry was the Black and Red ware, sometimes painted in white colour. In the beginning, such as at Ahar and Gilund, we find rich paintings and limited types which include bowls,

dishes, basins, lota-shaped vessels, etc., whereas, in the later stage of its life, painting decreased and a few new types, such as dishes-on-stand, channel spouted or lipped bowls or basins, perforated bowls, vessels, pottery-stands, etc., were introduced in this fabric at Chirand and Pandu-Rajardhibi. It seems that in the early stage, it was used strictly for eating and drinking purposes, while in the latter its range of function seems to have increased. Besides, a number of other ceramic fabric have also been found which testify to the variety of technique. Most of them are treated with a fine slip and represent a wide range of decorative elements.⁴

Most popular ceramic industry of the period was the Red Ware. It has been found at all the places with different sub-varieties, slipped or unslipped. The slipped specimens show orange tan, chocolate or brown hues. Fine to coarse-grained clay was used. Besides popular shapes in bowls, basins and storage vessels, it shows a wide range. Dishes were less popular. A remarkable shape found at Ahar is the vase with sloping corrugations and possibly a pedestal-base.⁵ A vase with stem looks like a chandelier or double bowl.⁶ The dishes-on-stand have been found at Ahar⁷, Gilund⁸ and Chirand.⁹ The stems were hollow or solid either with a corrugation or plain. Another type is represented by a basin with small channel-spout at Ahar¹⁰, with cut-spout at Gilund¹¹ or a lip at Sonapur and Chirand¹². A few interesting shapes, for the first time in this culture, occurred at Chirand, which included spouts, lipped bowl, three legged perforated bowls, and pedestalled-bowl. Shoulder portions of a few vases at Sonapur and Chirand and border of the bases of a few dishes-on-stand bear paintings in cream solid dots. A few sherds, painted in yellowish colour, have been found at Atranji Khera.¹⁴ Some of the sherds at Rajghat are also painted in orange or white pigments.¹⁶ Other decorative elements in the red ware include incised linear patterns, applied roundels and wavy bands.

The next popular pottery seems to be the Black ware. Though it has not been found at Ahar so far, but its association at Gilund¹⁸ and comparable sites in the Gangetic-valley may suggest its later introduction. It followed the types and painting tradition of the Black-and-red ware. Common types, found at all the places, are bowls and dishes.

Pesides, a corrugated stem, possibly of a bowl-on-stand, and a lid were found at Chirand and a beak shaped bridge spout at Pandu Rajardhibi.¹⁷ Sometimes it was painted in white pigment. At Gilund, the painting was done on the exterior or interior or both with geometrical designs. Whereas at Chirand¹⁸, Sonapur¹⁹ and Pandu Rajardhibi²⁰, the painting was confined on the inner surface. A few pieces bearing incised and pinhole decorations have been found at Mahisadal.²¹

The Grey ware, treated either with a slip or burnished was also manufactured in the period. At Ahar, the types included lid or a knobbed triangular or clamps-like hold basin, globular pot, dish-on-stand, perforated bowl on a broad hollow stem and base, animal-headed handles, etc. Gilund²² has yielded lipped or legged basin and vase with strap handle.²³ A lota-shaped pot in the burnished grey ware found at Chirand, may also be mentioned here.

A few pieces of the cream-slipped ware, coated with a fine thick slip of cream to greenish white colour, have been found at Ahar and Gilund. Only two shapes, i.e. small globular pot and a bowl with concave sides, have been recognized at Ahar.²⁴ Among the designs, painted in crimson blackish red, mention may be made of a dancing figure and an animal with stippled body, which occurred at Gilund.²⁵ It is interesting to refer here that a unique specimen representing possibly a miniature sarcophagus has been found at Chirand. It is coated with a thick creamish slip and painted in crimson red with small solid dots over the entire remaining body. A bull with an elongated body and prominent horns, was drawn over the dots. Its exact relationship with the cream slipped ware is to be ascertained.

The Buff ware, in a limited number has been found only at Ahar and it shared the types of the cream-slipped ware.²⁶ It bears distinct greenish grey slip.

A chocolate or buffish ware, painted in creamish white has been found at Pandu Rajardhibi.²⁷ Whether it represents a variant of the buff ware referred to above is not known. The types included bowls, vases, etc., and the designs, solid triangles and ladders.

The lustrous Red Ware formed another associated fabric of the period. It has been found at Ahar in the topmost phase²⁸, which bears resemblance with the same ware found at Rangpur. At Pandu i ajardhibi a kind of such pottery has also been found. Ahar has yielded dish-on-stand and a large globular vessel.²⁹ At the latter site, the types included shallow bowl and basin besides footed cup or beaker or bowl-on-stand.³⁰ They bear painting either in black or greyish white pigment and the designs included solid triangles, hatched diamonds, stepped chevrons, lattices etc.

Ahar and Gilund have yielded a few specimens of the Malwa ware from their latest levels. The common type was dish-on-stand. The painted designs at Ahar, included bands, wavy lines and loops³¹, whereas the pieces at Gilund are painted with a row of cross-hatched lozenges.³² This fabric was a characteristic pottery industry of the central Indian (Malwa) Chalcolithic culture.

A single sherd of the Jorwe ware has also been recovered from Ahar I. B.³³ A polychrome ware painted in black, bright red and white pigments on red background has been found at Gilund.³⁴

Thus, it appears that a variety of pottery fabrics and shapes, for the manifold household uses, were manufactured during the period. The whole range shows three functional groups those, which were for every day rough use, those for a refined use and lastly probably for ceremonial or ritualistic use. The storage jars, of various sizes, basins, globular pots, bowls dishes, etc. may be included in the first category. In the second, rimless bowls channel-spouted or lipped basins or bowls, dishes-on-stand etc., and in the last group, channel spouted or lipped bowls or basins, spouted vessels three-legged perforated bowls, miniature sarcophagus etc. may be included. It may be noted that the potters used different types of clay as desired or required by a particular fabric or type. They were manufactured on wheel, or by hand or with the combination of the both. Some pots were made in two or three parts separately and then luted together. The potters knew the method of inverted firing as also of closed and open kilns.

As regards the structural activities of the period, a clear and uniform picture has not yet emerged. Generally, the houses were formed

by wooden or bamboo posts. Around these were put reed or bamboo screens; then they were plastered with mud as is evidenced by the remains of lumps of clay, bearing reed or bamboo impressions, found at Ahar²⁵, Chirand, Sonapur³⁰ and Pandu Rajardhibi³⁷. Mud or mud-bricks were also used for making houses at Ahar³⁸ and Gilund³⁹. A few of them were plastered with clay, sometimes mixed with lime. One such wall at the latter site was decorated with zigzag finger-mark⁴⁰. Kiln-burnt bricks were used at Gilund⁴¹ only.

Regarding the exact plans of the houses, it may be said that they appear to be round square or rectangular. Floors of the houses were made of clay mixed with silt and sometimes were also paved with river gravel. At Sonpur and Pandu Rajardhibi⁴², however, it was further coated with lime in order to make them smooth, firm and insect proof.

How the houses were roofed, can not be ascertained precisely. However, it appears that they were supported on wooden or bamboo posts. The houses seem to have been divided into rooms, one of which probably served as the kitchen. The latter was equipped with pot-rests, querns, storage-pits, etc. At Ahar, large, sized hearths with a unit of two or four cooking positions have been found⁴³. The former example was made on a square platform and decorated with depressed chevrons. In both the cases, knobs were found on the inner walls to support the pot kept on the oven-mouth. At Gilund a clay-lined pit, which might have been used as an oven, has been found⁴⁴. Single-mouthed clay hearths and oblong or squat hearths, have been found at Pandu Rajardhibi⁴⁵ and Atranjikhara, respectively.

The black and-red ware people practised agriculture, hunting and fishing for their livelihood. We have not yet found any agricultural implement from the chalcolithic levels, but it seems that cultivation was known to them. The occurrence of querns and rubbers at Ahar⁴⁰ and Gilund⁴⁷ and pounders at the former site may indicate a grinding activity. Remains of charred rice have been found at Sonapur and Mahisadal. Husk, mixed with the clay of some of the pottery or its impression on the latter have been found at different places. S. B. Deo, after making a careful observation of the potteries from Ahar, has identified some kind of wheat

and rice husk⁴⁸. The impression of husk in the pottery fragments found at Pandu Rajardhibi, was scientifically analyzed and was identified to be that of cultivated paddy (*Oryza Sativa* L., Graminae)⁴⁹. Presence of large vessels at various places and storage pits at Gilund may go to suggest that grains were stored. Thus, it may be inferred that cultivation of wheat and paddy was practised as the Navdatolians did. Large number of animal and fish bones have been found at different sites in association with hunting and fishing tools. These evidences may go to prove that people were non-vegetarians.

Animals were domesticated, as the practice of cultivation and occurrence of humped terracotta bulls may suggest.

Hunting was done on a large scale. They used copper, bone and stone tools for this purpose. Copper axes of flat socketless variety have been found at Ahar⁵⁰ and Mahisadal⁵¹. Bone tools have not been found so far either at Ahar or Gilund, but other sites in the Gangetic valley particularly in Bihar, it has been found in a fairly good number which included arrow-heads of tanged and socketed varieties.

Microlithic tools, a characteristic of central Indian Chalcolithic Cultures, have been found only in a limited number. Whatever may be their quantity, most of them were probably used for hunting and allied purposes. Evidences show that a few blades and fluted cores either of chert or chalcedony, have been found at Ahar⁵² and Gilund⁵³. A few blades and points have also occurred at Sonapur and Chirand. More or less, the same story has been repeated at other sites also. It continued to be used even after the introduction of iron at Mahisadal and Pandu Rajardhibi. It may also be mentioned here that the stone sling-balls occur at Gilund. They were also probably used in hunting purposes.

