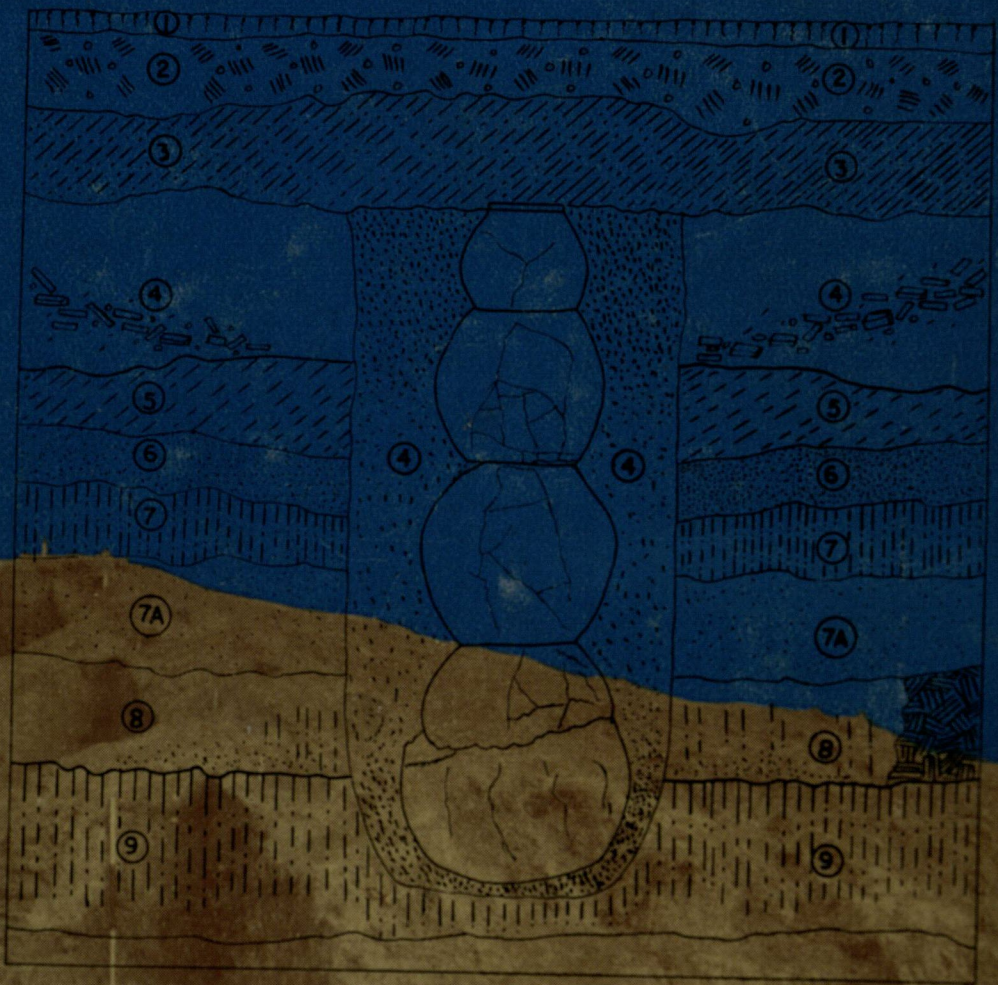


KAUNDINYAPURA



by
Dr. MORESHWAR G. DIKSHIT, Ph.D.



Painted Pottery of post-Satavahana Period

EXCAVATIONS AT KAUNDINYAPURA



BY

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With contributions from

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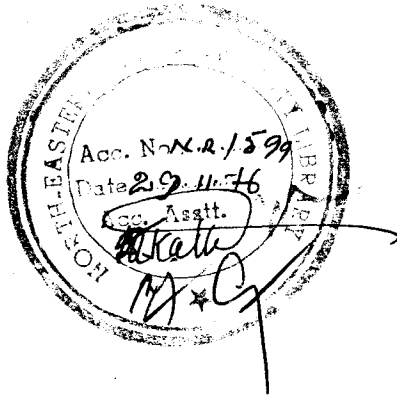
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ACKNOWLEDGEMENTS

THE excavation of Kaundinyapura, described here was carried out in 1962-64, by Dr. Moreshwar G. Dikshit of the Nagpur University, under the initiation of the Education and Social Welfare Department, Government of Maharashtra and with the assistance of the Department of Archaeology of the same Government. Shri P. J. Chinmulgund, I.C.S., Secretary of the Education Department, himself a very keen numismatist and a great lover of Indian antiquities took a very keen interest in this matter. Knowing that the archaeological stratigraphy of the Vidarbha region was a blank, he not only visited the ancient site of Kaundinyapura before its excavation for a preliminary survey but also negotiated for its early excavation. The success of the present excavation is entirely due to his initiative and efforts. On his transfer from the Education Department, the work was again enthusiastically supported by Shri V. M. Joshi, I.C.S., Secretary to Government, Education and Social Welfare Department. Dr. P. M. Joshi, M.A., Ph.D. (Lond.), Director of Archives and Historical Monuments, Maharashtra State, supported the proposal of the excavation on behalf of his Department and very willingly placed the entire resources of his Department to carry out the work. He visited Kaundinyapura while the excavations were in progress and made useful comments. The Director of Excavations was assisted by the following personnel of the Department. Shri D. R. Amladi, M.A., the then Assistant Director of Archaeology, remained in charge of the general administration of the camp. He also supervised the excavation of Sector Kdn-2, which has yielded the most important amongst the antiquities at the site. Shri M. R. Inamdar, Assistant Curator, Shri Bhavani Museum, Aundh, was deputed for training in excavation by the Government and was in charge of the main Trench B3 at the Bhim Tekdi. He rendered useful assistance in organizing and classification of the pottery both at the site and for study in the present report. Both Shri Amladi and Inamdar have contributed to the sections on the antiquity of Kaundinyapura and the pottery therefrom respectively. In the excavation work useful assistance was given by Shri P. M. Mulay, Archaeological Assistant in the Central Museum, Nagpur. All the photographs were taken by Shri M. M. Gupta, Senior Cameraman in the Department, with his usual skill. The surveying of the site was completed by Shri Davar and Shri Rege of the same Department, who also prepared many of the drawings included in this Report. The drawing of the small finds and the sections as well as the colour plate are the work of Shri V. V. Athavale, Artist in the Central Museum, Nagpur, who also rendered useful help at the site in the registration of the finds.

