CHAPTER VIII

THE MESOLITHIC
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This period is represented by the microlithic culture. Evidence for this culture has come from both the parts of Rajputana though largely it is from the Eastern part. In all at present forty four sites are known of which forty are in Eastern Rajputana and the rest four in Western Rajputana. In the former region majority of the sites are concentrated in the three districts of Udaipur, Chitorgarh, and Bhilwara. This uneven distribution is, however, due only to differential exploration. These three districts have been more thoroughly explored than any other area and if the same attention is paid to other parts, many more sites are sure to come to light.

In the present study more than two thousand artifacts from twenty nine sites have been studied. Twenty seven of these are in Eastern Rajputana and two in Western Rajputana. My own collection is derived from sixteen sites of which fourteen are in the districts of Udaipur, Chitorgarh, and Bhilwara and two in Pali. Nine of these sites were discovered by me and from the rest seven which were already known, fresh collections were made by me. Besides collections from eighteen sites made by the Exploration Branch of the Department of Archaeology, Government of India, were also studied. From five out of these eighteen sites collections were also made by me.

The details of the sites as also their names and abbreviations are given in Chapter III on pages 40-42 and 56-57.

In the following pages first my own collection which was more fully studied is described in some detail and later observations made on the collection of the Exploration Branch which was studied in Delhi are mentioned in brief.

All the sites are surface sites. No stratigraphical evidence
is therefore available for dating them. A relative age can be assigned to them
only on the basis of typological comparison with other areas in India. This
point will be discussed later.

Secondly nearly all the sites are factory sites. With the solitary exception of the site of Mandpisia which occurs on a loessic mound on the
bank of a river all the other sites occur away from the river valleys in the
rocky interior where raw material for making implements was available close
at hand and in plenty. Most of the artifactual material, therefore, of nece-
sity consists of waste products and only a small number of finished tools
are available. Our knowledge of the microlithic culture of Rajputana, therefore,
must remain incomplete until stratified sites yielding finished implements
in larger quantities are found. However the limited conclusions that can be
drawn from the present study may be set forth as follows:

(i) A significant part of the present collection is constituted by the flu-
ted cores. It is at once clear that the main objective of the artificer
was to produce fine, slender blades from them. The total number of these
cores in a collection of one thousand two hundred and forty artifacts
is one hundred and forty two and taking an average of ten blades per
core (and this is certainly an underestimate when we remember that
these cores are only final residue of much bigger pieces from which se-
veral series of blades were taken) the number of blades must have been
nearly one and a half thousands. But strangely enough less than two sco-
re of such pieces have been found. It is indeed a mystery as to into what
what tool types these blades were fashioned, and where they were exported,
used, and discarded.

(ii) The common tool type is constituted by various types of scrapers. Other
types are backed, and obliquely blunted blades, and tanged points
and borers. Besides there are a number of unretouched flakes and cores that were probably utilized as scrapers. One unperforated bead of chalcedony was found from the site of Potla, but in view of the complete absence of this type from all other sites it can not be regarded as of much significance in the industry as a whole;

(iii) There are absolutely no geometric forms among the microliths. A few crescent-like and one trapezoidal scraper are clearly fortuitous since their shapes have not been obtained by secondary work.

(iv) No pottery or any other object of stone or any other material (except the one incomplete bead already mentioned) was found at any of the sites explored by me. But microliths occur at a number of sites with Black and Red Ware of Chalcolithic Period explored by the Exploration Branch of the Union Department of Archaeology. A small number of microliths from four of these sites, namely, Sialpura, Fachar, Tarawat, and Joera was studied at Delhi and no differences either of raw material or typology were noted between them and the microliths from non-pottery sites. Since the typology of microliths in Chalcolithic cultures is markedly different from that of the microliths of the Mesolithic Period, it is possible that the association between pottery and microliths at these sites is only fortuitous. However, no final opinion can be expressed on this point.

1. It might be mentioned that triangles and lunates are said to occur at Sigoh, a site on the river Kadamli near Nimbahera south of Chitorgarh (I.A.R., 1954-55, p. 58.). Lunates are also mentioned to occur at Tarra, Bamini, and Kalikunya near Bainsrorgarh (I.A.R., 1956-57, p. 8.). But no details are available about the exact number and nature of the tools. However, at more than forty recorded sites their occurrence is not mentioned and it seems, therefore, justified to describe the industry as Non-geometric.
Unlike the Middle Palaeolithic culture which seems to be a direct derivative of the Lower Palaeolithic, the roots of the microlithic culture can not be so easily traced to the preceding Middle Palaeolithic culture. The hallmark of the Mesolithic culture is the cylindrical fluted core and the thin flat blade derived from it. Blades do occur in the Middle Palaeolithic but generally they are not of an advanced type nor obtained from fluted cores. However, one fluted core was obtained from Luni along with a large number of Middle Palaeolithic tools (Pl. XXXV, Fig. 3) and a few fine slender blades were obtained from Dhaneri and Pichak (Pl. XXXVII, Figs. 8a; 8b). The evolution of the microlithic cores and blades can be derived from such cores and blades. They have been ascribed for the time being to the Middle Palaeolithic culture because there is no stratigraphical evidence for their separation from the Middle Palaeolithic industry nor are they numerically large enough to constitute a separate industry.