Fishing was also practised, as most of the sites were situated near river banks. A fish hook of copper has been recovered from Pandu Rajardhibi.⁵⁴ Oriup^{54a} has yielded a large number of bone fish-hooks (harpoons). Mention may also be made here of a few pieces of burnt clay, found at Atranjikhara, which were probably used as net sinkers.⁵⁵ Thus evidences go to prove that fishing was also one of the main sources

of livelihood. It may also be mentioned here that baskets and screens made of reeds or bamboo, a practice still followed, might have been used by the black-and-red ware people for fishing.

It seems that the demand for terracotta figurines was not popular, as only a few examples have come to light so far. However, it may be divided into two groups—human and animal. In the first category, a torso of male-figure, probably in a dancing pose, has been found at Pandu Rajardhibi.⁵⁶ Another solitary example of a female-figure, with prominent breasts, have come from Oriup (Pl. 1). Among animal figurines, bull with prominent hump and long horns, have been found at Ahar⁵⁷ and Gilund.⁵⁸ Other specimens include a ram and stylized figures discovered at the former site.

The black-and-red ware people used different varieties of ornaments. Terracotta and stone beads were popular. Beads of the former material were biconical, globular or areca-nut shaped. At Ahar, they bear incised decorations.⁵⁹ Other sites have yielded only plain varieties. Beads, made of semi-precious stones, have been found almost from all sites and materials included, carnelian, agate, chalcedony, quartz, crystal, etc. Beads made of steatite, faience and copper were rare. These beads must have been strung into different varieties of necklaces, a practice even followed today. Copper rings were also used. They have been found at Ahar,⁶⁰ Atranjikhhera⁶¹ and Pandu Rajardhibi.⁶² Bangles made of copper, have been found at Ahar,⁶³ Oriup (Pl. 2). Pandu Rajardhibi⁶⁴ and of bone at Mahisadal. Sonapur and Chirand have yielded copper wires which were probably used for making rings. Besides, Mahisadal and Atranjikhhera have yielded bone combs. A few unique specimens for personal decorations have been found at Pandu Rajardhibi, i. e. copper eye-pencils⁶⁵.

We do not know about their dresses. However, some of the terracotta beads, referred to above, may be identified with spindle whorls, which bear testimony to their knowledge of spinning. Hence, it may be suggested that spinning and weaving was practised by the black-and-red ware people.

Copper-smelting was one of the main industries of the period. It has been suggested that the copper was smelted at Ahar from the very

beginning as it is situated in the vicinity of ancient copper workings." This suggestion has been corroborated by the discovery of copper tools and sheet. Further it may be strengthened by Hedge's work on chalcolithic metallurgy⁶⁷. According to him, the people in the Banas-Valley might have used khetri ores as agreement in impurity pattern of ore and artifacts shows. It is not clear whether copper was smelted at other sites also as scientific examination of the objects is not known to have been made so far. However, its rarity at other places may suggest that it was brought by the immigrants from the Banas-Valley.

Bone tool making industry was the back-bone of chalcolithic black-and red ware people in the Gangetic-Valley. It may be mentioned here that bone-tools in manufacturing stage surpass the number of the finished tools at Sonapur, Chirand and Pandu Rajardhibi. Besides its hardness and easy workability, the use of bone was probably due to the rarity of copper. It appears that bone was used as a substitute for copper in the middle Gangetic-Valley, particularly in Bihar.

We do not know about trade, but some inference may be drawn. The black-and-red ware has been found in association with contemporary chalcolithic cultures, characterized by Malwa and Jorwe wares. If it was imported there from the main centre, as Dr. Sankalia has suggested in the case of its occurrence at Navadatoli⁶⁸, we may say that there was a trade relation with the contemporary culture. Further, it may also be mentioned that Malwa, Jorwe and lustrous Red ware of Rangpur fabric, have been found in the Banas-Valley. For transport of men and goods, wooden carts might have been used as terracotta wheels found at Prahladpur may suggest⁶⁹. It may also be mentioned that the use of copper was possible only in so far as regular trade was organized. The tetrahedral objects found at Mahisadal have been identified as weights⁷⁰. If so, we may suggest that there was some kind of weight system. But meagre evidences show that barter-system was practised. The people had to exchange their surplus products for metal, steatite, faience and other things of interest.

The basis of their economy was, of course, copper smelting, cultivation, bone-tools making, besides hunting and fishing. The large settlements must have included, in addition to primary producers, a variety of

full-time specialists. Metal-smelting and use of wheel for manufacturing pottery have been regarded as evidences of specialization of labour⁷¹. In a nut-shell, two broad classes in society may be recognized. Firstly, agriculturists and collectors of food, and secondly, the full-time specialists such as potters and smiths.

It has been suggested by archaeologists that the existence of chieftainship may be inferred if one house in a settlement is conspicuously large⁷². If so, the larger house units made of mud-brick with a stone rubble foundation and of kiln-burnt bricks at Ahar and Gilund respectively, may be identified with the houses of chiefs of group-leaders. In this connection, it may be mentioned that in the present-day tribal communities and even in a small unit of a nomadic people, we may notice the presence of a chief. Hence, it may be suggested that there were some kind of chief at Gilund and Ahar. Perhaps, he was responsible for the safety of land and lives of cattle and men. As a reward, he gets a share atleast of the social surplus.

In their leisure hours, people played with games, as terracotta gamesmen have been found at Gilund, which included variety of heads including one of ram⁷³. The discovery of a male-figure, at Fandu Rajardhibi in a dancing pose and a sherd found at Gilund, showing the dancing-figure may testify to their knowledge of dancing. Probably they practised group-dance as was the case with other chalcolithic cultures.

In the present state of our knowledge, the superstitious customs and beliefs of the people cannot be made out precisely. Evidences regarding the disposal of dead are meagre and later in the life of the people. A few post-cremation pit-burials and large urns containing bone pieces have been found at Sorepur. At Fandu Rajardhibi both extended and secondary human-burials were practised⁷⁴. Evidences known so far may suggest that the black and-red ware people originally cremated their dead bodies. However the funerary-goods associated with these burials may suggest a belief in future life. Probably bulls were regarded sacred and may be considered to be a cult-object. Worship of mother-Goddess and phallus was also practised by them. On the whole, it may be regarded that they were the worshippers of fertility-cult. Painted designs on pottery represen-

ting antelopes and stylized figures may suggest its association with some magic. It may be explained by the belief held by the hunters that by representing the animal pictorially, they were thus captured in advance by the power of magic. Further, some pottery shapes, referred to earlier, might have been used for some ritualistic purposes.

A study of the associated antiquities of the black-and-red ware chalcolithic culture reveals that its earliest concentration and focus was in the Panas-valley. The next area of attraction seems to be the middle Gangetic-valley, particularly Bihar with certain differences. On the basis of available data, two major variations – the Banas valley proper with Ahar and Gilund and the middle Gangetic-valley with Chirand and Pandu Pajardhibi, may be recognized on the strength of certain individualistic features that were inherent or developed in these regions, but shared some socio-economic level. However, a few differences may be noted here. The inhabitants of the Panas-Valley lived in houses made of reed or bamboo screen, mud-bricks or kiln-burnt bricks. They mainly relied upon copper-metallurgy, agriculture and hunting. Whereas in the latter zone people lived in houses made of reed or bamboo screens only. The evidences for metal working are meagre though not wanting. Fishing and hunting was done on a larger scale as evidenced by the higher frequency of its tools. Bone tools were manufactured and played a dominant role in the economy of the people.

In the field of ceramic assemblage too, these differences may be marked (Figs. 1-3). In the Banas-Valley, it shows a wide range both in fabric and decorative elements. In the Gangetic-Valley, we have not found cream slipped Buff, Malwa, Jorwe and other finer wares which were associated with the culture in the Panas Valley. In the Gangetic Valley, a few new types which have been mentioned earlier, were made. The black-and-red ware, itself shows differences. In the Panas-Vally we find limited types, mostly painted either on interior or exterior or both, whereas, in the latter zone, the frequency of painting decreased and confined on the inner side only. Further, a few new types were also introduced in this fabric. We do not know, how the people in the Panas-Valley, disposed of their dead. Whereas, in the latter zone, burial-custom has been noticed, though the evidences are meagre.

In spite of these differences, they seem to have shared more or less equal socio economic level. However, on the basis of these differences we may divide the chalcolithic Black and Red ware culture into two zones, western and eastern. It may be proposed that the former zone should be christened as the Ahar Culture and the latter as the Gangetic Ahar culture with the type sites Ahar and Chirand, respectively.

In the black and red ware culture, we find small settlements, when compared with those of Harappa culture. However difference of material remains and thickness of habitational strata and area covered by them may go to suggest atleast two types of settlement, i. e., rural and urban, in the broader sense of the terms. Contrast in equipment used by the urban population and that used by the rural people, is very sharp even to day. It appears that pottery with basic types and poor cultural equipment found at Sonapur, Oriup, Atranjikhara, Rajghat, Prahladpur, etc., may represent small rural habitations of less skilled people. Whereas Ahar, Gilund, Chirand, and Pandu Rajardhibi with their variety of pottery fabrics and types along with other rich culture assemblages, may be taken as main centres, inhabited by more advanced and skilled craftsmen. These sites might have represented the urban settlements of the time.

In the present state of our knowledge, it is very difficult to assign its authorship to any particular racial group. Firstly, due to the non-availability of human burials excepting a few at Pandu Rajardhibi and Sonapur. Secondly, insufficient researches in the field. However, two sets of theories have been propounded. According to one group, they were Dravidians, whereas in the opinion of another set of scholars they may be identified with the early wave of the Aryans. It is not possible to go into detail here. However, it may be humbly suggested that anthropological, linguistic, Vedic, Avestan and Puranic evidences should also be taken into account along with the cultural contact with others.