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I express my gratitude to the Head of the Department of Tertiary Palaeobotany and Palynology, Birbal Sahni Institute of Palaeobotany, Lucknow, for having the seed samples investigated by Shri Vishnu Mittre, whose report thereon appears as an appendix to the present work. Thanks are also due to Shri D. C. Khare of the Government Polytechnic, Nagpur, for studying the crucibles from the Black and Red ware layers. Shrimati (Dr.) D. Shah very kindly undertook to study the bones from the excavation, for which our thanks are due to her.

The labour employed for the excavation was mostly recruited from Kaundinyapura and the adjoining village Deurwada on the opposite bank. The workers understood their task very quickly and evinced great interest when the antiquities were discovered. The local people visited the excavations almost regularly and contributed greatly to the success of the camp.

MORESHWAR G. DIKSHIT

SUMMARY OF RESULTS

KAUNDINYAPURA (District Amaraoti) is situated on the northern banks of the Wardha river and is believed to represent the capital of ancient Vidarbha of hoary antiquity. Rukmini, the daughter of Bhishmaka, who was eloped by Lord Krishna; Damayanti, who shared the fate of Nala, the King of Nishadha; Lopamudra, wife of sage Agastya, are some of the well-known names associated with this ancient place in Indian lore.

The archaeological importance of this place was first recognised by Shri A. R. Deshpande, then a Civil Judge and a well-known social worker in 1928. The antiquities were later studied by Rao Bahadur K. N. Dikshit in 1936 and by research workers from the Deccan College Research Institute, Poona, in 1959.

This Report embodies the results of a small-scale excavation conducted there by Dr. Moreshwar G. Dikshit under the auspices of the Government of Maharashtra in May-June 1962 and April-May 1964.

Starting its career as a megalithic settlement, the township grew into pretention during the Mauryan Period (300 B.C.). It had a straggling existence under the Satavahans (200 B.C. to 200 A.D.) and after a period of decay grew into prominence again during the Muslim Period (1500-1700 A.D.) and developed into a fortified outpost.

This Report, a fore-runner of large-scale operations in future, discusses the various finds like pottery, coins, beads, iron objects etc., and establishes for the first time a closely observed stratigraphy for the Vidarbha region of Maharashtra.

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ANTIQUITY OF KAUNDINYAPURA

SITUATION

KAUNDINYAPURA (20° 55' N and 78° 05' E) in Chandur taluka of Amaraoti district is situated on the western bank of the Wardha river. It is 42 miles (= 48 kms.) to the north-east of Amaraoti and 6 miles (=10 kms.) due west of Arvi, a terminus on the Pulgaon-Arvi section of the Central Railway. On the opposite bank of the eastern side is Devurvada in the Arvi taluka. As it stands Kaundinyapura is now a very small village with a population of over 600. The place has a holy sanctity on account of the temple of Lord Krishna and his consort Rukmini in whose honour a large fair is held annually in the month of November.

ANTIQUITY OF VIDARBHA AND KAUNDINYAPURA

Kaundinyapura is one of the few fortunate places in India which retains its old name through centuries. Wardha (Varada) and the Vidarbha its tributary meet each other at Dharode, a village about 6 miles (= 10 kms.) to the south-east of Kaundinyapura. From Dharode, the Wardha flows north-eastwards and both the rivers are mentioned in the Puranic lists.¹

The antiquity of Vidarbha in which Kaundinyapura is situated can be traced to the Brahmanas and Upanishads.

Vidarbha from ancient times formed part of the Dakshinapatha. The *Aitareya Brahmana* alludes to Bhima, a King of Vidarbha at the time of Nagnajit, a King of Gandhara.²

The country of Vidarbha is mentioned in the *Jaiminiya Brahmana*, II, 440.³ It was famous for its Machalas, i.e., dogs who killed tigers.⁴ The *Satapatha Brahmana* also mentions Vidarbha as a country.⁵

The *Prasna Upanishad*, I, 1, II, 1 mentions a sage from Vidarbha named Bhargava, as a contemporary of Asvalayana.⁶ Another sage called Vidarbhi Kaundinya is mentioned in the *Brihadaranyaka Upanishad*.⁷

¹ वेदस्मृतिर्नर्मदा च वरदा सुरसा शिवा ।

तापी पयोष्णी च सरयूः कावेरी गोमती तथा ॥

ऋषिकुल्या च कावेरी मर्च्यगङ्गा पयस्विनी ।

विदर्भा च शतद्रुश्च नद्यः पापहराः शुभा ॥

—*Garuda Purana* (Bangavasi Edn.), I, ch. 56, 8, 10.