However it must be admitted that there is not much justification for their inclusion in the Middle Palaeolithic either. They are much more evolved than the rest of the Middle Palaeolithic tools. Their small number and infrequent occurrence also suggest that they do not form a common type in the Middle Palaeolithic. It is quite possible that future research may show that these blades constitute an independent industry which is chronologically intermediate between the Middle Palaeolithic and Mesolithic cultures.

The focal area for this search is the limestone region from Sojat to Barunda in Western Rajputana which is immensely rich in palaeoliths and as well as microliths. The sites of Dhaneri and Pichak which yielded these few blades are situated in this region.
Raw material and State of Preservation of the Implements.

In Eastern Rajputana the commonest materials are chert and cherty jasper. The former is generally of greyish colour and the latter of dark-brownish colour. Quartzite of dark-brownish shade and chalcedony have also been used in some quantities. Less commonly used are jasper, quartz, and rock crystal. At Potla only quartz and rock crystal have been used but at other sites all materials excepting rock crystal have been used. There is no patination on any of the implements.

In Western Rajputana also chert is the most common material. It occurs in a number of shades such as grey, white, and black. Grey specimens have acquired a dull yellow patina but other specimens seem to be free from it. Other materials less frequently used are flint, jasper, chalcedony, and fossil wood. Artefacts from the site of Mandía which were obtained from a loessic mound are stained dark red.

In both the areas the raw material is derived from limestone outcrops and in fact there is close relation between limestone occurrences and microlithic sites. In the Eastern Rajputana it occurs in the form of very small nodules, of one inch to two inches diameter; consequently the size of the implements is also small. The average length of artefacts is one inch and very small pieces - less than half inch in one dimension - also occur. In Western Rajputana nodules are available in all sizes and the size of the artefacts is, therefore, much bigger. Majority of the artefacts are more than one inch in length and cores more than two inches long also occur.

**TECHNIQUE**

It has been mentioned that one of the principal objects of the
artificer was to produce thin blades from cylindrical cores. Since raw material was available only in the form of rough and irregular nodules, these nodules required to be drastically chipped to shape them into suitable cores. For this dressing of the nodule — as the process is sometimes called — small flakes were detached from all sides of the core by the soft stone hammer technique. Many of these flakes have been later fashioned into scrapers, borers, and points. Next a striking platform was prepared along the broader end of the core by removing numerous tiny chips. From this platform blades were removed by the help of a pointed punch. The platform is generally rough and slightly hollow rather than smooth and flat. This feature probably prevented the punch from slipping off the core.

In the preparation of tools out of flakes and blades two types of retouch have been employed.

(i) In the specimens where the working edge is along the thicker end of the flake as in many scrapers, a very steep retouch has been done. This is also the technique employed for the blunting of straight and obliquely backed blades.

(ii) In the specimens having their working edge along the thinner end of the flake or blade a flat retouch has been used.

ARTIFACT TYPES.

Finished Types.

The total number of artefacts collected from sixteen sites is one thousand two hundred and forty. Of this only one hundred and twenty one pieces or about ten per cent are finished tools. Considering Eastern and Western Rajputana separately the percentage is eleven and five respe-
ctively. The reason for the lesser percentage of finished types from the latter region is that the microlithic sites of this region, namely Dhaneri and Sojat are Middle Palaeolithic sites too. Hence the waste material of the earlier culture also occurs on these sites and it is not always possible to separate the waste material of two cultures with perfect accuracy; and in the present case this difficulty is enhanced because the raw material for both the cultures is the same and derived from the same source. The number and percentage of different types and sub-types is given in Tables XII to XIV.

Majority of the implements have been made on flakes, some on cores, and only a few on blades. However as has already been pointed out implements made from blades must have originally constituted a much bigger component of the microlithic industry; these may be found in future.

(a) Backed and Obliquely-blunted Blades. (Pls. L; L1, Fig.)

There are eight specimens in all. Three of these are straight sided and steeply blunted along the back; the rest are blunted obliquely along the back. The cutting-edge is left unretouched in all of them. Two of the obliquely-blunted blades may be called pen-knife blades since in them the back does not slope smoothly to the tip, but instead has an abrupt slope as in a pen-knife.

