CHAPTER V
MESOLITHIC SITES

Since the discovery of the first Mesolithic site by A.C.L. Carlleyle as early as in 1867-68 in the rock shelters of the Kaimur range in Uttar Pradesh and Madhya Pradesh (Brown, 1889), much work has been carried out by foreign and Indian Archaeologists resulting in the discovery of numerous Mesolithic sites scattered all over India. Some of the important sites are Pachmarhi (Hunter, 1935-37), Kandivli and Jalalahalli (Gordon, 1938), Langhnaj (Sankalia, 1946), Sanganakallu (Subba Rao, 1948), Teri sites (Zuener, 1956), Amrapur (Subba Rao, 1952), Nagarjunakonda (IAR, 1954-60), Kibbanahalli (Seshadri, 1956), Birlhanpur (Lal, 1958), Kuchai (IAR, 1961-62), Morhana pahar (Sharma, 1965), Devnimori (Malik, 1966), sites in the Chittoor district (Murthy, 1970), Bagor (Misra, 1973), Pachad (Joshi & Bopardikar, 1972), Sarai-Nahar-Rai (Sharma, 1973), Patne (Sali, 1975), Bhimbetka (Wakankar, 1976), Adamgarh (Joshi, 1978) and Chopani-Mando (Sharma, 1980).

Sites reported from Shorapur doab (Paddayya, 1970), Upper Krishna basin (Pappu, 1974), South-western Orissa (Tripathi, 1972), Indravati valley (Nanda, 1985), Karanja and Manjra valleys in Bidar district (Shadaksharaiah, 1984), Mallampuzha basin in north-Kerala (Rajendran, 1985) and from Bangalore and Chitradurga districts in Karnataka (IAR, 1975) are also noteworthy. Excavations in a few sites, viz., Langhnaj, Birlhanpur, Bagor, Sarai-Nahar-Rai, Bhimbetka and Adamgarh have revealed striking facts about the people, their food habits, pattern of settlement, pottery and burial practices. Rock shelters in many regions of the country occupied by Mesolithic people are decorated with paintings which tell about the cultural, social and economic aspects of the Mesolithic phase.

Though occurrence of Mesolithic sites were reported as early in 1939 in Karnataka, systematic study of the assemblage was started from 1956 onwards by Seshadri and others. Microliths found in the
Brahmagiri excavations (Wheeler, 1948) were also of not much help to fix a firm stratigraphical horizon of this phase. However, the excavations at Sanganakallu (Sankalia, 1969) indicated the relative chronological horizon of this culture in Karnataka. But excepting tools and their types, no other aspect of the life could be known. Two types of Mesolithic sites were encountered in the earlier explorations. They are (1) sites without pottery and other kinds of cultural relics as for example, Kibbanahalli and Jalahalli; and (2) sites with Neolithic or Chalcolithic pottery, Neoliths, etc., as for example, Brahmagiri, Sanganakallu, Maski, etc. In the case of the latter, it is clearly indicated that the Macroliths constituted a part of the lithic tool kit of the Neolithic or Chalcolithic culture and certainly did not represent a separate Mesolithic cultural stage. Hence, study of the Macroliths of this cultural complex would not help in any way in understanding the life of the Mesolithic people. Thus, a few other sites such as Kibbanahalli and Jalahalli alone had to be reviewed time and again for understanding the Mesolithic phase in the Karnataka region. But these sites are not excavated and hence, neither their relative chronology nor their cultural aspect could be ascertained. It is only logically said that these sites might be earlier than the Microliths yielding sites of the type found in Brahmagiri, etc. It is in this context, the excavations at Sanganakallu has been a little more encouraging and valuable. At least the relative chronological horizon could be convincingly established.

So far, 45 Mesolithic sites have been noticed during the survey of various river valleys in the region under study as detailed below.

<table>
<thead>
<tr>
<th>River valley</th>
<th>Total no. of sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Upper Tungabhadra</td>
<td>22</td>
</tr>
<tr>
<td>2. Bhadra valley</td>
<td>6</td>
</tr>
<tr>
<td>3. Tunga valley</td>
<td>9</td>
</tr>
<tr>
<td>4. Hemavati valley</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>45</td>
</tr>
</tbody>
</table>

... 305
These sites are found in different geographical situations, namely:

1. Sites situated in the gravel patches, 3-4 Kms away from the river bank.

2. Sites situated on the terraces of granite outcrops and on the hillocks overlooking the river.

3. Sites situated right on the river bank.

4. Microliths found in the habitation sites yielding Neolithic and Megalithic cultural materials.

While sites of the first three categories are found in the Upper Tungabhadra, the sites of the first two in the Bhadra, of the last two in the Tunga and of the last in the Hemavati valley are found. This point also seems to be noteworthy as it may imply not only the ecological aspect but also the development in the mode of life and increase in the population. The fourth group apparently found in a different situation than the other three groups would be discussed independently. The above sites are dealt with separately for, the people of these sites seem to have preferred particular geographical localities. Whether this observation is correct can be verified by further study of the lithic tools in all their aspects.

MESOLITHIC: I CATEGORY SITES

THE UPPER TUNGABHADRA VALLEY

Among the Mesolithic sites in the Upper Tungabhadra five sites, viz., Holeharlahalli, Konaikanahalli, Honnali, Harlehalli and Hanagavadi belong to the first category. As already mentioned, these sites are situated 3-4 Kms away from the river bank usually located on a slightly elevated gravel patches measuring 80-90 m in circumference and are composed of small to medium size brown skinned pebbles and loose granular sand. The original geo-setting of these sites have been
visibly altered due to heavy and constant agricultural activity over a long period of time. Occurrence of large number of waste flakes, broken pebbles, unfinished nodules and few finished tools indicate that these were factory sites. Waste flakes and tools do not exhibit weathering action and few tools show usage marks. It is interesting to note that except for the difference noticed in the raw material, a few types such as points, scrapers and discoids are typo-technologically similar to the types from the preceding Middle Palaeolithic culture.

**Rock material:** Quartz pebbles, varying in dimension from small to medium size, abundantly available in the gravel patches in these sites have been used for fashioning artefacts. Pinkish white and grey colours are common.

**Environment:** These sites fall in the maidan belt of the region dotted with semi-deciduous forest and scrub jungles. Soil colour is reddish in the gravel patches and the surrounding area accommodates brownish soil but devoid of gravel. Most of these sites are near the depressions of folding landscape. Seasonal ponds attracting small animals seem to have been ideal locale for both hunting and for manufacturing tools. The occurrence of gravel patches in these sites may be part of the river terrace. These observations need further study.

**Settlement pattern:** Whether these people had developed the art of building their dwellings can be known through excavations. The surface evidences do not indicate anything positively in this respect.

The five sites located in the Tungabhadra valley in relation to the distribution pattern of the Lower Palaeolithic sites are found close to one another over a distance of 20 Kms. The distance between two sites being 4-5 Kms on an average. Consequently, they are found in a part of the valley under study. It should be noted here that these microliths are found in gravel patches. Such gravel patches are not traced beyond the area within the sites. Thus, the mode of occurrence of the site appears to be significant.
Typology: Totally, 260 artefacts were picked from the surface and the sitewise distribution of artefacts is as follows:

Table No. 60

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the site</th>
<th>Total No. of artefacts</th>
<th>Total percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hole Arlehalli</td>
<td>74</td>
<td>28.46%</td>
</tr>
<tr>
<td>2</td>
<td>Konaikanahalli</td>
<td>53</td>
<td>20.38%</td>
</tr>
<tr>
<td>3</td>
<td>Honnalli</td>
<td>54</td>
<td>20.76%</td>
</tr>
<tr>
<td>4</td>
<td>Harlehalli</td>
<td>21</td>
<td>8.10%</td>
</tr>
<tr>
<td>5</td>
<td>Hanagavadi</td>
<td>58</td>
<td>22.30%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>260</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Sitewise typological distribution of artefacts of first category from Upper Tungabhadra is given in the table below.

Table No. 61

Common tool types of 1st category - Upper Tungabhadra

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tools</th>
<th>Hole - Arlehalli</th>
<th>Konaikanahalli</th>
<th>Honnalli</th>
<th>Harlehalli</th>
<th>Hanagavadi</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hollow scraper</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>Side scraper (single)</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>11</td>
<td>27</td>
</tr>
<tr>
<td>3</td>
<td>Side scraper (double)</td>
<td>11</td>
<td>-</td>
<td>7</td>
<td>3</td>
<td>3</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>Side end scraper</td>
<td>4</td>
<td>9</td>
<td>-</td>
<td>8</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>End scraper</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>Cortexed scraper</td>
<td>-</td>
<td>3</td>
<td>4</td>
<td>-</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>7</td>
<td>Thumb nail scraper</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Round scraper</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

... 308
<p>| | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>Core scraper</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>'D' type scraper</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>11</td>
<td>Borer</td>
<td>3</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>12</td>
<td>Awl</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>13</td>
<td>Discoid</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>14</td>
<td>Burin</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>15</td>
<td>Harpoon</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>Scraper cum point</td>
<td>4</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>17</td>
<td>Assymetric point</td>
<td>4</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>18</td>
<td>Symmetrical point</td>
<td>6</td>
<td>6</td>
<td>9</td>
<td>-</td>
<td>5</td>
<td>26</td>
</tr>
<tr>
<td>19</td>
<td>Tanged point</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>20</td>
<td>Double sided point</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>21</td>
<td>Core point</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>22</td>
<td>Core</td>
<td>9</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>24</td>
</tr>
</tbody>
</table>

### Blades

|   |   |   |   |   |
|---|---|---|---|
| 23 | Retouched blade | 8 | - | 2 |
| 24 | Unretouched blade | - | 5 | 2* |
| 25 | Backed blade | 2 | 3 | 2 |
| 26 | Points on blades | 8 | 3 | 4 |

*Single side .. 7
*Double side .. 2

A cursory glance at the table indicates two main groups, namely, flake and blade groups, accounting for 66.52% and 33.48% respectively. Varieties of scrapers and points dominate the flake group while the blade group is dominated by unretouched blades. Other noteworthy tool types include borer, awl and discoids. Fluted cores also form a major chunk of the collection.
Flake group: As already mentioned, scrapers dominate this group followed by points. The main features of both the groups and their sub-types are described below.

Scraper: scrapers form 42.68% of the flake group collection. Artefacts are made on thick flakes of varying forms invariably thick at the centre. A small percentage (3.01%) of scrapers made on cores are also available in the collection. Shallow flaking on both the surfaces and cortex retained in some on the dorsal side. Retouching is done along the working margin either on one side or on both the sides. Size of scrapers vary from site to site. Scrapers have been classified on the basis of forms and described below sub-type wise.

Side scraper: This category comprises of artefacts with working on one or both the sides accounting for 19.63% of the total collection. These are made on thick amorphous flakes. Double sided scrapers are worked on both the margins and invariably have two or more faceted platforms. Secondary retouch of the margin is limited to few specimens and in few alternate flaking is prominent. In single sided scrapers, left margin is retouched while the right lateral side is slightly curved/blunted by removing shallow flakes probably to accommodate firm grip while in use. Faceted platforms are also visible. Specimens of both the groups are thick at the centre. Cortexed upper surface is retained in couple of them. Bulb of percussion is found nipped in most of the specimens.
Metrical analysis of scrapers

(a) Length range:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Measurement range</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10 mm to 20 mm</td>
<td>3</td>
<td>6%</td>
</tr>
<tr>
<td>2</td>
<td>20 mm to 30 mm</td>
<td>22</td>
<td>44%</td>
</tr>
<tr>
<td>3</td>
<td>30 mm to 40 mm</td>
<td>12</td>
<td>24%</td>
</tr>
<tr>
<td>4</td>
<td>40 mm to 50 mm</td>
<td>11</td>
<td>22%</td>
</tr>
<tr>
<td>5</td>
<td>50 mm to 60 mm</td>
<td>2</td>
<td>4%</td>
</tr>
</tbody>
</table>

(b) Breadth range:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Measurement range</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10 mm to 20 mm</td>
<td>12</td>
<td>24%</td>
</tr>
<tr>
<td>2</td>
<td>20 mm to 30 mm</td>
<td>27</td>
<td>54%</td>
</tr>
<tr>
<td>3</td>
<td>30 mm to 40 mm</td>
<td>8</td>
<td>16%</td>
</tr>
<tr>
<td>4</td>
<td>40 mm to 50 mm</td>
<td>3</td>
<td>6%</td>
</tr>
</tbody>
</table>

(c) Thickness range

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Measurement range</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 mm to 10 mm</td>
<td>16</td>
<td>32%</td>
</tr>
<tr>
<td>2</td>
<td>10 mm to 20 mm</td>
<td>30</td>
<td>60%</td>
</tr>
<tr>
<td>3</td>
<td>20 mm to 30 mm</td>
<td>4</td>
<td>8%</td>
</tr>
</tbody>
</table>

Lengthwise, scrapers belong to five groups and vary between 10 mm to 60 mm. The maximum and minimum length measure 55 mm and 19 mm respectively. Specimens ranging between 20 mm to 30 mm dominate and account for 44% of the total collection in this category.

Breadthwise, scrapers belong to four groups and range between 10 mm and 50 mm. Specimens ranging between 20 mm and 30 mm is the most dominating with 54% followed by the group ranging between 10 mm to 20 mm respectively.
Thicknesswise, some uniformity is observed in the specimens. The measurement vary between 1 mm and 30 mm and the group ranging between 10–20 mm shows high frequency of 60% followed by specimens ranging between 1 mm and 10 mm accounting for 32% of the total collection in this category.

**Side end scraper:** Side end scrapers made on thick flakes form 6.16% of the total collection. These are roughly 'U' shaped with working edge on both the shorter sides as well as the distal end. Shallow flake scars are visible on both the surfaces. Rough and thin working end achieved by alternate flaking exhibits limited retouching. Straight end, thick at the bottom with one of the specimens exhibiting flat surface on the dorsal side is probably to accommodate firm hold at the time of working. Steep flaking towards upper end also gives it the appearance of crude transverse arrow head. Since these shapes are unusual, these have not been included in the side scraper group.

### Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10 mm to 20 mm</td>
<td>2</td>
<td>12.50%</td>
<td>10 mm to 20 mm</td>
<td>1</td>
<td>12.50%</td>
<td>1 mm to 10 mm</td>
<td>2</td>
<td>12.50%</td>
</tr>
<tr>
<td>2</td>
<td>20 mm to 30 mm</td>
<td>1</td>
<td>6.25%</td>
<td>20 mm to 30 mm</td>
<td>10</td>
<td>62.50%</td>
<td>10 mm to 20 mm</td>
<td>12</td>
<td>75.00%</td>
</tr>
<tr>
<td>3</td>
<td>30 mm to 40 mm</td>
<td>9</td>
<td>56.25%</td>
<td>30 mm to 40 mm</td>
<td>4</td>
<td>25.00%</td>
<td>20 mm to 30 mm</td>
<td>2</td>
<td>12.30%</td>
</tr>
<tr>
<td>4</td>
<td>40 mm to 50 mm &amp; above</td>
<td>4</td>
<td>25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The length of the side end scraper may vary between 10 mm and 60 mm, the maximum and minimum length being 57 mm and 18 mm respectively. 56.25% specimens fall between 30 to 40 mm, while 25% of them range...
between 40 to 50 mm. Breadthwise, specimens ranging between 20 mm to 30 mm account for 62.50% while those between 30 to 40 mm range account for 25%. Thickness of specimens vary between 9 mm to 22 mm. Those ranging between 10-20 mm show a high frequency of 75%.

Hallow scraper: This category is represented by only six specimens and constitutes 2.31% of the total collection. These are made on elongated thick flakes. One specimen made on a thin flake is also noteworthy. All have prominent medial ridge. Retouched working edges are noticed on the left lateral margin in four artefacts while the remaining two have it on the right lateral margin.

Metrical analysis: The smallest of the specimens measures 15x16x7 mm while the biggest one measures 53x23x14 mm. Lengthwise, the specimens range between 15 mm and 53 mm of which 33.3% of the specimens range between 40 mm and 50 mm and above. Breadthwise, they range between 16 mm and 33 mm of which 6.6% range between 20 mm and 30 mm. Thicknesswise, artefacts ranging between 10 mm and 20 mm account for 62.5%.

Round scraper: The lone specimen of this group account for 0.38% of the total collection. Shallow flake scars on both the surfaces and irregular working end alround. The maximum length, breadth and thickness measure 55 mm, 49 mm and 23 mm respectively.

End scraper: End scrapers constitute 1.54% of the total collection. These are made on thick flakes. Flaked and convex shorter sides are used as working end. On an average, lengthwise, these measure between 24 mm and 33 mm and thicknesswise, these measure between 12 mm and 21 mm.

Thumb nail scraper: One specimen of this type is available in the collection accounting for 0.38% of the total collection. Steep flaking is noticeable on one side to achieve working end. The working edge is slightly retouched. The flat surface on one side is deliberately
achieved for thumb use. The maximum length, breadth and thickness measure 33 mm, 26 mm and 16 mm respectively.

**Semi-circular scraper:** This group comprises of three specimens forming 1.16% of the total collection. These specimens have close similarity to the side scrapers. The straight working edge is poorly fashioned and devoid of retouch. The curved non-working edge is poorly fashioned and devoid of retouch. The curved non-working side gives the appearance of 'D' shape.

**Cortexed side scraper:** This group forms 3.47% of the total collection. Typologically, this should be discussed under side scraper group. As the name denotes, cortex is retained on one side and the detached surface below is plain. Secondary retouch is done in small patches along the working end on one side. There is no uniformity in shape.

**Metrical analysis:** Length of cortexed side scrapers vary between 18 mm and 46 mm. The most dominating group of specimens ranging between 30 mm and 40 mm accounting for 44.4% while those ranging between 20 mm and 30 mm account for 33.3%.

The minimum and maximum breadth of the specimens are 15 mm and 33 mm respectively. Specimens ranging between 10 mm and 20 mm account for 44.4% closely followed by specimens ranging between 20 mm and 30 mm which account for 33.3%.

Specimens ranging between 10 mm and 20 mm in thickness account for 88.8%.

**Core scraper:** These constitute 3.01% of the total collection. Generally irregular in shape. Zigzag working edge due to employment of alternate flaking. Elongated fluting scars are noticeable. Cortex is retained in one of the specimens.
**Metrical analysis:** Minimum and maximum length of core scrapers measure 21 mm and 35 mm respectively. Specimens ranging between 20 mm and 30 mm account for 62.5% while those ranging between 30 mm and 40 mm account for 37.5%.

Breadthwise, specimens ranging between 20 mm and 30 mm account for 75% and those ranging between 30 mm and 40 mm account for 25%. Maximum and minimum breadth of specimens measure 32 and 21 mm respectively. Thicknesswise, specimens ranging between 10 mm and 20 mm account for 62.5%.

**Point:** Points with different shapes account for 18.8% of the total collection. These are made on flakes detached from pebbles of small to medium size. Symmetrical and tanged points are made on thick flakes, whereas assymetrical points are made on thin flakes. Cortex is retained near the base in a few symmetrical points and are bifacially worked. These appear like arrow heads. Points are attained by removing flakes obliquely in asymmetric group. A small percentage of points are made on cores. Sub types, their features and analysis are discussed below.

**Symmetrical point:** These are triangular or leaf shaped made on quartz and account for 55.1% of the total collection of point group. These are bifacially worked and fabricated on flakes, usually thick at the centre. In some specimens, base is flat. Cortex is retained at the base in a few points. Pointed tip is attained either by producing notch on both sides or by removing flakes obliquely from both the sides near the top. Secondary retouch of the margins is noticeable. Thick in section, broad and short on plan. This is a rare variety and noteworthy. In fact, these specimens in their shape, workmanship, etc., have close similarity to the bifacial point group of the Teri sites (Zeuner, 1949) in Tirunelveli district of Tamilnadu.
Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20-30 mm</td>
<td>3</td>
<td>12%</td>
<td>10-20 mm</td>
<td>1</td>
<td>4%</td>
<td>1-10 mm</td>
<td>2</td>
<td>8%</td>
</tr>
<tr>
<td>2</td>
<td>30-40 mm</td>
<td>20</td>
<td>80%</td>
<td>20-30 mm</td>
<td>16</td>
<td>64%</td>
<td>10-20 mm</td>
<td>23</td>
<td>92%</td>
</tr>
<tr>
<td>3</td>
<td>40-50 mm</td>
<td>2</td>
<td>8%</td>
<td>30-40 mm</td>
<td>8</td>
<td>32%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maximun and minimum length of the specimens measure 44 mm and 25 mm respectively. Specimens ranging between 30 mm and 44 mm show high frequency of 80%.

Breadthwise, specimens ranging between 20 mm and 30 mm account for 64% while those ranging between 30 mm and 40 mm account for 32%. The maximum and minimum breadth measure 38 mm and 14 mm respectively.

Thicknesswise, there seems to be uniformity as 92% of the specimens range between 10 mm and 20 mm.

Assymmetric point: These are made on irregular flakes, thin in section and account for 5.39% of the total collection. The margins are not symmetric and the point is achieved by trimming the tip or by removing a flake obliquely near the distal end.

Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>1</td>
<td>7%</td>
<td>10-20 mm</td>
<td>7</td>
<td>50%</td>
<td>1-10 mm</td>
<td>8</td>
<td>57.2%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>10</td>
<td>71.4%</td>
<td>20-30 mm</td>
<td>7</td>
<td>50%</td>
<td>10-20 mm</td>
<td>6</td>
<td>42.8%</td>
</tr>
<tr>
<td>3</td>
<td>30-40 mm</td>
<td>4</td>
<td>21.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of assymmetric point vary between 16 mm and 40 mm. Specimens ranging between 20 mm and 30 mm account for 71.4% followed by specimens ranging between 30 mm and 40 mm with 21.4%.
Thicknesswise, specimens ranging between 1 to 10 mm show high frequency with 57.2% closely followed by specimens ranging between 10-20 mm with 42.8%.

**Tanged point**: These account for 1.16% of the total collection. There are in all three specimens made on thick flakes. Konaikanahalli specimen has a pronounced tang while the remaining two specimens have incipient tangs. Crude workmanship is probably due to the use of quartz. Usually, the dorsal side has central ridge and the tang is produced by two deep notches on either side of margins near the base. Pronounced tang in one of the specimens is a clear indication of use of hafting.