The नलचम्पू 6.66 states

वीरपुरुषं तदेतद्वरदातरं नामकं महाराष्ट्रम् ।

दक्षिण सरस्वती सा वहति विदर्भा नदी यत् ॥

² एतमु हैव प्रोचतुः पर्वतनारदौ सोमकाय साहदेव्याय सहदेवाय साङ्गी जयाय बभ्रवे देववृद्धाय भीमाय वैदर्भाय नग्नजिते गांधाराय ।

—*Aitareya Brahmana*, VII, 34.

³ Cf. *Vedic Index*, II, 297.

⁴ *J.A.O.S.*, 19, 100.

⁵ *Satapatha Brahmana*, 14, 5, 5, 22.

⁶ Cf. Rayachaudhuri, *P.H.A.I.*, p. 86.

⁷ *Vedic Index*, II, p. 297.

THE EXCAVATIONS, STRATIGRAPHY AND CHRONOLOGY

GEOGRAPHICAL SITUATION

THE situation of Kaundinyapura on the geographical map of Vidarbha is very interesting. Kaundinyapura stands on a high eminence on the northern bank of the Wardha river. The mounds of Kaundinyapura are partly natural and partly formed of the cultural debris which has accumulated there for centuries. The ancient history of the place as narrated in the ancient Indian literature has already been dealt with (ante, pp. 3-6) and it now remains to see how from its geographical position this place was immensely suitable to become the capital of Vidarbha.

The river Wardha, on the banks of which Kaundinyapura is situated, rises in the Multai plateau of the Betul district, about 70 miles N.W. of Nagpur. After flowing for a distance of nearly 32 miles in the east-west direction it takes a sudden turn towards the south, near Morshi, where it is joined by the river Madu from the adjoining Salbardi Hills. Leaving the alluvial tract of the Nagpur region it now enters the trap area extending over 50 miles and now forms the natural boundary between the Wardha and the Amaraoti districts. In ancient days this portion of the Wardha river was supposed to separate the Central Provinces (Nagpur region) from the Berar (Vidarbha). Being well watered by the rivers Chudamani and Bel, the entry of the Wardha near the town of Morshi is said to be very forceful, cutting a hillock almost into two, and the stream in the trappy bed gushes in torrents throughout the area, dividing itself into many channels and small islets in the bed of the river. The island at Kaundinyapura and at Ballarpur near Chanda, as the river flows further, are a curious feature of the Wardha system.

A little above the village of Kaundinyapura, the Wardha forms itself into two channels and the small islands in between them contain many fertile fields which are under active cultivation even to this day. A portion of this streamlet now forms the northern boundary of the village and exposes the bed-rock at several places in the northern and eastern peripheral regions. A study of the contour map shows that in ancient days a branch or the ancillary course of the river ran parallel to the main stream for nearly six furlongs, encircling the present village and the high mounds in its vicinity. Clear traces of the old stream are seen near the Devi temple, the western ridge of the Bhim Tekdi and in a section near the slope of the mound designated as Kdn-2. Though no gravel was anywhere exposed on the western side of the ancient mounds being hidden by thick deposits of washed alluvium, the river channel gets swollen every year during the monsoon, and leaves the village virtually turned into an island atleast for a few days in the season. As will be shown later, the excavation of mound Kdn-2 showed distinct traces of a mud fortification on the eastern side which was possibly intended to check the onward flow of the river and the belief is further strengthened by the layout of the mounds at Kaundinyapura in the north-south direction. The east-west expansion of the ancient city was probably limited by the presence of the ancillary channel and it was this 'island' like position of Kaundinyapura which must have led to the choice of this place as an ancient capital of Vidarbha. Proximity of the river which virtually justifies its ancient name Varada or the 'giver of blessings' from the rich crops which grow around, the naturally fortified place as sandwiched between two streams and the fertile tracts around, fully justify the selection, both in ancient and mediaeval times.

The topography of the ancient remains at Kaundinyapura may now be described as follows: As already stated above the precincts of Kaundinyapura begin with a small

THE POTTERY

GENERAL CHARACTERISTICS

SINCE Kaundinyapura is as yet the only site in Vidarbha region which has been subjected to systematic archaeological excavation, it is natural to assume that the stratigraphy and the pottery sequence from Kaundinyapura should serve as a useful guide to future work in this region. The results detailed here however, pertain to the individual cuttings and can in no case be said to represent a complete picture of the site. Surface exploration on the mounds have yielded several interesting types of pottery and tools which have a known chronology and dating value, but these had to be left out of consideration here because they were stripped off their archaeological context. Their occurrence however indicated that the site was of great promise and many potentialities. Among the tools, mention may be made of small pebble tool belonging to Series II found in the river bed and a large number of microlithic implements represented by lunates, crescents, parallel-sided flakes and long blades. In the pottery forms we had a few sherds of a black-on-red ware which had geometric designs in jet-black paint over a bright red surface which are known to have Chalcolithic associations on many a site in India. Besides numerous sherds of the Red Polished Ware, resembling the Samian, were found and which elsewhere in the Deccan and Saurashtra are known to form part of the Kshatrapa-Satavahana assemblage. Imported Magaron ware was represented by a single sherd. These if encountered in the cuttings would have greatly strengthened the stratigraphical position of the site and its chronology. The occurrence of these however, deem it necessary that for the full understanding of the cultural sequence a large scale horizontal excavation would be justified.

Provisionally the excavated pottery from Kaundinyapura can be studied in the following groups:

- Group A .. Black and Red Pottery including Megalithic Black-and-Red or all-black wares.
- Group B .. Pottery associated with NBP wares.
- Group C .. Pottery associated with Satavahana and Late Satavahana layers, including a black-on-red painted ware.
- Group D .. Red wares associated with the Muslim buildings.

