CHAPTER 4
WEAPONS AND IMPLEMENTS IN PAINTED GREY WARE PHASE

An important village culture developed in the protohistoric period in the western Gangetic and Yamuna basin and in the north western part of Rajasthan during the period c. 1100-600 BC. The archaeologists called this culture Painted Grey Ware culture (PGW). The name was given to this culture due to a well defined pottery which is light grey in colour and painted in black designs. The typical pottery was first reported from Ahichchhatra in district Bareily in Uttar Pradesh. Painted Grey ware was recovered by B.B. Lal at Hastinapur during a planned excavation\(^1\). The real significance of the culture represented by the characteristic pottery was realized when it was further reported from many sites like Ropar in Punjab, Purana Qila in New Delhi, Alamgirpur, Mathura, Atranjikhera etc in Uttar Pradesh. Some artifacts of PGW culture were also found at Ujjain in Madhya Pradesh. Bhagwanpura, Kurukshetra district in Haryana and Chosla in Ajmer district of Rajasthan are also important sites of PGW culture\(^2\). The evidences of overlapping between Late Harappan and PGW culture are found at Bhagwanpura in Kurukshetra district in Haryana and Sanghol, Dadheri, Nagar, Katpalon in Punjab

Extensive exploration and excavation revealed that the Painted Grey Ware is found at almost all the traditional sites mentioned in Mahabharata. With this background Lal presented a strong case for the association of the Painted Grey Ware people with the Aryans. Having taken into consideration the date of
Boghazkoi inscription (1400 BC). He believed that the Aryan speaking people must have reached the Satluj and Ghaggar valley. Regarding the date at Indian sites Lal rightly said that Painted Grey Ware people had association with Aryans\textsuperscript{3}. Refique Mughal brought to light ten sites of Painted Grey Ware in the Bahawalpur region of Pakistan on the banks of river Hakra, which is a continuation of Ghaggar\textsuperscript{4}. So it is considered that PGW culture flourished after the Late Harappan period (1500 BC). The important features of this PGW pottery, the distinctive pottery with very fine grey surface, made of well levigated clay, threw on fast spinning wheel, painted in black pigment and often is whitish grey, obtained by blocking technique and fired under reduced temperature is defined as the Painted Grey Ware\textsuperscript{5}.

B.B. Lal has tried to associate the painted grey ware people with the Aryans tentatively and provisionally by correlating the archaeological evidences with literary evidence. It seems that the Aryans after entering India introduced Painted Grey Ware and iron in this region. According to Y.D. Sharma, the study of the Aryan expansion must be made in the light of the fully developed iron industry and swift moving horses. These were used in warfare activities by the Aryans\textsuperscript{6}.

PGW was essentially a rural culture in which simple moderate sized habitation was present. House plans are hardly available, but post holes (with circular or rectangular alignment) are present. Plastered reed, or wood impressions, remains of mud brick wall shows that people of PGW culture lived in wattle and daub-structure which may have a thatched roof. Many excavated sites also reported the fire pits and hearths living may have been based on agriculture, but mainly based on hunting peoples of that time also knew weaving techniques as potsherds
evidences from site like Noh, Atranjikhera and other suggest. A pottery kiln founded from Atranjikhera suggest that PGW people also knew craft activity. They used woven clothes as suggested by evidences. A 4.25m wide road, a moat and a bund from large settlement founded at Jakhera, Shahi (1978) concerned to PGW’s Public architecture and settlement system. This could be the first evidence of PGW approaching the threshold of urbanization.

**Extent and distribution of PGW sites**

About seven hundred settlements of PGW culture have been discovered from Indo-Gangatic region extending from Lakhuyopir in Sindh and Bhawalpur region of Pakistan in the west to Kausambi in east, central Himalayas or Manda in the north to Ujjain (Madhya Pradesh) in south. Most of the PGW site are small ranging between 2 hectare, however

Mughal has reported relatively a large site at Satwadi, spread over an area about 13 hectare. These are some of the sites in India; Manda (J&K), Sanghol, Dadheri, Sunet, Kathplon, Nagar, Ropar, Bara, Kotla Nihang Khan, Singh Bhagwanpura (Punjab), Autha, Bhagwanpura, Mirzapur, Daulatpur, Sugh, Madina hatt, (Haryana), Sardargarh, Suneri, Jodhpur, Bairat, Noh (Rajasthan), Atranjikhera, Hastinapur, Ahichchhatra, Alamgirpur, Allahapur, Hulas, Jakhera, Beteswar, Khalau, Sonkh, Mathura, Kausambi, Thapli, Kanauj, Kampil, Parior, Sravasti, Srigverpura (Uttar Pradesh).