MDP 84 (2.4 x 1.1 x 0.6) Pl. L Fig. 21

A thick small blade of multi-coloured quartzite. Upper face has two small scars. Working edge is slightly convex; back very steeply retouched by detaching numerous tiny chips.

MDP 168 (2.9 x 1.1 x 0.4) Pl. L Fig. 16

A thin blade of grey-brown cherty jasper. It has a central longi-
tudinal ridge and two long flakes on either side of this ridge. One margin is steeply blunted but it is not as thick as MDP 84.

KPR 25 (2.2 x 0.9 x 0.5) Pl. L/ Fig. 22

A small, thick blade of greyish-brown cherty-jasper or quartzite. It has a central ridge and two longitudinal scars on either side of it. The steeply blunted back is thicker than in MDP 168.

MDP 154 (2.3 x 1.0 x 0.5) Pl. L Fig. 17

An elongated blade of brown cherty-jasper. Upper face has only one large flake; thick back is steeply blunted to a sharp pointed tip. Nearly one third of the specimen is broken along the bulbar side.

BNR 121 (2.6 x 1.1 x 0.3) Pl. L Fig. 18

A thin blade of white chaledony. It has a plain platform, a beautiful concoidal bulb, and a tiny bulbar scar. The upper face has a central ridge; there are two scars on either side of it. The right lateral margin is very thin and retouched to a pointed tip.

SJT 74 (3.2 x 1.0 x 0.5) Pl. L/ Fig. 18

An elongated pen-knife blade of dark-brown jasper. Upper face has a central longitudinal ridge which runs parallel to the right margin and is joined by a smaller ridge from the tip side; the back is steeply retouched except near the tip where it has a steep scar.

(b) SCRAPERS. (Pls. XLI-X+L/ Fig. 17)

These constitute the largest single group of finished tools. By far the majority of them are made on thick flakes, a small number on fresh chunks of raw material, and a few on exhausted fluted cores. The retouch is generally along the upper face only though in some specimens it
They are of following types:

(i) **Side-scrappers.**

**DEK 75** (2.5 x 1.8 x 0.5) Pl. L Fig. 3

A side-scaper on a piece of greyish-brown chert. The lower face probably retains original cortex; upper has a flake scar. It is retouched from the upper face along both the margins but the left one is better worked.

**BCR 277** (2.2 x 1.5 x 0.5) Pl. L Fig. 5

A small scraper on a thin flake of greyish-brown cherty jasper. It is steeply retouched along the right margin.

**DEK 67** (2.2 x 1.2 x 0.4) Pl. L Fig. 4

A side-scaper on a thin side-flake of dark-brown jasper. It has a roughly crescentic shape which is only fortuitous. It is worked by very thin trimming along the arched margin.

**SPG 22** (2.5 x 1.7 x 0.7) Pl. L Fig. 1

A side-scaper on an oval flake of greyish-brown chert or cherty jasper. It is retouched along one margin from both faces.

**SPG 62** (1.2 x 1.3 x 0.4) Pl. L Fig. 10

A scraper on a trapeze-shaped flake of red quartzite. It is retouched along the slightly flaring transverse side; lateral margins and bulbar-end left unworked.

**BCR 266** (2.3 x 1.7 x 0.5) Pl. L Fig. 2

A side-scaper on a triangular piece of pinkish jasper chert. It is worked on both faces; the right margin is very steeply retouched.

may be along the lower face as well.
(i) End-scrapers.

**BCR 25c** (2.3 x 1.6 x 0.6) Pl. L Fig. 26

An end-scraper on a piece of dark-blue jasper. It has a triangular pointed end and a fan-shaped transverse end. It is steeply retouched along the transverse side; the curved lower face makes the scraping-edge all the more efficient.

**BCR 25** (3.1 x 1.7 x 1.0) Pl. L Fig. 9

An end-scraper on an exhausted fluted core of red quartzite. It is steeply retouched along the end.

**BCR 16** (2.4 x 1.7 x 1.4) Pl. L Fig. 7

An end-scraper on a thick fluted core of dark-brown chert. Lower face has a large blade scar; upper has a very steeply worked scraping edge.

**BCR 233** (2.6 x 1.9 x 0.6) Pl. L Fig. 6

An end-scraper on a triangular flake of red quartzite. The flake has an intrusion of quartz in the centre. It has a convex working edge retouched steeply from the upper face; the flake is worked on the upper face.