To sum up, a study of the associated antiquities and their manifestations on the life of chalcolithic black and red ware people shows that the culture was widely distributed. Its early concentration was in the Panas-Valley, whereas in due course its focus shifted to the middle Gangetic-Valley, particularly in Bihar. The culture in the former zone may be

named as the Ahar Culture and in the latter as the Gangetic-Ahar Culture. Two types of settlement have been noticed i. e. rural and urban. The basis of their economy was copper-smelting, cultivation besides pottery-making, hunting and fishing. The whole society was divided into two main classes—food producers and full-time specialists. They were peace loving, resided in small houses and worshipped fertility cult. They existed for a long time. In a evolutionary process, with the advent of iron the chalcolithic people evolved into an urban civilization. The evolutionary process and final development of the black and red ware people is well attested in Bihar. Iron tools and slags occurred in a pre N. B. P. cum post chalcolithic black and red ware levels at Chirand and Sonapur. Now their economy was based on a firmer ground, i. e. iron. Its use gave them a new power and a new sense of security. Archaeological excavations have shown that with the advent of iron, the black and red ware people moved in different directions and by the end of 7th cent. B. C., practically whole of India was unified for the first time by their hands. Excavations at the black and red ware sites in Bihar have shown that in the 7th cent. B. C., the final stage of their development took place i. e., the invention of a new ceramic technology, known to archaeologists as the N. B. P. ware.

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DISCUSSIONS

Krishna Deva :

A comprehensive picture of cultural equipment of the Black-and-Red ware in different areas, has been well presented. It shows a hunting-fishing people in process of settling down. I really doubt that the remains of settlement left at Chirand etc., could be called urban. For urbanization we require town planning. There may not be any specialized group in the society.

R. C. Agrawal :

We should be very cautious about the cultural complex of the Chalcolithic period. It is high time to examine the Black-and-Red ware sites in detail and comparatively. We get Black-and-Red ware at Ahar also and the Lustrous Red Ware has come from early levels. The Buff ware has an affinity with those of Sialk. I have observed that the people make even to-day, houses of bamboo and mud in the villages of Ahar area. Chalcolithic people have been invariably using stone chips. It has an important bearing on social condition. At Ahar the stone is built just by the side of the kitchen. Only half a dozen fluted cores have been found there. Copper ore was probably not brought from the Khethri mines. It is available in the vicinity. The ancient mound at Ahar is locally known as Dhulkot and the entire area as Tamravati Nagri. Bone tools have also been found at Ahar, though in a limited number.

R. S. Sharma :

The paper is a good attempt to trace the socio-economic picture of Black-and-Red ware period. There are characteristic features of their own in Bengal. Its affinity and also difference with Ahar and Gilund is significant. There are differences between each other in Eastern Indian sites also. The cultural equipment of Chirand differs from Sonapur in some respect on one hand and from Pandu Rajardhibi on the other. The discovery of rice at Sonapur and fish hook at Pandu Rajardhibi may suggest that rice and fish were eaten. Stone is not available at Chirand. So what was the source of raw materials for Microliths there? The periphery of Chota Nagpur should be looked for the settlements of the Black-and-Red ware people.

S. P. Gupta :

A kiln, where bricks were fired, has been found at Gilund. Burnt-bricks has been used there on a large scale. Microlithic blades were used as agricultural tools. They were used as sickle blades at Gilund. Only a few arrow heads have been found. If the identification of bone harpoons from Oriup is correct it will be the first evidence in Eastern India. People in Bihar could also do something as copper mines are available here. The use of bone tool was not due to rarity of metal but it was a local tradition. The terms Gangetic Ahar or Ahar for the whole Black-and-Red ware complex may not be used unless one gets more evidence.

S. R. Rao :

The Black-and-Red Ware culture should be divided into two phases—Chalcolithic and Iron. At some stage, the Black-and-Red ware Chalcolithic people took to the use of Iron. When do they shifted from Copper economy to Iron? Hallur is a place where transitional phase may be seen. Burial has been found at Bahal also and we have to find out as to how the burial practice came into use. Graffiti marks may be taken as some kind of alphabetic system derived from the Harappans.

K. K. Sinha :

Limited nature of habitation was due to deep forest which was mostly cleared by burning.

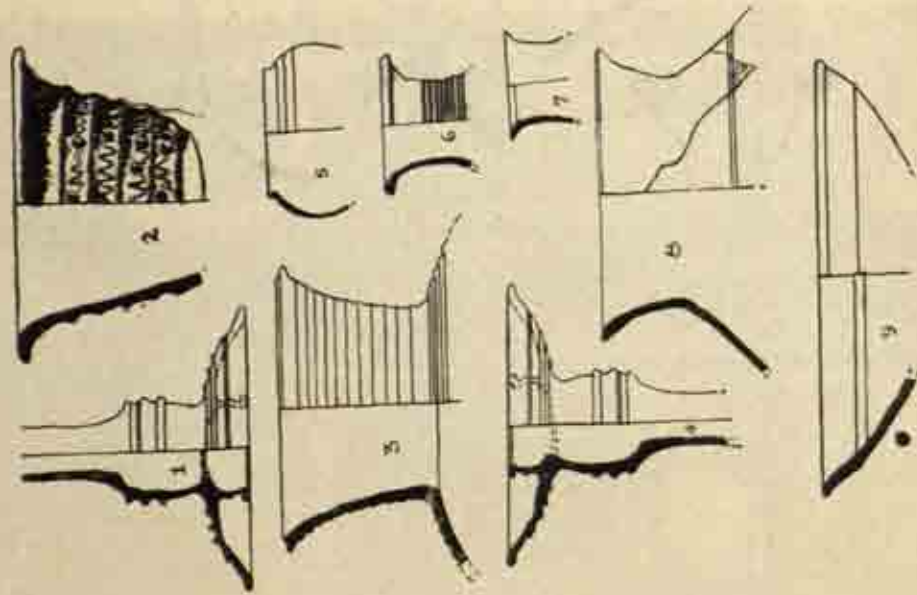
K. D. Bajpai :

Third important region for Chalcolithic Culture is Malwa. Human and animal designs were painted on the pottery. Barter system was practiced but a gold piece of Eran might have served as medium of exchange. Fence-wall has been discovered at Eran. It is a new feature in the Post-Harappan Chalcolithic complex.

M. N. Deshpande :

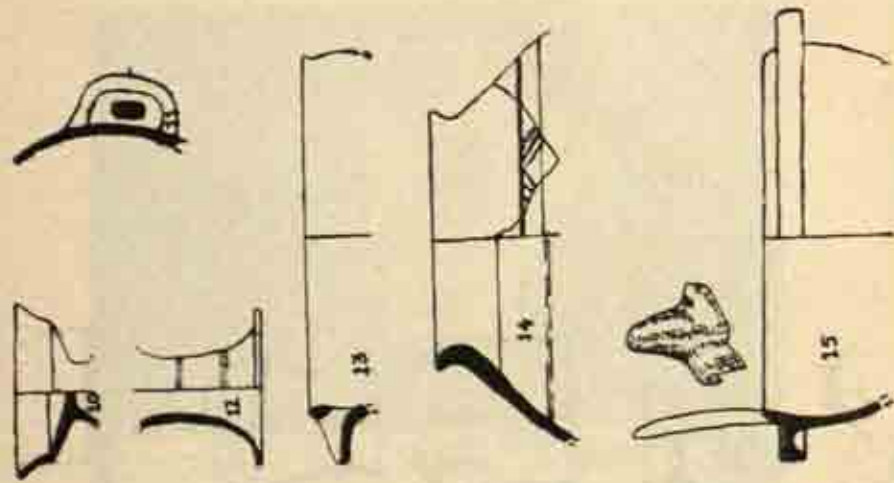
In lower Deccan burial sites are within the habitation area, where as at the Black-and-Red ware sites they are out side. Other side of the river be looked for burial sites or settlement.

FIG 1



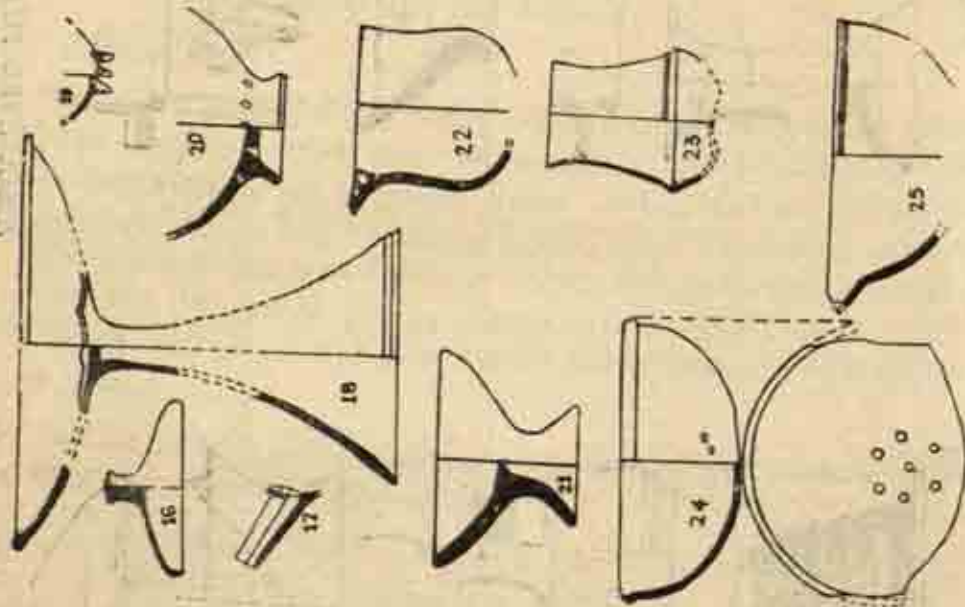
ASSOCIATED POTTERY TYPES: AHARI 1704
GILUND 5709