**Chronology**

Archaeologically speaking, the users of the PGW ware, the earliest people to introduce this culture in India. B.B. Lal has established a chronology of C. 1100-800 BC for the PGW levels at Hastinapur. The excavators of Atranjikhera on the basis of solitary c-14 dating fixed the date on 1025 BC. Relating to the early phase of this ceramic settled down in the Ganga valley around 1200 BC. In a more recent paper discussing the
chronology of early historic cultures, Tripathi has assigned 1000-400 BC for this culture in two parts. She has divided into two zones on the basis of chronology. The sites in indo-Gangetic divide (Rajasthan and the adjacent part of Haryana & Punjab) may be earlier to 1100-700 BC. Some of these sites have shown overlapping with the late Harappan culture thus indicating an early beginning. So at least two brackets emerge for the PGW culture earlier (1000-700 BC.) and later (700-400 BC) the latter bracket dating the doab site.

**Smelting evidence**

A number of PGW sites have been found from the mountainous region as well as from the adjoining area of the central Himalayas. In the recent years many mining and smelting sites with iron ores, shafts, slags, kilns etc have been explored. Tripathi and Mishra have pointed out that in central India most of the pre-industrial ironsmiths lived close to the sources of iron ores. At Atranjikhera, Uttar Pradesh, Gaur identified remains of a possible furnace (oval pit) from the PGW level. A fire pit was also located close to this and besides a pair of tongs and some charred bones. Inside the pits some rounded tapering clay lump and finished iron tools were also found. Noh and Jodhpura in Rajasthan yielded good evidences of iron smelting as the sites are limited with slag. Ash pits have been reported from the both site in PGW levels. Some iron objects were also found from these sites. Ujjain located in western Madhya Pradesh also yielded some evidence of iron smelting from PGW levels.
### List of metallic weapons and implements of PGW Culture