Apparently, these are heavy and have no similarity in measurements. Since the specimens are limited maximum measurements of these have been given.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Site</th>
<th>Length</th>
<th>Breadth</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Konaikanahalli</td>
<td>74 mm</td>
<td>43 mm</td>
<td>37 mm</td>
</tr>
<tr>
<td>2</td>
<td>Hole Arlehalli</td>
<td>46 mm</td>
<td>32 mm</td>
<td>20 mm</td>
</tr>
<tr>
<td>3</td>
<td>Hanagavadi</td>
<td>49 mm</td>
<td>34 mm</td>
<td>22 mm</td>
</tr>
</tbody>
</table>

**Double sided point**: These are made on thin flakes having working points at both the ends achieved by removing flakes obliquely from the side margins near the ends. Retouching is absent. These constitute 1.16% of the total collection. Average length, breadth and thickness of specimens measure 48 mm, 20 mm and 12 mm respectively.

**Core points**: These account for 1.16% of the total collection. Cylindrical cores have been used to attain desired point by working the margins. Actual use can not be ascertained. In one specimen, cortex is retained. Fluted scars are prominent in the remaining specimens. Tip is slightly curved and the base is flat. Maximum length, breadth and thickness measure 42 mm, 42 mm and 21 mm respectively.
Serrated point: It is an interesting specimen in the collection and account for 0.38% of the total collection. It is made on a thick flake with two deep notches producing serrated points, on one side of the margins. The other margin is straight and slightly curved near the top apparently, the tool appears like a harpoon. It is made on quartz and measures 37 mm x 20 mm x 12 mm.

Borer: These are made on thick flakes of quartz and account for 2.70% of the total collection. The working point is achieved by producing notches at the distal end or in the middle of the side margins and then, the point is slightly retouched. In one specimen, portion of a pebble core is used. Specimens are pressure flaked all over.

Metrical analysis: Maximum and minimum length of specimens measure 64 mm and 22 mm respectively. Specimens ranging between 40 mm and 50 mm are dominating with 42.8%.

Breadthwise, specimens belonging to 20 mm and 30 mm show high frequency with 85.7%. The breadth of specimens vary between 18 mm and 32 mm.

Thicknesswise, specimens between 10 mm and 20 mm range account for 71.4% and they vary between 9 mm and 25 mm respectively.

Scraper-cum-point: These are made on both thick and thin irregular flakes of quartz and account for 2.70% of the total collection. Working end is achieved by producing notch on either side and by removing flakes at oblique angle. Margins are retained. In one specimen, cortex is retained on dorsal side. Another specimen is cylindrical in shape and concave at the middle.

Metrical analysis: Length of specimens vary between 31 mm and 58 mm. Those ranging between 40 mm and 60 mm show high frequency of 57%.

Maximum and minimum breadth of specimens measure 54 mm and 18 mm respectively. Specimens ranging between 10 mm and 30 mm show frequency with 57%.
Thickness of specimens range between 8 mm and 20 mm. 85.7% of the specimens fall between the range of 10 mm and 20 mm.

**Discoid:** These are oval or round shaped, made on thick flakes of quartz and account for 1.93% of the total collection. Shallow step flake scars on the upper surface is prominent. Working edges are thin and zigzag. Although actual use is not known, they might have been used for scraping. Maximum and minimum length, breadth and thickness are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Breadth</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum</td>
<td>60 mm</td>
<td>53 mm</td>
<td>34 mm</td>
</tr>
<tr>
<td>Minimum</td>
<td>42 mm</td>
<td>31 mm</td>
<td>18 mm</td>
</tr>
</tbody>
</table>

**Burin:** Two specimens made on quartz have been collected one each from Hole Arlehalli and Hanagavadi. One is made on a flake and the other on a fluted core. Burin facet is achieved by striking a blow at the ventral side along the left margin. The average length, breadth and thickness measure 24 mm, 11 mm and 10 mm respectively.

**Awl:** The lone specimen made on milky quartz is from Konaikanahalli. It is made on a thick flake. Working end is achieved at the middle of the left margin by producing two shallow notches. The maximum length, breadth and thickness measure 30 mm, 21 mm and 18 mm respectively.

**Blade group:** Blades or bladish flakes have been used for various purposes in the Mesolithic period and they constitute one of the important groups. Artefacts of this group in the present collection account for 24.2% of the total collection. Depending on the shape and retouch done, these have been classified into four groups. A cursory glance at these specimens indicates that short and broad blades dominate the collection. This is mainly due to the use of quartz as raw material. Pressure technique and soft hammer technique have been employed to detach blades and to attain working ends. Totally, 63 specimens picked up from five sites have been classified under different groups and discussed separately.
Retouched blade: These constitute 25.39% of the blade group collection. These blades made on quartz might have been used independently or as composite tools to cut organic materials. The blades show marks of retouch on one or both the margins. A few are parallel sided. The usage marks are difficult to distinguish. Majority of specimens are irregular, short and broad.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>7</td>
<td>43.75%</td>
<td>10-20 mm</td>
<td>14</td>
<td>87.50%</td>
<td>1-10 mm</td>
<td>12</td>
<td>75%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>6</td>
<td>37.50%</td>
<td>20-30 mm</td>
<td>2</td>
<td>12.50%</td>
<td>10-20 mm</td>
<td>4</td>
<td>25%</td>
</tr>
<tr>
<td>3</td>
<td>30-40 mm</td>
<td>3</td>
<td>18.75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>100%</td>
<td>16</td>
<td>100%</td>
<td>16</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of specimens vary from 14 mm to 35 mm. Those ranging between 10 mm and 20 mm show high frequency with 43.75%. Breadthwise, specimens ranging between 10 mm and 14 mm account for 87.50%. Thicknesswise, specimens ranging between 1 to 10 mm account for 75%.

Unretouched blade: These simple blades made on quartz are devoid of use marks and account for 30.15% of the blade group collection. These are small and medium sized having prominent medial ridge on the dorsal side. Numerous flutings are noteworthy.
## Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 nm</td>
<td>7</td>
<td>36.84%</td>
<td>10-20 nm</td>
<td>12</td>
<td>63.15%</td>
<td>1-10 mm</td>
<td>12</td>
<td>63.15%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 nm</td>
<td>7</td>
<td>36.84%</td>
<td>20-30 nm</td>
<td>7</td>
<td>36.84%</td>
<td>10-20 nm</td>
<td>7</td>
<td>36.84%</td>
</tr>
<tr>
<td>3</td>
<td>30-40 nm</td>
<td>5</td>
<td>26.31%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The maximum and minimum length of specimens measure 40 mm and 17 mm respectively. Specimens ranging between 10-20 mm and 20-30 mm show equal proportion of 36.84%. In breadth, specimens ranging between 10-20 mm account for 63.15%. Thickness of specimens vary from 5 mm to 15 mm and artefacts ranging between 1-10 mm account for 63.15%.

**Backed blade:** Backed blades might have been used as composite tools and the deliberate backing indicates use of haft. These are made on short broad blades of quartz and account for 11.11% of the blade group. Working edge is straight and has usage marks. Back is attained by blunting the other margin in a roughly semi-circular shape. The maximum and minimum length, breadth and thickness are as follows:

- **Maximum:** 34 mm x 24 mm x 10 mm
- **Minimum:** 23 mm x 17 mm x 7 mm

**Technique:** In the first category are numerous types made on core, flake and blades. The techniques employed in the manufacturing of tools, namely, (a) stone hammer and soft hammer techniques exhibit continuance of techniques from preceding Middle Palaeolithic and (b) use of pressure flaking technique which had not been used in the preceding cultures, are noteworthy. Although percentage of Levallois flake is small, it shows the continuance of prepared core technique also. The blades have been removed from short cores through punch technique as is evident from the size of blades and the flutings on the cores. The working edge and the blunted sides of the specimens with minute low
angle retouching and small shallow flake scars exhibit controlled flaking.

**General observations:** In particular, what is really noteworthy is the distribution pattern of the sites in relation to those of the Lower and Middle Palaeolithic sites. The sites are concentrated in a limited area. The lithic tools are found only in the gravel patch. But, it should be noted that there might be more gravel beds exposed containing similar lithic tools. But as mentioned above, the surface features over a large area in the valley is very much altered owing to constant cultivation. Hence, the distribution pattern as known today can not be taken to be the same in the past. Therefore, more intensive work is necessary from this point of view. The occurrence of tools in the gravel patches only is significant for the environmental condition indicated by the gravel patch are evidently different from that of the period characterised by the formation of the overlying soil.

Select specimens are described seperately.

**MESOLITHIC - II CATEGORY SITES - THE UPPER TUNGABHADRA**

In this group are three sites viz., Haraganahalli, Salabalu and Surahonne.

**Environment:** The sites are situated in the maidan belt of the region with vast open land and scrub jungles. Although the area receives less rain fall, tools found embedded in the reddish fine soil over the granitic hillocks is noteworthy.

**Rock material:** Majority of implements are made on whitish quartz. Intrusive quartz veins amidst the granite outcrops seems to be the main source. Besides, small pebbles have also been used for fashioning tools as is evident from the cortexed implements in the collection. One scraper made on chalcedony is noteworthy. Brownish quartzite lumps and flakes are sparsely used.
Typology: Totally seventy artefacts were picked up from the surface of three sites as noted below.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Site</th>
<th>Total Nos.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Haraganahalli</td>
<td>19</td>
<td>27.20%</td>
</tr>
<tr>
<td>2</td>
<td>Salabalu</td>
<td>21</td>
<td>30.00%</td>
</tr>
<tr>
<td>3</td>
<td>Surahonne</td>
<td>30</td>
<td>42.80%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

The following types shown in the table could be picked up from the sites.

**Table No. 62**

**Typewise distribution of artefacts**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Tool type</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Side scraper</td>
<td>25</td>
<td>35.72%</td>
</tr>
<tr>
<td>2</td>
<td>Side end scraper</td>
<td>7</td>
<td>10.00%</td>
</tr>
<tr>
<td>3</td>
<td>Round scraper</td>
<td>1</td>
<td>1.43%</td>
</tr>
<tr>
<td>4</td>
<td>Hollow scraper</td>
<td>2</td>
<td>2.85%</td>
</tr>
<tr>
<td>5</td>
<td>Assymmetric point</td>
<td>12</td>
<td>17.14%</td>
</tr>
<tr>
<td>6</td>
<td>Symmetric point</td>
<td>3</td>
<td>4.28%</td>
</tr>
<tr>
<td>7</td>
<td>Scraper cum point</td>
<td>1</td>
<td>1.43%</td>
</tr>
<tr>
<td>8</td>
<td>Transverse arrow head</td>
<td>1</td>
<td>1.43%</td>
</tr>
<tr>
<td>9</td>
<td>Blade</td>
<td>11</td>
<td>15.73%</td>
</tr>
<tr>
<td>10</td>
<td>Fluted core</td>
<td>2</td>
<td>2.85%</td>
</tr>
<tr>
<td>11</td>
<td>Simple core</td>
<td>5</td>
<td>7.14%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>70</strong></td>
<td><strong>00.00%</strong></td>
</tr>
</tbody>
</table>

... 323
The flake group with varied types as first category dominates while the blade group is composed of unretouched ordinary blades.

A brief account of flake group and blade group is given below along with analysis of each type and their characteristic features.

**Flake group:** 75.71% of the assemblage are made on flakes, the maximum and minimum length being 47 mm and 14 mm respectively. Types in this group include scrapers with sub types, points, transverse arrow head, etc.

**Side scrapers:** Scrapers worked on single side dominate. A few exhibit working on both the sides and secondary retouch. Zigzag working end exhibits alternate flaking. Flutings, cortexed surface and plain platform are some of the noticeable features. While the Haraganahalli side scrapers are larger in size, those picked up from Salabalu and Surahonne are worked on smaller flakes and differ in thickness also.

### Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>2</td>
<td>8%</td>
<td>10-20 mm</td>
<td>12</td>
<td>48%</td>
<td>1-10 mm</td>
<td>11</td>
<td>44%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>18</td>
<td>72%</td>
<td>20-30 mm</td>
<td>9</td>
<td>36%</td>
<td>10-20 mm</td>
<td>12</td>
<td>44%</td>
</tr>
<tr>
<td>3</td>
<td>30-40 mm</td>
<td>1</td>
<td>4%</td>
<td>30-40 mm</td>
<td>3</td>
<td>12%</td>
<td>20-30 mm</td>
<td>2</td>
<td>8%</td>
</tr>
<tr>
<td>4</td>
<td>40-50 mm</td>
<td>4</td>
<td>16%</td>
<td>40-50 mm</td>
<td>1</td>
<td>4%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>25</td>
<td>100%</td>
<td></td>
<td>25</td>
<td>100%</td>
<td></td>
<td>25</td>
<td>100%</td>
</tr>
</tbody>
</table>

The length of scrapers varies from 14 mm to 47 mm. Specimens ranging between 20 mm and 30 mm dominate and account for 72% of the collection in this category.

Breadthwise, specimens ranging between 10 mm-20 mm dominate with 48%, closely followed by the group ranging between 20 mm-30 mm with 36%.
Thickness of specimens varies between 7 mm and 21 mm. Specimens ranging between 10 mm-20 mm dominate with 48% and those ranging between 1 mm-10 mm account for 44% of the collection.

Side scraper: These form 10% of the total assemblage and are made on short thick flakes. The proximal end is invariably straight and flat while the shorter sides and distal end are worked. Faint secondary retouching, shallow flaking of both the surfaces are noteworthy. A few are thick at the centre. One of the specimens exhibits pebble cortex. Haraganahalli tools are comparatively bigger in size than the specimens picked up from other two sites. Except one specimen which is 'U' shaped, others are of different shapes.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20-30 mm</td>
<td>4</td>
<td>57.2%</td>
<td>10-20 mm</td>
<td>1</td>
<td>14.2%</td>
<td>10-20 mm</td>
<td>4</td>
<td>57.2%</td>
</tr>
<tr>
<td>2</td>
<td>30-40 mm</td>
<td>3</td>
<td>42.8%</td>
<td>20-30 mm</td>
<td>6</td>
<td>85.8%</td>
<td>20-30 mm</td>
<td>3</td>
<td>42.8%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>100%</td>
<td></td>
<td></td>
<td>100%</td>
<td></td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

The specimens ranging between 20 mm - 30 mm dominate and account for maximum percentage of the total collection under this category.

Round scraper: This lone specimen picked up from Surahonne accounts for 1.43% of the total collection. It has shallow flake scars on the dorsal side while the ventral surface is flat and devoid of working. The working edge is zigzag alround and the tiny scars indicate pressure flaking. It is thick at the centre and measures 19 mm x 11 mm x 9 mm.

Hollow scraper: Made on thick flakes of quartz, the hollow scrapers account for 2.85% of the total collection. One is cylindrical in shape with four fluting marks and obliquely cut base. The curved right side margin is retouched and slightly pointed at the distal end. The second specimen has flat base and the upper portion is worked all over. The
zigzag margin running alround devoid of retouch seems to has been used as working edge. The maximum length, breadth and thickness measure 26 mm x 15 mm x 15 mm respectively.

Point: These form the second largest type after scrapers accounting for 28.3% in the flake group and constitute 21.42% of the total collection. On the basis of shape, two groups are distinguished viz., assymmetric and symmetric. Symmetrical points are comparatively large and the rest are small and amorphous. Few triangular shapes are noteworthy. The size of tools of both the groups differ considerably from similar types of the first category. Features of sub types are described below.

Assymmetric point: Made on thick short flakes; retouched working margins, faceted platforms and nipped bulb of percussion in them are noteworthy. These constitute 17.14% of the total collection. Working end is achieved by producing notches near the distal end and is further strengthened by removing thin flakes from below the surface, as also noteworthy.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>3</td>
<td>25%</td>
<td>10-20 mm</td>
<td>9</td>
<td>75%</td>
<td>1-10 mm</td>
<td>8</td>
<td>66.66%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>9</td>
<td>75%</td>
<td>20-30 mm</td>
<td>3</td>
<td>25%</td>
<td>10-20 mm</td>
<td>4</td>
<td>33.33%</td>
</tr>
</tbody>
</table>

The length of points varies from 10 mm to 30 mm. The maximum and minimum length measure 29 mm and 18 mm respectively. Specimens ranging between 20 mm-30 mm dominate with 75%.

Breadthwise, maximum and minimum measurement of specimens are 26 mm and 14 mm respectively. Specimens ranging between 10 mm to 20 mm show high frequency with 75%.
Specimens ranging between 1 to 10 mm in thickness account for 66.66% of the collection. The maximum and minimum thickness measure 16 mm x 5 mm respectively.

*Symmetrical points:* These constitute 4.28% of the total collection. These are fabricated on small flakes. These are short and broad on plan and thin in section. The side margins are retouched in a fashion to converge at the distal end. Numerous shallow flake scars on the dorsal surface is significant and the ventral surface is plain. These points are different both in size and type than their counterparts in the first category. Their complete absence from Haraganahalli and their small representation in the total collection of tools from second category site is particularly noteworthy. The average length, breadth and thickness measure 18.6 mm, 13 mm and 7.3 mm respectively.

*Scraper cum point:* The lone specimen of this type from Haraganahalli accounts for 1.43% of the total collection. Made on a thick greyish quartz flake, it is triangular in shape. Worked side margins and point are obtained by flaking the left side margin obliquely. Rough retouching on both the sides. Flat and thick base. This type is completely absent at both Surahonne and Salabalu sites. The length, breadth and thickness measure 49 mm, 36 mm and 19 mm respectively.

*Transverse arrow head:* This is made on a thin quartz flake accounting for 1.43% of the collection. It is thin in section and almost semi-circular in plan. Its shorter sides are worked and has a short projection looking like a tang. The thin working edge is attained by removing flake at acute angle. Its presence also indicates use of geometric tools. The length, breadth and thickness measure 21 mm, 17 mm and 5 mm respectively.

*Blade group:* This group accounts for 15.73% of the total collection. These are simple parallel sided and single sided short blades devoid of retouch. Fluting on one or both the sides indicates pressure technique. Working edges are thin and sharp and some have use marks.
The actual use though not known, it is postulated that these were used for cutting either as individual tools or as composite ones. These are obtained from Salabalu and Surahonne. Their absence in Haraganahalli is noteworthy.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>7</td>
<td>63.63%</td>
<td>1-10 mm</td>
<td>2</td>
<td>18.18%</td>
<td>1-10 mm</td>
<td>9</td>
<td>81.81%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>4</td>
<td>36.36%</td>
<td>10-20 mm</td>
<td>9</td>
<td>81.81%</td>
<td>10-20 mm</td>
<td>2</td>
<td>18.18%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>99.99%</td>
<td></td>
<td></td>
<td>99.99%</td>
<td></td>
<td></td>
<td>99.99%</td>
</tr>
</tbody>
</table>

Variation between length, breadth and thickness is almost uniform. The average length, breadth and thickness measure 19.6 mm, 14.09 mm and 8.5 mm respectively.

**Fluted core:** These account for 2.85% of the total collection. These exhibit flutings measuring 33 mm in length and 11 mm in breadth. However, these measurements vary probably due to the use of quartz usually not susceptible for obtaining ribbon like blades. Flutings also indicate pressure technique. Cores have platforms and pointed end almost cylindrical in shape. The average length, breadth and thickness measure 32 mm, 24.5 mm and 16 mm respectively.

**Simple core:** These are simple cores (7.14%) showing variety of flake scars on both the surfaces. Flake scars are usually broad and shallow. Stone hammer technique seems to have been used to detach flakes from the cores of different shapes. Maximum length and thickness of cores measure 84 mm and 40 mm respectively.

**Technique:** The assemblage mainly comprises of flake tools. Percentage of blades and cores are comparatively low. Majority of the flake tools are devoid of positive bulbs. However, one or two specimens with
diffused bulb indicate use of soft hammer technique. Numerous fluted marks on the flakes, blades and the blunting and retouching done in them perhaps indicate pressure technique. Similar technique is noticed in the first category sites also.

**General observations:** The assemblage from sites of second category on the slopes of granitic hillocks are characterised by flake tools, such as scrapers, points, end scrapers, etc. Blade group is represented by ordinary blades without retouch. The collection is almost non-geometric. The flake tools especially the scrapers appear to be rather big, in comparison with those from other sites. Tools are mostly prepared on quartz of varying colours. Limited use of quartzite and chalcedony is noteworthy.

Tool types are comparatively less than in the first category. Scrapers and points are dominating groups. Bifacially worked points observed in the first category sites are absent here. There are three symmetrical points with worked side margins on one side while the other side is flat and plain. Lone transverse arrow head with a tang perhaps indicates hafting. Blades are either parallel sided or single sided. There is no working on the margins. They are flat and broad with a curved or pointed tip.

An interesting feature that deserves attention is the tendency to occupy small hillocks with granitic outcrops situated fairly away from the river bank. Select specimens are described separately.

**MESOLITHIC-III CATEGORY SITES**

**THE UPPER TUNGABHADRA VALLEY**

In the Upper Tungabhadra valley, three sites belonging to this category have been located. While sites at Chikbasur and Sasivehalli are situated right on the river bank, the site at Nyamti is found situated on the slopes of the bank of Hirehalla, a small tributary of Tungabhadra.
Environment: The sites under investigation are open sites situated on the maidan belt of the region. The surroundings of the sites are usually occupied by small bushes and the colour of the soil is brown.

Rock materials: As already seen in the sites of the above two categories, here too, quartz has been profusely used. Other rock materials used include rock crystal, quartzite and banded agate. The tool assemblage mostly looks fresh probably indicating their local manufacture. Microliths are found scattered along with few rejects.

Typology: Totally, 151 tools and a large number of waste flakes were collected from the three sites under reference. The following table indicates the sitewise distribution and their percentage.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Site</th>
<th>River/Stream</th>
<th>No. of objects</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chikbusur</td>
<td>Upper Tungabhadra</td>
<td>37</td>
<td>24.50%</td>
</tr>
<tr>
<td>2</td>
<td>Sasivehalli</td>
<td>-do-</td>
<td>35</td>
<td>23.18%</td>
</tr>
<tr>
<td>3</td>
<td>Nyamti</td>
<td>Hirehalla</td>
<td>79</td>
<td>52.32%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>...</td>
<td>151</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

The above table indicates that two sites located in the main river valley have yielded 72 specimens accounting for 47.60%. Similarly, the lone site near a stream accounts for 79 specimens with 52.32%. The assemblage comprises of tools on flake and blade having different subgroups such as scrapers, points, backed blades, retouched blades, etc. Though the assemblage is dominated by non-geometric group, few geometric tools are also present in the collection.
The tools assemblage could be placed under flake-blade group and are classified as per shape, technique, etc., unlike the tools of the first and second categories; in these tools, uniformity in shape, technique and size could be noticed. Workmanship seems to be more refined in these specimens. The following table presents the classification of tool types and their percentage.