**SPG 15** (2.8 x 1.8 x 0.8) Pl. L Fig. 13

An end-scraper on a thick flake of variegated chert. It has a curved lower face and a very steep scraping edge along one end; the upper face is marked by a number of small scars.
An end-scraper on a flake of light-brown coloured chert. It has a plain platform, a soft bulb, and a curved flake surface. Upper face is fully worked and the transverse side is steeply retouched.

An end-scraper on a piece of cream-coloured chert. Lower face probably retains original cortex; upper face has one big flake scar in the centre and steep margins. Scraping-edge is also steeply worked.

An end-scraper on a flat fluted core of milky-white chert or flint. The core has a faceted platform and a number of blades have been taken from it. It has a very fine convex scraping edge working upwards from the lower face upwards.

An end-scraper on an oval flake of dull-grey chert. It has a constricted bulb end and a convex arched scraping-edge along the opposite end. Working-edge is made by flaking from both faces.

(iii) Side-and-end-scrapers.

A scraper on a rectangular flake of dark-brown jasper. It has a cortexed platform, a diffused bulb, and a plunging flake scar. Upper face fully cortexed; it is retouched along the left lateral margin from the lower face and along the end opposite the bulbar side from the upper face.

A scraper on a thin side-flake of variegated chert. It has a constricted butt and a flaring transverse end. Worked along the transverse end and right margin.
A scraper on a flake of cherty-jasper of dark-brown colour. It has a plain platform, and a prominent bulb of percussion. Upper face retains a small patch of cortex; left margin is thick and the right one thin. It is retouched from the upper face along the end opposite the bulb, and along the right margin.

A scraper on a reddish-yellow chert flake. It has a narrow butt and flaring transverse end; retouched along both the margins as well as along the transverse end from the upper face.

(iv) Round scrapers.

A round scraper on a thick flake of reddish quartzite. Lower face is slightly curved; upper face has a number of small scars. It is steeply worked almost along the entire periphery.

A round scraper on a flat piece of dark-grey chert. Upper face is also flat and is probably a flake scar; it is pointed along one side. Retouched along the entire periphery; edge very steep.

A round scraper on a side flake of blue quartzite. It has a plain platform, and a very soft bulb. Upper face fully worked; it is retouched along the entire periphery except the bulbar portion. It is pointed along one end and could also be regarded an almond-shaped point.
BCR 77 (2.6 x 2.3 x 0.7) Pl. L Fig. 25

A round scraper on an oval flake of dark-grey jasper. It has a plain platform, and a prominent bulb; upper face fully worked by detaching a number of tiny chips. It is retouched all along the periphery except near the bulb.

BCR 167 (1.6 x 1.4 x 0.8) Pl. L Fig. 23

A thumb-nail scraper on a thick flake of dark-brown quartzite. It has a thick oval upper surface which is steeply worked all around the periphery.

(v) Hollow scrapers.

KPR 2 (3.4 x 3.0 x 1.1) Pl. L Fig. 2

A hollow scraper on a thick flake of dark-grey cherty jasper. It has a prominent bulb; the platform has been subsequently worked. Upper face has two large flake scars. It is retouched along the left margin from the lower face.

BCR 197 (2.1 x 1.4 x 0.5) Pl. L Fig. 13

A hollow scraper on an irregular flake of dark-brown chert. Upper face is also a flake surface; steeply retouched along part of the right margin.

BCR 327 (2.2 x 1.9 x 0.8) Pl. L Fig. 14

A hollow scraper on an end-flake of dark-grey chert. It has a cortexed platform, and a diffused bulb. Upper face also has only one flake scar; steeply retouched along part of the left margin.

ENR 77 (4.0 x 3.2 x 0.9) Pl. L Fig. 19

A hollow scraper-cum-point on a Levallois-like flake of yellow or silicified wood chert; probably slightly patinated. Upper face also has only one
large flake scar; the bulbar side has been probably reworked. It has a retouched concave edge and a small point along the broader end. The implement could also be of Middle Palaeolithic culture.

(1) Steep Scrapers.

BWV 1 (4.5 x 3.1 x 2.5) Pl. L Fig. 17

A thick scraper on a flake of red and brown quartzite. It has a flat lower surface and a thick dome-shaped upper surface with a central keel to which flakes from all the sides converge; fully worked with a steep edge running all around the periphery. Because of its fine workmanship and symmetrical shape the implement can be said to be a text-book specimen.

(c) POINTS. (Pls. L- L Fig. 24)

(i) Simple Points.

This group includes those points which do not have a tang. They can be divided into two groups: (a) Unifacial, and (b) bifacial.

(a) Unifacial.

BCR 326 (2.4 x 1.1 x 0.6) Pl. L Fig. 24

A triangular point on a blade-like flake of cherty jasper. It has a narrow platform, and a diffused bulb. Upper face has a longitudinal central ridge on either side of which there are two flakes; retouched to a tip from both margins.