The pottery from Kaundinyapura, with the exception of a few sherds is mainly wheel-turned, generally on a fast wheel, well-baked and is very sturdy. The wares are mainly utilitarian in character, denoted by simple forms like dishes, bowls, water-jars, jar-covers, etc. Devices like spouts, handles and loops for pans and *applique'* decorations, are very sparingly employed. Incised and surface decoration by impressions by thumb, cloth (Pl. XXVI-XXVII) or by the maize corn (Pl. XXIII) is resorted to only in the Late Mediaeval or Muslim Period (Period VI); graffiti (Pls. XX-XXII, Figs. 27-30) occurs exclusively on wares of Period I (Megalithic) and only sporadically in the subsequent two periods (II and III) (*see* below pp. 78-85). Only in three instances large dishes are known to have been used as 'Strainers' form a single or a group of large holes at the bottom (Pl. XXV). In one, the hole appears near the edge of the rim probably intended for the hanging of the vessel by means of a string.

All the vessels generally bear a good slip. In mass-produced vessels like Types 1, 1a, 8, 9, 11, 31, etc., a clayee wash by dipping the vessel into water in which some clay

GRAFFITI ON POTTERY¹

GRAFFITI on the pottery from Kaundinyapura is restricted to the lower levels (Layers 11-15) though occasionally a few strays have been recorded in the Mauryan and Late Satavahana levels also. The decoration is mainly a megalithic one. In most of the cases it was recorded on the exterior of vessels like bowls and dishes of black-and-red ware and only sparingly on red-ware vessels. In the case of the latter the motif occurs on the necks of vessels whereas in the black-and-red ware it is resorted to on the rims, basal portion of the carinated walls and in rare cases on the bases of the dishes. Only in one instance it was found that the interior of dish was embellished with a compartmental lines in the shape of a cross (Fig. 4). The designs are in the form of light scratches made with a very sharply pointed instrument or perhaps with a needle.

Only a few amongst them can be identified as the crescent (Fig. 27 : 2) [Plate XXI, 2] ; the cross (Fig. 27 : 7, 8, 24, 32), (Fig. 28 : 7, 8) [Plate XXI, 7, 8] ; (Fig. 29 : 32) ; the ladder (Fig. 27 : 3), (Fig. 28 : 3) ; the fish (Fig. 27 : 12), (Fig. 28 : 12) [Plate XXI, 12] [Plate XXII, 49] ; a bullock-cart like object (Fig. 28 : 4) [Plate XX] ; the banner (Fig. 27 : 31), (Fig. 29 : 31) [Plate XXI, 31] ; the rising sun (Fig. 27 : 33), (Fig. 29 : 33), [Plate XXI, 33] ; the bow and arrow (Fig. 27 : 14, 18, 30, 34), (Fig. 29 : 19, 30), (Fig. 20 : 36 ?) [Plate XXI, 19, 30] ; and the arrow-head (Fig. 27 : 13, 15, 17, 27, 35, 39), (Fig. 28 : 9, 13, 15, 16, 17), (Fig. 29 : 22, 25, 27), (Fig. 30 : 35, 38, 39, 40, 41) [Plate XXI, 15, 22], [Plate XXII, 35, 36, 37, 38, 39, 40, 41]. In other cases the designs are made of straight and curvilinear lines. All these are illustrated in Fig. 27 : 1-55 ; Fig. 28 : 1-17 ; Fig. 29 : 18, 34 ; and Fig. 30 : 36-55 ; and in Plates XX-XXII.

As in other places the graffiti occurs incised into the slip of the vessels after they were fired and in no instance it could be said that the occurrence of the designs was accidental though the meaning of all or any one of them was uncertain. The designs were single units in every case except in one case where two units were combined on one and the same pot.

Graffiti on pottery, particularly of megalithic fabric is recorded on several sites in India such as Maski, Sanur, Sengmedu, Brahmagiri, Kunnatur and T. Narsipur. It is encountered with grave-goods at Sanur, Kunnatur, Bahal and T. Narsipur and generally with black-and-red ware vessels. The only occupational sites at present known to have yielded any graffiti are Bahal, Maski and T. Narsipur and to this list Kaundinyapura may be added now.

The subject of different marks represented by graffiti on megalithic pottery has been very exhaustively studied by Shri B. K. Thapar in his report on the Maski excavations ; and this has shown that the marks by themselves do not carry any suggestion of being owners' marks. The number of marks present on the Kaundinyapura pottery lead us to the same conclusion.

Dr. G. Yazdani, in his paper in the " Journal of the Hyderabad Archaeological Society, 1916-17 " had given a comparative study of Graffiti marks but the Harappan and post-Harappan material was not available. Sir Mortimer Wheeler (Brahmagiri-1947, Harappa-1947), Shri B. K. Thapar (Maski-1954) and Dr. N. R. Banerjee (Sanur-1950-1952) in their reports on excavations at Harappa, Brahmagiri, Maski and Sanur respectively, have found graffiti on pottery at all these sites. Besides additional material has accumulated from other megalithic and Chalcolithic sites.

¹ This section on graffiti has been contributed by Shri M. R. Inamdar.