**Table No. 64**

**Typological distribution of artefacts**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tool type</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Side scraper</td>
<td>25</td>
<td>16.56%</td>
</tr>
<tr>
<td>2</td>
<td>End scraper</td>
<td>5</td>
<td>3.32%</td>
</tr>
<tr>
<td>3</td>
<td>Hollow scraper</td>
<td>2</td>
<td>1.32%</td>
</tr>
<tr>
<td>4</td>
<td>Round scraper</td>
<td>3</td>
<td>1.98%</td>
</tr>
<tr>
<td>5</td>
<td>Assymmetric point</td>
<td>27</td>
<td>17.88%</td>
</tr>
<tr>
<td>6</td>
<td>Symmetric point</td>
<td>7</td>
<td>4.64%</td>
</tr>
<tr>
<td>7</td>
<td>Tanged point</td>
<td>3</td>
<td>1.98%</td>
</tr>
<tr>
<td>8</td>
<td>Scraper cum point</td>
<td>2</td>
<td>1.32%</td>
</tr>
<tr>
<td>9</td>
<td>Borer</td>
<td>3</td>
<td>1.98%</td>
</tr>
<tr>
<td>10</td>
<td>Lunate</td>
<td>12</td>
<td>7.95%</td>
</tr>
<tr>
<td>11</td>
<td>Simple blade</td>
<td>14</td>
<td>9.28%</td>
</tr>
<tr>
<td>12</td>
<td>Retouched blade</td>
<td>23</td>
<td>15.24%</td>
</tr>
<tr>
<td>13</td>
<td>Backed blade</td>
<td>9</td>
<td>5.97%</td>
</tr>
<tr>
<td>14</td>
<td>Points on blade</td>
<td>13</td>
<td>8.60%</td>
</tr>
<tr>
<td>15</td>
<td>Cores</td>
<td>3</td>
<td>1.98%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>151</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

It is clear from the above table that in typology and in pattern of distribution, close similarity is discernible between sites. Tools made on flakes account for about 60% of the total collection and blade...
group with their sub groups and their percentage along with analysis of length, breadth and thickness of each group is discussed below.

**Flake group:** Scrapers and points dominate this group with 23.18% and 24.50% respectively. Flakes used for fashioning tools are comparatively smaller in size to the similar types from the two categories discussed earlier. The other types of this group include scraper cum point and borers. Bladish flakes have been used for fashioning geometric types such as lunate and trapezoids. Typewise analysis of flake group is discussed below.

**Scraper:** This constitutes a major portion of the collection with 23.18%. These occur in all the sites and are classified into different groups depending on the nature and orientation of the scraping edge. Specimens are made on flakes of different shapes such as triangular, rectangular and few are amorphous. Retouched on the straight margins on dorsal side or both the dorsal and the ventral sides. Few flakes have retained patches of cortex. Depending upon the shape and functional aspect, these are classified under the following sub groups.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tool type</th>
<th>Total No. of tools</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Side scraper</td>
<td>25</td>
<td>71.42%</td>
</tr>
<tr>
<td>2</td>
<td>End scraper</td>
<td>5</td>
<td>14.28%</td>
</tr>
<tr>
<td>3</td>
<td>Hollow scraper</td>
<td>2</td>
<td>5.72%</td>
</tr>
<tr>
<td>4</td>
<td>Round scraper</td>
<td>3</td>
<td>8.58%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>...</td>
<td><strong>35</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>
Side scraper: Side scraper seems to be almost an indispensible component in the Mesolithic industries of the Upper Tungabhadra valley and in the present context, these account for 16.58% of the total collection. 15 specimens were picked up from the river bank and the rest from the bank of a stream. These are fabricated on different shapes of flakes, the most dominant being rectangular in shape. Deliberate attempts seem to have been made to obtain a specific form and then sides are blunted with retouching. Close marks at acute angle exhibit some sort of pressure technique. Flakes are usually thick at the centre. Few specimens have patches of pebble cortex on the upper surface.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>4</td>
<td>16%</td>
<td>10-20 mm</td>
<td>18</td>
<td>72%</td>
<td>1-10 mm</td>
<td>17</td>
<td>68%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>18</td>
<td>72%</td>
<td>20-30 mm</td>
<td>7</td>
<td>28%</td>
<td>10-20 mm</td>
<td>8</td>
<td>32%</td>
</tr>
<tr>
<td>3</td>
<td>30-40 mm</td>
<td>3</td>
<td>12%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of the scrapers varies between 18 mm and 35 mm. The above table indicates that specimens ranging between 20 mm and 30 mm show high frequency with 72% followed by specimens of 10-20 mm range with 16% and those ranging between 30-40 mm with 12%.

Breadthwise, specimens ranging between 10 mm and 20 mm account for 72% followed by specimens ranging between 20-30 mm with 28%. The maximum and minimum breadth measure 28 mm and 11 mm respectively.

Thickness of specimens varies between 6 mm and 14 mm. Specimens falling within 10 mm range account for 68%.
End scraper: These constitute 3.32% of the total collection and 14.28% of the scraper group collection. These have working margins at the distal end and are slopy near the margin. These are thick near the proximal end and a flat surface is distinctly provided, probably for grip while in use. Retouch work is done on both the surfaces along the working margin. Specimens are fashioned on short thick flakes. Their total absence in Sasivehalli collection is noteworthy.

Metrical analysis: Average length, breadth and thickness of specimens measure 22.4 mm, 18.8 mm and 11.4 mm respectively. Lengthwise, specimens ranging between 20 mm and 30 mm show high frequency (60%) followed by specimens ranging between 10 mm and 20 mm with 40%. Uniformity in breadth, in specimens ranging between 10-20 mm is noteworthy. Thicknesswise, specimens ranging between 10-20 mm dominate with 80%.

Hollow scraper: Only two specimens of this group are available accounting for 1.32% of the total collection. These are made on thick flakes. In both the specimens, left margin is straight and is obtained by removing a flake at oblique angle producing a ridge in the longer axis. Concavity or hollowness is achieved by producing a deep notch in the right side margin. The remaining side margins are then retouched including the notch. These might have been used to fashion some organic material used by the Mesolithic people for hunting. Maximum length, breadth and thickness measure 29 mm, 24 mm and 12 mm respectively and the average measurement is 25.5 mm x 19.5 mm x 10 mm.

Round scraper: These constitute 1.98% of the total collection. These are worked on thick flakes of quartz and almost round in shape. Flake scars diverge at the centre from the margins resulting in obtaining thin working edge around. These are thick at the centre. Controlled retouching is done around the margin. Maximum length, breadth and thickness measure 28 mm, 25 mm and 13 mm respectively. Average measurement is 24.6 mm x 23.3 mm x 12 mm.
Point: These constitute the major group accounting for 24.50% of the total collection. These are made on both thick and thin flakes. Specimens made on thin flakes are more symmetrical. Fairly good representation of points in all the three sites is significant. Depending on the shape and other features, points are divided into the following sub-groups.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tool type</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assymmetric point</td>
<td>27</td>
<td>72.97%</td>
</tr>
<tr>
<td>2</td>
<td>Symmetric point</td>
<td>7</td>
<td>18.92%</td>
</tr>
<tr>
<td>3</td>
<td>Tanged point</td>
<td>3</td>
<td>8.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>37</td>
<td>99.99%</td>
</tr>
</tbody>
</table>

Assymmetric point: These constitute 72.97% of the collection under points group. Almost all the specimens are fabricated on simple flakes. Few specimens are thick at the centre due to central ridge prevailing along the axis. In most of the specimens, point is achieved by removing a flake obliquely either on the left or right margin near the distal end. In some cases, working point is obtained by producing a notch each with pronounced shoulders on the side margin near the distal end and strengthened by working the ventral side. Points achieved by detaching two flakes at acute angle on dorsal side form the third category.
The maximum and minimum length of points measure 39 mm and 18 mm respectively. Specimens ranging between 20 mm and 30 mm dominate the collection with 81.8%.

Breadthwise, specimens fall into two groups, dominated by specimens ranging between 10 mm and 20 mm with 88.88%.

Thicknesswise also, specimens fall into two groups. 88.88% of the specimens range between 1 mm and 10 mm.

Symmetric point: These constitute 18.92% of the points group and 4.63% of the total collection. These points are fabricated on flakes and are triangular in shape. One is leaf shaped. Specimens have prominent ridge and shallow flaking marks on the dorsal side with flat and plain ventral side. Bifacially retouched working end and retouched margins, faceted platform are noteworthy features. Both in workmanship and type, these specimens could be compared with 'Teri' points.

Metrical analysis: Lengthwise, all the specimens belong to 20 mm-30 mm group. Breadthwise, the variation ranges between 14 mm and 22 mm. Specimens ranging between 10 mm and 20 mm dominate with 85.7%. Maximum and minimum thickness are 16 mm and 8 mm respectively. Specimens ranging between 1 mm and 10 mm show high frequency with 85.7%.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>3</td>
<td>11.11%</td>
<td>10-20 mm</td>
<td>24</td>
<td>88.88%</td>
<td>1-10 mm</td>
<td>24</td>
<td>88.88%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>22</td>
<td>81.48%</td>
<td>20-30 mm</td>
<td>3</td>
<td>11.11%</td>
<td>10-20 mm</td>
<td>3</td>
<td>11.11%</td>
</tr>
<tr>
<td>3</td>
<td>30-40 mm</td>
<td>2</td>
<td>7.40%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

The maximum and minimum length of points measure 39 mm and 18 mm respectively. Specimens ranging between 20 mm and 30 mm dominate the collection with 81.8%.

Breadthwise, specimens fall into two groups, dominated by specimens ranging between 10 mm and 20 mm with 88.88%.

Thicknesswise also, specimens fall into two groups. 88.88% of the specimens range between 1 mm and 10 mm.

Symmetric point: These constitute 18.92% of the points group and 4.63% of the total collection. These points are fabricated on flakes and are triangular in shape. One is leaf shaped. Specimens have prominent ridge and shallow flaking marks on the dorsal side with flat and plain ventral side. Bifacially retouched working end and retouched margins, faceted platform are noteworthy features. Both in workmanship and type, these specimens could be compared with 'Teri' points.

Metrical analysis: Lengthwise, all the specimens belong to 20 mm-30 mm group. Breadthwise, the variation ranges between 14 mm and 22 mm. Specimens ranging between 10 mm and 20 mm dominate with 85.7%. Maximum and minimum thickness are 16 mm and 8 mm respectively. Specimens ranging between 1 mm and 10 mm show high frequency with 85.7%.
Tanged point: These account for 1.98% of the total collection. These are made on flakes. At the proximal end, a notch is produced on one side of the margin to form a tang for hafting. Slight retouch of margins and tip is noteworthy. Maximum length, breadth and thickness measure 40 mm, 28 mm and 14 mm respectively and the average measurement is 31.3 mm x 21 mm x 12 mm.

Scraper cum point: These constitute 1.32% of the total collection. These are made of simple flakes. Both the specimens are worked on the dorsal side. Ventral side is plain. Traces of Levallois technique is noteworthy. Another has a ridge running in the longer axis. Working margins are retouched besides the point. Average length, breadth and thickness measure 26.5 mm, 15.5 mm and 9.5 mm respectively.

Borer: These constitute 1.98% of the total collection. These are made on thick short flakes. The working tip is obtained by producing a notch on one side of the margin near the distal end and is retouched. Average length, breadth and thickness measure 22.6 mm, 15.6 mm and 9 mm respectively.

Lunate: These constitute 7.94% of the total collection. These are fabricated on flakes and bladish flakes. Specimens made on short flakes are broad at the centre and have slopy cutting edge and the convex edge is produced by deliberate retouching. Lunates made on bladish flakes have short cutting and the distance between working edge and convex edge is narrow. Secondary retouch is more refined in these specimens and exhibit signs of usage of the working edge. All are roughly crescentic in shape. Their absence in Sasivelahalli is significant. Average length, breadth and thickness measure 30 mm, 16 mm and 8 mm respectively.

Blade group: These account for 39% of the total collection, and are fabricated on short thick blades. Depending on their type, working etc., these have been classified into following sub-types and analysed.
<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Type</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Simple blade</td>
<td>14</td>
<td>23.72%</td>
</tr>
<tr>
<td>2</td>
<td>Retouched blade</td>
<td>23</td>
<td>38.98%</td>
</tr>
<tr>
<td>3</td>
<td>Bakced blade</td>
<td>9</td>
<td>15.25%</td>
</tr>
<tr>
<td>4</td>
<td>Points on blade</td>
<td>13</td>
<td>22.04%</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>...</td>
<td>59</td>
</tr>
</tbody>
</table>

**Simple blade:** These constitute 9.28% of the total collection. The low percentage of occurrence in all the three sites is perhaps due to non-availability of suitable Silicious raw materials. These are short and thick, parallel sided blades made on quartz and rock-crystal.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>9</td>
<td>64.28%</td>
<td>1-10 mm</td>
<td>3</td>
<td>21.42%</td>
<td>1-5 mm</td>
<td>4</td>
<td>28.57%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>5</td>
<td>35.72%</td>
<td>10-20 mm</td>
<td>11</td>
<td>78.58%</td>
<td>5-10 mm</td>
<td>10</td>
<td>71.43%</td>
</tr>
</tbody>
</table>

The maximum and minimum length of specimens measure 24 mm and 15 mm respectively and those ranging between 10 mm and 20 mm dominate with 64.28% followed by specimens ranging between 20 mm and 30 mm with 35.72%.

Breadth of specimens varies between 8 mm and 17 mm and those ranging between 10 mm and 20 mm dominate with 78.58%. Maximum thickness of specimens measures up to 10 mm. Those ranging between 5 mm and 10 mm show high frequency with 71.43%.

**Retouched blade:** These constitute 15.24% of the total collection. These are made on thick short blades of quartz. Invariably, these have mid ridge along the longer axis. Retouching is done along the margins on dorsal side as well as ventral side and few have retained patch of cortex.
The above analysis indicates that blades under study are short, broad and thick. Length of specimens varies between 17 mm and 33 mm.

Specimens ranging between 10 mm and 20 mm dominate with 52.18% closely followed by specimens ranging between 20 mm and 30 mm with 43.48%. Breadthwise, specimens ranging between 10 mm and 20 mm show high frequency with 86.95%. Maximum and minimum thickness of specimens measure 11 mm and 6 mm respectively and those which fall in the group of 1 mm to 10 mm dominate with 91.30% of the total collection.

Backed blade: These constitute 5.96% of the total collection and 15.25% of the blade group collection and are made on short blades with rough parallel sides. The sharp and thin working margin is attained by removing a thin blade sloping towards the working edge. The other margin is blunted by removing small flakes or chips. Some have usage marks.
### Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>6</td>
<td>66.67%</td>
<td>10-20 mm</td>
<td>9</td>
<td>100%</td>
<td>1-10 mm</td>
<td>9</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>3</td>
<td>33.33%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Except in length, uniformity is observed in both breadth and thickness. Maximum and minimum length of specimens measure 24 mm and 15 mm. Specimens ranging between 10 mm-20 mm dominate with 66.66%. Breadth and thicknesswise, specimens fall between 10 mm-20 mm and 1 mm-10 mm range respectively accounting for 100% each.

**Point on blade:** These constitute 8.61% of the total collection. All are of asymmetric group except one specimen with retouching done on the side margins converging at the distal end. In few specimens, points are obtained by producing a small notch near the tip along the side margins or by removing thin elongated flakes. The tip is then strengthened by removing a small flake on the ventral side, a feature common to flake group also.

### Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>10</td>
<td>76.92%</td>
<td>10-20 mm</td>
<td>13</td>
<td>100%</td>
<td>1-10 mm</td>
<td>13</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>3</td>
<td>23.08%</td>
<td></td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above analysis indicates uniformity in breadth and thickness while in length among two groups. Specimens ranging between 10 mm and 20 mm dominate with 76.92%.
Core: These constitute just 1.98% of the total collection. These are of different shapes. Parallel sided flutings and single platform are noteworthy. Occurrence of few cores indicate that only finished tools were brought to camps from the nearby factory sites in the river bed. However, no evidence is encountered in the survey. Average length, breadth and thickness measure 23.6 mm, 20 mm and 14.6 mm respectively.

Technique: flakes of different shapes used for manufacturing is detached from the core by using stone hammer technique as already noticed in the two categories in the same valley dealt with above. Instances of using Levallosian flake is rare. For obtaining parallel sided blades and for trimming the convex margins of lunate and in secondary retouch, controlled pressure flaking seems to have been used. Use of soft hammer technique is evident from zigzag margins of few specimens. A sharp thin edged implement may have been used for removing thin blades from quartz cores.

General observations: Of the tool types of each of the three categories, the scraper points in the first two categories are dominant and in the third category, the blade and other related Microliths are more, than in the first two categories. Thus, there appears to be two distinct traditions, the scraper point complex and the blade complex. Even in this stage, the former has a long history appearing distinctly in the Mid-Palaeolithic stage. In the Upper Palaeolithic levels in North Karnataka along with blade and burin complex is also found scraper-point assemblage. In the region under study also, in the lone Upper Palaeolithic site, this feature has been found. However, as explained above, in a few sites, for example at Kattebelguli also, there is a vague indication of a transitional stage from Middle to Upper Palaeolithic. The scraper-point assemblage of the Mesolithic in the region of study in all probability is a derivative from the earlier tradition, but produced through improved technique and demutitive form in accordance with the tendencies and requirement of the people.

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Apart from tool types, the technique of their manufacture, rock material, etc., the location and the extent of the sites are particularly noteworthy. The sites of this category are invariably located on the banks of the rivers or their tributaries. The extent of the sites is much larger than those of the first two categories. The people, therefore, were becoming more river bank oriented and increasing in number. Consequently, as evident from the tool types - especially the blade complex now very distinct - in the third category, their activities were mostly concerned with food economy and were becoming more complex and enlarged demographically.

Select specimens are described separately.

**MESOLITHIC - II CATEGORY SITES - THE TUNGA VALLEY**

Seven sites noticed in this valley belonging to the II category are situated about ½ km from the main river bed. Of these, the sites noticed at Tirthahalli, Taluve and Sringeri are on the slopes or peak of the hillocks, while the sites at Sulebailu (behind Guddemaradi hill about 300 m south), Tirthamathur, Nadbur and Hosagadde are noticed near or on the terrace of granitic outcrops.

**Environment:** Based on the geo-setting, Mesolithic sites of this category can be further classified into two groups. The first group comprises of a lone site situated in the maidan belt dotted with scrub jungles and red soil. Here, the tool bearing deposits are found amidst a low granite outcrop. The remaining six sites are situated in the thick forest region of Malnad. In these sites, vast spread of waste flakes and few finished tools are found on the flat stretches of areas with little soil cover. The occurrence of these sites at higher altitude indicates that these were probably primary sites used exclusively during the high flood activity particularly during the monsoon. Even now, flood level of Tunga rises considerably during the rainy season occupying vast stretch of the bank on either side. It is...
quite possible that in the prehistoric time too, this situation might not have been different. Inspite of difficult terrain, with dense forest and moving river stream with steep gradient, Mesolithic people habitated the region is a noteworthy point which deserves our attention.

**Rock material**: Small quartz pebble with brownish surface, small nodules of quartzite, rock-crystal and milky quartz are available in these sites. Small pebbles seem to have been obtained from the nearby river bed while the other raw materials seem to have been obtained from the veins noticed in the nearby granitic outcrops. Bulk of the specimens are made of quartz of different shades, closely followed by milky quartz. Majority of the lunates made on quartzite is particularly noteworthy. Rock crystal has been sparsely used. The Sulebailu assemblage has scrapers made on large flakes probably taken out from medium size pebbles, a feature commonly noticed in the nearby sites of the Bhadra and the Upper Tungabhadra valleys.

**Density and typology**: It is interesting to note that, all the seven sites are primary sites with heavy percentage of waste flakes found scattered in the surroundings of outcrops probably used as natural anvils. Finished implements occur sparsely. This low percentage might indicate that finished tools are removed to camp sites but occurrence of such sites with implements could not be located. The entire assemblage comprising 166 specimens is classified into different types based on nature and other characters of implements. Sitewise distribution of implements and their percentage is given in the following table.
Table No. 66

Sitewise distribution of artefacts

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Name of the site</th>
<th>Total No. of artefacts</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sulebailu</td>
<td>33</td>
<td>21.10%</td>
</tr>
<tr>
<td>2</td>
<td>Tirthahalli</td>
<td>15</td>
<td>9.00%</td>
</tr>
<tr>
<td>3</td>
<td>Tirthamattur</td>
<td>45</td>
<td>27.10%</td>
</tr>
<tr>
<td>4</td>
<td>Taluve</td>
<td>12</td>
<td>7.24%</td>
</tr>
<tr>
<td>5</td>
<td>Sringeri</td>
<td>29</td>
<td>17.46%</td>
</tr>
<tr>
<td>6</td>
<td>Hosagadde</td>
<td>24</td>
<td>14.46%</td>
</tr>
<tr>
<td>7</td>
<td>Nadbur</td>
<td>6</td>
<td>3.64%</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>166</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

The above table would indicate that four sites have yielded twenty and above implements accounting for 70% of the collection while the remaining sites, each has yielded less than 10%. The assemblage is further classified into different types. Typewise distribution is shown in the table given below.
The above table indicates that the industry is mainly composed of Bladish flakes and blades. Percentage of scrapers is very low compared to the Upper Tungabhadr and Bhadra. Both non-geometric and geometric groups are available in the collection. In the following pages, typotechnological features of the various tool groups and their analysis are brought out.