FIG 2



ASSOCIATED POTTERY TYPES: GILUND-10-15

FIG. 3

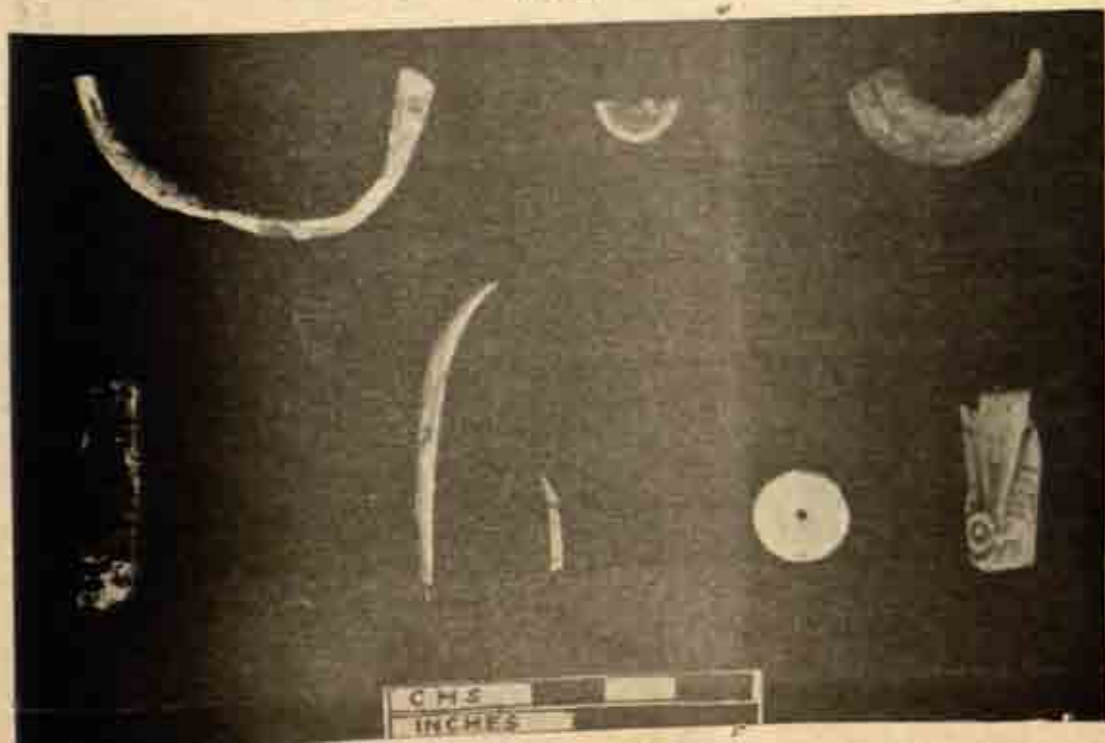


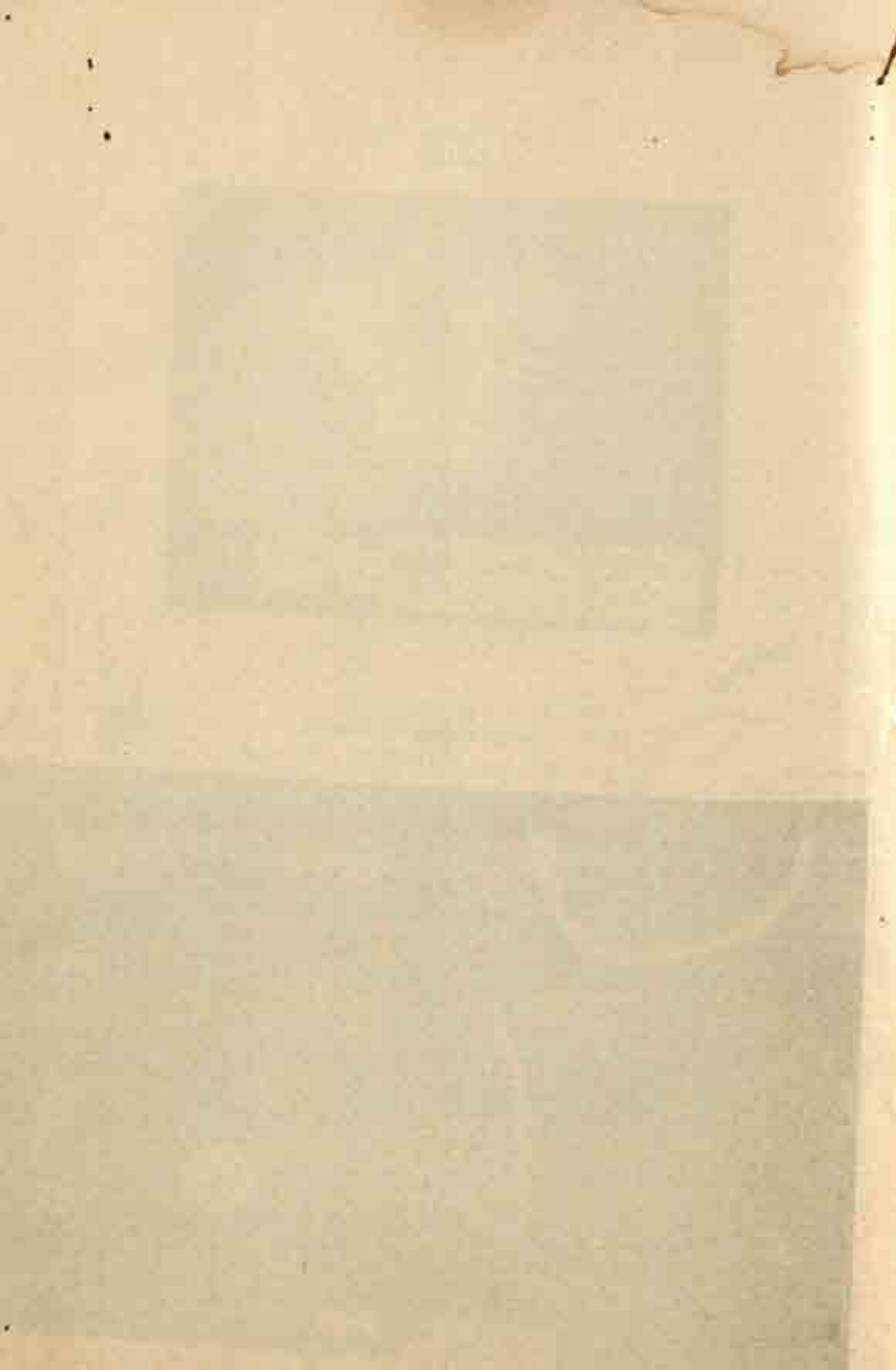
ASSOCIATED POTTERY TYPES
CHIBAND. 16 TO 25. SONPUR. 24 TO 25.

PLATE 1
Terracotta Female Figurine
ORIUP



PLATE 2.
Associated Antiquities
ORIUP





VEDIC LITERATURE ON POTTERY.

SHIVAJI SINGH,

Introduction

The efforts aimed at bridging up the hiatus between the middle of the 2nd millennium B. C. to the beginnings of the historical period in *cir* 600 B.C. are directed in two distinct lines. One line of investigation, based mainly on literary data, has brought to fore-front several culture-groups such as Āryans, Vṛātyas, Dravidians, Asuras, Nishādas, Kīrātas etc., many of whom have also been distinguished as separate ethnic-linguistic groups. It is in terms of existence, contact and cultural interaction of these groups that the historical reconstruction of the dark age, preceding the historical period, is being attempted by the followers of this line of investigation.¹¹ The other line of inquiry, having material remains as its evidence, has also successfully resulted in distinguishing separate cultural traits and groups, but its terminology, conditioned as it is by the nature of the data used, consists of Ochre-Washed Ware Culture, Copper-Hoard Culture, Black and Red Ware Culture, Painted Grey Ware Culture and so on. The pictures emerging out of these two parallel lines of investigation are encouraging in themselves, but they have, as yet, few points of correspondence despite the fact that they are treading a common ground in time and space and dealing with the same problem of socio-cultural groupings.

Perhaps, it would never be possible to establish complete congruence between these two pictures, for as earth has failed to treasure things other than material, literature too has relevance only to a few of the innumerable culture-groups, that occupied the Indian scene in the dark age before the advent of historical period. Nevertheless, more and more points of analogy between the two pictures may be searched for in order to bring out a better correspondence between them. The associability of the Painted Grey Ware with the early settlers of Hastinapura, Mathura, Kurushetra, Barnawa, etc. (*viz.*, the Pauravas, Panchalas, etc.) suggested by Lal,¹² the identification of Black and Red Ware with the early Āryans and P.G. Ware with later post-Rigvedic Āryans hinted at by Gaur³ and the talk of Epic and Purāṇic archaeology started by Sankalia⁴ are pointers in the right direction and need to be followed, verified and worked out further.

The present paper is an humble effort to analyse the pottery gleaned from the Vedic literature and to throw light on potter's technique as found therein. Hitherto, pottery types of early and late Āryan tribes are sought to be identified solely on the basis of their space-time context. It is hoped that detailed studies in this direction, followed in the present paper, may prepare a suitable ground where such pottery-identifications are checked and corroborated in the light of their typology and technique as well.

Various kinds of Vessels :

A large number of vessels, made of various materials¹ and serving different purposes, are referred to in the Vedic literature. The general term for a pot is, of course, *patra*.² The word seems to have been derived from root 'pā' (to protect). Some scholars, including the authors of the Vedic Index,³ however, derive the word from root 'pā' (to drink) which would indicate that originally the word was used only in the limited sense of 'a drinking vessel'.⁴ Whatever the case, the term *pātra* had already acquired its generic connotation in the early Vedic age. *Pātrī*, the feminine counterpart of *pātra* is also present in the literature in the sense of a vessel.⁵

The popular materials for making pots were clay and wood. Metals were also used besides gourd and leather. Bigger receptacles were sometimes made of dressed stone and bricks but these, like woven baskets and other viskered containers, constitute entirely different industries and fall out-side the scope of present discussions.