DEK 35 (2.5 x 0.8 x 0.4) Pl. L Fig. 26

An elongated, narrow point on a blade-flake of greenish jasper; no trace of the bulb and striking platform is left. The pointed tip is worked by very shallow retouch from both margins.
BCR 343 (2.1 x 1.0 x 0.4) Pl. L Fig. 20

A triangular point on a thin blade of red quartzite. On the right margin it is retouched from the upper face and on the left margin from the lower face.

(b) Bifacial points.

There are only three specimens of this type. It might be pointed out that they are worked from both faces along the margins only leaving the area in the centre unworked. Two of these are on rock crystal and in view of the brittleness of the raw material could have been made only by pressure technique.

SPG 26 (2.8 x 1.9 x 0.7) Pl. Ll Fig. 5

A triangular point on a cream-coloured chert flake. It is worked on the lower face by very shallow flaking; the fine conoidal bulb is left unworked and the striking platform has been subsequently trimmed away. Upper face first worked by primary flaking and then retouched along the margins.

PTL 4 (3.8 x 2.1 x 0.9) Pl. Lll Fig. 15

A long, thick point on a flat nodule of rock crystal. It is worked from both faces along both the margins leaving a narrow area of the original cortex; butt and tip fully worked. Lateral margins are sharp and the cross section is a hexagonal figure.

(ii) Tanged points. Tanged points are rare in Indian microlithic industries and indeed in Indian Stone Age as a whole. Their earliest appearance is in the Nevasian of Maharashtra. In this culture both single shouldered and double-shouldered points occur. In the Mesolithic industries genuine specimens of tanged points occur in Kurnool and one

specimen is illustrated by Seshadri from Mysore. Sporadic examples occur in the Chalcolithic cultures. One specimen occurs in the Chalcolithic culture of Nevasa.

In the present collection there are twelve specimens. They are all made on flakes. Six of these have well-made tangs and the rest only incipient ones. In the well-made specimens the tang is quite elongated and often double-shouldered.

**BCR 127** (2.2 x 1.8 x 0.6) Pl. **E1** Fig. 23

A small triangular point of green jasper. It has a central ridge on the upper face on either side of which there is one longitudinal flake. Worked by very shallow retouch from the upper face; small tang made by very shallow notches. The pointed tip is along the bulbar end.

**SPG 19** (4.1 x 2.5 x 0.7) Pl. **L11** Fig. 7

A long pointed on a side-flake of variegated quartzite. Upper also has only one flake scar; retouched along the total length of both margins. The tang is made by a deep notch on the left margin and tapering of the right margin to a point.

**BCR 64** (3.5 x 2.3 x 0.7) Pl. **L1** Fig. 14

A thick point on a flake of grey chert; slightly patinated. Upper face is fully cortexed; pointed tip is along the bulbar end. Fully retouched along the total length of both margins; tang is made by a short notch on the left margin and an abrupt tapering down of the right margin.

**SPG 21** (3.4 x 2.0 x 0.5) Pl. **L1** Fig. 7

A thin, elongated point greyish cherty-jasper. Lower surface is

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1. Seshadri, M. (1956) The Stone-Using Cultures of... Mysore. p.xv Fig. 4

2. Sankalia, et al. (1960) From History to Pre-history at Nevasa, p.67; Fig.66,18.
a clean flake surface; upper surface partly cortexed. Fully retouched along both margins; a short tang made by two shallow notches along both margins.

(d) BORERS. (Pls. L; L Fig. )

These have been made both on flakes and cores. Only thing that needs mention about them is that some of them are also retouched along one margin besides the tip and could be used as scrapers.

ECR 22o (2.5 x 1.5 x 0.9) Pl. L Fig. 27

A thick borer on a flake of dark-brown chert. The borer tip is made by a shallow notch along the right margin and steep retouch along both margins; the flake is also retouched along the thick right margin and the butt-end so that it can be used as an excellent side-and-end-scraper.

KPR 24 (2.6 x 1.4 x 0.9) Pl. L Fig. 8

A borer on a thick flake of dark-brown quartzite. It has a pointed butt and an elongated borer tip, which is retouched steeply along the two margins.

DEK 106 (3.5 x 2.4 x 1.0) Pl. L Fig. 3

A borer on a thick, broad flake of quartzite. It has a tiny borer tip retouched from both margins; there is no retouch along the rest of the margins.

KPR 4o (1.8 x 1.8 x 0.5) Pl. L Fig. 22

A borer on a thin flake of dark-brown quartzite. Lower face a clean flake surface; upper face is partly cortexed. Borer tip made by a shallow notch along the right margin; both margins retouched near the tip.
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Unfinished Types and Waste Products.