### Table No. 67

**Typewise distribution of artefacts**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tools</th>
<th>Suleballu</th>
<th>Tirthahalli</th>
<th>Tirthamattur</th>
<th>Taluve</th>
<th>Sringeri</th>
<th>Hosagadde</th>
<th>Nadasahur</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Side scraper</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>1.80%</td>
</tr>
<tr>
<td>2</td>
<td>End scraper</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>0.60%</td>
</tr>
<tr>
<td>3</td>
<td>Bladish flake</td>
<td>8</td>
<td>4</td>
<td>8</td>
<td>-</td>
<td>9</td>
<td>3</td>
<td>-</td>
<td>32</td>
<td>19.28%</td>
</tr>
<tr>
<td>4</td>
<td>Asymmetric point on flake</td>
<td>7</td>
<td>1</td>
<td>8</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>-</td>
<td>27</td>
<td>16.27%</td>
</tr>
<tr>
<td>5</td>
<td>Symmetric point</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>7</td>
<td>4.22%</td>
</tr>
<tr>
<td>6</td>
<td>Crescentic point</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>12</td>
<td>7.23%</td>
</tr>
<tr>
<td>7</td>
<td>Tanged point</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>5</td>
<td>3.02%</td>
</tr>
<tr>
<td>8</td>
<td>Borer</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>1.80%</td>
</tr>
<tr>
<td>9</td>
<td>Simple blade</td>
<td>4</td>
<td>5</td>
<td>11</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>31</td>
<td>18.68%</td>
</tr>
<tr>
<td>10</td>
<td>Point on blade</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td>16</td>
<td>9.64%</td>
</tr>
<tr>
<td>11</td>
<td>Lunate</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>10</td>
<td>6.04%</td>
</tr>
<tr>
<td>12</td>
<td>Trapeze</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>4</td>
<td>2.40%</td>
</tr>
<tr>
<td>13</td>
<td>Core scraper</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>4</td>
<td>2.40%</td>
</tr>
<tr>
<td>14</td>
<td>Core point</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>2.40%</td>
</tr>
<tr>
<td>15</td>
<td>Core</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>4.22%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>...</strong></td>
<td><strong>35</strong></td>
<td><strong>15</strong></td>
<td><strong>45</strong></td>
<td><strong>12</strong></td>
<td><strong>29</strong></td>
<td><strong>24</strong></td>
<td><strong>6</strong></td>
<td><strong>166</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The above table indicates that the industry is mainly composed of Bladish flakes and blades. Percentage of scrapers is very low compared to the Upper Tungabhadr and Bhadra. Both non-geometric and geometric groups are available in the collection. In the following pages, typotechnological features of the various tool groups and their analysis are brought out.
Flake group: In this category, four specimens are available. These include side scrapers (3) and end scraper (1). These are made on thick flakes, irregular in shape. Working edge is retouched along the margin in patches.

Side scraper: These constitute 1.80% of the total collection. These are simple and irregular in shape. The steep working edge is retouched from the dorsal surface. The average length, breadth and thickness measure 37.66 mm, 27.66 mm and 14.66 mm respectively.

End scraper: One specimen (0.60%) of this type is found in the entire collection. It is made on a thick flake having a prominent central ridge and slopy surface on the dorsal side. It has flaking distal end which is obviously the working end. It is retouched effectively. It measures 24 mm x 19 mm x 12 mm.

Bladish flake: These constitute 19.20% of the total collection. These are of different types, the most common being rectangular. Specimens from Sulebailu and Hosagadde are broad and thick. Other specimens are slightly short. Invariably, these have a low central ridge running along the longer axis and slopy surface on one side, shallow flaking and flutings. The working margin is thin and almost parallel in some specimens. Few are retouched along the working margin from one side. Bulb of percussion and faceted platform are noteworthy. Pebble cortex is retained in a few.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>2</td>
<td>6.25%</td>
<td>10-20 mm</td>
<td>18</td>
<td>56.25%</td>
<td>1-10 mm</td>
<td>32</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>25</td>
<td>78.25%</td>
<td>20-30 mm</td>
<td>13</td>
<td>40.50%</td>
<td></td>
<td>32</td>
<td>100%</td>
</tr>
<tr>
<td>3</td>
<td>30-40 mm</td>
<td>5</td>
<td>15.50%</td>
<td>30-40 mm</td>
<td>1</td>
<td>3.25%</td>
<td></td>
<td>32</td>
<td>100%</td>
</tr>
</tbody>
</table>
The maximum and minimum length of specimens measure 37 mm and 18 mm respectively. In the length range, specimens of 20 mm and 30 mm range dominate with 78.25%. In the breadth range, specimens of 10 mm and 20 mm dominate with 56.25% closely followed by 20 mm and 30 mm range specimens with 40.50%. The second group seems to have been close similarity in length and breadth. Thicknesswise, all the specimens fall into 1 mm - 10 mm range (100%).

Point: These are of four types and account for 30.72% of the total collection. Mostly, triangular in shape and are made on flakes, bladish flakes and blades. Few are made on core also. Depending on the shape and other features, these have been classified into the following sub-types.

Assymetric point: These constitute 16.20% of the total collection. These are essentially made on bladish flakes. Point is obtained by a single oblique stroke or by producing a notch near the distal end and is further made thin by removing a small flake from ventral surface. Care is taken to fashion the point and some times the base also. Shallow flake scar and small flutings are seen on both the surfaces.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>9</td>
<td>33.33%</td>
<td>10-20 mm</td>
<td>22</td>
<td>81.48%</td>
<td>1-10 mm</td>
<td>27</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>18</td>
<td>66.66%</td>
<td>20-30 mm</td>
<td>5</td>
<td>18.52%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length range of specimens varies between 18 mm and 30 mm. Those ranging between 20 mm and 30 mm dominate with 66.66%, closely followed by specimens of 10 m and 20 mm range with 33.33%. The maximum and minimum breadth of specimens measure 27 mm and 14 mm respectively. Specimens of 10 mm and 20 mm range show high frequency with 81.48%. Thicknesswise, the entire group falls into 1 mm and 10 mm range (100%).
Symmetric point: These constitute 4.20% of the total collection. These are made on bladish flake and blades. In few specimens, point is obtained by oblique strokes. The side margins are tapered to converge at the tip. Margins are retouched from opposite side or on dorsal side only. Low central ridge in a few is noteworthy.

Metric analysis: Except one specimen made of bladish flake (31 mm x 28 mm x 9 mm), the remaining points are made on long and short blades. Lengthwise, these belong to 20 mm and 30 mm range (85.71%). The maximum and minimum length being 31 mm and 16 mm respectively. Breadth of specimens varies between 10 mm and 28 mm. Majority of these belong to 10 mm and 20 mm range with 71.42%. Thicknesswise, all the specimens fall in 5 mm and 10 mm range group.

Crescentic point: These constitute 7.20% of the total collection. These are made on both long and short blades. Working point is obtained by oblique stroke or by producing two notches. In a few specimens, pointed end of other margin is retained and when backed, margin merges, with this, a fine strong point is produced. Invariably, central ridge is noticed on one surface in a few specimens and few have slightly depressed dorsal surface. One of the side margins is blunted by close retouching to obtain curved or crescentic shape.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>4</td>
<td>33.33%</td>
<td>1-10 mm</td>
<td>3</td>
<td>25%</td>
<td>1-10 mm</td>
<td>11</td>
<td>91.66%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>6</td>
<td>50.00%</td>
<td>10-20 mm</td>
<td>9</td>
<td>75%</td>
<td>10-20 mm</td>
<td>1</td>
<td>8.33%</td>
</tr>
<tr>
<td>3</td>
<td>30-40 mm</td>
<td>2</td>
<td>16.66%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The above analysis indicates three groups in the length range. Of these, specimens ranging between 20 mm and 30 mm showing frequency with 50%, closely followed by 10-20 mm group with 33.33%. The remaining specimens belong to 30-40 mm group with 16.66%. The length of specimens varies between 12 mm and 41 mm.
Breadthwise, two groups of specimens are available. Specimens of 10 mm and 20 mm range account for 75% and the 1 mm - 10 mm range specimens account for 25%. The maximum and minimum breadth of specimens measure 18 mm and 5 mm respectively. Thicknesswise, specimens belonging to 1 mm and 10 mm range dominate with 91.66%. The minimum and maximum being 3 mm and 11 mm respectively.

**Tanged point:** These account for 3% of the total collection and are made on bladish flakes. Both the side margins are retouched at the distal end on the upper surface so as to converge at the point. At the proximal end from the left side margin on the dorsal side, a small notch is produced to obtain a narrow tang. Some have small notches on either side of the margin and a long narrow tang. The upper surface of these specimens has fluting marks and few shallow flake scars. The average length, breadth and thickness measure 25.6 mm, 16.8 mm and 8.2 mm respectively.

**Borer:** These account for 1.80% of the total collection of implements and are fashioned on bladish flakes. The working point or borer is obtained by removing a flake vertically at the distal end along one of the side margins. The other margin is blunted by removing small flakes close to one another and a crescentic back is achieved. The meeting point of worked margin and the natural edge results in a sharp straight working end. A thin flake is removed from ventral surface below the working end to make it thinner and long lasting. Faceted platforms are noticed in the specimens. The dorsal surface is protruded and ventral surface is depressed. The average length, breadth and thickness measure 20.33 mm, 14.66 mm and 7.33 mm respectively.

**Lunate:** These are made on blades and account for 6% of the total collection. These have almost straight cutting edge and the other margin is backed by close minute retouching. However, in two specimens, pebble cortex is retained along the non-working margin making the specimens look semi-circular on plan. Specimens made on
short blades are broad at the centre and those made on longer blades are narrow and have slightly projected arc at the centre. Both the surfaces slope towards the cutting edge which usually bear use marks. High percentage of lunates in Taunga valley is noteworthy.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>5</td>
<td>50%</td>
<td>1-10 mm</td>
<td>4</td>
<td>40%</td>
<td>1-10 mm</td>
<td>9</td>
<td>90%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>5</td>
<td>50%</td>
<td>10-20 mm</td>
<td>6</td>
<td>60%</td>
<td>10-20 mm</td>
<td>1</td>
<td>10%</td>
</tr>
</tbody>
</table>

The maximum and minimum length of specimens range between 32 mm and 15 mm respectively. Two groups of specimens in the collection show equal distribution with 50% each as shown in the table. Breadth of specimens varies between 7 mm and 24 mm. Specimens of 10 mm and 20 mm range, show high frequency with 60%, closely followed by 1-10 mm range specimens with 40%. Thicknesswise, specimens ranging between 1 mm-10 mm dominate with 90%.

**Trapeze:** These constitute 2.40% of the total collection and are made on blades. The working edge is thin and straight. The other three sides retouched. One of the specimens has a ridge running parallel to the cutting edge at the centre. This geometric microlithic tool seems to have been used for different purposes like agriculture as well as for hunting. Though small, these are effective in use particularly when used as composites. A deliberate projection at the centre of retouched back is a definite indication of hafting probably to a sickle? The maximum length, breadth and thickness measure 22 mm, 14 mm and 6 mm while the minimum measure 10 mm, 10 mm and 5 mm respectively.

**Blade group:** Tools of this group account for 27.10 of the total collection. Sub-types of this group include simple blades and point on blades.
Simple blade: These constitute 18.60% of the total collection and are medium to short in length. Roughly parallel sided and invariably have a central ridge running along the longer axis and slopy surface. Slightly pointed distal end, faceted platforms and bulb of percussion are noteworthy features. Fluting marks on both the surfaces are common.

Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length No.</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1-10 mm</td>
<td>1</td>
<td>3.22%</td>
<td>1-10 mm</td>
<td>15</td>
<td>48.38%</td>
<td>1-10 mm</td>
<td>29</td>
<td>93.54%</td>
</tr>
<tr>
<td>2</td>
<td>10-20 mm</td>
<td>23</td>
<td>73.20%</td>
<td>10-20 mm</td>
<td>16</td>
<td>51.62%</td>
<td>10-20 mm</td>
<td>2</td>
<td>6.46%</td>
</tr>
<tr>
<td>3</td>
<td>20-30 mm</td>
<td>7</td>
<td>22.58%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The maximum and minimum length of specimens in the collection measure 26 mm and 7 mm respectively. Specimens ranging between 10 mm and 20 mm show high frequency with 74.20%, closely followed by specimens of 20 mm and 30 mm range with 22.58%. Breadthwise, 10 mm and 20 mm range dominate with 51.62% and they vary between 8 mm and 14 mm. Majority of the specimens fall into 1 mm-10 mm range thickness accounting for 93.54%.

Point on blade: These constitute 9% of the total collection and are made on short blades. Most of these are triangular shaped. Working end is obtained by retouching the margins to converge at the distal end and by producing a small notch near the distal end along the margin or by oblique stroke. Invariably, a prominent central ridge and worked base are other features.
Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>14</td>
<td>87.50%</td>
<td>1-10 mm</td>
<td>5</td>
<td>31.25%</td>
<td>1-10 mm</td>
<td>16</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>2</td>
<td>12.50%</td>
<td>10-20 mm</td>
<td>11</td>
<td>68.75%</td>
<td>1-10 mm</td>
<td>16</td>
<td>100%</td>
</tr>
</tbody>
</table>

Lengthwise, specimens ranging between 10 mm and 20 mm dominate with 87.50%. Breadthwise also, specimens of 10 mm and 20 mm range dominate with 68.75%, while the thickness of specimens belong to one group of 1 mm to 10 mm with 100%.

Core tool: The assemblage comprises of few tools made on cores. These include scrapers (2.40%) and points (2.40%). Scrapers are thick with numerous flutings all over the surface. Working edge is retouched from upper surface. Average length, breadth and thickness measure 22.5 mm, 1.25 mm and 11 mm respectively.

Core points are all cylindrical in shape with flutings. Faceted platform and retouched working end are noteworthy. In a few specimens, natural point is used. The largest of the specimens made on a thick flake measures 60 mm, 59 mm and 31 mm. It is triangular in shape. Prominent central ridge, slopy surface, bifacially retouched thin margins are important features. Occurrence of such big tools in the Mesolithic context is noteworthy. Its exact use is not known. Average length, breadth and thickness of other specimens measure 18.33 mm, 10.66 mm and 7.66 mm respectively.

Core: In the collection, cores of varying shapes constitute 4.2%. Small to medium flutings, flat platform and cortex patches are noteworthy. The maximum and minimum measurement of cores are 32 mm, 19 mm and 14 mm; and 25 mm, 18 mm and 14 mm respectively.
**Technique:** The assemblage is composed of bladish flakes, few scrapers, large number of points, blades, trapeze and lunates. Small percentage of core tool is also present. The occurrence of large number of bladish flakes, few having bulb of percussion and flake scars in a few implements indicate the use of soft hammer technique. The use of pressure technique is evident from fluting marks observed in large number of implements. In few bladish flakes, thin working edge is achieved by pressure technique using a broad, thin edged tool either of stone or hard bone. Blunted backs of implements also exhibit controlled chipping by using pressure. Absence of Levallois flake is significant.

**General observations:** It is interesting to note that the sites are situated in the typical Malnad belt amidst dense forest and rapidly moving river with steep gradient. Unlike in other river valleys, the sites are located about ½ Km to 1 Km away from the river bed. The distance between the sites is also more, varying from 5 Kms to 20 Kms. A few sites, as for example at Tirthahalli and Srinigeri, are found on the peak of the hillocks with large quantity of waste flakes which seem to indicate that these were primary sites and the camping sites were not far from these locations. Another point that we may infer is, due to the close proximity of the river, the Mesolithic people of the region seem to have preferred safe spots at higher levels to escape from the havoc of flood. Even today, flood levels engulf the flat area near the river in the region and this situation may not have been different in the Mesolithic times. That Mesolithic people could live both in dry and wet area is very well attested by the presence of numerous sites amidst thick jungles, particularly in the upper reaches of the valley. Interestingly, the assemblage is dominated by blade point group, which is rather significant feature when compared to the assemblages in similar situation in other valleys of the region where scraper groups dominate. This is perhaps due to the ecological factors governing the area and indicates that fashioning of artefacts of a particular type has direct bearing on the needs and habits of the people of the region.
Two sites belonging to this category are noticed in the lower course of the river Tunga. The distance between the two sites is about 14 Kms.

Environment: Mandagadde and Sirgala fall in the semi-Malnad belt where dense forest diffuse into small patches of semi-deciduous forest. At Mandagadde, Mesolithic artefacts along with large waste flakes are found embedded in the upper layer of sandy silt bed of the river bank indicating its stratigraphic horizon. At Sirgala, these waste flakes with small percentage of implements are found embedded in the thin surface humus overlaying the laterite along the bank. This more or less confirms the stratigraphic horizon observed in Mandagadde. The river flows at a relatively low velocity in this belt and plenty of games, aquatic food and availability of raw materials near the river bed might have attracted the Mesolithic people to settle in these sites, at least temporarily, if not permanently, since no evidence is available in the vicinity about their dwellings, etc.

Rock material: Small to medium sized quartz pebbles having brownish skin are abundantly available in the nearby river bed. Quartz, milky quartz and quartzite have been used to fashion the tools. Majority of the implements are made on quartz.

Density: Both the sites have yielded a small percentage of implements. However, a large number of waste flakes are found in clusters in these sites. One may wonder as to why such waste flakes are found in large numbers in a limited area and hence, deserves further detailed study.

Typology: Totally, 28 implements were collected and their sitewise distribution is as follows:
The tool kit comprises of bladish flakes, points, few blade tools and borers. These are tabled below.

**Table No. 68**

**Typological distribution of artefacts**

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Tool</th>
<th>Mandagadde</th>
<th>Sirgala</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bladish flake</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>17.85%</td>
</tr>
<tr>
<td>2</td>
<td>Assymmetric point</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>21.42%</td>
</tr>
<tr>
<td>3</td>
<td>Symmetric point</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>3.58%</td>
</tr>
<tr>
<td>4</td>
<td>Crescentic point</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>17.85%</td>
</tr>
<tr>
<td>5</td>
<td>Borer</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>7.14%</td>
</tr>
<tr>
<td>6</td>
<td>Backed blade</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>3.58%</td>
</tr>
<tr>
<td>7</td>
<td>Simple blade</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>10.72%</td>
</tr>
<tr>
<td>8</td>
<td>Point on blade</td>
<td>4</td>
<td>-</td>
<td>4</td>
<td>14.28%</td>
</tr>
<tr>
<td>9</td>
<td>Core</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>3.58%</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>16</strong></td>
<td><strong>12</strong></td>
<td><strong>28</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

In the entire collection, one core is noticed. Waste flakes have not been included for analysis. Main features of each type and their measurements along with percentage is discussed below.
Bladish flake: These account for 17.86% of the total collection. These are of medium size roughly triangular in shape. A few specimens have prominent central ridge and few have retained patches of pebble cortex. Working edge is thin and retouched.

Metrical analysis: The maximum and minimum length of specimens measure 34 mm and 24 mm respectively and 75% of these range between 20 mm and 30 mm. Breadth of the specimens varies between 1 mm and 10 mm.

Point: These constitute the bulk of the tool kit and account for 42.85% of the entire collection. These are further classified into subtypes depending on the nature and other characteristics.

Assymmetric point: These constitute 21.42% of the total collection. These are of medium size made on flakes. Working point is achieved by producing a shallow, broad notch near the distal end and retouched. Invariably the natural edge of the other margin is retained and slightly retouched. The working tip is retouched from both the sides to strengthen it. Irregular margins, worked base are some of the important features. The maximum and minimum length, breadth and thickness measure 34 mm, 24 mm, 11 mm, and 21 mm, 20 mm, 7 mm respectively.

Symmetric point: One specimen (3.57%) of this category is found in the entire collection. It is made on a medium size flake roughly triangular in shape. The side margins are worked and the distal end is obliquely cut to obtain a thin working point. It is thick at the base and has a nipped bulb of percussion on the ventral surface. Length, breadth and thickness measure 31 mm, 26 mm and 12 mm respectively.

Crescentic point: These constitute 17.86% of the total collection of artefacts and are unusual types. Fashioned on thick flakes of quartz, these appear like lunates. However, other features of lunates are absent in them. These have blunted convex margins and a small notch at
at the distal end; usually thick at the centre. Working point is projected and thin. Faceted platform and low bulb of percussion is noticed in couple of specimens. One of the points is made on a thin elongated blade. These have broad centre and narrow ends. Left margin is almost straight and slightly retouched in two specimens. The maximum and minimum length, breadth and thickness measure 40 mm, 24 mm, 13 mm and; 24 mm, 11 mm and 5 mm respectively.

**Borer:** These constitute 7.15% of the total collection of artefacts. The specimens are made on bladish flakes. The borer point is attained by employing burin technique, i.e., by detaching a small vertical spall along the margin at the distal end. Working tip is retouched.

**Blade:** These are simple blades accounting for 10.72% of the total collection. These are short and have a central ridge on the dorsal surface. Slopy margins are thin, sharp and parallel sided. On an average, these measure 19 mm, 10.66 mm and 4.33 mm.

**Point on blade:** This category accounts for 14.28% of the total collection of artefacts. These are made on short, broad blades. Working point is obtained by an oblique stroke at the distal end along the left margin and by retouching the other margin. In one specimen, both the margins are retouched to converge at the distal end. The maximum and minimum length, breadth and thickness measure 24 mm, 15 mm, 4 mm; and 20 mm, 14 mm and 3 mm respectively.

**Backed blade:** One specimen of this category is noticed. It is made on a broad and thick blade of quartz. The working margin is concave and sharp. The convex margin exhibits uneven step flaking. The length, breadth and thickness measure 31 mm, 17 mm and 10 mm respectively.

**Core:** In the entire assemblage, only one core could be picked up. It is cylindrical in shape and has parallel sided fluting marks all over the surface. Both ends have platforms. It measures 28 mm, 22 mm and 16 mm.
Technique: The assemblage comprising blade flakes, points and blade tools exhibit evidence of various techniques prevalent during the period. Stone hammer technique is used to detach flakes from the cores. Numerous parallel sided flutings on the core and in few implements indicate employment of pressure flaking. Secondary retouch work though employed in limited manner, is a definite indication of the use of controlled flaking or chipping through pressure and punching. Absence of Levallois flake is significant.

General observations: The location of the sites in the semi-Malnad belt almost on the river bank and the occurrence of lithic artefacts embedded in the upper layers of silt deposits indicate the tendency of Mesolithic people to move near to the shallow waters.

Another point of interest is that considerable quantity of waste flakes are found in clusters in a limited area. The non-availability of sufficient raw material on the one hand and the profuse occurrence of waste flakes on the other may possibly indicate that finished artefacts were carried to camp sites from these primary sites. The technique, rock material and other aspects of assemblage are similar to other sites of the same category in the adjacent valleys. However, high percentage of point are particularly noteworthy. Although exact use of points for any specific work could not be ascertained, their occurrence as major group of tool kit warrants close study.

MESOLITHIC: I CATEGORY SITES - THE BHADRA VALLEY

Mattigatta is the lone site belonging to the first category in this valley. Location of the site at Mattigatta and other features have already been described in the relevant chapter. The tool assemblage collected from the surface of the site is classified and discussed below.
Environment: The region forms part of the maidan belt with scrub jungles and small trees dotted here and there. The Mesolithic artefacts are found mixed with brownish sandy soil and along with small to medium sized pebbles scattered in the open field. Abundant water and rock material seem to have attracted the Mesolithic people to occupy this site.

Rock material: The artefacts are fashioned on two types of rocks namely quartz and rock crystal. Majority of tools are made on quartz. Few artefacts are made on milky quartz also. Pebbles found here and there are of various shapes having brown surface and varying in measurement from 20 mm to 50-60 mm in length.