Wooden vessels, which were no less popular than the earthenwares in the Vedic age and which even later on predominated in sacrifices and other rituals, seem to have acquired a kind of sanctity. Vessels made of *palāśa*, *aśvattha*, *varana* and *vikankata* wood were considered to be specially pure. As hoary antiquity is generally the factor that leads to sanctification, it may be surmised that the Aryan societies passed through a gradual transition from wooden to earthen vessels which offers a striking analogy to the transition that they had in the field of architecture where it took a longer time to substitute wood by more stable media of stone and brick.

Among the wooden vessels, those of frequent occurrence in the literature under reference are *Dru*, *Drona*, *Drona-kalāśa*, *Dronāhava* and *Chamasa*. *Dru* was a popular wooden vessel in the early vedic period⁶. It is specially mentioned in connection with *Soma* sacrifices⁷. According to Hillebrandt, it was the wooden vessel that was placed below the sieve to collect the flowing *Soma* juice⁸. This suggestion of Hillebrandt suits the etymological sense of the term derived from the root *dru* (to flow). Later on, it

appears that the meaning of the term shifted from the pot to its material and Dru came to denote 'wood'.¹⁹ It is in this sense that it occurs in compounds like drupada¹⁸ (wooden post), druhana¹⁸ (wooden club?), etc.

Drona is another popular wooden vessel of the Vedic period¹⁸. Drona containing Soma are referred to at several places in the Rigveda¹⁷. It appears to have been an open-mouthed vessel, like a trough, for alters are said to have been shaped sometimes as a Drona¹⁸. Donā and Dongā of to-day seem to have preserved the shape of the ancient Drona.¹⁹ There were, however, other shapes in the Drona-variety of vessels. One was Drona-kalaṣa which appears to be a large vessel used for strong Soma²⁰ and the other was Dronāhava which was a kind of wooden bucket for drawing up of water from wells.²¹

Chamasa²² and Chamu²² both have been derived from the root cham (to sip, to lick, to drink off).²⁴ Both these vessels are connected with Soma. Chamasa was the vessel from which Adhvaryu and hotri drank Soma at the time of sacrifices²⁵. Right from the early Vedic period, it was always made of wood²². The Śatapatha Brāhmana informs that it was made of Udumbara wood²⁷. Later on, it came to be made of other kinds of wood as well.²⁸ Chamu was a vessel connected with the preparation of Soma, being either the vessel in which Soma was pressed²⁹ or trough in which Soma was collected from the press³⁰.

Metal too was a favourite material for making vessels. Ayas³¹ (metal in general and copper or bronze in particular)³², Syāma Ayas³³ or Kārshnāyasa³⁴ (iron), Lohāyasa³⁵ or Lohitāyasa³⁶ (copper or bronze?), Hiranya³⁷ Suvarna³⁸ (gold), Rajata³⁹ (silver), Sisa⁴⁰ (lead) and Tapru⁴¹ (tin) were the different metals. Vessels of different metals are referred to in the literature under reference⁴². The more popular of the metallic vessels of the Vedic age are Gharma and Kamsa. Gharma has been mentioned in connection with heating milk⁴³. Pour in, O Milkman', thus runs an Atharvedic verse, 'the milk of the ruddy (cow) in the Gharma'⁴⁴. Although generally referred to as a vessel for heating milk, it appears to be the pot also for milking the cow, which sense of the word is indicated by its derivation from root ghri (to flow, to trickle). Kamsa too has been mentioned in the Atharvaveda in connection with cow-milking,⁴⁵ but it was mainly a drinking pot.⁴⁶ In the Śatapatha Brāhmana, it is mentioned along with Chamasa, the wooden drinking pot referred to above.⁴⁷ Filled with Soma and other precious liquids Kamsa was a pot of great attraction to the eyes and a highly desired thing. It was really this that gave rise to

its name Kamsa, a word derived from root kam (to long for, to wish, to desire).

Among the earthenwares of the Vedic period those met with more frequently are Ukhā, kalaśa, Kumbha, Sthālī and Kapāla. Ukhā has been mentioned at a large number of places in the Vedic literature as a pot for cooking or boiling things⁴⁴. Although generally mentioned in connection with sacrifices, it was also a regular domestic pot and has been referred to even in connection with cremation⁴⁵. It has been called mrinmayī or made of clay⁴⁶. It must have been made in various shapes and sizes but from the description of the process of its manufacture, given in the Śatapatha Brāhmaṇa⁴⁷, it appears to be a pot of flat base with sides raised up in layers.

Sthālī, the most common pot from the Vedic period down to the present day, has enormously changed its form and function. In the Vedic literature, it is referred to as a cooking pot⁴⁸ rather than a dish for serving meals. Sthālī-pakṣamānam (grains cooked in Sthālī) and Sthālīṇaka (rice or barley boiled in milk) are referred to in the Brahmanas and the Upaniṣads⁴⁹.

Kalaśa⁵⁰ and Kumbha⁵¹ both were jars. They are generally used as synonyms, but their distinctive use at the same place in a verse of the Atharvaveda⁵² indicated that originally some distinction was maintained between the two. A thorough study of the contexts in which these pots are referred to may reveal this distinction. Statistics, however, is in favour of indicating that Kalaśa was the jar in which Soma, water and other liquids were kept or stored⁵³ while Kumbha was generally used for bringing water from the well. In a verse of the Atharvaveda, water brought in a Kumbha is distinguished from other kinds of water, such as, that of the plains that of marshes and rain-water⁵⁴. This difference in function is also indicated by the fact that Kumbha was easily broken.⁵⁵

Kapāla⁵⁶ denoted small bowl or cup of clay as also a piece of a broken jar or potsherd. It was so called because of its resemblance to skull. Besides their domestic use as lids, etc., the Kapālas were employed in sacrifice too. The action of placing Kapālas in a prescribed order at the occasion of a sacrifice was technically called Kapālapadhāna⁵⁷.

We have described above a few vessels that are met with more frequently in the Vedic literature. But there are many more of them and, as it is not possible to discuss them all in a short paper like this, only more important

of the remaining vessels are being briefly dealt with here. Kunda (the ancesto. of modern Kūnā)²² was a vessel for storing water as is indicated by names or epithets such as Kundapayin²³ (drinking from a vessel) and Kunda-pāyya²⁴ (descendant of Kundapayin). The vessel, Kośa, too, as is indicated by its name, was used as a storage. The large vessel, in which Soma was stored in the sacrifices, was called Kośa²⁵. It is, however, also the name of the vessel by means of which water was drawn from a well²⁶. This latter sense of the word soon became unpopular and we find that in the later Vedic period Udañchana²⁷ is the name of the bucket used for drawing water from a well. The verbal root añch means to move, to rise or raise. The vessel which raised water from the well, therefore, came to be known as Udañchana. Another vessel connected with water and well was Āhāva²⁸. It was really the large open-mouthed receptacle which was kept near a well and filled with water for cattle. It is the action of drawing cattle to this water-reservoir (ahvāna from root hye, to call) that has given the name Āhāva to the receptacle²⁹.

Pāñnejane³⁰, as is clear from the name of the vessel, was used for washing feet (pad + anejana). Panhana³¹ was a cooking vessel, from root pach (to cook). Amatra³² was the name of the vessel into which Soma was served. It was derived from root any (to serve, to honour). Āssechana³³ was used for keeping liquids like yūshan (meat juice) and ghee (clarified butter).

Vedic reference to Black-and-Red Ware?

There are several verses in the Atharvaveda which deal with the removal of the effects of witchcraft³⁴, one of which runs as follows :

या ते चकुरामे पात्रे या चकुर्नील लोहिते ।
 घ्रावे माते कृत्वा मां चकुस्तवा कृपाकृतो जहि ॥

AV, IV. 17.4

This verse has been translated by Whitney thus 'What (witchcraft) they have made for thee in the raw vessel (patra), what they have made in the blue-red one, in raw flesh what witchcraft they made with that do thou smite the witchcraft-makers.'³⁵ Word nilalohita in this verse has been rendered by Whitney as 'the blue-red as' but in Vedic literature, the word nila stands for black or at the most bluish-black and not blue.³⁶ The word nilalohita, therefore, means 'the black-red one.' Now, that is meant here by 'the black-red one'? Commenting on it, Sayana says: nila (black) by the issuing smoke and lohita (red) because of the flames, it is Agni (fire) that has been

called *nila-lohita*'. This explanation of Sayana does not seem to be correct in view of the fact that Agni has not been referred to by this name in the literature.

N.R. Banerjee suggested that the term *Nilalohita*, in the above verse of the Atharvaveda, means 'bluish tinged Grey Ware, as well as the brownish red ware, which goes with it and covers the same shapes, as found at Hastinapura and Ahichchhatra'*. Commenting on the suggestion,* Ghosh rightly observed that 'a very literal translation of the term would be black and red (ware)*'. But a critical study of the verse under reference makes it clear that the word *nilalohita* does not stand for any pottery whatsoever. The same verse is repeated at another place in the Atharvaveda* with the only difference that in place of *nilalohite* we have *miśradhānye* (mixed grain). This may indicate that the term *nilalohita* stands for its substitute *miśradhānya*. The Paippalada or Kashmirian version of the Atharvaveda has *sutra nilalohite** in place of *nilalohite*. This makes it clear that *nilalohita* stands for 'the black-and-red' thread. These references have not been considered by Banerjee. As a matter of fact, *nilalohita* in the Atharvaveda indicated either black and red thread or mixed grain. It can never be taken to mean any pottery at all.