(a) Utilized Pieces. (Pls. L1; L11; Figs. )

Many flakes and some cores, and pieces of raw material have shallow and fragmentary indentation marks along one of their lateral margins. These marks do not appear to be due to deliberate retouch but seem to have been caused by use only.

CHG 2 ( 4.0 x 2.5 x 1.4 ) Pl. L11 Fig. 10

A thick flake core of grey chert. It has a short notch along the right margin which is slightly retouched due to use.

SPG 6 ( 2.7 x 1.1 x 0.5 ) Pl. L1 Fig. 12

A blade-like flake of chocolate-coloured chert. It has a thick left margin and a thin right margin; the latter bears use marks on both the faces.

DNR 2o5 ( 3.7 x 2.7 x 0.9 ) Pls. L11 Fig. 11

A thick flake of yellow chert; slightly patinated. It has a central ridge on the upper face on either side of which is one longitudinal scar; left margin bears fragmentary use marks.

(f) Unretouched Blades. (Pls. L; L11; Figs.)

These are thin, slender blades detached from fluted cores. Many of them have been broken because of their extreme thinness. A few of them show use marks along the margins.

MEP 167 ( 4.0 x 1.1 x 0.5 ) Pl. L11 Fig. 4

A long, narrow blade of chocolate-coloured chert. It has a narrow and platform, a tiny, conical bulb with a bulbar scar. Upper face has
a central ridge; on the left side of the ridge is a large scar and on the right are two smaller scars. Left margin has a sharp cutting-edge; right margin is thick. Section triangular.

**MDP 158** (2.6 x 0.7 x 0.3) Pl. L Fig. 19

A thin, narrow blade of pinkish quartzite. It has three longitudinal parallel scars on the upper face; margins sharp and section trapezoidal.

**MDP 169** (2.7 x 0.9 x 0.4) Pl. L Fig. 19

A narrow blade of chocolate-coloured chert. It has a narrow platform, a tiny bulb, and a bulbar scar. Upper face has a central rib; there are two long scars to the left of the ridge; on the right side are four small scars which are remnants of the flakes detached from a perpendicular to the central rib. Sharp margins and triangular section.

**MDR 384** (3.1 x 1.0 x 0.2) Pl. L Fig. 16

An extremely thin blade of yellowish chalcedony. It has a narrow platform, and a tiny bulb with a bulbar scar. Upper face has three long parallel flake scars; section plano-convex; margins very sharp.

**MDR 382** (2.9 x 1.0 x 0.4) Pl. L Fig. 15

A long blade of white chalcedony. Lower face has a plunging scar and the bulbar end is broken. Upper face has a medium rib; left half has two scars parallel to the rib and right side has two scars perpendicular to it. Margins very sharp and section triangular.

**MDR 385** (2.9 x 1.0 x 2.0) Pl. L Fig. 7

A long, thin blade of white chalcedony. It has a narrow platform
and a tiny bulb with a bulbar scar; slightly encrusted with lime and clay on the bulb. Upper face has three narrow parallel scars. The tip which was formerly pointed is broken; margins sharp and section plano-convex.

\[ SJT \, 47 \, ( \, 2.7 \times 1.6 \times 0.3 \, ) \, PI. \, L/1 \, Fig. \, 2 \]

An extremely narrow but broad blade of light brown chert. The bulbar end is broken; upper face has three parallel scars.

\[ (e) \, FLAKE \, CORES. \, ( \, PI. \, L/1 \, Figs. \, J) \]

They have all sorts of irregular shapes. Small flakes have been detached from them from all sides; some of these flakes have been fashioned into scrapers, borers etc. Such cores were probably converted into blade cores. From some of them one or two blades have been removed but generally speaking they may be regarded incomplete pieces.

\[ HRO \, 2 \, ( \, 4.7 \times 4.5 \times 2.3 \, ) \, PI. \, L/1 \, Fig. \, 16 \]

A small spherical core of pinkish cherty jasper. A number of small flakes have been taken from all sides.

\[ PUR \, 1 \, ( \, 4.2 \times 3.6 \times 1.9 \, ) \, PI. \, L/1 \, Fig. \, 15 \]

A roundish core of dark brown jasper or cherty jasper. On the upper face one large flake has been struck off on the right side and a number of smaller ones from the left side. From the lower face also one large and three smaller flakes have been taken.

\[ (h) \, BLADE \, CORES. \, ( \, PI. \, X/1 \, X-L/1 \, Figs. \, 9) \]

These are final residue of much bigger pieces from which several series of blades were taken off. Many of them measure less than two centimeters and were discarded when possibility of taking any further
blades from them was exhausted. There is evidence that the cores were rejuvenated to produce a new platform when the previous platform had become unsuitable. Majority of them have faceted platforms and only some have dished type. In some specimens blades have been taken off from platforms opposite each other. They are classified into three groups after Barnes,

(i) **Flat-based Cores.**

**DEK 124 (2.7 x 1.4 x 1.2)**  
Pl. Fig. 1

A small fluted core of brown jasper. It has a faceted platform from which at least eight blades have been detached in the last round; section plano-convex.