A. BEADS

IN spite of the very limited extent of the excavation, the total yield of beads from Kaundinyapura was quite high being 395 in number. Of these 98 came from the Bhim Tekdi and 297 from the sector Kdn-2. Besides a large quantity of beads (nearly 120) was collected as surface finds, mainly from the slopes of the mound and picked up while the area was being surveyed for a contour map. The periodwise distribution of these was as follows: Period I, 54 beads in a necklace; Period II, 20 beads; Period III, 103 beads; Period IV, 105 beads; Period V, 17 beads; and Period VI, 14 beads; unstratified beads, 6 specimens. As the area under excavation was very small it is difficult to say if this distribution is indicative of the popular demand in any particular period or its phases. There is reason to believe that a small scale industry for the manufacture of beads existed at the site during Period IV evinced from the several unperforated specimens and an exquisitely worked banded agate bead which required polishing and drilling only. Three large circular thick discs of agate (2 from surface and 1 from excavations in Period IV) identified as the covers of pots in which beads were heated for enhancing their colour, were also found, as at Ujjain.¹ (See Plate XXXIII.)

The material of the beads comprises of semi-precious stones (silicon minerals) of both crystalline and crypto-crystalline varieties of quartz, including rock crystal, Amethyst, carnelian, agate (plain and banded), chalcedony, jasper (both green and red); lapis lazuli of feldspathoid variety; shell, glass and terracotta. Copper was represented by three specimens. Glass seems to have been introduced during Period III. In general the use of carnelian, agate, jasper and crystal seems to be very widespread; but the excavations were not extensive enough to discuss this matter more fully.

Nearly 50 per cent of the total number of the beads found at the site were of carnelian and the etched beads associated with Period I deserve special mention. The practice of etching beads in India is as ancient as the Harappa Culture. Beads are found decorated with white patterns on the surface of carnelians and agates (rarely on any other crystalline material) by the treatment of alkali like soda for which the juice of a plant called *Kirar* was employed. A very large range of patterns is found amongst the beads so decorated and a comprehensive study of these, with special reference to their geographical distribution has been attempted by this writer in his monograph on Etched Beads in India.² Beads with radial strokes abound in a good number at Kaundinyapura, along with other patterns. The distribution of the former in megalithic cultures³ in South India has an important bearing on the chronology of the site.

Steatite disc beads from the site are also important in this respect because, though not exactly identical with similar material from the Indus Valley sites, they constitute a class which scarcely re-appears in India after the Mauryan Period and therefore have a dating value. At Kaundinyapura six of them occurred in Period II and had a continuity as late as Period V along with a stray in Period VI also. The hard porcelain-like appearance and the uniformly good quality of these beads is noteworthy. The exact value of this bead-type as an aid to determine the chronology of the site can only depend upon future extensive work.

¹ N. R. Banerjee, "The Technique of the manufacture of stone beads in Ancient Ujjain" *Journal of the Asiatic Society*, Vol. I, No. 2 (1959), pp. 189-196, Plate II.

² Etched Beads in India, Deccan College Monograph Series No. 4, Poona 1949.

³ The tablet-shaped bead bearing an etched cross on both the sides affords an interesting parallel to a specimen from the megalith at Porkalam.

B. TERRACOTTA OBJECTS

(Plates XXXVI-XXXVIII)

THE following terracotta objects deserve a special attention:

1. A terracotta head of a ram, length 10 cms., breadth 9 cms. showing the curved horns and the mouth in broad outline and well-delineated features. The fragment has a small vertical hole in the neck showing that it was movable and attached to the body by a suitable pivot. No. 164 from D4 Layer (2), depth 9 inches. Though found in the uppermost layers the workmanship shows that it was probably an old discarded object. On grounds of style the specimen presumably belongs to the Satavahana Period. Hard baked red clay with traces of red paint. (Pl. XXXVI, A)

2. Beautifully modelled terracotta head of a horse, length $5\frac{1}{2}$ cms., showing the mane in deeply incised lines and the eyes effected by a hollow cylindrical tube. No. 104, Trench Z, Layer (8), Satavahana. Depth 3 metres. (Pl. XXXVI, B)

3. Portion of a water vessel, pale yellow in colour with identical slip and traces of a golden paint, representing a hollow irregular channel with the figure of an elephant with out-stretched *Shunda*. Length $4\frac{1}{2}'' \times 3''$ (Pl. XXXVI, C). The figure of the elephant is very gracefully made in *applique* and the object is identified as a Gajamukha Pranali (elephant-headed channel-spout). The exact shape of the vessel to which this spout was attached is not known. No. 103, Trench B3, Layer (6), depth 5'-3". Late Satavahana.

Makaramukha Pranalis are mentioned in Sanskrit literature like Harsha Charita¹ of Bana and elsewhere. An exactly similar object forming part of identical vessel, of the same fabric and with trace of gold paint was found in the same layer but the figure it bore is not well preserved. Traces of scales in *applique* indicate that it probably represented a fish. Spouts with representations of animals are quite common in the Gupta Period in North India, particularly at Rajghat and Ahichchhatra.

4. A small rectangular tablet (7 cms. \times 6 cms. \times $1\frac{1}{2}$ cms.) of very hard baked clay with short herring-bone incisions all over the body. No. 238, D4, Layer (2), depth 2'.

This object is identified as a skin rubber or sole cleaner and is of common occurrence on several Indian sites. The antiquity of the skin rubber can be traced as far back as the Harappan times,² where barrel-shaped objects with herring-bone incisions were quite common; the type continued in the Gangetic valley as can be seen from the recently discovered specimens at Vaisali³ attributed to about 150 B.C.-100 A.D. The rectangular type originated in Taxila, where the Bhir Mound specimens are incised with triangular marks, while those from Sirkap⁴ have herring-bone patterns, as on the present specimen from Kaundinyapura. Mauryan specimens are known from Bhita⁵ and Tripuri.⁶ They are also known from Ujjain,⁷ Besnagar,⁸ Maheswara,⁹ and Sanchi.¹⁰ These are

¹ Kane, P. V., *The Harshacarita*, p. 6 (1965).