Density: Implements occur as scatters in an area of about 250 square metres. Their occurrence in a large area with varying types and large quantity of waste flakes besides nodules attest to the features of a factory site.

Typology and analysis: The assemblage comprises of various types of flake and blade tools. Totally forty implements were picked up from the surface. Flake group accounts for 67.5% and the blade group accounts for 25% of the total collection. Cores constitute 7.5%. Typewise distribution and their percentage is given in the table below. Large quantity of waste flakes have not been included in the study.
Table No. 69

Tool types - The Bhadra valley

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tool type</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Side scraper</td>
<td>6</td>
<td>15.0%</td>
</tr>
<tr>
<td>2</td>
<td>End scraper</td>
<td>2</td>
<td>5.0%</td>
</tr>
<tr>
<td>3</td>
<td>Borer</td>
<td>1</td>
<td>2.5%</td>
</tr>
<tr>
<td>4</td>
<td>Point</td>
<td>18</td>
<td>45.0%</td>
</tr>
<tr>
<td>5</td>
<td>Simple blade</td>
<td>3</td>
<td>7.5%</td>
</tr>
<tr>
<td>6</td>
<td>Backed blade</td>
<td>4</td>
<td>10.0%</td>
</tr>
<tr>
<td>7</td>
<td>Point on blade</td>
<td>3</td>
<td>7.5%</td>
</tr>
<tr>
<td>8</td>
<td>Core</td>
<td>3</td>
<td>7.5%</td>
</tr>
</tbody>
</table>

Flake group: This group is dominated by points and side scrapers. Other types include end scrapers and borer.

Side scraper: These constitute 15% of the total collection. These are made on thick end flakes and small ordinary flakes of varying shape. Use of Levalloisian flake is noteworthy. Faceted platform, retouched working margins and the retaining of cortex patch are some of the significant features.

Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20-30 mm</td>
<td>5</td>
<td>83.33%</td>
<td>10-20 mm</td>
<td>3</td>
<td>50%</td>
<td>1-10 mm</td>
<td>1</td>
<td>16.66%</td>
</tr>
<tr>
<td>2</td>
<td>30-40 mm</td>
<td>1</td>
<td>16.66%</td>
<td>20-30 mm</td>
<td>3</td>
<td>50%</td>
<td>10-20 mm</td>
<td>5</td>
<td>83.33%</td>
</tr>
</tbody>
</table>

A cursory glance at the table indicates uniformity in ratio between the length, breadth and thickness.
End scraper: These constitute 5% of the total collection and are made on thick short flakes. The working edge at the distal end is retouched from both the sides in one tool while the other has shallow flakes on the ventral side only. Both are thick at the centre. Average length, breadth and thickness measure 28.5 mm, 17.5 mm and 14.5 mm respectively.

Borer: Borer constitutes 2.5% of the total collection. The working tip is produced by removing two notches on either side at the centre of the longer axis of the margin and the dorsal side is retouched. It measures 31 mm, 16 mm and 11 mm in length, breadth and thickness respectively.

Point: These constitute 45% of the total collection. Depending on the nature and shape, these are classified into asymmetric and symmetric groups.

Asymmetric point: These constitute 37% of the total collection. These are made on flakes of varying shapes and thickness. Working point is obtained by varying methods. In some, by removing a single flake obliquely near the distal end along one margin and retouching the other and by producing two notches on either side of the distal end of the margins in another type. Artefacts are essentially triangular in shape with straight flat base and worked along the the margins from the middle leaving prominent shoulder like projections. Faceted platform in a few is noteworthy. Most of these points exhibit working below the tip on ventral side probably to attain thin and strong point.
The maximum and minimum length of specimen measure 33 mm and 20 mm respectively. Specimens ranging between 20 mm and 30 mm dominate with 86.66%. Specimens ranging between 10 mm and 20 mm dominate in the breadth range with 66.66%. Thicknesswise, specimens ranging between 1-10 mm show high frequency with 53.33% closely followed by the specimens ranging between 10-20 mm with 46.66%.

**Symmetric point:** These are fashioned on small bladish flakes and constitute 7.5% of the total collection. The side margins converging at the distal end are retouched either on one side or from both the sides of the margins. Runt tip is retouched from ventral surface. These are short curved at the proximal end and thin in section. On an average, these specimens measure 19.66 mm x 16.33 mm x 8 mm.

**Blade group:** These are made on small broad blades and constitute 25.5% of the total collection. Three types of tools are available in the assemblage and the same is discussed below.

**Simple blade:** These are roughly parallel sided. Prominent central ridge, slopy surface, faceted platform and flutings are some of the important features. Average length, breadth and thickness measure 18 mm, 13.33 mm and 10 mm respectively.

**Backed blade:** These constitute 10% of the total collection. These are made on short broad blades of quartz. The slopy cutting or working edge is retouched from the dorsal side. The other convex margin is
backed by controlled pressure flaking. These are more refined than their counterparts in the adjacent valley.

**Point on blade:** These constitute 7.5% of the total collection. These are made on fluted blades having rough parallel sides. Working point is attained by removing two notches on either side of the margin from the dorsal at the distal end.

**Core:** These constitute 7.5% of the total collection. These are roughly cylindrical in shape. Flutings of varying length, flat platform and cortexed surface are some of the important features.

**Technique:** The assemblage comprises of flake and blade group classified into different types on the basis of shape, nature, etc. Flakes are of medium size. Few exhibit Levalloisian technique. Stone hammer technique seems to have been adopted for removing flakings obliquely along the margins to produce points. Flutings and blunted convex margins indicate use of pressure technique. Minute retouching in low angle along the working margin exhibits the use of controlled flaking and punch.

**General observations:** It is not possible to assess the extent of the culture of this category from a lone site found in the valley. Another point of interest is that the site is situated close to the river unlike in Upper Tunga where sites of this category are about 3-4 Kms away. However, rock material, techniques adopted and tool types are similar to the ones of I category encountered in the adjacent river valleys. The assemblage is dominantly composed of scraper-point group. It is interesting to note the high percentage of points constitute 52% of the entire collection, thereby indicating frequent common use of this type.
MESOLITHIC - II CATEGORY SITES - THE BHADRA VALLEY

Mesolithic sites of this category occur in the valley on the terraces of granite hillocks in six locations of which the site at Gondi is almost on the peak of the hill at an altitude of 600 m overlooking the river.

Environment: The area of the region belongs to the maidan belt with scrub jungles and patches of semi-deciduous forests near Gondi. Artefacts are found embedded in the reddish soil capping granite outcrops. Occurrence of large number of waste flakes also indicates that these were primary sites and their habitation camps were not far away.

Rock material: River borne quartz pebbles of small to medium size measuring 60 mm (length), 40 mm (breadth) and 30 mm (thickness) of different colours such as white, pink, etc., have been used for manufacturing artefacts. Flakes with cortex are found strewn all over along with fluted cores of quartz. Possibilities of using the quartz veins in the granite outcrops near the site can not be ruled out. The bulk of the assemblage is fashioned on quartz while small percentage of implements are fashioned on milky quartz as well as rock crystal.

Density and typology: The entire assemblage is classified into different types on the basis of nature and form. Totally 175 implements including cores from six sites have been classified and analysed. Sitewise distribution of the specimens and their percentage is given in the following table. Large number of waste flakes collected from these sites have not been included.
Table No. 70

Sitewise distribution of artefacts

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Site</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Holebelagal</td>
<td>17</td>
<td>9.71%</td>
</tr>
<tr>
<td>2</td>
<td>Dasarakalhalli</td>
<td>42</td>
<td>24.00%</td>
</tr>
<tr>
<td>3</td>
<td>Malenahalli</td>
<td>29</td>
<td>16.58%</td>
</tr>
<tr>
<td>4</td>
<td>Kagikodumagge</td>
<td>10</td>
<td>5.71%</td>
</tr>
<tr>
<td>5</td>
<td>Bommnkatte</td>
<td>49</td>
<td>28.00%</td>
</tr>
<tr>
<td>6</td>
<td>Gondi</td>
<td>28</td>
<td>16.00%</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>175</strong></td>
<td><strong>100.00%</strong></td>
</tr>
</tbody>
</table>

The above table indicates that two sites have yielded 52% of the total collection and the other four sites account for the remaining 48% of the assemblage. Typewise distribution of artefacts in these sites are given below.

Table No. 71

Typological distribution of artefacts

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tool</th>
<th>Kagikodumagge</th>
<th>Dasarakalhalli</th>
<th>Holebelagal</th>
<th>Malenahalli</th>
<th>Bommnkatte</th>
<th>Gondi</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Side scraper</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Side end scraper</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>3</td>
<td>Round scraper</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>Point on flake</td>
<td>2</td>
<td>8</td>
<td>8</td>
<td>4</td>
<td>14</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>5</td>
<td>Bladish flake</td>
<td>2</td>
<td>7</td>
<td>-</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>22</td>
</tr>
<tr>
<td>6</td>
<td>Lunate</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>7</td>
<td>Simple blade</td>
<td>-</td>
<td>7</td>
<td>-</td>
<td>3</td>
<td>7</td>
<td>-</td>
<td>17</td>
</tr>
<tr>
<td>8</td>
<td>Retouched blade</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>-</td>
<td>4</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Backed blade</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>4</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>10</td>
<td>Point on blade</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>20</td>
</tr>
<tr>
<td>11</td>
<td>Burin</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Core</td>
<td>-</td>
<td>6</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>42</strong></td>
<td><strong>17</strong></td>
<td><strong>28</strong></td>
<td><strong>49</strong></td>
<td><strong>29</strong></td>
<td><strong>175</strong></td>
</tr>
</tbody>
</table>

... 365
The assemblage comprises of flake tools, bladish flakes and blades of different varieties and points. These have been discussed in detail below.

**Flake group:** Flake tools constitute bulk of the collection with 60%. These include varieties of scrapers, points, lunates and bladish flakes of different shapes. These are thick and broad, have faceted platform. Occasional bulb of percussion and cortexed surface are other important features.

**Scraper:** Scrapers constitute 17.14% of the total collection. Depending on the nature and type of working, these have been classified into sub types. Specimens are made on thick end or side flakes, amorphous in form. All are made on quartz. sub types are detailed below.

**Side scraper:** These constitute 5.17% of the total collection and 33.33% of the scraper group. Made on thick flakes of quartz, these are thick and the margins are usually worked. Pebble cortex is retained in a few.

### Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20-30 mm</td>
<td>3</td>
<td>30%</td>
<td>20-30 mm</td>
<td>9</td>
<td>90%</td>
<td>10-20 mm</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>30-40 mm</td>
<td>6</td>
<td>60%</td>
<td>30-40 mm</td>
<td>1</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>40-50 mm</td>
<td>1</td>
<td>10%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Artefacts ranging between 30 mm and 40 mm in length account for 60%, followed by the group of 20 mm and 30 mm range with 30%. The maximum and minimum length measure 47 mm and 26 mm respectively. Breadth varies between 23 mm and 34 mm. The artefacts ranging between
20 mm and 30 mm are the largest accounting for 90%. Majority of artefacts range between 13 mm and 16 mm in thickness while the minimum and maximum being 10 mm and 20 mm respectively.

**Side end scraper:** These constitute 8.57% of the total collection and 50% of the scraper group collection. These are made on thick quartz flakes of varying sizes. Functionally the lateral margins and the distal end is worked from one side or both the sides. Steep flaking is towards the working edge. These have thick flat ovaloid or bi-convex base on plan. Artefacts from Gondi are rectangular shaped and exhibit controlled working.

### Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20-30 mm</td>
<td>7</td>
<td>46.66%</td>
<td>10-20 mm</td>
<td>4</td>
<td>26.66%</td>
<td>1-10 mm</td>
<td>3</td>
<td>20%</td>
</tr>
<tr>
<td>2</td>
<td>30-40 mm</td>
<td>6</td>
<td>40.00%</td>
<td>20-30 mm</td>
<td>9</td>
<td>60.00%</td>
<td>10-20 mm</td>
<td>12</td>
<td>80%</td>
</tr>
<tr>
<td>3</td>
<td>40-50 mm</td>
<td>2</td>
<td>13.33%</td>
<td>30-40 mm</td>
<td>2</td>
<td>13.33%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lengthwise, three groups are discernible. Maximum and minimum length measures 42 mm and 22 mm respectively. Those falling in the range of 20 mm and 30 mm show high frequency with 46.66%, followed by the group of 30 mm and 40 mm range with 40%. Breadthwise, measurement varies between 19 mm and 31 mm. Tools of 20 mm and 30 mm range dominate the collection with 60%.

Thicknesswise, among the two groups, 10 mm and 20 mm range dominates with 80% and the remaining of 1 mm and 10 mm with 20%. Maximum and minimum thickness measure 19 mm and 7 mm respectively.

**Round scraper:** These form an important tool type and constitute 2.85% of the total collection and 16.66% of the scraper group collection.
These are made on medium sized irregular flakes. Bifacially flaked, zigzag and thin working end. Few are cortexed and thick at the centre.

**Metrical analysis:** Somewhat uniform in length as well as breadth, these fall in the range of 20 mm and 30 mm. Thicknesswise also, these fall into one group of 10 mm and 20 mm range. The maximum and minimum length, breadth and thickness measure 28 mm, 27 mm, 15 mm; and 22 mm, 22 mm and 11 mm respectively.

**Point:** These constitute 28.28% of the total collection. These are fashioned on both flakes and bladish flakes of quartz varying shapes of which irregular triangular shape is common. Working point is obtained by producing notches at the tip of the distal end from one side or both the sides and the margin is retouched. Another form of obtaining point is by removing a flake obliquely along the margin at the distal end. Point or tip is retouched to make the tool workable and strong. Those made on thick flakes have prominent central ridge and sloppy surface on one side. Few are worked on the convex margins but they can not be grouped under symmetric point. In a few, pebble cortex is retained in patches. Holebelgal and Malenahalli artefacts are more symmetric in form and exhibit refined workmanship.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>4</td>
<td>8.69%</td>
<td>10-20 mm</td>
<td>29</td>
<td>63.05%</td>
<td>1-10 mm</td>
<td>32</td>
<td>69.57%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>35</td>
<td>76.10%</td>
<td>20-30 mm</td>
<td>16</td>
<td>34.78%</td>
<td>10-20 mm</td>
<td>14</td>
<td>30.43%</td>
</tr>
<tr>
<td>3</td>
<td>30-40 mm</td>
<td>7</td>
<td>15.21%</td>
<td>30-40 mm</td>
<td>1</td>
<td>2.17%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Length of artefacts varies between 19 mm and 39 mm. 20 mm and 30 mm range dominates with 76.10%. Breadthwise, 10 mm and 20 mm range group shows high frequency with 63.05%, followed by 20 mm and 30 mm range group with 34.78%. The maximum and minimum breadth measure
36 mm and 13 mm respectively. Thicknesswise, 1 mm-10 mm range group dominates with 69.57%, closely followed by 10 mm and 20 mm group with 30.43%.

Bladish flake: These constitute 12.57% of the total collection. Made on quartz, these are of different shapes and are short, thick and broad. Slopy working edges are trimmed in a few and others are with thin sharp edges, devoid of workmanship. Flutings in a few are noteworthy. Their total absence in Holebelkal is significant.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>2</td>
<td>9.10%</td>
<td>10-20 mm</td>
<td>18</td>
<td>81.18%</td>
<td>1-10 mm</td>
<td>19</td>
<td>86.36%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>20</td>
<td>90.90%</td>
<td>20-30 mm</td>
<td>4</td>
<td>18.18%</td>
<td>10-20 mm</td>
<td>3</td>
<td>13.63%</td>
</tr>
</tbody>
</table>

Length varies between 18 mm and 29 mm. 20 mm and 30 mm range dominates with 90.90%. Maximum and minimum breadth measure 27 mm and 13 mm respectively. 10 mm and 20 mm range shows high frequency with 81.18%. Thickness range between 6 mm and 13 mm. 1 mm and 10 mm range account for 86.36% of the total collection.

Lunate: These constitute 4% of the total collection. These are made on bladish flakes and blades of quartz. Slopy and short cutting edge, short point at the distal end and the broad distance between the working edge and convex blunted margin are noteworthy. The other convex margin has minute flutings and flake scars.

**Metrical analysis:** Length of specimens varies between 18 mm and 43 mm. 20 mm-30 mm shows high frequency with 71.42%. Maximum and minimum breadth of specimens measure 26 mm and 10 mm respectively and those ranging between 10 mm and 20 mm dominate with 71.42%. Most of the artefacts (85.71%) fall within 10 mm range.
Blade group: This is another important group with different tool types and account for 31.41% of the total collection. Depending on the shape and nature of artefacts, these have been classified and discussed as below.

Simple blade: These constitute 9.71% of the total collection and 32.72% of the blade group collection. These are short and broad, devoid of usage marks. Central ridge running along the longer axis with slopy sides and flutings are some of the important features.

Metrical analysis

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>3</td>
<td>17.64%</td>
<td>10-20 mm</td>
<td>17</td>
<td>100%</td>
<td>1-10 mm</td>
<td>17</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>13</td>
<td>76.47%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>30-40 mm</td>
<td>1</td>
<td>5.88%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Only length range exhibits three groups dominated by specimens of 20 mm and 30 mm range with 76.47%. Breadth and thickness also fall within one range group and exhibit slight uniformity.

Retouched blade: These constitute 5.71% of the total collection and 18.18% of the blade group collection. These are made on both short and medium sized blades. Convex, concave and straight working edge are slightly retouched either on one side or on both the sides. Central ridge and slopy surface, fluting marks, plain platform are noteworthy features.

Metrical analysis: Lengthwise, 20 mm and 30 mm range dominates with 70% and the remaining 30% falls into 10 mm and 20 mm range. Breadth range varies between 10 mm-20 mm (100%). thicknesswise, artefacts fall between 6 mm and 9 mm range (100%).
Backed blade: These constitute 4.57% of the total collection and 14.55% of the blade group collection. These are fashioned on slightly broader parallel sided blades. Thin sharp working margin is straight or concave, retouched on the dorsal or ventral side. The other convex margin is blunted by chipping and fluting using pressure technique.

Metrical analysis: The maximum and minimum length measure 33 mm and 19 mm respectively. 20 mm and 30 mm range group dominates with 62.5%. Breadthwise, all fall into 10 mm and 20 mm range (100%). 87.5% belong to 1 mm and 10 mm range in thickness.

Point on blade: These constitute 11.42% of the total collection and 34.55% of the blade group collection. These are made on parallel sided blades of both longer and shorter varieties. Working points are attained by removing small flakes at the dorsal end or by retouching the distal end to the desired shape. Tips are short and sharp. One of the specimens has convex margin on one side. Plain platform and cortexed surface are other noteworthy features.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10-20 mm</td>
<td>11</td>
<td>55%</td>
<td>1-10 mm</td>
<td>4</td>
<td>20%</td>
<td>1-10 mm</td>
<td>20</td>
<td>100%</td>
</tr>
<tr>
<td>2</td>
<td>20-30 mm</td>
<td>9</td>
<td>45%</td>
<td>10-20 mm</td>
<td>16</td>
<td>80%</td>
<td>1-10 mm</td>
<td>20</td>
<td>100%</td>
</tr>
</tbody>
</table>

Maximum and minimum length measure 32 mm and 12 mm respectively. Those ranging between 10 mm and 20 mm dominate with 55% closely followed by 20-30 mm group with 45%. Breadth varies from 9 mm to 19 mm and those ranging between 10-20 mm show high frequency with 80%. Thicknesswise, all fall into one group of 1 mm-10 mm (100%).
**Burin**: It is made on a thick fluted blade of quartz. The burin facet is obtained by removing a spall vertically from the end of the blade along the left side margin. The working tip is sharp and slightly curved. Dorsal side has flutings. Ventral side is plain. Margins are blunted by pressure flaking. Length, breadth and thickness measure 25 mm, 12 mm and 7 mm respectively.

**Core**: These constitute 8.57% of the total collection. Majority of these are cylindrical in shape. Two to five parallel sided flutings of varying measurement, numerous platforms and cortex patches are other noteworthy features.

**Technique**: flaking is done by using a small stone hammer or by a wooden hammer. Cores exhibit narrow and broad flutings indicating use of punch or pressure to obtain blades. Retouching done on the scrapers and points show controlled flaking.

**General observations**: The occurrence of sites even at an altitude of 600 m above the M.S.L. is particularly noteworthy. Secondly, lithic artefacts are preserved largely as primary refuse. Majority of sites are located at a distance of 3 km from each other in the lower reaches and their occurrence in a limited area in the maidan region is particularly noteworthy. The sites in the Bhadra are rather large in extent than the ones noticed in the Upper Tungabhadra of the same category. Tools made out of river borne pebbles are more in number than the tools made from using quartz available in the nearby granitic hillocks.

Another feature worthy of note is the occurrence of tools embedded in the red humus deposit covering the bed rock, as for example at Malenahalli, a feature akin to Jalalahalli (Seshadri, 1956). Situation of sites, tool types, techniques adopted to fashion the tools and the rock material used are all similar to the features noticed in the Upper Tungabhadra valley.
Intensive survey in the valley revealed five sites of this category. Artefacts are found strewn on the slopes of the sections and on the top of the river bank. While in some sites, these are found in loose condition in clusters indicating their primary nature, in other sites, these occur as secondary refuse, and differ typo-technologically from the assemblages of sites situated under geo-setting elsewhere in the Upper Tungabhadra and the Tunga valleys. The main features of the assemblage of the Hemavati valley are discussed below.

**Environment:** The sites are located in the maidan, semi-Malnad belt of the region where semi-deciduous forest dissolve into scrub jungles and the river almost enters into its mature phase, a situation ideally suited for hunting in the vast open land and an assured, continuous supply of aquatic food in the shallow waters. Possibilities of these factors attracting the Mesolithic people to inhabit the area can not be ruled out. Occurrence of Mesolithic artefacts in two sites which yield Middle Palaeoliths is significant as it indicates continuous occupation.

**Rock material:** Large quantity of pebbles of quartz and rock-crystals of varying dimensions available in the river bed in these sites have been used. Except three implements of rock-crystal, the entire assemblage is made on quartz of white and grey colour. While fine grained quartz is used to fashion blade tools, coarser variety is used for fashioning other types of tools.

**Density and typology:** In two sites, artefacts are found spread in vast area in clusters along with huge quantity of waste flakes which are evidently primary refuse. In the remaining sites, only a few artefacts are found with a low percentage of waste flakes. These may be secondary refuse and the primary base camps may not be far away. However, no evidence could be traced..
Evidently bulk of the assemblage belong to the last two sites. As indicated above, totally 85 finished artefacts were collected and classified into different types depending on the nature, working and other characteristics of the implements. Sitewise distribution of the tool types are given in the table below.