**BCR 52 (1.4 x 1.1)**  
Pl. Fig. 15

A tiny fluted core of light-brown chert. It has faceted platforms at both the ends; blades have been detached from both the platforms. It has a circular cross-section so that breadth and thickness are the same.

**DNR 125 (4.6 x 3.5)**  
Pl. Fig. 11

A thick core of dull white chert. It has broad faceted platforms at both ends. One platform is rough but the other is smooth but both are uneven. Blades have been detached from both the platforms. Scars of at least a dozen blades are present; besides there is evidence of several unsuccessful attempts. In some of these scars negative bulbs are quite deep; section circular.

---

1. **Barnes, A.S. (1947) "The Technique of Blade Production in Mesolithic and Neolithic Times."**  
P.P.S. Vol. XIII. P. 105.
(ii) **Pointed-based.**

**BCR 35** (2.3 x 1.3 x 1.3) Pl. L Fig. 11

A pointed core of dark-grey chert. It has a dished platform; scars of five blades converge to a point. Opposite face has a central rib; several unsuccessful attempts were made to detach blades from this side.

**DEK 118** (2.7 x 1.7 x 0.8) Pl. L Fig. 12

A thin fluted core of dark-blue cherty jasper. It has a smooth platform worked by removing a number of tiny chips. Lower face is a flake surface and is slightly concave; no blades have been detached from this face. From the upper face at least eight blades have been taken off; section is plano-convex.

**DNR 132** (6.7 x 3.5 x 2.3) Pl. L Fig. 5

A large fluted core of bluish chalcedony. It has a faceted but rough and irregular platform. From one face a number of blades were struck off but many of them could not proceed beyond half the length of the core due to the faulty nature of the raw material; the lower face is cortexed and uneven and no blades could be taken off from it. The large size of the specimen is due to the availability of big nodules of raw materials in Western Rajputana.

(iii) **Chisel-ended.**

**BCR 2** (2.6 x 2.0 x 1.5) Pl. L Fig. 6

A chisel-ended core of grey chert. It has a rough faceted platform; upper face has one large shallow scar and three narrow blade scars; opposite face is rough and cortexed except a sloping
scar at the lower end which gives it a chisel-edge shape.

SJT 18 ( 3.2 x 2.6 x 1.6 ) Pl.*xi X; MK. L//. Figs. 16 j 20

A small, broad core of light black coloured flint. It has a rough faceted platform; on the upper face the scars of at least ten blades are present. The opposite face is rough and partly cortexed; the striking platform along this face is also cortexed; a big sloping scar on this face produces a fine chisel-edge. This core looks an exact replica of another chisel-ended core from the Narmada valley illustrated by Barnes.

(i) OBLIQUELY TRUNCATED PIECES. (Pl. L// Figs. )

A number of flakes and some cores in the present collection have a chisel-like edge along their distal end produced by the intersection of two oblique flake scars, one from either side. There is no retouch on these pieces. It is difficult to say whether this peculiar feature of these pieces is due to accidental snapping or made by deliberate blows. The specimens appear to be very similar to oblique-ended blades illustrated by Grahmann from Leipzig sites.

DNR 99 ( 2.7 x 3.2 x 0.3 ) Pl. L// Fig. 9

An extremely thin pointed flake of yellow-white chalcedony. Lower face has a diffused bulb but otherwise both faces are remarkably flat; a strong chisel-edge is produced by the intersection of two oblique scars; no retouch.

1. Barnes, A.S. op. cit. Fig. 2, No. 18.

2. Grahmann, R. (1955) The Lower Palaeolithic Site of Markkleeberg and Other Comparable Localities near Leipzig. Pl. 48. Fig. 11,12.
A thick, oval flake of yellow chert. Lower face has a prominent bulb of percussion occupying most of the flake scar; it has been partly worked subsequently. Upper face has one large and two small scars. Two oblique scars along the right margin and one along the left produce a pointed sharp tip. Almost no retouch; tiny patches of cortex remain.

An elongated flake of yellow-brown chalcedony. Lower face is a clean flake surface; upper face has two big scars. Two oblique scars, one each from right and left margins, produce a pointed end.