² Marshall, *M.I.C.*, pp. 467-68 and Pl. CXXXIII, 13-17.

³ Krishna Deva and V. K. Mishra, *Vaisali Excavations*, 1950, p. 58, Pl. XXB (Vaisali, 1962).

⁴ Marshall, *Taxila*, II, p. 425, Pl. 229, t, x, etc.

⁵ *A.S.I., A.R.*, 1911-12, Pl. XXIX, 18.

⁶ Dikshit, *Tripuri*—1952, p. 99, Pl. XXXVI.

⁷ *Gwalior Archaeological Department, Annual Report*, 1938-39, Pl. XIa, XXB.

⁸ *A.S.I., A.R.*, 1913-14, Pl. LX, 56; *Ibid.*, 1914-15, Pl. LIII, 5.

⁹ Sankalia *et al.*, *op. cit.*, pp. 198-200; Fig. 103 = 2, 3, 19, 20.

¹⁰ *Catalogue of the Museum of Archaeology at Sanchi*, Pl. XX, C, 644.

C. METAL OBJECTS

IRON OBJECTS

(Plate XLIII, 1-21; Fig. 35 : 1-21)

QUITE a large number of iron objects were found in the excavation. Many of them were non-descript fragments and shapeless masses with very heavy corrosion which rendered the identification of the objects difficult. A few selected examples are illustrated here (Plates XLIII and XLIV). Of special interest are a few arrow-heads, a pair of tongs (Pl. XLIII, 8) and a pin used in a rotary quern (Pl. XLIII, 16). Daggers, swords and a chisel (Pl. XLIV) also deserve mention.

Arrow-heads.—Thirteen arrow-heads fall into four distinct classes. Class 1 has a triangular leaf-shaped blade with barbs at ends and a solid tang. Class 2 has a long tapering leaf-shaped blade with a socketed tang and a mid-rib on the blade which extends about half the length of the height. Class 3 has a fish-shaped profile for the blade and a socketed tang. Class 4 is represented by a large number of specimens which have very short tennon-like tangs and the blades are substantially thick and have a square or diamond-shaped cross-section. Whether the last mentioned class represents ordinary nails used for door-fittings etc., could not be determined and if actually so these belong to domestic furniture of which no substantial evidence was forthcoming in the excavation.

1. A small arrow-head with a flat triangular blade and a solid tang, heavily rusted. One portion of the blade missing. Length 6·8 cms.; Breadth 2·3 cms.; No. 236, B3 Layer (15); Megalithic.

2. Similar to above. Trench Z, Layer (8). Class 1. Mauryan ? Length 5·9 cms.; Breadth 3·2 cms.

3. Similar to above but with a flat blade having a slightly raised mid-rib. No. 202, B3 Layer (7); Length 5·2 cms.; Breadth 2·8 cms.; Post-Mauryan. Class I.

4. A long leaf-shaped arrow-head with a barbed blade and a socketed tang with a mid-rib on the blade extending up to the middle. One barb broken. Class 2. Length 8·8 cms.; Breadth 3·2 cms.; B3 Layer (14); Megalithic.

5. A long arrow-head with a fish-shaped profile with a socketed tang. No. 218, B3 Layer (13); Pre-Mauryan; Length $10\frac{1}{2}$ cms.; Breadth 3·2 cms.

6. Portion of a chisel with a splayed blade having a curved edge. Flat lenticular section. Length 11 cms.; Breadth 3·8 cms.; No. 207, B3 Layer (11); Pre-Mauryan.

7. Portion of the lower end of a crow-bar having a sharp cutting edge. Heavily rusted. From the patination and the flakes it appears that it was made by beating long iron strips. Length 16 cms.; B3, Layer (10); Pre-Mauryan.

8. Fragmentary portion of a pair of tongs made from a single piece of iron with a diamond-shaped tip and doubled top, one prong broken. No. 230, B3, Layer (15); Length 13 cms.; Megalithic.

9. Non-descript iron object, curved at one end with the longer section flattened and lenticular in section. The curved portion is thick and circular in section. An exactly identical object (No. 220) from Layer (12) is recorded. Both the objects are unfortunately

D. ORNAMENTS, ETC.

BANGLES

A LARGE number of bangle fragments were found in the excavation. These are comprised of various materials like (in order of their frequency) shell, glass, chalcedony, copper and bone, only one specimen of the last mentioned material being recorded.

The glass bangles were in all cases associated with the Muslim layers in Trench B3 but were found to have a higher antiquity in Kdn-2 where these were associated with Mauryan layers.

The two bangle pieces recovered from Trench B3 belong to the stratified variety of glass. One of them is triangular in section. It has a dull opaque grey core within which is flushed an opaque sulphur coloured yellow glass. At the triangular apex it is overlaid with a strip of bright red glass to which small studs of a milky-white glass have been affixed at regularly spaced intervals. In many cases the beads have fallen off. The second specimen represents a flattish strip of dull grey glass coated with a sap-green glass. It is overlaid with prominent ridge of identical glass having a short red border at the apex which in turn is set with small beads of white glass, at short intervals. Another unstratified sample from the same trench is comprised of a small strip of yellow glass, rectangular in section overlaid with a bright leafy-green glass.

At site Kdn-2 two bangle fragments recovered show some advance in the technique of glass fabrication. One of them, associated with Layer (8), is a mis-shaped wire of drawn glass, indicating the manufacture of glass at the site. It has a dull black surface with a dark patina on the exterior resulting from the salts contained in the batch. The second fragment is of green glass which has disintegrated considerably and leaves a pitted surface all over. It has a pentagonal cross-section with very sharp edges, a feature which is associated with Mauryan glass at other sites like Prakashe in Maharashtra.¹ It has not been possible to get the specimen analysed but coupled with the fact that the same layers have yielded perfect specimens of glass ear-plugs described below show that glass of a good quality was manufactured in India in the early historical period.