<table>
<thead>
<tr>
<th>S. N.</th>
<th>Sites</th>
<th>State</th>
<th>Tool type</th>
<th>No of tool</th>
<th>Metal</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Hastinapur</td>
<td>UP</td>
<td>Arrowhead</td>
<td>1</td>
<td>Copper</td>
<td>Ancient India Nos. 10 &amp; 11 p. 95-99</td>
</tr>
<tr>
<td>3.</td>
<td>Alamgirpur</td>
<td>UP</td>
<td>Arrowhead</td>
<td>1+</td>
<td>Iron</td>
<td>Puratattva No. I, p. 68</td>
</tr>
<tr>
<td>5.</td>
<td>Jakhera</td>
<td>UP</td>
<td>Arrowhead</td>
<td>1+</td>
<td>Iron</td>
<td>IAR 1974-75 p.44</td>
</tr>
<tr>
<td>8.</td>
<td>Madina</td>
<td>Haryana</td>
<td>Arrowhead</td>
<td>1</td>
<td>Iron</td>
<td>Manmohan Kumar &amp; other (2009) excavation at Madina p.103</td>
</tr>
<tr>
<td>10.</td>
<td>Hatt</td>
<td>Haryana</td>
<td>Arrowhead</td>
<td>2</td>
<td>Iron</td>
<td>Displayed at Archaeological Museum, Department, of History, M.D.U. Rohtak</td>
</tr>
<tr>
<td>14.</td>
<td>Jakhera</td>
<td>U.P.</td>
<td>Spearhead</td>
<td>1&lt;sup&gt;r&lt;/sup&gt;</td>
<td>Iron</td>
<td>IAR 1974-75, p. 44</td>
</tr>
<tr>
<td>15.</td>
<td>Noh</td>
<td>Rajasthan</td>
<td>Spearhead</td>
<td>1&lt;sup&gt;r&lt;/sup&gt;</td>
<td>Iron</td>
<td>Tripathi Vibha (176) p. 101</td>
</tr>
<tr>
<td>17.</td>
<td>Hatt</td>
<td>Haryana</td>
<td>Spearhead</td>
<td>2</td>
<td>Iron</td>
<td>Displayed at Archaeological Museum, Department, of History, M.D.U. Rohtak</td>
</tr>
<tr>
<td>18.</td>
<td>Jakhera</td>
<td>UP</td>
<td>Dagger</td>
<td>1</td>
<td>Iron</td>
<td>IAR 1975-76, p. 51</td>
</tr>
<tr>
<td>No.</td>
<td>Site/Location</td>
<td>State/Province</td>
<td>Item Type</td>
<td>Quantity</td>
<td>Material</td>
<td>Reference</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------</td>
<td>----------------</td>
<td>-----------</td>
<td>----------</td>
<td>----------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>21</td>
<td>Atranjikhera</td>
<td>UP</td>
<td>Axe</td>
<td>1</td>
<td>Iron</td>
<td>Ibid p. 219</td>
</tr>
<tr>
<td>22</td>
<td>Jakhera</td>
<td>UP</td>
<td>Axe</td>
<td>1</td>
<td>Iron</td>
<td>IAR 1975-76, p. 51</td>
</tr>
<tr>
<td>24</td>
<td>Allahapur</td>
<td>U.P.</td>
<td>Celt</td>
<td>1</td>
<td>Iron</td>
<td>IAR 1970-71, p. 41</td>
</tr>
<tr>
<td>25</td>
<td>Jakhera</td>
<td>U.P.</td>
<td>Hoe</td>
<td>1</td>
<td>Iron</td>
<td>IAR 1975-76, p. 44</td>
</tr>
<tr>
<td>26</td>
<td>Jakhera</td>
<td>U.P.</td>
<td>Ploguh share</td>
<td>1</td>
<td>Iron</td>
<td>Ibid, p. 44</td>
</tr>
<tr>
<td>28</td>
<td>Hatt</td>
<td>Haryana</td>
<td>Sickle</td>
<td>1</td>
<td>Iron</td>
<td>Displayed at Archaeological Museum, Department, of History, M.D.U. Rohtak</td>
</tr>
<tr>
<td>29</td>
<td>Hastinapur</td>
<td>U.P.</td>
<td>Borer</td>
<td>1</td>
<td>Copper</td>
<td>Ancient India No. 10 &amp; 11, pp. 95-99.</td>
</tr>
<tr>
<td>31</td>
<td>Jakhera</td>
<td>U.P.</td>
<td>Needle</td>
<td>1</td>
<td>Copper</td>
<td>Puratattva No. 32 p. 180</td>
</tr>
<tr>
<td>33</td>