Table No. 73
Typewise distribution of artefacts

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tools</th>
<th>Kattebelguli</th>
<th>Kattehosalli</th>
<th>Cholenahalli</th>
<th>Mudalahippe</th>
<th>Maranayakanahalli</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Side scraper</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>13.64%</td>
</tr>
<tr>
<td>2</td>
<td>Round scraper</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2.28%</td>
</tr>
<tr>
<td>3</td>
<td>Bladish flake</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>5</td>
<td>19.32%</td>
</tr>
<tr>
<td>4</td>
<td>Assymetric point</td>
<td>1</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>10</td>
<td>32.93%</td>
</tr>
<tr>
<td>5</td>
<td>Symmetric point</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>4.54%</td>
</tr>
<tr>
<td>6</td>
<td>Borer</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2.28%</td>
</tr>
<tr>
<td>7</td>
<td>Simple blade</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4.54%</td>
</tr>
<tr>
<td>8</td>
<td>Retouched blade</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>7.95%</td>
</tr>
<tr>
<td>9</td>
<td>Backed blade</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>5.68%</td>
</tr>
<tr>
<td>10</td>
<td>Cores</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>6.82%</td>
</tr>
</tbody>
</table>
Various types and their features with analysis and percentage are discussed below.

**Side scraper:** Side scrapers are made on thick flake and account for 13.64% of the total collection of artefacts. Straight margins retouched from one or both the sides, prominent mid ridge with slopy surface on either side are some of the important features.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20-30 mm</td>
<td>2</td>
<td>16.16%</td>
<td>20-30 mm</td>
<td>7</td>
<td>66.66%</td>
<td>10-20 mm</td>
<td>10</td>
<td>83.33%</td>
</tr>
<tr>
<td>2</td>
<td>30-40 mm</td>
<td>5</td>
<td>41.66%</td>
<td>30-40 mm</td>
<td>4</td>
<td>33.33%</td>
<td>20-30 mm</td>
<td>2</td>
<td>16.66%</td>
</tr>
<tr>
<td>3</td>
<td>40-50 mm</td>
<td>5</td>
<td>41.66%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lengthwise, scrapers belong to three groups. The first two of 30 mm-40 mm and 40 mm-50 mm range account for 41.66% each, while the third group of 20-30 mm range accounts for 16.66%. The maximum and minimum length of scrapers measure 49 mm and 25 mm respectively. Breadthwise, measurement varies between 20 mm and 42 mm and 20 mm and 30 mm range dominates with 66.66%. Thicknesswise, 10 mm-20 mm range group shows high frequency with 83.33%. It is evident from the analysis that specimens are quite large in size and no standardisation is noticeable.

**Round scraper:** These constitute 2.28% of the total collection and are made on thick flakes of grey coloured quartz. These are thick at the centre, bifacially worked and have thin zigzag working margin. Roughly round in shape. The maximum and minimum length, breadth and thickness measure 36 mm, 32 mm, 13 mm; and 27 mm, 25 mm and 10 mm respectively.
Bladish flake: These constitute second largest group of artefacts forming 19.32% of the entire collection. Varying in measurement, these are of rectangular as well as triangular shape and thick at the middle. Bulb of percussion, central ridge running along the axis, retouched margins on the dorsal side are noteworthy features.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Length Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Breadth Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Thickness Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20-30 mm</td>
<td>8</td>
<td>47.10%</td>
<td>10-20 mm</td>
<td>8</td>
<td>47.10%</td>
<td>1-10 mm</td>
<td>11</td>
<td>64.70%</td>
</tr>
<tr>
<td>2</td>
<td>30-40 mm</td>
<td>7</td>
<td>41.14%</td>
<td>20-30 mm</td>
<td>7</td>
<td>41.14%</td>
<td>10-20 mm</td>
<td>6</td>
<td>35.30%</td>
</tr>
<tr>
<td>3</td>
<td>40-50 mm</td>
<td>2</td>
<td>11.76%</td>
<td>30-40 mm</td>
<td>2</td>
<td>11.76%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Bladish flakes are uniform in size. In length, 47% range between 20 mm and 30 mm closely followed by the group ranging between 30 mm and 40 mm with 41.14%. 40 mm-50 mm range accounts 11.76%. In breadth, 10 mm and 20 mm range dominates with 47.1% while those in the range between 20 mm and 30 mm account for 41.14% and the rest belong to 30 mm to 40 mm range with 11.76%. Similarly in thickness, 1 mm and 10 mm range group accounts for 64.70% and the rest belong to 10 mm and 20 mm range (35.30%).

Point group: This is the largest group constituting 37.5% of the total collection of artefacts. These are simple types made on bladish flakes and are classified into two sub types, asymmetric and symmetric points.

Asymmetric point: These constitute 32.95% of the total collection of artefacts. Majority of these are made on thick, broad, bladish flakes, medium in size, invariably having a thick central ridge running along the longer axis. Working point is obtained by striking a single oblique stroke at the distal end and in few, two oblique strokes along the margin to produce points. Retouched tip and side margins are other...
noteworthy features. Triangular and irregular cross section is common. Points from Mudalahippe and Maranayakanahalli are distinctly different from each other. While bladish flakes were preferred in the former, thick and later elongated bladish flakes having a prominent central ridge were used in the latter.

**Metrical analysis**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Length range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Breadth range</th>
<th>Total No.</th>
<th>Percentage</th>
<th>Thickness range</th>
<th>Total No.</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20-30 mm</td>
<td>15</td>
<td>51.72%</td>
<td>10-20 mm</td>
<td>18</td>
<td>62.06%</td>
<td>1-10 mm</td>
<td>19</td>
<td>65.52%</td>
</tr>
<tr>
<td>2</td>
<td>30-40 mm</td>
<td>10</td>
<td>34.48%</td>
<td>20-30 mm</td>
<td>11</td>
<td>37.94%</td>
<td>10-20 mm</td>
<td>10</td>
<td>34.48%</td>
</tr>
<tr>
<td>3</td>
<td>40-50 mm</td>
<td>4</td>
<td>13.80%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lengthwise, 20 mm and 30 mm range accounts for 51.72%. 30 mm to 40 mm and 40 mm to 50 mm range account for 34.48% and 13.80% respectively. Breadthwise, specimens of 10 mm to 20 mm range and 20 mm to 30 mm range groups account for 62.06% and 37.94% respectively. Similarly in thickness also, two groups of 1 mm to 10 mm range and 10 mm to 20 mm range account for 65.52% and 34.18% respectively.

**Symmetric point:** These constitute 4.54% of the total collection. Fashioned on thick bladish flakes, medium in size, these are triangular in shape. One of the margins is slightly retouched while the other margin is straightened up by an oblique stroke at the distal end evidently to obtain thick and short working point. Plano-convex cross sections and diffused bulb of percussion are other noteworthy features.

**Metrical analysis:** Average length, breadth and thickness measure 28.25 mm, 22.5 mm and 9.5 mm respectively. 50% of the points measure 30 mm and above in length. Breadthwise, 20 mm and 30 mm range group dominates with 75% and similarly in thickness, 75% of the points fall in 1 mm and 10 mm range group.
**Borer:** These constitute 2.28% of the total collection. These are made on bladish flakes. Working end is obtained by producing a notch at the distal end of the left margin or by striking a blow at the distal end to remove a flake along the length of the margin, the pointed tip is then retouched. Zigzag, convex side margin obtained by alternate flaking is noteworthy. Maximum and minimum length, breadth and thickness measure 35 mm, 13 mm, 10 mm, and 29 mm, 20 mm and 6 mm respectively.

**Blade group:** These account for 18.18% of the total collection. Slightly large in size and exhibiting limited incipient retouch, these are further classified into the following sub types.

**Simple blade:** These constitute 4.54% of the total collection and 25% of the blade group. Side margins are roughly parallel sided and have thin sharp blade like working ends devoid of use marks. Prominent mid ridge is noteworthy.

Lengthwise, 50% of these measure in between 20-30 mm range and the remaining 50% measure in between 30-40 mm range. Breadthwise, 75% of the blades range between 10 mm and 20 mm and the remaining 25% are in the 30 mm range. Similarly in thickness, 75% of the blades measure between 1 mm and 10 mm and 25% measure between 10-20 mm range.

**Retouched blade:** These constitute 7.95% of the total collection and 43.75% of the blade group. Made on broad short blades, these have mid ridge, slopy sides on the dorsal surface and are parallel sided. Faint retouching of one side of the margin is noteworthy. While 'lengthwise,' these measure 21 mm on an average, breadth and thicknesswise these belong to 10 to 20 mm and 1 to 10 mm range respectively.

**Backed blade:** These constitute 5.68% of the total collection and 31.25% of the blade group. These are fashioned on slightly broad and elongated blades. Working margin is almost straight and sharp. The arc in most of the blades are crudely retouched by step flaking.
80% of the blades measure between 30 mm and 40 mm in length. Breadthwise, these measure between 10 mm and 20 mm (100%). Similarly in thickness, 60% of the blades measure between 1 mm and 10 mm and the remaining 40% measure between 10 mm and 20 mm.

Core: These constitute 6.82% of the total collection. These are cylindrical in shape, short and thick. Numerous flutings and flat upper end are other noteworthy features. Percentage of occurrence of these cores does not coincide with the percentage of blade tools in these sites. Average length, breadth and thickness measure 46.60 mm, 34.20 mm and 26.4 mm respectively.

Technique: The assemblage comprises of scrapers, points, bladish flakes and blades of different types. Artefacts of first two groups are fashioned on irregular flakes. Use of stone hammers for detaching flakes might have been used. Zigzag working margin in round scrapers is due to alternate flaking probably using a soft bone as hammer. From the crude irregular flutings on the cores and on few tools, it may be postulated that pressure technique was just making its appearance in this part of the region. This is further attested by the fact that retouching is used sparingly along the working edge exhibiting an incipient stage. All these factors tend to show that the Hemavati assemblage is a precursor to the true Mesolithic stage in region under study.

General observations: It is particularly noteworthy that Mesolithic artefacts are found above the gravels which yield Middle Palaeolithic artefacts at Kattebelguli and Cholenahalli indicating continuous occupation of the area. The Mesolithic people of the region seem to have preferred only coarse grained quartz while their predecessors used close grained chloritic schist. This marked contrast in the use of raw material is a significant feature of the Mesolithic culture in this region. Most of the sites are small in dimension and are located within a limited area of the river bank, the distance between each...
site varying between ½ Km-1 Km particularly in lower course of the river. Whether the same situation prevailed in the upper reaches could not be ascertained since the major portion of the river is submerged in the back waters. Open land with scrub jungles ideally suited for hunting, abundant raw material for fashioning lithic artefacts and assured continuous aquatic food in the shallow waters might have attracted people to habitat this region.

Occurrence of high percentage of blade tools is noteworthy and seems to be a regular feature of the sites of the third category as evidenced in the adjacent river valleys of the region under study. Majority of the tools are fashioned on flakes detached from quartz lumps. Limited use of river borne pebbles is significant.
MESOLITHIC TOOL TYPES

Figure I: Side scrapers

(1)
River valley: Upper Tungabhadra (I)  Site: Hole Arlehalli
Rock material: Milky quartz  Tool type: Side scraper
Description: Oval shaped; made on a thick flake. Shallow flake scars on both the surfaces. Scraping edge retouched alternatively from both sides. Thick, convex right lateral margin. Plain platform. Thick at the bottom. Fresh. Measures 5.1 cm x 3.5 cm x 2.4 cm.
Comparable to: No. 3, Pl. XVI, Site near Bangalore (Seshadri, 1956).

(2)
River valley: Upper Tungabhadra (I)  Site: Hole Arlehalli
Rock material: Quartz  Tool type: Side scraper
Description: Triangular shape; made on a thick pinkish flake. Shallow flake scars on the dorsal side. Plain ventral side. Scraping edge minutely retouched from both the sides. Irregular platform. Thick at the centre and pointed distal end. Fresh. Measures 4.3 cm x 2.7 cm x 1.2 cm.
Comparable to: No. 8, Pl. XIV, Jalahalli (Seshadri, 1956).

(3)
River valley: Upper Tungabhadra (II)  Site: Haraganahalli
Rock material: Milky quartz  Tool type: Side scraper
Description: Made on a thick whitish flake. Bold ridge on the dorsal side besides stepped shallow flake scars. Deep flake scar and a thin coat of blackish patina on the ventral side. Thin working edge bears faint traces of retouch. The other side margin is slightly convex. Deep notch at the distal end. Thick at the centre. Fresh. Measures 4.6 cm x 4.2 cm x 2.1 cm.
Comparable to: No. 3, Pl. XIV, Jalahalli (Seshadri, 1956).
(4)
River valley: Upper Tungabhadra (III)  Site: Chikbasur
Rock material: Quartz  Tool type: Side scraper
Description: Made on a thin flake. Shallow flake scars near the working margin on the dorsal side. Depressed ventral side. Working edge retouched from both the sides. Tang like projection on the right side margin. Fresh. Measures 3.1 cm x 2.2 cm x 0.9 cm.
Comparable to: No. 4, Pl. XVII, Brahmagiri (Seshadri, 1956).

(5)
River valley: Upper Tungabhadra (III)  Site: Nyamti
Rock material: Quartz  Tool type: Side scraper
Description: Made on a bladish flake. Plain dorsal and ventral sides. Working edge retouched from both the sides. Straight right side margin. Distal proximal end slightly retouched. Fresh. Measures 2.1 cm x 1.5 cm x 0.6 cm.
Comparable to: No. 6, Pl. XVI, Bangalore (Seshadri, 1956)

(6)
River valley: Bhadra (I)  Site: Mattigatta
Rock material: Quartz  Tool type: Side scraper
Description: Made on a thick oval shaped whitish flake. Shallow flake scars, cortexed median ridge and slopy surface on the dorsal side. Shallow flake scars on the ventral side. Convex margins retouched from both the sides. Fresh. Measures 4.6 cm x 2.2 cm x 1.3 cm.
Comparable to: No. 11, Pl. XIV, Jalahalli (Seshadri, 1956).
(7)  
River valley: Bhadra (II)  
Site: Holebelgal  
Rock material: Quartz  
Tool type: Side scraper  
Description: Made on a thick rectangular flake. Deep flake scar and patch and pebble cortex on the dorsal side. Diffused bulb of percussion on the ventral side. Retouched distal working end. Fresh. Measures 3.7 cm x 3.2 cm x 1.3 cm.  
Comparable to: No. 14, PI. XVI, Bangalore (Seshadri, 1956).

(8)  
River valley: Hemavati (III)  
Site: Kattebelguli  
Rock material: Quartz  
Tool type: Side scraper  
Description: Oval shaped, made on a thick flake. Shallow flake scars on the dorsal surface. Plain depressed ventral surface. Right side margin slightly retouched from dorsal side. Fresh. Measures 4 cm x 2.5 cm x 1 cm.  
Comparable to: Variant of No. 7.

(9)  
River valley: Hemavati (III)  
Site: Maranayakanahalli  
Rock material: Quartz  
Tool type: Side scraper  
Description: Roughly oval shaped, made on a thick flake. Shallow ripple marks on both the surfaces. Zigzag and convex left margin retouched from both the sides. Thick and straight right margin. Fresh. Measures 4.3 cm x 2.9 cm x 1.7 cm.  
Comparable to: No. 1, PI. XVII, Brahmagiri (Seshadri, 1956).
Figure II : Round scrapers

(10)
River valley : Upper Tungabhadra (I) Site: Harlahalli
Rock material: Quartz Tool type: Round scraper
Description: Made on a thick whitish flake. Shallow flake scars converging at the centre on both the dorsal and ventral sides indicate prepared core technique. Thin working edge alround. Thick at the centre. Fresh. Measures 5.7 cm x 4.8 cm x 2.5 cm.
Comparable to: No. 4, Pl. XVI, Bangalore (Seshadri, 1956).

(11)
River valley : Bhadra (II) Site: Gondi
Rock material: Milky quartz Tool type: Round scraper
Description: Made on a thick short flake. Prominent median ridge and shallow flake scars on the dorsal surface. Shallow flake scars on the ventral surface. Thin zigzag working edge alround. Thick at the centre. Fresh. Measures 2.7 cm x 2.5 cm x 1.2 cm.
Comparable to: No. 57, Fig. XXVII, Satara (Malik, 1959).

(12)
River valley : Upper Tungabhadra (III) Site: Chikbasur
Rock material: Quartz Tool type: Round scraper
Description: Made on a thick short flake. Shallow stepped flake scars on the dorsal side. Irregular flake scars and shallow flutingts on the ventral side. Zigzag working edge alround due to alternate flaking. Faint mark of retouch along the periphery. Fresh. Measures 2.4 cm x 2.2 cm x 1.1 cm.
Comparable to: No. 93, Fig. 45, Nagarjunakonda (Subramanyam, 1975).
(13)
River valley: Hemavati (III) Site: Maranayskanahalli
Rock material: Quartz Tool type: Round scraper
Description: Made on a thick greyish flake. Shallow flake scars on both the surfaces. Zigzag working edge due to alternate flaking. Faint retouching along the edge. Fresh. Measures 3.7 cm x 3.2 cm x 1.4 cm.
Comparable to: No. 1, Pl. XVI, Bangalore (Seshadri, 1956)

Figure III: Hollow scrapers

(14)
River valley: Upper Tungabhadra (I) Site: Konaikanahalli
Rock material: Quartz Tool type: Hollow scraper
Description: Made on a thin elongated brownish flake. Prominent median ridge, two steep flake scars on the dorsal side. Plain ventral side. Deep notch at the middle of right side margin to achieve concave working edge. Faint marks of retouch. Slightly convex near the top, flat base. Fresh. Measures 5.3 cm x 2.4 cm x 1.4 cm.
Comparable to: No. 14, Fig. 43, Nagarjunakonda (Subramanyam, 1975).

(15)
River valley: Upper Tungabhadra (I) Site: Harlahalli
Rock material: Quartz Tool type: Hollow scraper
Description: Made on a thick whitish flake. Elongated fluted flake scars on the dorsal side. Shallow flake scars on the ventral side. Deep flake removed from the right side margin to achieve concavity and retouched from the dorsal side. Convex left side margin. Pointed base. Semi fresh. Measures 4.9 cm x 2.7 cm x 1.5 cm.
Comparable to: No. 99, Fig. 45, Nagarjunakonda (1975).
(16)
River valley: Upper Tungabhadra (II) Site: Surahonne
Rock material: Quartz Tool type: Hollow scraper
Description: Made on a thin pinkish flake. Prominent median ridge on the dorsal side. Plain ventral side. Concave working edge and faint traces of retouch. Distal end curved and almost pointed. Slopy base. Measures 2.4 cm x 1.5 cm x 0.6 cm.
Comparable to: No. 7, Pl. XVI, Bangalore (Seshadri, 1956).

(17)
River valley: Upper Tungabhadra (III) Site: Chikbasur
Rock material: Quartz Tool type: Hollow scraper
Description: Made on a thick flake. Prominent median ridge with slopy sides on the dorsal side. Stepped flake scars on the ventral side. Concavity on the right side margin obtained by producing a deep notch on the dorsal side. Remaining sides and the notch slightly retouched. Faceted platform. Measures 3 cm x 2.4 cm x 1.2 cm.
Comparable to: No. 6, Fig. XIV, Chembur (Malik, 1959).

Figure IV: End scraper

(18)
River valley: Upper Tungabhadra (I) Site: Konaikanahalli
Rock material: Quartz Tool type: End scraper
Description: Made on a thin brownish flake. Shallow flake scars on both the surfaces. Steep flaking of the top end to achieve thin working end. Flaring working end retouched from dorsal side. Narrow base. Fresh. Measures 3.8 cm x 2.5 cm x 0.9 cm.
Comparable to: No. 7, Pl. XIV, Jalahalli (Seshadri, 1956).
(19)
River valley: Upper Tungabhadra (I)  Site: Honnali
Rock material: Quartz  Tool type: End scraper

Description: Made on a thick whitish flake. Uneven dorsal and ventral surface. Steep flaking near the top end to achieve thin working end and retouched. Thick at the base. Semi fresh. Measures 3.5 cm x 2.9 cm x 1.6 cm.

Comparable to: No. 11, Pl. XVI, Bangalore (Seshadri, 1956).

(20)
River valley: Upper Tungabhadra (III)  Site: Chikbasur
Rock material: Milky quartz  Tool type: End scraper

Description: Made on a short thick flake. Almost rectangular in shape. Prominent median ridge and slopy surface on the dorsal side. Plain ventral side. Flaring distal end retouched from dorsal side. Thick, flat base. Fresh. Measures 2.6 cm x 1.9 cm x 1.3 cm.

Comparable to: No. 6, Pl. XIV, Jalahalli (Seshadri, 1956).
(22)
River valley : Bhadra (I) Site: Mattigatta
Rock material: Quartz Tool type: End scraper
Description: Made on a thick flake. Shallow stepped flake scars on the dorsal and ventral surfaces. Broad working end at the distal end retouched from both the sides. Thick base. Fresh. Measures 2.8 cm x 1.7 cm x 1.2 cm.
Rare type.

Figure V : Scraper cum point

(23)
River valley : Upper Tungabhadra (I) Site: Hole Arlehali
Rock material: Quartz Tool type: Scraper cum point
Description: Made on a thin flake; rectangular shaped. Three shallow flake scars and patch of cortex on the dorsal side. Plain ventral side. Retouched right margin on dorsal side. Point achieved at distal end by two small notches on the dorsal side and trimmed. Fresh. Measures 3.3 cm x 1.8 cm x 0.9 cm.
Comparative to: No. 16, Fig. XXVI, Satna (Malik, 1959).

(24)
River valley : Upper Tungabhadra (III) Site: Haraganahalli
Rock material: Quartz Tool type: Scraper cum point
Description: Made on a thick greyish flake. Shallow flake scars and prominent mid ridge along the longer axis on the dorsal side. Step flake scars on the ventral side. Retouched side margins. A small flake removed obliquely near the distal end on the left side margin to obtain working point and retouched. Thick at the bottom and straight base. Fresh. Measures 5 cm x 4.8 cm x 2.2 cm.
Comparative to: No. 9, Pl. XV, Bangalore (Seshadri, 1956).
River valley: Upper Tungabhadra (III) Site: Chikbasur
Rock material: Quartz Tool type: Scraper cum point
Description: Made on a thick flake. Irregular in shape. Shallow slopy flake scars and median ridge on the dorsal side. Flat and plain ventral surface. Margins retouched around from both the sides, including the tip. Fresh. Measures 3 cm x 1.9 cm x 0.8 cm. Comparable to: No. 18, Fig. XXV, Mahabaleshwar (Malik, 1959).