SHELL BANGLES

Thirteen fragments of shell bangles were found in the excavation of which two emanated from unstratified deposits. Four fragments were associated with Layer (6) corresponding to the Satavahana Period in Trench B3, while seven were found in Kdn-2 in Layers 4-8. These pieces were sawn from the curved surfaces of large conches and do not show any distinctive features as they are of common occurrence on several sites in India. These have oval, circular, lenticular or triangular cross-sections and on only one of them a simple decoration of straight lines has been resorted to. Some of the pieces have calcined due to contact with fire which does not seem to be intentional.

AGATE AND CHALCEDONY BANGLES

Two pieces of chalcedony bangles were recorded. One fragment came from unstratified layers while another one was associated with Layer (10) of the Mauryan Period in Trench D4. The fragment is elliptical in section and is very well selected having a short black streak on one of its sides. The agate specimen is very highly polished and has a pentagonal cross-section. Bangles of this material and description are of common occurrence in Mauryan strata on other sites in India.

¹ Information from Shri B. K. Thapar.

E. STONE OBJECTS

STONE QUERNS AND MULLERS

FEW stone-mullers and querns were found in the excavations. Of the eight mullers, two have squarish cross-section and the rest six are cylindrical. All of them are fragmentarily preserved and apparently were discarded.

Three fragments of legged querns (one surface find) were associated with the Satavahana levels at the site. (Plate XLIX, C). They have two of the four tapering legs preserved and a portion of the grinding surface. Since the distribution of this variety of legged querns has been fully dealt with by me elsewhere¹ the same ground need not be covered here. One peculiarity however may be mentioned in passing. One fragment recovered from Layer (12) at the site Kdn-2, shows that the legs are comparatively very much shorter than the usual specimens. (Plate XLIX, B). The exact stratigraphical context of this specimen cannot be ascertained in relation to the other layers in the mound, but its fairly low position leads to a suspicion that the short-legged variety preceded the long-legged saddle quern.

GRINDING SLAB AND QUERNS

The successive phases in the evolution of the grinding slabs and querns found at Kaundinyapura is very interesting. In Period I large slab-stones were used for purposes of grinding. A very large specimen from Layer (+ 9) of this phase shows the hollowed surface of grinding very clearly in the shape of a patch smoothened by constant rubbing with the muller. The stone was probably kept in an inclined angle. The muller found in association with the slab consisted of a large pebble of irregular shape, slightly concave in the middle and only some portion of it showed signs of grinding. It therefore rolled to-and-fro on the slab and the rotary motion was not complete. (Plate XLIX, A). In the Mauryan stratum the grinding slab assumed the shape of a short-legged stool, with very short stunted legs which protruded from the corners of the rectangular slab. In three specimens recovered from the site (cf. Plate XLIX, B) the blobbed legs measured between $1\frac{1}{2}$ inch from the base of the slab. The material in all the three cases was local trap. The quern or more correctly the saddle-quern assumes a distinct shape in the subsequent phase attributable to the Satavahana Period, where three fragments of legs and half of a quern was found. The legs are triangular in shape and incline sharply inwards from the base. They measure over $2\frac{1}{2}$ to 3 and even 4 inches in length. Other querns simulating this shape, known from several sites in India range from 200 B.C. to 100 A.D. and it is known that when complete, one side of the grinding slab projected outwards, the additional space being utilised for the keeping of the receptacle below the stool. The specimens are known from Kolhapur and their distribution in India has been discussed in my Tripuri Report.¹ The distinction between the Mauryan and the Satavahana specimens can well be made out from their illustrations side by side (Plate XLIX, B & C). The priority of stunted legs over the fully developed triangular legs is also well established at Prakashe.² Nevasa and Maheshwar have both yielded examples of legged querns where they have classified into three evolutionary groups having (i) undifferentiated legs, (ii) legs differentiated but not separated and (iii) differentiated and separated. The Kaundinyapura querns do not show any of these stages but the distinction between the Mauryan and the Satavahana specimens is quite clear.

¹ Dikshit, *Tripuri-1952*, pp. 105-09.

² Information from Shri B. K. Thapar.

F. SEALS AND COINS

(Plates XXXIX & XL)

THE important criteria for determining the stratigraphy was the incidence of coins. In all eight coins were encountered in the excavation whereas quite a large number were picked up from the surface. These are studied below by Shri V. P. Rode of the Central Museum, Nagpur.

His study reveals that the punch-marked coins of Kaundinyapura (particularly the silver one of the variety found at Kaundinyapura) are confined to the Deccan in a broader sense. The uninscribed cast coin No. 4 below is somewhat interesting because it does not bear the general characteristics of a coin and represents a unusual variety. Coin No. 5 representing a human figure on the obverse connects it with early Satavahana coins though we have no independent evidence as such. The die-struck coins with the *Shadara chakra* on the obverse, furnishes an intermediary link between punch-marked and die-struck coins. The remaining eight coins are all surface finds belonging to the Tughlaq, Bahmani, Qutb Shahi and Mughal dynasties. As they are surface pickings no great importance should be attached to them.

Besides the coins, the only datable objects which deserve attention are two terracotta seals from site Kdn-2. They are attributed to 1st-2nd century A.D.