<td>Atranjikhera</td>
<td>U.P.</td>
<td>Clamp</td>
<td>1+2</td>
<td>Copper + Iron</td>
<td>Ibid, p. 219, 232</td>
</tr>
<tr>
<td>34</td>
<td>Atranjikhera</td>
<td>UP</td>
<td>Tong</td>
<td>1</td>
<td>Iron</td>
<td>Ibid, p. 219</td>
</tr>
<tr>
<td>37</td>
<td>Bhagwanpura</td>
<td>Haryana</td>
<td>Rod</td>
<td>1+</td>
<td>Copper</td>
<td>IAR 1975-76, p. 17</td>
</tr>
<tr>
<td>38</td>
<td>Atranjikhera</td>
<td>U.P.</td>
<td>Rod</td>
<td>7</td>
<td>Iron</td>
<td>Gaur RC (1983) p. 219</td>
</tr>
<tr>
<td>39</td>
<td>Allahapur</td>
<td>U.P.</td>
<td>Rod</td>
<td>1+</td>
<td>Copper</td>
<td>Tripathi Vibha (1976) p. 101</td>
</tr>
<tr>
<td>40</td>
<td>Jakhera</td>
<td>U.P.</td>
<td>Rod</td>
<td>1</td>
<td>Iron</td>
<td>Puratattva No. 32 p. 179</td>
</tr>
<tr>
<td>41</td>
<td>Ahichchhatra</td>
<td>U.P.</td>
<td>Nail</td>
<td>1+</td>
<td>Copper</td>
<td>IAR 1963-64, p. 44</td>
</tr>
<tr>
<td>42</td>
<td>Jakhera</td>
<td>U.P.</td>
<td>Nail</td>
<td>1+</td>
<td>Iron</td>
<td>IAR 1975-76, p. 51</td>
</tr>
<tr>
<td>44</td>
<td>Atranjikhera</td>
<td>U.P.</td>
<td>Nail Parer</td>
<td>2</td>
<td>Copper</td>
<td>Ibid, p. 232</td>
</tr>
<tr>
<td>45</td>
<td>Allahapur</td>
<td>U.P.</td>
<td>Nail Parer</td>
<td>1</td>
<td>Copper</td>
<td>IAR 1970-71, p. 41</td>
</tr>
<tr>
<td>No.</td>
<td>Location</td>
<td>State</td>
<td>Type</td>
<td>Quantity</td>
<td>Material</td>
<td>Source</td>
</tr>
<tr>
<td>-----</td>
<td>----------------</td>
<td>---------</td>
<td>---------------------</td>
<td>----------</td>
<td>----------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>47</td>
<td>Atranjikhera</td>
<td>U.P.</td>
<td>Hook</td>
<td>7</td>
<td>Iron</td>
<td>Ibid, p. 219</td>
</tr>
<tr>
<td>48</td>
<td>Daulatpur</td>
<td>Haryana</td>
<td>Antimony Rod</td>
<td>1</td>
<td>Copper</td>
<td>IAR 1968-69, p. 9</td>
</tr>
<tr>
<td>50</td>
<td>Jakhera</td>
<td>U.P.</td>
<td>Antimony Rod</td>
<td>1</td>
<td>Copper</td>
<td>IAR 1975-76, p. 51</td>
</tr>
<tr>
<td>52</td>
<td>Hulas</td>
<td>U.P.</td>
<td>Antimony Rod</td>
<td>1</td>
<td>Iron</td>
<td>IAR 1978-79 pp. 60-61</td>
</tr>
<tr>
<td>53</td>
<td>Kasithal</td>
<td>Haryana</td>
<td>Antimony Rod</td>
<td>1</td>
<td>Copper</td>
<td>Dangi, Vivek (2010) p. 357</td>
</tr>
<tr>
<td>54</td>
<td>Jognakhera</td>
<td>Haryana</td>
<td>Antimony Rod</td>
<td>1</td>
<td>Copper</td>
<td>Ibid</td>
</tr>
<tr>
<td>55</td>
<td>Agond</td>
<td>Haryana</td>
<td>Antimony Rod</td>
<td>1</td>
<td>Copper</td>
<td>Ibid</td>
</tr>
<tr>
<td>56</td>
<td>Hatt</td>
<td>Haryana</td>
<td>Antimony Rod</td>
<td>3</td>
<td>Copper</td>
<td>Displayed at Archaeological Museum, Department, of History, M.D.U. Rohtak</td>
</tr>
<tr>
<td>57</td>
<td>Alamgipur</td>
<td>UP</td>
<td>Pin</td>
<td>1</td>
<td>Iron</td>
<td>Puratattva No. 1 p. 54</td>
</tr>
<tr>
<td>58</td>
<td>Ahichchhatra</td>
<td>UP</td>
<td>Pin</td>
<td>1</td>
<td>Copper</td>
<td>IAR 1963-64, p. 44</td>
</tr>
</tbody>
</table>