Vedic reference to Harappan Pottery-types

We come across several references to important pottery-types in Vedic literature. A funeral verse of the Atharvaveda* mentions a jar with four orifices and Sayana takes to the four of the holes in the hundred-holed vessel. This reminds us of the perforated pottery unearthed at Harappan sites. Another important pottery tradition coming down from the Harappan culture, viz., that of the knobbed-pottery is also preserved in the Vedic literature. *Ukhā*,* which is indeed the most significant earthenware of the vedic period, was a knobbed pot. The Satapatha Brāhmaṇa ordains that *Ukhā* should have only four nipples (*stanas*) and neither two nor eight as made by some, for it represents a cow and those who make fewer or more nipples, their vessel does not symbolise a cow but a bitch or a ewe or a mare.* It is significant to note that knobs in both the Harappan and the Vedic verses symbolise *stanas* or nipples in the context respectively of the Mother Goddess and the Cow.

Technique of making Eastern Vessels.

We have enough of references to clay, pot and potter in the Vedic literature. Clay the material of pots, is called *Mrid** 85 or *Mrittikā*.* Pots

made of clay were known as Mrinmaya-pātra¹¹ or Maritpātra.¹² The potter has been called Kulāla¹³, Kaulāla¹⁴ and Mritapacha.¹⁵ Not only this, the literature supplies us with interesting details about the technique of making a pot. These are found mainly in the Brahmanas and the traditions are carried on and described in greater details in the Sutra literature. Although, the making of these pots is described in connection with sacrifices, where every act is accompanied by ritualistic formalities and citation of mantras it is not difficult to remove the ritualistic Jargon and see the simple details, of potters' art. We describe below the successive stages in making of a pot mainly with the help of the Satapatha Brāhmaṇa¹⁶.

Preparation of Clay: First of all, suitable clay was searched for. The search for clay, in the sacrifices, is accompanied with meticulous formalities. Although a potter did not observe any of these, we may presume that he took special care to collect clay suitable for making pots of durability and quality. Water was then poured into the clay. Resin of palāśa tree was boiled in water and added to the clay for firmness¹⁷. The clay was sufficiently mixed with water so that foam was produced.

Several things were then added to the clay to make the pot durable and good. According to the Satapatha Brahmana¹⁸, goat hair (ajaloma) and powder of three kinds, viz. that of gravel stone and iron were added to clay. According to Taittiriya Samhitā¹⁹ however postsherds collected from ancient deserted sites (armakapāla) sand (śarkarā), and hairs (Ajaloma and Krishanājinaloma) were to be mixed with the clay²⁰.

Then followed the kneading with skill, strength and wisdom and this continued for a sufficiently long time²¹. The clay was now ready for fashioning the pots.

Fashioning the Pots: A portion of the prepared clay was taken out and in cases of hand-made pots beaten to make it flat. This flat clay served as the bottom of the hand-made pot²². Then, other lumps of clay were similarly spread out by beating and sides were raised. The bottom has been termed nidni. Raising of the sides was done in several layers called pūrvodohi, uttaroddhī, etc.²³ Gurdles, bands and knobs were then made on the pot, if required.

Pre-Firing Surface Treatment: Before keeping the pots in the firepit, sometimes they were given a kind of surface treatment. A particular pre-firing surface treatment was known as dhūpana or fumigating the pot²⁴.

Firing of the Pots: Thereafter, followed the act of digging (khanana) the earth to make a suitable pit for firing. The fire-pit was called Kupa²⁵.

The arranging of pots properly in the pit was known as *avadhana*. Turning the pots in the pit was called *pariyāvarttana*. Taking out of pots from the pit was known as *Udyachchhana*. Keeping out pots aside was called *Nidadhana*.¹

Post-Firing Treatment: Pots were sometimes given post-firing treatment. According to the *Satapatha Brāhmaṇa*, the sacrificial fire-pan was given a post-firing treatment by pouring goat's milk into it. This action was called *Āchchhrinana* and was done to ensure durability of pot (*isthene*).

Concluding Remarks

We have made a rapid survey of the various kinds of vessels in the Vedic literature. It has not been possible to trace out all the various vessels through out the literature and gather details about their forms and functions, but what has been given is sufficient to demonstrate the mine of information on the subject available in the Vedic literature.

Form and function of different vessels are occasionally described or can be gathered from the context. Where it is not so, the nature of the pot may be made out by an etymological consideration of its name. So far as the problem of recognizing Aryan pottery is concerned, the pot names gleaned from Vedic literature should be compared with their counterparts in other Indo-European languages. This may give us valuable hints about Aryan pottery. Chemical analysis of pottery obtained from recognized Aryan sites may fruitfully be made and result compared with the corresponding information Vedic literature.

FOOTNOTES

Abbreviations are : AA—Āitareya-Aranyaka; AB—Āitareya-Brāhmaṇa; Av—Atharva-veda; ASS—Āpastamba-Srauta-Sūtra; BU—Bṛihadāraṇyaka-Upanishad; CU—Chāndogya-Upanishad; GB—Gopatha-Brahmana; JUB—Jaiminya-Upanishad-Brāhmaṇa; KS—Kāthaka-Samhitā; KSS—Kātyāyana-Srauta-Sūtra; MS—Maitrāyaṇi-Samhitā; MU—Maitrāyaṇi-Upanishad; RV—Rigveda; SAA—Sāṅkhāyanāranyaka; SAB—Sāṅkhāyana-Brāhmaṇa, also known as the Kaushitaki-Brāhmaṇ of the RV; SAS—Sāṅkhāyana-Srauta-Sūtra; SB—Sātapatha-Brāhmaṇa; TA—Taittirīya-Āryanaka; TAB—Tāndya-Brāhmaṇa; TB—Taittirīya-Brāhmaṇa; TS—Taittirīya-Samhitā; VS—Vājasaneyi-Samhitā.

1. See, for example, Chanda, R.P.: *Indo-Aryan Races*. Rajshahi, 1916; Chaudhari, R. *Vratyas in Ancient India*, Varanasi, 1964; Leuva, K.K. *The Asuras—a Study of Primitive Iron Smelters*, New Delhi, 1963; Banerji-Sastri, A. *Asura India*, Patna, 1926.

2. Ancient India, Nos. 10 & 11, 1954-55, p. 151.
3. Indian Prehistory; 1964, Poona, 1965, p. 145.
4. Puatativa, No. 1, 1967-68, pp. 1-3.
5. In a typological discussion on pottery, a consideration of pots and of other materials is also helpful as potshades in one medium are found to have been translated in the other.
6. RV, I.82.4; 162.13; 175.1; II. 37.4; VI.27.6; AV, IV. 17.4; VI. 142.1; IX.6.17; XII.3.25; 36; TS, V. A1.62; VI 4.1; VS, XVI.62; XIX.86; SAB, XXIV.8; 9; SB, I.4.2.13; IV. 4.24; XII.7.2.14; TA, V.2.13; AB, III.30 etc.
7. Macdonell, A.A. and Kieth, A.B. Vedic Index, I.516.
8. It is interesting to note, in this connection, that patui still means a particular small bowl-like earthenware in UP. used generally as a lid to cover bigger vessels.
9. AB, VIII.17; SB, I.1.2.8; 2.2.1; II.5.3.6; 6.2.7; IX.2.1.1; XII.5.2.7; SAS, V.8.2.
10. RV, 1161.1; V.86.3; VIII.66.11.
11. Ibid, IX.1.2.; 65.6; 98.2.
12. Hilliebrandt: Vedische Mythologie, I.191-192.
13. TB, I.2.9.1.
14. RV, I.24.13; IV.32.23.
15. RV, X.102.9; AV, VI I.28.1. It may be noted here that the word druma (tree) is not referred to in the literature until the later period in the Shadvimsa Brahmana. V.11; Vedic Index, I.384.
16. RV, VI.2.8; 37.2; 44.20; IX.93.1; TB, II.4.7.2; TAB, XI.3.1.
17. Ibid, IX.3.1; 15.7; 28.4; 30.4; 67.14; etc.
18. MS, II. 4.7; KS, XXI.4; SB, VI.7.2.8.
19. Dona is made by stitching leaves and is generally used for carrying sweets, etc. Donga is both wooden and metallic and is used for keeping vegetables, etc. at dining table.
20. AS, III.2.1.2; VS XVIII.21; XIX.27; SB, IV.3.2.6; 2.34; 5.5.11; 8.5; TAB, VI.5.1; 6; 7; 15; 18; 6.1; WB, VII.17.32.
21. RV, X.101.7.
22. RV, I.20.6; 110.3; VIII.82.7; X.16.8; 68.8; 96.9; AV, VII.73.3; XVIII. 3.54; VS, XXIII.13; AB, VIII.5; 8; 17; SB, I.4.2.14; IV.2.1.29; XIV. 5.2.4; 5; 9.3.21; TB, VII. 5.3.2; TA, VI.1.4.
23. RV, IX.69.5.; 71.1; 72.5; 86.47; 96.20.21; 97.2.48; 103.4; 107.10; 18; 108.1 TB, I.4.2.1.
24. चण्ड्यते भण्ड्यते पीयते वा सोमः अस्मिन् इति अमृतः Sabdakalpadaruma, II.433.
25. VS, VIII.37, ASS, XII. 24.11. 12. KSS, IX.15.5.8.
26. RV, I. 161.1 X.68.8.
27. SB, VII. 2.11.2.
28. पलाशादा वदवलादाद्वलादा अमृतः स्मृतः ।
An unnamed authority quoted in the Sabdakalpadaruma, II.433.