No. Kdn-2.31 a clay seal, hand-made, about 30 mm. in diameter, plano-convex in shape, crudely formed at the back by impressing on a well-made die. It bears the figure of a majestic cock facing right. In front of it we have a *dhvajastambha* topped by a Trisula. The Dhvaja or a flowing banner is indicated by a curved line. At the proper left, above the cock and the banner appears the legend in 2nd century Brahmi characters reading 'DHANAPATISA'. (Plate XXXIX, 1).

The seal is crudely formed of a dark black clay. Being not well levigated, the edges show a tendency for cracking and is ill-burnt. The die however is cleverly made in bold technique and shows the cock in an aggressive posture in remarkably few lines. The cock, the symbol of 'Skanda' is variously portrayed on Indian seals. Recovered at a depth of 2.10 metres below surface. (Plate XXXIX, 1; Enlarged x3 in XXXIX, A).

TERRACOTTA SEALING

This sealing was found near the northern wall of the pavement in the Main Trench in Sector A while brushing its floor.

It is a small sealing, roughly triangular in section and having oval surface on its three sides. On two of the faces there are small ovoid depressions, one of which is blank. In the other there is a short legend of four letters in the Brahmi script belonging to about 1st century A.D. The legend reads, 'SAV(I)TASA'. The characters are extremely small, about 2 mm. in height, and on account of the small exergue the medial marks are not clearly visible. The sealing is also considerably worn. The external dimensions are: length 1.25 cm., breadth 1.50 cm., height 1.20 cm. Plate XXXIX, 2 shows the three faces of the sealing and an enlarged photograph (x3) of the legend appears as Plate XXXIX, 2a. Trench A, Layer (4), Depth 4 ft.

KAUNDINYAPURA PLANT ECONOMY IN PRE-HISTORIC AND HISTORIC TIMES

by

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INTRODUCTION

THE carbonised foodgrains or their impressions from Kaundinyapura comprise cereals (rice, maize), legumes (peas) and the fruit remains (Jujube) and a crushed fragment of a Bamboo. The various strata from which the material has been obtained range in age from 200 B.C. to 1400 A.D. from slightly earlier Mauryan to the Muslim Period.

The material was kindly sent to me by Dr. Moreshwar G. Dikshit, who also very kindly provided detailed information regarding the archaeological provenance of the samples. There are three samples which definitely belong to the Post-Mauryan (about 200 B.C. to 300 B.C.) one of them from B3 Layer (7) contains Matter and the Jujube and the other from D4 Layer (7) comprises Rice and Bamboo. The third sample containing a hard tar-like mass of spikelets of rice comes from D4 Layer (9) (about 500 B.C. to 400 B.C.) and is slightly earlier than the Mauryan stratum.

Later, Dr. Dikshit kindly sent me a potsherd from Layer (2) at Kaundinyapura, which is decorated by a pattern believed to have been formed by turning an ear of Maize on a bolstered surface of clay. It is discovered from a Muslim building from the excavations dated to the Bahmani Period. From similar sherds at Kolhapur it appears that the specimen might be slightly earlier to 1435 A.D.

Methods.—No special techniques were employed except examining the grains under the low power binocular for any recognizable morphological details and taking measurements for comparing them with the corresponding modern grains.

From the impression on the potsherd plasticine castes were prepared and matched with those of the modern ears of Maize on plasticine. On the clay models of the potsherd prepared here impressions were made by turning an ear of Maize and these were then compared with those on the potsherd.

For opportunity to work this interesting material my thanks are due to Dr. Moreshwar G. Dikshit, who very kindly sent this interesting material to me and to Dr. K. R. Surange, the Director of the Birbal Sahni Institute of Palaeobotany, for permission to undertake this investigation.

DESCRIPTION OF THE FOODGRAINS (CEREALS)

RICE

Oryza sativa var. sativa L.

(Pl LII, 1-5 & LIII, 1-2)

The grains of rice from D4 Layer (7) are more or less oblong and strongly ribbed (usually three-ribbed) and are made up of two varieties one comprising comparatively

ANIMAL REMAINS FROM EXCAVATION AT KAUNDINYAPURA

by

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THE animal remains from Kaundinyapura comprises mostly of cows and a few of goat, sheep, pig, ass, elephant, dog, deer and turtle. All these bones being very fragmentary, no measurements could be taken. A large number of these bones belong to the Phase III, IV and V i.e. Historic Period. Practically all the bones that belong to Period I or Phase II are of *Bos Indicus* (cows). The following classification describes the remains of the animals :

Class—*Reptilia*
Order—*Chelonia*
Family—*Trionychidae*
Chitra indica (Gray)

Fragment of carapace :

1. Kdn-2 196 Tr. E(4) Phase IV ;
2. Kdn-2 198 Tr. E(4) Phase IV ;
3. Kdn-2 197 Tr. E(4) Phase IV.

Class—*mammalia*
Order—*Proboscidae*
Family—*Elephantidae*
Elephas maximus

Isolated molar tooth from upper jaw :

4. Kdn-2 338 Tr. C(6) Phase III. (Pl. LIV, A)

Order—*Perisodactyla*
Family—*Equidae*
Equus assinus

Fragment of metacarpal :

5. Kdn-2 224 Tr. E(5) Phase IV.

Order—*Arthiodactyla*
Family—*Bovidae*
Bos Indicus Linnaeus

Fragment of right upper jaw with molar teeth :

6. Kdn-2 100 Tr. C(6) Phase III ;
7. Kdn-2 257 Tr. Z(7) Phase II.

Fragment of upper jaw with molar teeth :

8. Kdn-2 85 Tr. C(4) Phase IV.

Fragment of right lower jaw with pre-molar and molar teeth :

9. Kdn-2 175 Tr. E(3) Phase V.

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