**Problems of material for research**

It is unfortunate that our knowledge of PGW culture is still far from being satisfactory. Although not less than 700 PGW site have been exploreded and around forty of them were excavated. Reports of only three sites viz. Hastinapur, Atranjikhera and Bhagwanpura have been published. The work done in this field is as yet too limited to yield concrete conclusion. Most of the material is scattered in the various issues of the Indian Archaeological Review\(^\text{13}\). The Review also does not provide full information of metal weapons and implements only names of some metal weapons and implements are given. Photographs of weapons and implements are inadequate therefore it is very
difficult to give precise shape and size. It is also very difficult to form opinions about their uses.

A. WEAPONS OF PGW CULTURE

A number of PGW sites have been excavated in different region of Northern India. However, unfortunately most of the excavators could not publish reports of these site. On the basis of available date specific to weapons and implements show that the people of PGW culture used iron, copper, stone, terracotta for making artifacts. They used arrow, spear, dagger, shaft, sling ball for war and hunting. The weapons were mostly made of iron and bone, Copper weapons were found rarely. In this culture the dominant group is of the implements of household (47.9%). It is followed by those meant for war and hunt (35.1%), implement of various craft (11.1%) and agriculture implement (4.8%).

Arrowhead

(A) Iron Arrowhead

Arrowheads are reported from Atranjikhera\textsuperscript{14}, Madina\textsuperscript{15}, Hatt, Sonkh\textsuperscript{16}, Ropar\textsuperscript{17}, Alamgirpur\textsuperscript{18}, Allahapur\textsuperscript{19}, Jakhera\textsuperscript{20}, Noh\textsuperscript{21}, Ujjain, Kausambi\textsuperscript{22}, Sravasti, Abhiapur\textsuperscript{23} etc. All the arrowheads excepts the from one Hastinapur, is of iron. We present here the statistical details of the arrowhead of Atranjikhera, Hastinapur, Sonkh, Ropar specimens as below:

<table>
<thead>
<tr>
<th>S. No</th>
<th>Site</th>
<th>Metal</th>
<th>Length x Breadth x thickness (cm)</th>
<th>Cross section</th>
<th>Edge form profile shape etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>5.8x0.8x0.3</td>
<td>Biconvex (Pl.4.1.1)</td>
<td>both edges sharp, blade barbed projected point, socketed tang.</td>
</tr>
<tr>
<td>2.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>4.3x1.2x0.4</td>
<td>Biconvex (Pl.4.1.2)</td>
<td>Edge blunt, triangular blade, socketed tang and pointed tip</td>
</tr>
<tr>
<td>3.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>5.0x0.8x0.4</td>
<td>Elliptical (Pl.4.1.3)</td>
<td>Elongated straight side</td>
</tr>
<tr>
<td>No.</td>
<td>Site</td>
<td>Material</td>
<td>Dimensions</td>
<td>Shape</td>
<td>Description</td>
</tr>
<tr>
<td>-----</td>
<td>----------</td>
<td>----------</td>
<td>------------------</td>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>9.3x2.5x0.5</td>
<td>Rhombic (Pl.4.1.4)</td>
<td>Triangular blade, prominent midrib, partly damaged barbs, socketed tang</td>
</tr>
<tr>
<td>5.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>9.3x2.5x0.5</td>
<td>Rhombic (Pl.4.1.5)</td>
<td>As above but differ in having long cylindrical socketed shaft.</td>
</tr>
<tr>
<td>6.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>9.5x1.5x0.5</td>
<td>Rectangular (Pl.4.1.6)</td>
<td>Narrow long flat blad shaft broken.</td>
</tr>
<tr>
<td>7.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>4.0x2.6x0.7</td>
<td>Biconvex (Pl.4.1.7)</td>
<td>Short wide leaf shaped blade tip and shaft.</td>
</tr>
<tr>
<td>8.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>7.8x1.8x0.8</td>
<td>Roughly elliptical (Pl.4.1.8)</td>
<td>Elongated leaf shaped blade tip broken.</td>
</tr>
<tr>
<td>9.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>10.0x1.4x1.4</td>
<td>Circular (Pl.4.1.9)</td>
<td>Cylindrical long body flat acuminate tip, short thin blade.</td>
</tr>
<tr>
<td>10.</td>
<td>Hastinapur</td>
<td>Copper</td>
<td>5.4x1.2x0.3</td>
<td>Biconvex</td>
<td>Both edges sharp, leaf shaped blade and tanged</td>
</tr>
<tr>
<td>11.</td>
<td>Sonkh</td>
<td>Iron</td>
<td>6.3 cm long</td>
<td></td>
<td>Barbed with socket</td>
</tr>
<tr>
<td>12.</td>
<td>Sonkh</td>
<td>Iron</td>
<td>7.6 cm long</td>
<td>Lance olate</td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>Ropar</td>
<td>Iron</td>
<td>92x20x8 (mm)</td>
<td>Parallel shape (Pl.4.2.2)</td>
<td>Tip broken blade long and sharp edge with tang parallel shape</td>
</tr>
<tr>
<td>14.</td>
<td>Ropar</td>
<td>Iron</td>
<td>36x24x9 (mm)</td>
<td>(Pl.4.2.1)</td>
<td>Half broken</td>
</tr>
</tbody>
</table>