29. RV, V. 51.4; VIII.4.4; 76.10; IX.46.3; X.24.1.
 30. RV, III.48.50; VIII.2.8; 82.7; 8; IX.20.6; 62.16; 63.2; 52.2; 93.3; 97.21; 99.6; 8.
 31. RV, I.57.3; 163.9; IV.2.17; VI.3.5.
 32. Lallanji Gopal has shown that Ayas in Rigveda denotes simply metal and does not mean iron. Uttar Bharati, IX, 71.
 33. AV, IX, 5.4.
 34. CU, IV, 17.7; VI, 1.5.
 35. SB, V.4.1.2.
 36. MS, II.11.5; IV.44; KS, XVIII.10.
 37. RV, I.43.5; III.34.9; IV.10.6; 17.11; AV, I.9.2; II.36.7; V.28.6; VI, 38.2.
 38. AV, XV.1.2; SB, XI.4.1.8.
 39. AV.281; XIII.4.51; AB, VII.12.
 40. AV, XII.2.1; 19; 53.
 41. VS, XVIII.13.
 42. For golden vessels, see, TS, V, 7.1.3; TB, I.3.3.7; SB, V.1.2.19; 5.28
 For silver pots, vide TB, II.2.9.7; III, 9.6.5.
 43. RV, III.5.3.14; V.30.15; 43.7; 76.1; VS, VIII.61; AB, I.18.22.
 44. AV, VII, 73.6.
 45. AV, X.10.5.
 46. JUB, III.7.4.1; CB, II.6.7; TB, III.12.2.9; 4.7; TA, I.32.3; BU, VI.3.1.
 47. सोदुम्बरे कसे चमसे वा SB, XIV.9.3.1.
 48. RV, 162.13; 15; III.53.22; TS, V.1.6.3; SB, I.7.10; VI.2.2.23-25; 5.2.7; 22.3.4; 6.1.22; VII.1.1.42; 2.1.5; 5.1.26; X.4.1.1; TB, III.2.3.2.
 49. AV, XII, 3.2.3.
 50. VS, XI, 59; TS, IV.1.5.4.
 51. TB, VI, 5.1.1; 2.9.
 52. AV, VIII, 6.17; T, VI.5.10.5; VS, XIX, 27.86; AB, 1.2; 8; SB, 2.2.1; 3.1; 4.2; VI, 6.4.8; 7.1.24; XI.3.2.1; 5.1.13; XII.4.1.6; TB, II, V, 1.3.1; III, 7.6.11.
 2.4; BU, VI, 4.18.
 54. RV, I.117.12; III.32.15; IV.27.5; 32.19; AB, VI.11; SB, IV.5.10.7; TAB, IX, 6.1; 5; GB, II.2.21.
 55. RV, 116.7; 117.6; VII.33.13; VS, XIX.87; SB; SB, IV.4.5.20; V.5.4.27; XIII.8.3.4; TB, II.6.43; GB, 1.2.23.
 56. एसां परिलुतः कुम्भ आ दध्नः कलशैरनुः AV, III.12.7.
 57. Av, IX.1.6; IX.4.15.
 58. AV, I.6.4.
 59. RV, X, 89.7.
 60. AB, VII.9; SB, I.11.22; II.2.1.17; 4.3.8; VII.5.1.2; TB, III.2.7.1; 3; 4; 6; SAA, II.2; Ta, V.2.13.
 61. KSS, II.4.27-34.
 62. Kunda or Kuna is the popular name in U.P. of the large earthenware in which grains or water are stored. This is four to five feet in length and two to three feet in breadth across the centre.
 63. TAB, XXV, 4.4.
 64. RV, VIII, 17.13.
 65. Ibid., IX, 75.2; AV, XVIII, 4.30.

66. RV, I.130.2; III 32. 15; IV.17.6.
 67. AB. VII. 32; SB, IV.3.5.21.
 68. RV, I.34.8; VI.7.2.; I.101.5; 112.6; AB, II.33; III. 32; IV.21; GB, II.3.30; AA, V.1.5.
 69. Even to-day the practice of digging up a small pit near the well and filling it with water for cattle continues in villages. This pit has also been called Ahava. Sabdakalpadruma. 1.199.
 आहावः कृप सनीपे पडवादि जलपानार्थं कृतः स्याप जलाशयः
 70. SB, III. 8.2.1; 9.3.27; XII. 5.2.1; 2.2.
 71. RV, I.162. 6; SB, VI. 5.43; 4; XIV.1.2.21.
 72. AV, RV, II.14.1; V.51.4; I.42.2; X.29.7.
 73. RV, I.162. 13; SB, II.1.9.
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 76. This is clearly indicated but the substitution of the word nila in the Chhandogya Upanishad with Krishna in the Kaushitaki Upanishad. Vide Macdonell and Kieth: Vedic Index, II. 246, fn.6.
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 83. Supra, fn. 48.
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 85. TS, V. 7.9.2; VS, XI.55; SB, VI.1; 1.13; 2.34; 3.3.
 86. VS, XVIII.13; AB, III. 34.2; TA, X.1.8.9.
 86a. TB, 1.4.1.3.
 87. KS, XXXI. 2.
 88. XVI.27, MS, 1.8.3.
 89. VS, XXX.7.
 90. MU, II.6; III.3.
 91. SB, VI, 3.1.23. ff.
 92. पर्णकषायनिष्पत्त्याऽप्युताऽभापो भवन्ति । स्येन्ने are SB. VI. 5.1.1.
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 95. SB, VI.5.1.9.
 96. Ibid., VI. 5.2.1-2.
 97. Ibid., VI. 5.2.4-5.
 98. Ibid., VI. 5.3.8-9.
 99. Ibid., VI. 5.4.1.
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 101. Ibid., VI. 5.4.15.

DISCUSSION

B.P. Sinha:

Dr. Singh has broken absolutely new ground. Now it is for archaeologists to find out a co relation. Aryan problem has been already taken as a cultural problem not racial. The Aryans seem to be a people having a composite culture. What should be their pottery and other cultural traits? He has mentioned the technique of pottery making also. It should be compared with the technique of pottery making from archaeological context. We have hand-made as well as wheel made (both slow and fast wheels) pottery. Did you find any reference of slow or fast wheel?

S.V. Sohoni :

We have ample evidence that wood was the first material used for making various articles. The famous story of Parasu-Rama is associated with the use of wood.

Krishna Deva :

Wood should be primary material for various domestic use. Earthen pot is mentioned in the Vedic literature. The Satapatha Brahmana appeared in time-scale just when the P.G. ware came on the archaeological scene. The word Aryan has been used in cultural sense. It may be mentioned here that fire-sacrifice was known to the pottery makers of Kalibangan and Lothal. In the Harappan Period, Perforated Jars were probably used for rituals. Is there any reference of the shape and size of the Drona Kalasa. Drona means to measure; whether it was used as measuring pot. Etymology of Chamasa does show its use as spoon also. Sri Kansa may represent Kansya Patra decorated with Devi.

Dr. K.K. Sinha :

Whether a shape in clay is derived from wooden proto-type? we need precise nature of decorative elements mentioned in literary works. The exact nature of environment, where sacrifices used to take place, will be helpful in determining the ritualistic pottery of archaeological context. Most of the rituals were held outside the habitation. We also have to be very cautious in digging and the context of occurrence of certain types should be observed.

R.S. Sharma;

We should be very careful in dating ancient texts.. They were compiled in later period. Transition from wood to clay vassels should be marked.

Aid of linguistic and anthropology may be taken to solve the problem and identification of pottery. Most of the place names of South Bihar is of Munda or Oraon origin, for example Gaya. Take the name of a shape of a pot of present day and go back. We have names like Kuncha, Ghaila, Chukiya, Khapra, Kadahi, Jata (used for storing rice in Bengal), Katia, Tunya Launi etc. Whether its origin may be traced? If so, in which linguistic group. Word Avadhana is used for firing in Vedic literature. To-day Kiln is called Ava.

Shivaji Singh :

In early context of the vedic literature, we have no reference of either slow or fast wheels but in later, it has been found. Early clear reference of clay made pottery comes in the Atharva Veda-Ame Patra. It does not mean that clay pot did not exist in the Rig Vedic Period. Sthatti for cooking is mentioned there which could not have been of wood. Chamasa was spoon. Grammatically, it is not possible to derive Kansya and kansa from one root. In the present state of knowledge, I am not in position to say any thing about the transition from wood to clay. It may be said that in the Vedic period, wooden vessels were very popular. Pot sherds of the ancient deserted sites are mentioned in the Rig Veda.

B.P. Sinha :

Baily has referred to a co-relation of evidence regarding of Aryans and non-Aryans. The Vedic Aryans used wooden vessel and certainly knew clay pot also. Wooden vessels may have been used for ritualistic purposes.

A NOTE ON THE N. B. P. WARE.

R. C. GAUR

Many C-14 dates are now available for the N. B. P. ware phase from different sites viz. : Rajgir, Kausambi, Hastinapur, Atranjikhhera, Ahichchhatra, Rajghat and Rupar. They range between second century B. C. to 5th century B. C. However, the maximum number of dates i.e. 5 belong to 3rd century B. C. This period corresponds with the hey day of the Māuryas when the industry appears quite popular. It also appears that probably the use of the N. B. P. Ware almost comes to an end with the downfall of the Mauryas in the 2nd century B. C.

However, Lal¹ dated Period III at Hastinapur to 600-300 B. C. taking the break between periods II and III into account. He was probably led by Wheeler's dating at Taxila. Professor Sharma on the basis of the structural phase at Kausambi² dated the beginning of the industry to 605 B. C. Thus the general opinion is in favour of a date bracket of C. 600 B. C. to 200 B. C. for the industry.