Figure VI: Asymmetric point

River valley: Upper Tungabhadra (I) Site: Hanagawadi
Rock material: Quartz Tool type: Asymmetric point.
Description: Made on a thin flake. Steep flake scar and patch of cortex on the dorsal side. Plain ventral side. Oblique flaking near the distal end to achieve point. Retouched tip. Fresh. Measures 3.5 cm x 2.4 cm x 0.9 cm. Comparable to: No. 6, Pl. XVII, Brahmagiri (Seshadri, 1956).

River valley: Upper Tungabhadra (I) Site: Hanagavadi
Rock material: Quartz Tool type: Asymmetric point
Description: Made on a thin elongated flake. Shallow flake scars on both the surfaces. Working end on either side achieved by removing flakes, obliquely from side margins. Slightly convex right side margin. Fresh. Measures 5.5 cm x 2.6 cm x 1 cm. Comparable to: No. 44, Fig. 42, Nagarjunakonda (Subramanyam, 1975).
(28)  
River valley: Upper Tungabhadra (I) Site: Konaikanahalli  
Rock material: Quartz Tool type: Asymmetric point  
Description: Made on a thin flake. Two deep notches on the right side margin producing serrated edge. Plain dorsal and ventral sides. Convex right margin and curved near the top. Fresh. Measures 4 cm x 2.6 cm x 1.1 cm.  
Rare type.

(29)  
River valley: Upper Tungabhadra (II) Site: Haraganahalli  
Rock material: Quartzite Tool type: Asymmetric point  
Description: Made on a thick brownish flake. Triangular shaped. Shallow flake scars on the dorsal side. Bulb of percussion nipped on the ventral side. Cortexed platform near the base. Narrow pointed end achieved by producing a notch near the tip on the right side margin. Patch of cortex at the base. Fresh. Measures 2.9 cm x 2.5 cm x 1.7 cm.  
Comparable to: No. 3, Pl. XVII, Brahmagiri (Seshadri, 1956).

(30)  
River valley: Upper Tungabhadra (II) Site: Salabalu  
Rock material: Quartz Tool type: Asymmetric point  
Description: Made on a thick whitish flake. Numerous ripple marks on the dorsal and ventral sides. Faceted platform on the left side margin. Remaining sides retouched. Two thin flakes removed from the distal end to obtain working point. Fresh. Measures 2.3 cm x 2.2 cm x 0.8 cm.  
Comparable to: No. 19, Fig. XIII, Bombay (Malik 1959).
(31)
River valley: Upper Tungabhadra (III) Site: Chikbasur
Rock material: Quartz Tool type: Asymmetric point
Description: Made on a thick narrow bladish flake. Shallow flutings on the dorsal side. Stepped flake scars on the ventral side. Both the margins and the tip retouched. Flat base. Fresh. Measures 2.3 cm x 1.6 cm x 0.9 cm.
Comparable to: No. 41, Fig. XIX, Mahuli (Malik, 1959).

(32)
River valley: Bhadra (I) Site: Mattigatta
Rock material: Quartz Tool type: Asymmetric point
Description: Irregular shaped, made on a thick flake. Shallow step flake scars on the dorsal and ventral surfaces. Oblique stroke on the right side margin to produce point. Left side margin retouched from middle towards tip end. The remaining portion obliquely cut. Fresh. Measures 3.3 cm x 2.5 cm x 1.00 cm.
Comparable to: No. 26, Pl. XIII, Jalahalli (Seshadri, 1956).

(33)
River valley: Bhadra (II) Site: Kagikodumagge
Rock material: Rock crystal Tool type: Asymmetric point
Description: Made on a narrow thick flake. Rectangular in shape; uneven dorsal surface. Plain ventral surface. Two oblique strokes near the distal end to produce point and retouched from ventral side. Fresh. Measures 2 cm x 1.8 cm x 0.7 cm.
Comparable to: No. 42, Pl. XIII, Jalahalli (Seshadri, 1956).
(34) River valley: Tunga (III) Site: Sirgala
Rock material: Rock crystal Tool type: Asymmetric point
Description: Made on a short thick flake. Numerous shallow flake scars on the upper half and patch of pebble cortex on the lower half of dorsal side. Shallow flutings and flake scars on the ventral surface. A shallow notch at the distal end along the left margin. Working point retouched from all sides. Fresh. Measures 2.1 cm x 1.9 cm x 0.8 cm.
Comparable to: No. 18, Fig. XVI, Vajreshwari (Malik, 1959).

(35) River valley: Hemavati (III) Site: Maranayakanahalli
Rock material: Quartz Tool type: Asymmetric point
Description: Made on a thin elongated bladish flake. Median ridge running along the longer axis and the side slopes towards the margins on the dorsal surface. Depressed ventral surface. Oblique flaking along the margin at the distal end. A small notch near the base to produce tang. Point tip short and thick. Fresh. Measures 3.7 cm x 1.9 cm x 0.7 cm.
Comparable to: No. 5, Pl. XVII, Brahmagiri (Seshadri, 1956).

(36) River valley: Hemavati (III) Site: Cholenahalli
Rock material: Quartz Tool type: Asymmetric point
Description: Made on thin flake. Patch of pebble cortex on the upper half and ripple marks on the lower half of dorsal surface. Ripple marks on the ventral surface. Small notch at the pointed distal end. Right margin slightly convex and straight left margin. Thick near the base. Fresh. Measures 2.6 cm x 1.5 cm x 0.7 cm.
Comparable to: No. 14, Pl. XV, Bangalore (Seshadri, 1956).
Figure VII : Symmetric point

(37)
River valley : Upper Tungabhadra (I)  
Site: Honnali
Rock material: Quartz  
Tool type: Symmetric point

Description: Leaf shaped; made on thick pinkish flake. Shallow flake scars on the dorsal side. Bulb of percussion on the ventral side. Flakes removed obliquely near the distal end to achieve point. Slight retouching of side margins. Prominent median ridge. Round base. Fresh. Measures 4.5 cm x 3.5 cm x 1.5 cm.

Comparable to: No. 50, Fig. 19(a), Renigunta (Murthy, 1970).

(38)
River valley : Upper Tungabhadra  
Site: Hanagavadi
Rock material: Milky quartz  
Tool type: Symmetric point

Description: Leaf shaped; made on a thin flake. Shallow flake scars on both the surfaces. Side margins retouched to attain point at distal end. Broken point. Flat base. Fresh. Measures 3.5 cm x 3 cm x 1.1 cm.

Comparable to: No. 28, Fig. XXI, Wai (Malik, 1959).

(39)
River valley : Upper Tungabhadra (II)  
Site: Salabalu
Rock material: Quartz  
Tool type: Symmetric point

Description: Leaf shaped point; made on a short thick whitish flake. Few ripple marks on the dorsal side. Plain ventral side. Retouched convex side margins. Broken point. Measures 2.2 cm x 1.7 cm x 0.8 cm.

Comparable to: No. 27, Fig. XXI, Wai (Malik, 1959).

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(40) River valley: Upper Tungabhadra (III) Site: Nyamti
Rock material: Quartz Tool type: Symmetric point
Description: Made on a thin flake. Shallow flutings and few flake
scars on both the ventral and dorsal sides. Point obtained by oblique
stroke from one margin and retouched. Faint projection at the base.
Incipient notch on the other margin appears like tang. Fresh.
Measures 2.7 cm x 2.2 cm x 0.9 cm.
Comparable to: NO. 6, Fig. XIII, Bombay (Malik, 1959)

(41) River valley: Upper Tungabhadra (III) Site: Chikbasuc
Rock material: Quartz Tool type: Symmetric point
Description: Made on a short thick flake. Shallow stepped flutings and
ridge on the dorsal side. Flat and plain ventral side. Minute
retouching of margins from both the sides. Broken tip. Measures 2.1
cm x 1.5 cm x 0.9 cm.
Comparable to: No. 23, Pl. XV, Bangalore (Seshadri, 1956).

(42) River valley: Bhadra Site: Mattigatta
Rock material: Milky quartz Tool type: Symmetric point
Description: Triangular shaped, made on a thick broad flake. Flaking
done from the middle on the dorsal side slopes towards the tip.
Shallow flake scars and median ridge on the ventral surface. Two
shallower notches at the middle on either margins to obtain broad and
thin point. Margins retouched from both the sides. Partially straight
left side margin. Flat base. Fresh. Measures 2.9 cm x 2.6 cm x 1 cm.
Rare type.
(43)
River valley: Bhadra (I)  Site: Mattigatta
Rock material: Rock crystal  Tool type: Symmetric point
Description: Triangular shaped; made on a thin flake. Uneven dorsal and ventral surfaces. Margins retouched all round. Uneven notches on the dorsal side at the distal end. Retouched tip. Round base. Fresh. Measures 2.8 cm x 1.8 cm x 0.8 cm.
Rare type.

(44)
River valley: Tunga (III)  Site: Mandagadde
Rock material: Milky quartz  Tool type: Symmetric point
Description: Made on a thick flake. Triangular shaped. Zigzag ridge running along the longer axis on the dorsal side. Nipped, diffused bulb of percussion on the ventral side. Thin convex right margin slightly retouched. Left margin thick near the base. Fresh. Measures 3.2 cm x 2.8 cm x 1.2 cm.
Comparable to: NO. 49, fig. XXII, Wai (Malik, 1959).

(45)
River valley: Hemavati (III)  Site: Kattebelguli
Rock material: Quartz  Tool type: Symmetric point
Description: Made on a thick flake; triangular shaped. Ripple marks and protrusion on the dorsal surface. Nipped bulb of percussion on the ventral surface. Platform on the right margin. Slightly retouched left margin. Thin point. Thick at the centre. Fresh. Measures 3.7 cm x 3 cm x 1.5 cm.
Comparable to: no. 35, Fig. 59(a), Bangaltota (Sankalia, 1974).
River valley: Hemavati (III)  Site: Mudalahippe
Rock material: Rock crystal  Tool type: Symmetric point

Description: Made on a short thick flake; triangular shaped. Pebble cortex patch along the left margin and ripple marks in the remaining portion on the dorsal surface. Small bulb of percussion on the ventral surface. Oblique strokes from opposite margins to attain working point. Short and thick tip. Faint retouching along the margin. Narrow base indicates tang. Fresh. Measures 2.6 cm x 2 cm x 0.8 cm.

Figure VIII: Borer

River valley: Upper Tungabhadra (I)  Site: Hole Arlehalli
Rock material: Quartz  Tool type: Borer

Description: Made on a thick flake; almost triangular in shape. Working end achieved at the middle of longer axis by producing two deep notches on the dorsal side. Shallow scars on the ventral side. Flat base. Fresh. Measures 4.8 cm x 2.4 cm x 1.2 cm. Rare type.

River valley: Upper Tungabhadra (III)  Site: Nyamti
Rock material: Quartz  Tool type: Borer

Description: Made on a small thin flake. Shallow flake scars and short ridge on the dorsal side. Plain ventral surface. Borer point obtained by producing a deep notch at the distal end on the right side margin. Retouched tip. Fresh. Measures 2 cm x 1.3 cm x 0.6 cm.

Comparable to: No. 6, Fig. 20, Renigunta (Murthy, 1970).
(49)
River valley: Bhadra (I)  Site: Mattigatta
Rock material: Quartz  Tool type: Borer
Description: Made on a thin flake. Medial ridge and slopy surface on the dorsal side. Flat and plain ventral side. Borer tip obtained by producing notches at the middle of the longer axis. Retouched tip. Fresh. Measures 3.1 cm x 1.7 cm x 0.6 cm.
Variation of No. 47.

(50)
River valley: Tunga (III)  Site: Mandagadde
Rock material: Quartz  Tool type: Borer
Description: Made on a thick bladish flake. Numerous flutings and central ridge running along the longer axis on the dorsal side. Shallow ripples on the ventral side. Faceted platform on the right margin. Borer point attained by removing a spall vertically and retouched from all the sides. Uneven base. Fresh. Measures 3.5 cm x 1.9 cm x 1.1 cm.
Comparable to: No. 47, Pl.XIII, Jalahalli (Seshadri, 1956).

(51)
River valley: Hemavati (III)  Site: Maranayakanahalli
Rock material: Quartz  Tool type: Borer
Description: Made on a bladish flake; rectangular in shape. Shallow fluting marks and low ridges on the dorsal surface. Depressed ventral surface. Borer point at the distal end, achieved by a deep notch along the left margin. Protruding thin working end retouched from all sides. Fresh. Measures 2.9 cm x 2.1 cm x 0.6 cm.
Comparable to: No. 29, Fig. XXIV, Mahabaleshwar (Malik, 1959).
(52)
River valley: Tunga (II)  Site: Hosagadde
Rock material: Quartzite  Tool type: Borer

Description: Made on a bladish flake, grey in colour. Fluting marks on the protruded dorsal side. Bulb of percussion nipped on the ventral surface. Working end attained by removing a flake vertically along the right margin at the distal end. Flat cortexed base. Fresh. Measures 2.4 cm x 1.7 cm x 0.8 cm.

Comparable to: No. 9, Fig. 20, Renigunta (Murthy, 1970).

Figure IX: Backed blade

(53)
River valley: Upper Tungabhadra (I)  Site: Harlahalli
Rock material: Quartz  Tool type: Backed blade

Description: Almost triangular shaped, made on a thin pinkish blade. Plain dorsal and ventral sides. Straight working margin. Other convex margin blunted with numerous shallow flake scars. Fresh. Measures 2.5 cm x 1.5 cm x 0.8 cm.

Comparable to: No. 25, Pl. XIII, Jalahalli (Seshadri, 1956).

(54)
River valley: Upper Tungabhadra (III)  Site: Chikbasur
Rock material: Quartz  Tool type: Backed blade

Description: Made on a short thin greyish blade. Depressed dorsal and ventral surfaces. Thin working edge obtained by fluting the margin and retouched. Convex margin blunted carefully by removing small chips by pressure technique. Fresh. Measures 2.3 cm x 1.9 cm x 0.6 cm.

Rare type.
(55)  
River valley: Upper Tungabhadra (III)  
Site: Nyamti  
Rock material: Quartz  
Tool type: Backed Blade.  
Description: Triangular shaped. Shallow flake scar on the ventral side, slopey dorsal surface. Thin cutting edge with notches show use mark. Convex margin blunted by removing small flakes. Fresh. Measurements 2.6 cm x 1.4 cm x 0.7 cm.  
Comparable to: No. 7, Fig. XXV, Mahabaleshwar (Malik, 1959).

(56)  
River valley: Bhadra (I)  
Site: Mattigatta  
Rock material: Milky quartz  
Tool type: Backed Blade  
Description: Made on a short thick blade. Rough retouch sloping towards the working edge on the dorsal side. Convex margin blunted by removing small flakes. Narrow distal end. Broad in the middle. Flat straight base. Fresh. Measurements 2.1 cm x 1.6 cm x 0.6 cm.  
Comparable to: Variation of 54.

(57)  
River valley: Bhadra (II)  
Site: Malenahalli  
Rock material: Milky quartz  
Tool type: Backed Blade  
Description: Rectangular shaped; medium size. Shallow flittings and low ridge on the dorsal surface. Depressed ventral surface. Working margin straightly concave at the centre and retouched from dorsal side. Convex margin blunted by close chipping. Fresh. Measurements 2.4 cm x 1.1 cm x 0.4 cm.  
Comparable to: No. 8, Fig. XXVI, Ambenalli - Joali (Malik, 1959).
(58)
River valley : Bhadra (II) Site: Malenahalli
Rock material: Quartz Tool type: Backed blade
Description: Rectangular shaped; medium size. Flutings and ridge running along the concave working margin on the dorsal surface. Depressed ventral surface. Working margin retouched from the dorsal side. Convex margin blunted by chipping. Thick base. Fresh. Measures 3.4 cm x 1.5 cm x 1.1 cm.
Comparable to: Variation of No. 57.

(59)
River valley : Tunga (III) Site: Mandagadde
Rock material: Quartz Tool type: Backed blade
Description: Made on a thick long blade. Slopy dorsal side. Depressed ventral surface. Thin and sharp. Concave working margin. Convex margin is blunted by steep flaking. Fresh. Measures 3.3 cm x 1.7 cm x 1 cm.
Comparable to: No. 17, Fig. XXV, Mahabaleswar (Malik, 1959).

(60)
River valley : Hemavati (III) Site: Maranayakanahalli
Rock material: Quartz Tool type: Backed blade
Description: Made on thin blade. Ridge along the convex margin and slopy working margin on the dorsal surface. Working edge straight and slight retouched. Convex margin blunted by irregular step flaking. Fresh. Measures 3.6 cm x 2 cm x 0.7 cm.
Comparable to: Variation of No. 55.
Plate X: Point on blade

(61)
River valley: Upper Tungabhadra (I) Site: Haralahalli
Rock material: Quartz Tool type: Point on blade
Description: Triangular shaped, made on a thin short blade. Fluted scars on the dorsal side. Ripple marks on the ventral side. Point achieved by producing a notch near the distal end retouched. Slight retouching of the side margins. Fresh. Measures 1.7 cm x 1.3 cm x 0.6 cm.
Rare type.

(62)
River valley: Upper Tungabhadra (I) Site: Haralahalli
Rock material: Quartz Tool type: Point on blade
Description: Made on a short blade. Flutings on the dorsal side. Plain ventral side. Working end achieved by producing irregular notches on either side of the margin. Fresh. Measures 1.8 cm x 1.6 cm x 0.7 cm.
Comparable to: No. 7, Fig. 3, Malampuzha (Rajendran, 1985).

(63)
River valley: Bhadra (I) Site: Mattigatta
Rock material: Quartz Tool type: Point on blade
Description: Made on a short thick blade. Shallow flutings and two slopy notches at the distal end on the dorsal side. Depressed ventral surface. Tip retouched. Fresh. Measures 2.2 cm x 1.4 cm x 0.6 cm.
Comparable to: No. 43, Fig. XXIII, Panchganı Road (Malik, 1959).
(64)
River valley: Bhadra (II)  
Site: Holebelgal  
Rock material: Quartz  
Tool type: Point on blade

Description: Point made on a short blade. Prominent median ridge and slopy dorsal surface. Shallow flutings on the ventral surface. Thick long point retouched from all sides. Triangular section. Fresh. Measures 2.1 cm x 1.2 cm x 0.6 cm.

Comparable to: No.42, Pl. XIII, Jalahalli (Seshadri, 1956).

(65)
River valley: Tunga (II)  
Site: Sulebailu  
Rock material: Quartz  
Tool type: Point on blade

Description: Small point made on a thick short blade. Median ridge and fluting marks on the dorsal surface. Depressed ventral surface. Working margin retouched from ventral surface. Fresh. Measures 1.6 cm x 1.2 cm x 0.7 cm.

Comparable to: No. 10, Fig. XXIII, Panchgani Road (Malik, 1959).

(66)
River valley: Tunga (III)  
Site: Mandagadde  
Rock material: Quartz  
Tool type: Point on blade

Description: Crescent shaped point made on a thin short blade. Shallow flutings on the dorsal surface. Plain ventral surface. Straight left margin. Convex right margin retouched obliquely at the distal end. Thin and sharp point. Fresh. Measures 2 cm x 1.3 cm x 0.4 cm.

Comparable to: No. 9, Fig. 2, Podippara (Rajendran, 1985).
Figure XI: Simple blade

(67)
River valley: Upper Tungabhadra (II) Site: Surahonne
Rock material: Quartz Tool type: Simple blade
Description: Rectangular shaped, made on a short thick blade. Fluting on both the surfaces. Straight left margin shows wear and tear. Convex right margin. Thick at the centre. Fresh. Measures 2.2 cm x 1.2 cm x 0.8 cm.
Comparable to: No 95, Fig. 45, Nagarjunakonda (Subramanyam, 1975).

(68)
River valley: Upper Tungabhadra (III) Site: Sasivehalli
Rock material: Quartz Tool type: Simple blade
Description: A short and thin blade. Central ridge and slopy surface on the dorsal side. Small bulb of percussion on the ventral side. Plain platform. Margins almost straight and thin. Fresh. Measures 2 cm x 1.3 cm x 0.6 cm.
Comparable to: Variation of 67.

(69)
River valley: Upper Tungabhadra (III) Site: Nyamti
Rock material: Quartz Tool type: Simple blade
Description: Short and thick blade. Shallow flutings on the dorsal side. Depression on the ventral surface. Almost straight margins. Small strip of cortex retained along the left margin. Broad base. Fresh. Measures 2 cm x 1.9 cm x 0.6 cm.
Comparable to: No. 9, Fig. XVII, Mahuli (Malik, 1959).
(70)
River valley: Bhadra (I)  
Site: Mattigatta  
Rock material: Quartz  
Tool type: Simple blade  
Description: Parallel sided blade. Flutings on the dorsal surface. Depressed ventral surface. Thin left margin. Thick and blunt right side margin. Fresh. Measures 2.1 cm x 1.1 cm x 0.4 cm.
Comparable to: No. 3, Fig. XIII, Bombay (Malik, 1959).

(71)
River valley: Bhadra (I)  
Site: Dasarakallahalli  
Rock material: Quartz  
Tool type: Simple blade  
Description: Rectangular shaped; low median ridge and flutings on the dorsal surface. Bulb of percussion on the ventral surface. Faceted platform. Concave left side margin; convex right side margin. Fresh. Measures 2.4 cm x 1.1 cm x 0.5 cm.
Comparable to: Variation of 70.

(72)
River valley: Tunga (II)  
Site: Hosagadde  
Rock material: Quartzite  
Tool type: Simple blade  
Description: Made on a greyish flake. Flutings on the dorsal surface. Bulb of percussion on the ventral surface. Thin parallel sided margins. Fresh. Measures 1.6 cm x 1.4 cm x 0.6 cm.
Comparable to: Variation of 69.
River valley: Tunga (II)          Site: Tirthahalli
Rock material: Milky quartz      Tool type: Simple blade
Description: Rectangular shaped; flutings on the dorsal side. Plain ventral surface. Broad parallel sided margins. Slightly retouched narrow distal end. Fresh. Measures 1.9 cm x 1.4 cm x 0.4 cm.
Comparable to: No. 5, Fig. XIV, Chembur (Malik, 1959).