Plate 4.1 Iron Arrowheads from Atranjikhera
Sringverpur yielded barbed arrowheads and fifty three arrowheads have been recovered from Atranjikhera. They number 5, 13 and 35 from lower, middle and upper levels respectively. They are fine pointed, tanged or socketed. Tanged and socketed arrowheads with fine points are found from Jakhera. Arrows were of a few types in PGW culture: leaf shaped, pointed, socketed, parallel blade etc. Triangular shaped arrow head usually show a midrib running from shaft to blade, they are also barbed in same case length 4.3 to 10 cm. From Atranjikhera twenty one specimens of arrowheads including four socketed and tanged were recovered representing eight type. In same cases shanks have also been provided to balance and straight long distance shoot. Jakhera also yielded arrowheads from the levels of period under study. During the later excavations at Hastinapur one nine inch long arrowhead of iron was recovered. The details of arrowheads from Allahapur and Alamgirpur are not published. Two Iron Arrowheads displayed at Archaeological museum department of history Maharshi Dayanand University, Rohtak. First arrowhead has measures 8.0cm length and 2.50cm breadth, it is socketed and triangular shaped (Pl.4.3). Second arrowhead has measures 6.0cm length and 2.0cm breadth, It is also socketed and tanged, broken on tip.
(Pl.4.4). A wooden shaft attached into socket for projectile by bow. Two Iron arrowheads from Alamgirpur, first arrow head is long and round pointed and second has two points (Pl.4.5).

![Plate 4.3 Iron socketed Arrow Head from Hatt](image1)

![Plate 4.4 Iron socketed Arrow Head from Hatt](image2)

![Plate 4.5 Iron Arrowheads from Alamgirpur](image3)