So far it has been unanimously accepted that the N. B. P. Ware is a post-Painted Grey Ware deposit. But a few scholars now are inclined to think that the N. B. P. industry in its epi-centres in eastern U. P. and Bihar was almost contemporary to the P. G. W. industry on the basis of a number of C-14 dates³ belonging to a date range of C. 600 B. C. to 400 B. C. To prove this a comparative study of the pottery types has been made between the P. G. W. phase and the N. B. P. Ware phase. At Sravasti the excavator since found that the shapes of the Red Ware industry of Period I are very common to the types found in Period II (P. G. W. Phase) at Hastinapur and that the associated Red Ware types reported from Period III (N. B. P. phase) of Hastinapur are missing from Sravasti I, he thought that the Hastinapur II and Sravasti I if are not contemporary also could not be far removed from each other.

But this hypothesis needs a careful study. In this context it may be stated that the Sravasti evidence is nearer to Atranjikhhera and not to Hastinapur. The N. B. P. deposit at Atranjikhhera is about 5 meters thick which may be divided into two phases :

- (1) Pre-structural deposit—2 meters.
- (2) Structural deposit—3 meters.

In the first phase the entire cultural pattern almost remains the same as in the P.G.W. phase and no significant change in the pottery complex is to be seen. It is much more nearer to the P.G.W. complex than that assemblage which is reported from Sravasti I. But evidently at Atranjikhhera it is a post P.G.W. deposit. Other features of Sravasti I also continue in this phase. If a few traditional shapes of proto-incurred bowls and N. B. P. sherds which occur casually are picked out from the pottery assemblage of the earlier levels of pre structural phase, it would be quite difficult to distinguish it from the P. G. W. deposit. But the position gradually changes. Incurred bowls slowly emerge and it is followed by the evolution of Ahichchhatra 10 A. and a few other shapes. The characteristic features of the well-known N. B. P. phase are found in the structural phase deposit of the N. B. P. Period which may be equated to Hastinapur III. The pre-structural phase is however absent at Hastinapur and thus it can not be dated prior to 4th century B. C. Thus the N.B.P. Phase seems to have begun at Atranjikhhera, Sravasti and Kausambi in the beginning of the 6th century B. C. or a bit earlier. It may also be noted that while the N. B. P. sherds are found in abundance at the sites of its epicentre, they are rare on the western sites. Similarly while the P. G. W. and the grey ware continue in large numbers on the western sites, they are found scarcely on the eastern site.

To conclude, it may be noted that since the N. B. P. phase generally follows the black-and-red ware phase in the Eastern zone, the sherds of the black-and-red continue in the succeeding period, in the same way as the P. G. W. industry continues in the Western Zone in the post P. G. Period of the N. B. P. phase and gradually it disappears.

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- (2) Ancient India Nos. 10 and 11.
- (3) Kausambi Excavation Report, page 22.
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LIST OF CONTRIBUTORS

- Sri B. B. Lal, Director-General of Archaeology, Government of India, New Delhi.
- Dr. B. B. Lal, Chief Archaeological Chemist, Archaeological Survey of India Dehradun.
- Sri B. K. Thapar, Director (Exploration), Archaeological Survey of India, New Delhi.
- Dr. B. P. Roy, Lecturer, Department of Ancient Indian History and Archaeology, Patna University, Patna.
- Dr. B. P. Sinha, University Professor and Head of the Department of Ancient Indian History and Archaeology, Patna University, Patna.
- Dr. B. Sahu, Reader, Department of Ancient Indian History and Archaeology, Patna University, Patna.
- Sri Ballabh Sharan, Superintending Archaeologist, Mid-Eastern Circle, Patna.
- Dr. B. S. Verma, Excavation Officer, Directorate of Archaeology and Museums, Government of Bihar, Patna.
- Sri S. C. Bhardwaj, Lecturer, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.
- Sri Krishna Dev, Director, School of Archaeology, Government of India, New Delhi.
- Prof. K. D. Bajpai, University Professor and Head of the Department of Ancient Indian History, Culture and Archaeology, University of Saugar, Saugar.
- Dr. K. K. Sinha, Reader, Department of Ancient Indian History and Archaeology, Banaras Hindu University, Varanasi.
- Sri K. N. Dikshit, Deputy Keeper, National Museum, New Delhi.
- Sri K. V. Saundarrajan, Superintending Archaeologist, Madras.
- Sri L. A. Narain, Conservation Officer, Directorate, of Archaeology and Museums, Government of Bihar, Patna.
- Sri M. D. Khare, Superintending Archaeologist, Archaeological Survey of India.
- Dr. M. M. Singh, Reader, Department of Ancient Indian History and Archaeology, Patna University, Patna.
- Sri M. N. Deshpande, Joint Director-General of Archaeology, Government of India, New Delhi.
- Dr. M. S. Pandey, Lecturer, Department of Ancient Indian History and Archaeology, Patna University.
- Sri N. Akhtar, Curator, Department of Ancient Indian History and Archaeology, Patna University.

Sri Purushottam Singh, Lecturer, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.

Dr. R. C. Agrawal, Keeper, National Museum, New Delhi.

Sri R. C. Gaur, Reader in Archaeology, Aligarh Muslim University, Aligarh

Dr. R. C. P. Singh, Director of Field Excavations, Department of Ancient Indian History & Archaeology, Patna University, Patna.

Dr. (Sm.) S. M. Devi, Lecturer, Department of Ancient Indian History and Archaeology, Patna University, Patna.

Dr. S. N. Sahay, Lecturer, Department of Ancient Indian History and Archaeology, Patna University, Patna.

Sri S. P. Gupta, Keeper, National Museum, New Delhi.

Dr. S. P. Srivastava, Director, State Archaeology and Museums, Rajasthan.

Dr. S. R. Rai, Excavation Officer, Directorate of Archaeology and Museums, Government of Bihar, Patna.

Sri S. R. Rao, Superintending Archaeologist, Archaeological Survey of India.

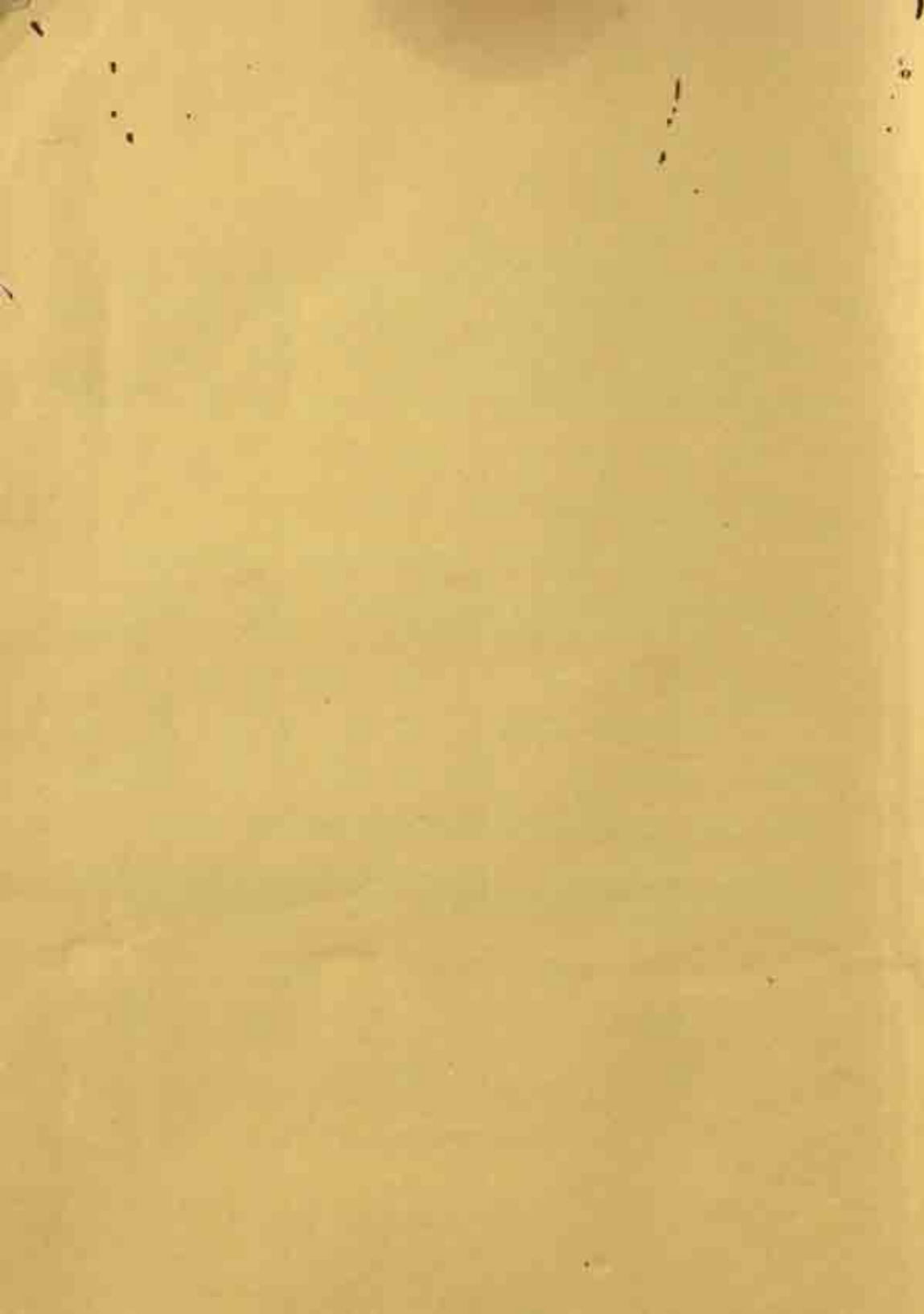
Dr. Sivaji Singh, Lecturer, Department of Ancient Indian History, Culture and Archaeology, Gorakhpur University, Gorakhpur.

Dr. T. V. Mahalingam, University Prof. and Head of the Department of Ancient Indian History and Archaeology, University of Madras.

Sri V. D. Mishra, Lecturer, Department of Ancient Indian History & Archaeology, Allahabad University, Allahabad.

Srimati Vibha Tripathi, Research Fellow, Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, Varanasi.







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