River valley: Hemavati (III)    Site: Maranayakanahalli
Rock material: Quartz           Tool type: Simple blade
Description: Rectangular shaped; made on a thick blade. Prominent median ridge and flake scars slopings towards the margin on the dorsal surface. Uneven ventral surface. Thin margins slightly convex near the base and top end respectively. Fresh. Measures 3.2 cm x 1.8 cm x 0.9 cm.
Comparable to: No. 103, Fig. 45, Nagarjunakonda (Subramanyam, 1975).
Figure NO. XII : Core

(75)
River valley : Bhadra (I) Site : Mattigatta
Rock material: Milky quartz Tool type: Core
Description: Roughly cylindrical shaped. Shallow short fluting marks on all the sides. Platforms slanting towards one side. Measures 2.3 cm (length) x 1.6 cm (thickness).

(76)
River valley : Bhadra (II) Site : Dasarakallahalli
Rock material: Quartz Tool type: Core
Description: Nearly cylindrical in shape with conical tip. Has flutations around and the base slanting obliquely. Measures 2.8 cm x 1.8 cm.
(77)
River valley : Bhadra (II) Site: Malenahalli
Rock material: Quartz Tool type: Core
Description: Medium sized; rectangular in shape. Flutings all over the surface and both the ends are almost flat. Measures 2.9 cm x 1.4 cm.

(78)
River valley : Hemavati (III) Site: Marannyaahalli
Rock material: Quartz Tool type: Core
Description: Cylindrical shaped. Numerous fluting marks and patch of pebble cortex on the upper surface. Platform at the top. Broad and flat base. Measures 4.2 cm x 3.4 cm.
Figure No. XIII - Tool types found only in the I category sites in the Upper Tungabhadra valley
(Scrapers and Discoid)

(79)
River valley: Upper Tungabhadra (I)  
Site: Konaikamahalli
Rock material: Quartz  
Tool type: Cortexed side scraper

Description: Almost triangular in shape; made on a thin flake. Patch of a cortex and few shallow flake scars on the dorsal side. Plain ventral side. Retouched margin. Fresh. Measures 4 cm x 2.2 cm x 1.1 cm.

Comparable to: No. 2, Fig. 3, Mallampuzha (Rajendran, 1975)

(80)
River valley: Upper Tungabhadra (I)  
Site: Honnalı
Rock material: Quartz  
Tool type: Thumb rail scraper

Description: Made on a thick rectangular flake of pinkish colour. Shallow flake scars on both the surfaces. Flat surface achieved by removing circular flake on the dorsal side for thumb grip. Broad retouched distal working end. Thick at the base. Fresh. Measures 3.5 cm x 2.6 cm x 1.6 cm.

Comparable to: No. 17, Fig. XIII, Bombay (Malik, 1959).

(81)
River valley: Upper Tungabhadra  
Site: Hanagawadi
Rock material: Quartz  
Tool type: Thumb nail scraper

Description: Rectangular shaped; made on a thick flake. Shallow slopy flake scars and prominent median ridge on the dorsal surface. Plain ventral surface. Thick and convex left margin. Straight right margin retouched from both the sides. Steep flaking near the working end on the dorsal side for thumb hold. Fresh. Measures 4.5 cm x 3 cm x 2.1 cm.

Comparable to: No. 15, Pl. XVI, Bangalore (Seshadri, 1954).
(82)  
River valley: Upper Tungabhadra (I)    Site: Hole Arlehalli  
Rock material: Quartz                        Tool type: Double sided scraper  
Description: Made on a thin flake of pinkish colour. Rectangular  
shaped. Shallow flake scars on the dorsal side. Nipped bulb of  
percussion on the ventral surface. Retouched margins. Plain platform.  
Semi-fresh. Measures 2.8 cm x 2.6 cm x 0.9 cm.  
Comparable to: No. 9, Pl. XIV, Jalahalli (Seshadri, 1956)

(83)  
River valley: Upper Tungabhadra (I)    Site: Honnali  
Rock material: Quartz                        Tool type: Double sided scraper  
Description: Made on a thick pinkish flake. Rectangular shaped;  
prominent ridge and shallow flake scars on the dorsal side. Nipped  
bulb of percussion on the ventral side. Plain platforms. Retouched  
zigzag working edge on both the sides due to alternate flaking. Fresh.  
Measures 3.8 cm x 3.5 cm x 1.5 cm.  
Comparable to: No. 13, Pl. XIV, Jalahalli (Seshadri, 1956)

(84)  
River valley: Upper Tungabhadra (I)    Site: Hanagavadi  
Rock material: Quartz                        Tool type: Discoid  
Description: Made on a thick flake; oval shaped. Pressure flake scars  
on both the surfaces. Thin and slightly zigzag periphery allround.  
Thick at the centre. Pointed base. Fresh. Measures 4.4 cm x 3.2 cm x  
1.8 cm.  
Rare type.
Figure XIV: Tool types found in the II category sites only

(85)
River valley: Bhadra (II) Site: Malenahalli
Rock material: Milky quartz Tool type: Burin
Description: Made on a thick short blade. Fluting marks and slopy margins on the dorsal side. Plain ventral surface. Working point achieved by removing a spall vertically at the distal end along the right margin and retouched. Fresh. Measures 2.3 cm x 1.4 cm x 0.7 cm.
Comparable to: No. 8, Fig. 20, Around Renigunta (Murthy, 1970).

(86)
River valley: Tunga (II) Site: Sringeri
Rock material: Quartz Tool type: Core point
Description: Made on a short cylindrical shaped core. Ridges and fluting marks all over the surface. Pointed distal end. Flat base. Fresh. Measures 2.1 cm x 1.2 cm x 1.2 cm.
Comparable to: No. 65, Pl. XIII, Jalahalli (Seshadri, 1956)

(87)
River valley: Upper Tungabhadra (II) Site: Surahonne
Rock material: Quartz Tool type: Transverse arrow head
Description: Made on a thin flake, plain surface. Thin and broad working end is made on the dorsal side. Both the convex side margins retouched and converge at the base to form a small tang for hafting. Fresh. Measures 2.3 cm x 1.8 cm x 0.5 cm.
Comparable to: No. 3, Fig. XIII, Jalahalli (Seshadri, 1956)
Figure XV  Tool types common to II and III category sites

(a) Side End scraper

(88)  
River valley: Upper Tungabhadra (I)  Site: Konaikanahalli  
Rock material: Quartz  Tool type: Side End scraper  
Description: Irregular 'U' shaped; made on a thick flake. Shallow flake scars on both the surfaces. Steep flaking to achieve thin working edge on the dorsal side. Flat ventral surface. Prominent protrusion on the dorsal side. Minute retouching of the working edge. Straight bottom. Fresh. Measures 4.1 cm x 3.1 cm x 1.9 cm.  
Comparable to: No. 8, Pl. XIV, Jalaballi (Seshadri, 1956).

(89)  
River valley: Upper Tungabhadra (II)  Site: Haraganahalli  
Rock material: Quartzite  Tool type: Side end scraper  
Description: 'U' shaped; made on a thick brownish flake. Shallow flake scars converging at the centre on the dorsal side indicates prepared core technique. Portion of cortex retained on the dorsal side. Deep flake scar near the right side margin on the ventral side. Flat base and zigzag working end. Fresh. Measures 4.1 cm x 2.9 cm x 1.4 cm.  
Comparable to: No. 13, Fig. 3, Mallampuzha (Rajendran, 1985)

(90)  
River valley: Upper Tungabhadra (II)  Site: Salabalu  
Rock material: Quartz  Tool type: Side end scraper  
Description: Roughly 'U' shaped; made on a thick whitish flake. Numerous fluting marks on the upper surface and along the three margins on the dorsal side. Retouched margins. Flat ventral side. Fresh. Measures 2.1 cm x 1.8 cm x 0.9 cm.  
Comparable to: No. 14, Pl. XIV, Jalaballi (Seshadri, 1956)
River valley: Upper Tungabhadra (11)  Site: Surnhonne
Rock material: Milky quartz  Tool type: Side end scraper
Description: 'U' shaped; made on a thick flake. Shallow flake scars converging at the middle on the dorsal side and flutings on the ventral side. Prominent median ridge. Working end slightly retouched on three sides. Thick at the centre. Flat base. Fresh. Measures 2.7 cm x 2.3 cm x 1.7 cm.
Comparable to: No. 11, Pl. XIV, Bangalore (Seshadri, 1956)

River valley: Bhadra (II)  Site: Malenahalli
Rock material: Quartz  Tool type: Side end scraper
Description: 'U' shaped; made on a thick flake, shallow flake scars on the dorsal side. Numerous ripple marks on the ventral surface. Thin working end retouched from the dorsal side all along the margin. Prominent ridge along the slopy left side margin. Thin coat of blackish patina on both the surfaces. Broad base. Fresh. Measures 4.2 cm x 2.8 cm x 1.3 cm.
Comparable to: Variation of No. 89.

River valley: Bhadra (II)  Site: Holebelgal
Rock material: Quartz  Tool type: Side end scraper
Description: Roughly rectangular in shape; made on a thick flake. Shallow flake scars on the dorsal surface. Depressed ventral surface. Side margins and distal end retouched from both the sides. Convex left margin. Concave right margin. Fresh. Measures 4.3 cm x 3.5 cm x 1.3 cm.
Comparable to: No. 19, Pl. XIV, Jalahalli (Seshadri, 1956).
Figure XV(b) : Core scrapers

River valley : Upper Tungabhadra (I)  
Site: Hanagavadi  
Rock material: Quartz 
Tool type: Core scraper  
Description: Irregular shaped; made on a thick pinkish core. Steep fluted scars on the dorsal side. Flat and plain ventral side. Zigzag working edge. Fresh. Measures 3.6 cm in length and 2.2 cm in thickness.

Comparable to: No. 1, Fig. 3, Mallampuzha (Rajendran, 1985).

River valley : Upper Tungabhadra (II)  
Site: Surahonne  
Rock material: Quartz 
Tool type: Core scraper  
Description: Sub-triangular in shape; made on a cylindrical core. Three to four fluted marks on the dorsal side and three on the ventral side. Pointed tip. Left side working margin slightly convex at the distal end. Flat platform. Fresh. Measures 2.4 cm x 1.7 cm x 1 cm.

Comparable to: No. 65, Pl. XIII, Jalahalli (Seshadri, 1956).

Figure XVI : Tool types common to II and III category  
(a) Crescentic point

River valley : Tunga (II)  
Site: Tirthamattur  
Rock material: Quartz 
Tool type: Crescentic point  
Description: Made on a short bladish flake of grey colour. Triangular shaped. Numerous shallow flake scars on the slopy dorsal surface. Fluting marks and flake scar near the tip on the ventral surface. Retouched convex left side margin, converges at the working end. Straight base. Fresh. Measures 2 cm x 1.4 cm x 0.7 cm.

Comparable to: No. 31, Pl. XIII, Jalahalli (Seshadri, 1956).
River valley: Tunga (II)  
Site: Srmgeri
Rock material: Quartz  Tool type: Crescentic point
Description: Made on a thin narrow blade. Leaf shaped. Low central ridge along the longer axis, on the dorsal side. The two sides meet at narrow distal end. The arc is blunted by close chipping of flakes. Thin and sharp tip. Broad base. Fresh. Measures 1.8 cm x 0.8 cm x 0.4 cm.
Comparable to: No. 21, Fig. 59, Tinnevelly (Sankalia, 1975).

River valley: Tunga (III)  
Site: Mandagadde
Rock material: Quartz  Tool type: Crescentic point
Description: Made on a thick bladeish flake. Prominent median ridge and slopy shallow flake scars on the dorsal side. Flake scars and numerous ripples on the ventral surface. Convex, thin left margin. Straight right margin blunted by retouching from the ventral side. Broad, thin and retouched point. Fresh. Measures 3.4 cm x 2.4 cm x 0.9 cm.
Comparable to: No. 14, Fig. 3, Mallampuzha (Rajendran, 1985).

River valley: Tunga (III)  
Site: Sirgala
Rock material: Quartz  Tool type: Crescentic point
Description: Made on a thick bladeish flake. Shallow flake scars on both the surfaces. Retouched and thin convex left margin. Point attained by producing a shallow notch at the distal end and retouched. Thick at the centre. Fresh. Measures 3.5 cm x 2.5 cm x 1.1 cm.
Comparable to: Variation of No. 98.

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Figure XVI (b): Tanged point

(100)
River valley: Upper Tungabhadra (I)  Site: Konaikanahalli
Rock material: Milky quartz  Tool type: Tanged point

Description: Made on a thick flake. Numerous shallow flake scars and prominent median ridge on the dorsal side. Steep flake scars on the ventral side. Slight retouch of side margins and tip. Two deep notches near the base to achieve tang. Thick at the centre. Fresh. Measures 7.5 cm x 4.4 cm x 3.3 cm.

Comparable to: No. 14, Pl. XV, Bangalore (Seshadri, 1956).

(101)
River valley: Upper Tungabhadra (III)  Site: Nyamti
Rock material: Quartz  Tool type: Tanged point

Description: Made on a short thick flake. Triangular in shape. Irregular shallow flutings on the dorsal and ventral sides. Retouched margins and slightly curved tip. Tanged base. Fresh. Measures 2 cm x 1 cm x 0.7 cm.

(102)
River valley: Tunga (II)  Site: Sulebailu
Rock material: Quartz  Tool type: Tanged point

Description: Made on a bladish flake. Fluting marks and ridges on the dorsal surface. Nipped bulb of percussion on the ventral side. Both the margins worked from middle to converge at the distal pointed end. A deliberate notch at the proximal end near the left margin to produce a tang and retouched. Fresh. Measures 2.8 cm x 1.8 cm x 0.6 cm.

Comparable to: No. 11, Fig. XXIII, Panchgani (Malik, 1959).
(103)  
River valley: Tunga (II)  Site: Tirthamattur  
Rock material: Milky quartz  Tool type: Tanged point  
Description: Made on a bladish flake. Slopy and short ridge on the dorsal surface. Shallow flake scars on the ventral surface. Oblique strokes to attain point at the distal end. Narrow convex left side margin; tang. Fresh. Measures 2.6 cm x 1.7 cm x 0.8 cm.  
Comparable to: No. 64, Fig. 44, Nagarjunakonda (Subramanyam, 1975).  
Figure XVI(c): Bladish flake

(104)  
River valley: Bhadra (II)  Site: Dasarakalhalli  
Rock material: Quartz  Tool type: Bladish flake  
Description: Roughly rectangular in shape. Low uneven central ridge and shallow flutings on the dorsal surface. Depressed uneven ventral surface. Use marks on the thin side margins. Faceted platform. Fresh. Measures 2.5 cm x 2 cm x 0.8 cm.  
Rare type.

(105)  
River valley: Bhadra (II)  Site: Malenahalli  
Rock material: Quartz  Tool type: Bladish flake  
Description: Rectangular shaped. Faint flutings on the dorsal side. Numerous ripple marks on the ventral surface. Straight left side working margin. Convex right side margin. Working margin retouched from the dorsal side. Faceted platform broken in a corner. Fresh. Measures 2 cm x 1.3 cm x 0.7 cm.  
Rare type.
River valley: Tunga (II) Site: Sulebailu
Rock material: Rock crystal Tool type: Bladish flake
Description: Roughly oval in shape. Low central ridge and patch of cortex on the dorsal side. Shallow ripples on the ventral surface. Thin margin retouched on the dorsal side. Fresh. Measures 3.5 cm x 2.5 cm x 0.9 cm.
Rare type.

River valley: Hemavati (III) Site: Cholenahalli
Rock material: Quartz Tool type: Bladish flake
Description: Rectangular shaped. Prominent mediant ridge, shallow flake scars, slope towards the margins on the dorsal surface. Depressed ventral surface. Retouched convex margins and base. Fresh. Measures 3.3 cm x 2.4 cm x 1 cm.
Rare type.

River valley: Bhadra (II) Site: Holebelgal
Rock material: Quartz Tool type: Retouched blade
Description: Rectangular shaped; small size. Short median ridge and slopy surface on the dorsal side. Shallow step flake scars on the ventral side. Left margin retouched from both the sides. Fresh. Measures 1.5 cm x 1 cm x 0.5 cm.
Comparable to: No. 36, Fig. 41, Nagarjunakonda (Subramanyam, 1975).
(109)
River valley : Hemavati
Site: Kattebelguli
Rock material: Quartz
Tool type: Retouched blade

Description: Thick and short; rectangular shaped. Numerous fluting ridges on the dorsal surface. Ripples on the ventral surface. Parallel sided margins. Right margin retouched from the ventral surface. Fresh. Measures 2.1 cm x 1 cm x 1 cm.

Comparable to: No. 39, Fig. 41, Nagarjunakonda (Subramanyam, 1975).

Figure XVI(c): Lunate

(110)
River valley : Tunga (II)
Site: Hosagadde
Rock material: Quartzite
Tool type: Lunate

Description: Made on a narrow greyish blade. Plain dorsal and ventral surface. Straight thin working margin, bears use signs. Convex margin has shallow flake scars. Sharp and thin tip. Fresh. Measures 2 cm x 0.8 cm x 0.6 cm.

Comparable to: No. 1, Pl. XIV, Jalahalli (Seshadri, 1956)

(111)
River valley : Upper Tungabhadra (III)
Site: Nyamtı
Rock material: Agate
Tool type: Lunate

Description: Made on a bladish flake. Ripple marks on both the ventral and dorsal surface. Working edge straight and shows use marks. Convex edge has flutings and a small patch of cortex near the tip at the distal end. Flat base. Fresh. Measures 2.8 cm x 1.9 cm x 0.7 cm.

Comparable to: No. 19, Pl. XIV, Jalahalli (Seshadri, 1956).
River valley: Upper Tungabhadra, Site: Chikbasur
Rock material: Rock crystal, Tool type: Lunate

Description: Made on a thin blade-like flake; shallow stepped fluting scars on the dorsal and ventral surfaces. Slopy working edge on the left side margin. Convex edge shows prominent retouching. Fresh. Measures 2.2 cm x 1.7 cm x 0.8 cm.

Comparable to: No. 14, Pl. XIV, Jalahalli (Seshadri, 1956).
### Mesolithic Sites

#### Tool Types Common to All the Three Categories

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tool type</th>
<th>Category I</th>
<th>Category II</th>
<th>Category III</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>UBB</td>
<td>HH</td>
<td>UBB</td>
</tr>
<tr>
<td>1.</td>
<td>Side scraper</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>2.</td>
<td>Round scraper</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>3.</td>
<td>Hollow scraper</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>4.</td>
<td>End scraper</td>
<td>*</td>
<td>*</td>
<td>#</td>
</tr>
<tr>
<td>5.</td>
<td>Scraper cum point</td>
<td>*</td>
<td>*</td>
<td>#</td>
</tr>
<tr>
<td>6.</td>
<td>Asymmetric point</td>
<td>#</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>7.</td>
<td>Symmetric point</td>
<td>#</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>8.</td>
<td>Borer</td>
<td>*</td>
<td>#</td>
<td>#</td>
</tr>
<tr>
<td>9.</td>
<td>Backed blade</td>
<td>#</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>10.</td>
<td>Point on blade</td>
<td>#</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>11.</td>
<td>Simple blade</td>
<td>#</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>12.</td>
<td>Cores</td>
<td>#</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

**UTB:** Upper Tungabhadra; **HH:** Bhadra; **TNG:** Tunga; **HW:** Hemavati.

* Tools found
# Tools not found

Note: (a) Serial numbers mentioned in the description are common to the drawings as well as plates.

(b) Scale: 1:1 (Drawings)
FIG. I: SIDE SCRAPERS
FIG. II: ROUND SCRAPRS

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FIG. III: HOLLOW SCRAPERS

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FIG. IV: END SCRAPER

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FIG. V: SCRAPER CUM POINT

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FIG. VI: ASYMMETRIC POINT

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FIG. VII: SYMMETRIC POINT
FIG. VIII: BORER
FIG. IX: BACKED BLADE

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FIG. X: POINT ON BLADE

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FIG. XI: SIMPLE BLADE

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FIG. XII: CORE

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TOOL TYPES FOUND IN I CATEGORY SITES
IN THE UPPER TUNGABHADRA VALLEY

Illustrations

Index

1. Cortexed side scraper
2. Thumb nail scraper
3. Double sided scraper
4. Discoid

Note: a) Serial numbers mentioned in the description are common to drawings as well as plates.
b) Scale; 1:1
FIG XIII: TOOL TYPES FOUND ONLY IN THE I CATEGORY SITES IN THE UPPER TUNGABHADR VALLEY
(Scrapers and Discoid)
TOOL TYPES FOUND ONLY IN THE II CATEGORY SITES

Illustrations

Index
1. Burin Bhadra
2. Core point Tunga
3. Transverse arrow head Upper Tungabhadra

Note:  
a) Serial numbers mentioned in the description are common to the drawings as well as plates.
b) Scale; 1:1
FIG. XVI: TOOL TYPES FOUND ONLY IN THE II CATEGORY SITES
TOOL TYPES COMMON TO I AND II CATEGORY SITES

Illustrations

Index

1. Side end scraper
   Upper Tungabhadra (I)
   Bhadra (II)

2. Core scraper
   Upper Tungabhadra (I)
   Tunga

Note: a) Serial numbers mentioned in the description are common to the drawings as well as plates.
   b) Scale; 1 : 1
FIG. XV(a): TOOL TYPES COMMON TO I AND II CATEGORY SITES (SIDE END SCRAPER)
## TOOL TYPES COMMON TO II AND III CATEGORY SITES

### Illustrations

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Tool type</th>
<th>River valley</th>
<th>Category</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Crescentic point</td>
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<td>Tanged point</td>
<td>Tunga II</td>
<td>II</td>
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<tr>
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<td></td>
<td>Upper Tungabhadra</td>
<td>II &amp; III</td>
</tr>
<tr>
<td>3.</td>
<td>Bladish flake</td>
<td>Bhadra II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tunga II</td>
<td></td>
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<td>Hemavati III</td>
<td></td>
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<tr>
<td>4.</td>
<td>Retouched blade</td>
<td>Upper Tungabhadra</td>
<td>III</td>
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<tr>
<td></td>
<td></td>
<td>Bhadra II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hemavati III</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Lunate</td>
<td>Bhadra II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tunga II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Upper Tungabhadra</td>
<td>III</td>
</tr>
</tbody>
</table>

**Note:**

a) Serial numbers mentioned in the description are common to the drawings as well as plates.

b) Scale, 1:1
FIG. XV(b): CORE SCRAPERS

FIG. XVI(a): TOOL TYPES COMMON TO II AND III CATEGORY SITES (CRESCENTIC POINT)
FIG. XVI(b): TANGED POINT

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FIG. XVI(c): BLADISH FLAKE

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FIG. XVI(d): RETOUCHEP BLADE

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FIG. XVI(e): LUNATE

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