(B) **Bone arrowheads**

A large number of bone arrowheads are found from Abhaipur khalaua, Sringverpur, Jakhera\(^{27}\), Mathura, Allahapur\(^{28}\), Chak-86, Daulatpur\(^{29}\), Bhagwanpura etc. The large
presence of bone arrowhead shows that PGW people had a fashion of killing and hunting birds and animals. Bone arrowheads reported from chak-86 are pointed buff coloured, socketed, broken working end, and circular in section. A large number bone arrowheads and a workshop of making bone tools found from Abhaipur in pilibhit district (Uttar Pradesh). It appears that bow and arrow was still the favorite weapon of Abhaipuria. The arrowheads 2.1 to 6.6cm long were found in two varieties, two barbed and four barbed. These were either flat or roughly conical in shape with cylindrical or square distal ends. The tangs of arrowhead were cylindrical in shape with a hole for holding the shaft of arrow. An interesting characteristic of these arrowheads was two lateral circles. Perhaps the circles were symbolic representation of eyes of the arrow which were engraved invariably in every finished bone arrowhead and this continued well into N.B.P.W. period. There was another kind of arrowhead without barbs and tang. It was shorter in size and conical in shape like a pointed bullet with a hole behind. The projectile points were tanged but devoid of barbs. The tangs were pointed in shapes which were fitted into the shaft. These were however, devoid of symbolic eyes. More six triangular shaped and with tanged bone arrowheads reported from Allahapur (Pl.4.6). Double headed and tanged bone arrowheads were also found from Ropar-II, Alamgirpur II, Allahapur, Khalaua and Atranjikhera. Each one bone arrowhead discovered from Khalaua and Mathura, details are not available in reports.
Iron spearheads have been discovered from Atranjikhera\textsuperscript{36}, Alamgirpur\textsuperscript{37} (one) (Pl.4.7), Allahapur (one)\textsuperscript{38}, Jakhera (more than one)\textsuperscript{39}, Noh (many)\textsuperscript{40}, Singh Bhagwanpur\textsuperscript{41} (fragmentary piece), Ujjain\textsuperscript{42}, Kausambi\textsuperscript{43} (several), Hastinapur\textsuperscript{44}, Hulas (one). All these are recovered from PGW deposit except those from Noh which are unearthed from overlapped phase PGW and NBPW. Eight spearheads from Atranjikhera seem to be thrusting rather than throw Javelins. These might have been used in close combat as well as in hunting. All the spearheads are heavy and made with a fore shaft. Though there are minor variations in the shapes of their blades, there is only one that is of main type. A spearhead from Atranjikhera is dagger shaped long blade with rounded blunt tip, conical tang for fixing it into a wooden shaft, biconvex cross section, full length 16.75cm, length of the tang 6.55 cm\textsuperscript{45} (Pl.4.8). Some spearheads are also discovered from Jakhera but details are not published. Two spearheads are recovered from Hastinapur in the mid level of PGW. Alamgirpur and Allahapur also yielded spearheads. A specimen of iron spearhead has been recovered by Dr. Sukhdev Saini from a PGW site in Haryana (Pl.4.9). The measurement of this specimen is 14.2 cm length, 4.3cm Breadth and 4mm to 10mm thickness. It
is unique because it has 1mm iron layer on it. It was used for hunting. Two triangular spear heads have been unearthed from Hatt, district Jind in Haryana, first Iron spearhead has measures 13.0 cm length and 3.0 cm thickness, it is round in section and very sharp tip and broken into butt (Pl.4.10). Second Iron spear head has measures 11.0cm length and 2.50cm breadth or diameter, it is very sharply weapon and round section, splayed toward butt both side for attached the wooden shaft (Pl.4.11). Both spears are very unique in PGW Culture.
Dagger

A iron dagger has been reported during the excavation at Jakhera a PGW site. It has biconvex edged blade and midrib slightly toward to point\textsuperscript{46}. Copper fragment of a dagger with rectangular section and length 6.3 cm was found at a late level of sub period IB (Late Harappan +PGW overlapping phase) in Bhagwanpura at Kurukshetra in Haryana\textsuperscript{47}.

Shaft

Shaft was a part of weapon which used by the people of PGW culture. It was fitted with arrowhead and spearhead. The size of the shaft varied because it was used with different weapons. In addition to the arrowheads and spearheads, 10 shafts of iron have been reported from Atranjikhera at PGW level. The size of one shaft out of 10 is illustrated as, 9.7 cm length, 0.9 cm Breadth, 0.9 cm Thickness. The length of its socket is 2.50 cm\textsuperscript{48} (Pl.4.12).
Hilt (Pl.4.13)

A unique iron hilt was recovered at Ropar in Punjab. It is 128mm long and 14-22 mm thickness. The breadth of this hilt is not clear. It is fully intact with circular shaft and triconical base. Probably it was used as handle of dagger or sword but the sword is not reported from any PGW site. It provides a good grip to hold and used the weapon\(^49\).

![Plate 4.13. Iron Hilt from Ropar](image)

Sling Ball

Sling balls were also known as missiles. These were used to hunt the birds and small animals. Sometimes these may be used for self-defence. The stone and terracotta sling balls were found in large number from different PGW sites.

Stone sling balls were recovered at Atranjikhera, Bhagwanpura, Jognakhera etc. and Terracotta sling balls were found at Ropar, Rohira, Madina, Bhagwanpura, Jakhera, Chak-86. One faience sling ball was also found at chak-86 in Rajasthan. One of the terracotta ball has graffiti mark on its surface and another has intersecting lines. The faience ball is divided into four parts with well decoration. A faience ball also found from Kunal in Fatehabad district (Pl.4.14)
Plate 4.14. Stone Ball from near Kunal Village

These sling balls are varied in shape and colour. Some of them are spheroid and ovaloid. They are grey, red and dull red in colour. Three terracotta sling balls are displayed in Archaeological museum at Ropar. These have the various size of diameter viz. from 16mm to 38mm.