Other categories of artefacts are primary flakes, some unclassified pieces, and chips including rejuvenating flakes.

A long, narrow tranchet type rejuvenating flake of grey-white chert. It has a longitudinal median ridge and a triangular cross-section; along the right side of the ridge are two long, narrow flakes and along the left side are a number of tiny chips detached perpendicular to the ridge; the bulb is along the broader end.

Another elongated, narrow rejuvenating flake similar to SJT 68. This too has a median ridge. On the left side of the ridge are three narrow longitudinal scars; right side retains original cortex. The ridge is worked from both sides for one third of its length along the pointed end. On the lower face left margin appears to be purposely retouched.
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**TABLE XII**

INVENTORY OF UNFINISHED TYPES AND WASTE PRODUCTS.
| Artifacts | JMB | EBN | BCR | GRH | DEK | IRO | MDK | KPR | CHG | SPG | MDP | MRP | PUR | PTL | DNR | SJT | TOTAL |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| Scrapers  | 4   | 1   | 23  | 13  | 1   | 3   | 12  | 1   | 7   | 3   | 9   | 1   | 78  |     |     |     |       |
| Retouched Blades | 1   | 3   | 3   | 1   | 8   |     |     |     |     |     |     |     |     |     |     |     |       |
| Points    | 1   | 8   | 6   | 5   | 3   | 2   | 25  |     |     |     |     |     |     |     |     |     |       |
| Borer     | 4   | 3   | 2   | 1   | 6   |     |     |     |     |     |     |     |     |     |     |     |       |
| Utilized Pieces | 2   | 1   | 32  | 17  | 1   | 4   | 1   | 7   | 4   | 1   | 10  | 1   | 91  |     |     |     |       |
| Unretouched Blades | 7   | 13  | 29  | 3   | 52  |     |     |     |     |     |     |     |     |     |     |     |       |
| Obliquely truncated pieces | 3   | 2   | 2   | 11  | 18  |     |     |     |     |     |     |     |     |     |     |     |       |
| Beads     | 1   | 1   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |       |
| Blade cores | 54  | 1   | 26  | 1   | 4   | 1   | 5   | 7   | 7   | 3   | 31  | 2   | 142 |     |     |     |       |
| Flake cores | 1   | 29  | 1   | 1   | 9   | 2   | 13  | 3   | 3   | 5   | 41  | 7   | 115 |     |     |     |       |
| Primary Flakes | 1   | 35  | 7   | 1   | 2   | 13  | 2   | 1   | 19  | 8   | 91  |     | 3.3%|     |     |     |       |
| Chips     | 1   | 150 | 8   | 47  | 36  | 33  | 137 | 15  | 5   | 110 | 19  | 561 |     |     |     |     |       |
| Unclassified Pieces | 34  | 1   | 1   | 1   | 2   | 2   | 13  | 4   | 59  |     |     |     |     |     |     |     |       |
| TOTAL     | 9   | 3   | 379 | 11  | 122 | 2   | 3   | 61  | 2   | 68  | 190 | 41  | 9    | 16  | 278 | 46  | 1240  |

|      | 0.7% | 0.24%| 0.56%| 9.5% | 0.84%| 0.16%| 15.3%| 0.72%| 22.41%| 99.95%|
An unfinished bead of yellowish chalcedony. It is barrel-shaped and fresh. The specimen bears numerous fluted scars on the surface which show that the specimen had not been fully finished. The sides are truncated, and along one side there is an attempt to make the perforation which, however, could not be carried out.

A collection of seven hundred and thirty six tools from fourteen sites made by the Exploration Branch of the Department of Archaeology Government of India was also studied at Delhi. The conclusions arrived at from the study of my collection are supported by the additional information provided by these artifacts. There is little difference in raw material or technique between my collection and this one. The commonest materials are chert, cherty jasper and quartzite. Quartz, rock crystal and chalcedony occur less frequently. The artifacts from Bharni are stained red like those from Mandpia. Another common feature between these two sites is the presence of long flakes and blades in the artifacts. One point that may be mentioned here is that though it has been stated by the collectors of these artifacts that crested guiding ridge is very common at several of the sites, I could not find any genuine specimen of a crested guiding ridge technique in the collection available to me for study. The typology of the artifacts from these sites is given in table XV on the following page. The percentages of various tool types are not given as there is a possibility that the collection studied by me was not the complete collection made in the field. For the explanation of site names see chapter III pp. 40–42.

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1-5. Side scrapers. 6-7. End scrapers. 9. Side and end scraper.
pointed fluted cores. 15. Flat-based fluted core. 20. 24. Unifacial points.