Eight stone and twenty terracotta balls have been recovered from the overlapping phase of late Harappan and PGW at Bhagwanpura. The size of diameter of stone balls ranges from 1.9 cm to 6.0 cm and they are globular in shape.

The size of the diameter of terracotta balls ranges from 1.3 cm to 2.9 cm and they are spherical in shape. Two copper balls have been reported from Bhaklana-III in Hansi. A unique Iron slingball found from Ropar is it round shaped. (Pl.4.15)
LIST OF WEAPONS IN PGW SITES


Bone Arrowhead: Allahapur, Khalaua, Jakhera, Abhaipur, Mathura, Shringverpur, Daulatpur, Bhagwanpura, Chak-86.


Dagger : Copper-Bhagwanpura, (Late Harappan+PGW Culture) Iron-Jakhera, Alamgirpur.

Shaft: Iron -Atranjikhera

Sling Ball: Stone- Atranjikhera, Bhagwanpura, Jognakhera., Terracotta- Jakhera, Bhagwanpura, Rohira, Ropar, Chak-86., Copper-Bhaklana-III (Hansi).

B. AGRICULTURAL IMPLEMENTS

Agriculture was the main economic activity of the PGW people. The metallic evidence of agriculture like Axe, sickle, plough, hoe etc. were found from different PGW sites. They did crop harvesting for example rice, barlay peas, wheat etc.

Axe

Iron axes have been discovered from Atranjikhera\textsuperscript{53}, Jakhera\textsuperscript{54}, Allahapur\textsuperscript{55}, Noh\textsuperscript{56}. Two axes of Atranjikhera are without socketed detail which are as below.

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Site</th>
<th>Measurement Length x Breadth x Thickness (cm)</th>
<th>Cross</th>
<th>Edge form and shape</th>
<th>Metal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Atranjikhera</td>
<td>14x5.50x1.20</td>
<td>Thin flat</td>
<td>Double cutting edges convex slightly splayed</td>
<td>Iron (Pl.4.16)</td>
</tr>
<tr>
<td>2.</td>
<td>Atranjikhera</td>
<td>10.10x2.20x0.35</td>
<td>Rectangular</td>
<td>Blade slightly splayed toward concentric edge</td>
<td>Copper (Pl.4.17)</td>
</tr>
</tbody>
</table>
In this period axes can be divided into two types, socketed axe and flat axe. The broken piece of copper socket axe from Hastinapur and simple type flat axes made up iron found from Atranjikhera, Jakhera, and Noh. A axe from Noh has broad straight cutting edge. These were used by the PGW people for cutting the stumps of burnt down trees of the dense forest, facilitating, the reclamation of the land.

**Sickle**

Iron sickels have been reported from Jakhera\(^{57}\), Atranjikhera\(^{58}\), Noh\(^{59}\), Khokhrakot\(^{60}\) and Hatt. The blade of these sickels have curved, thin and sharp. The detail of these sickels are not available. Hatt sickle is displayed in archaeological museum at History department of Maharishi Dayanand University, Rohtak. It has 19 cm length, 3 cm breadth and 1.10 cm thickness, curved and sharped blade like modern sickle (Pl.4.18). Some copper sickels have been found from Purana Qila in PGW deposite\(^{61}\). Unfortunately the details are not available. These examples reveals that sickels have with crescent curved and simple curved blade. People belonging to PGW culture harvest their crops with the help of these sickels.
Ploughshare

For agriculture iron ploughshare from Jakhera must have been very helpful in breaking the hard alluvial soil of the Gangetic plain and preparing the field for cultivation\textsuperscript{62}. The detail of this ploughshare about measurement and shape and size is not available.

Hoe

Iron hoes have been reported from Alamgirpur and Jakhera\textsuperscript{63}. These are very helpful in digging and breaking the hard soil. The farmers of PGW culture used to do the work like overturn the soil preparation for agriculture.

LIST OF AGRICULTURE IMPLEMENTS

**Axe:** Copper- Atranjikhera., Iron- Atranjikhera (one), Jakhera (one), Allahapur (one), Noh (one)

**Sickle:** Copper- Purana Qila (sev)., Iron- Jakhera, Atranjikhera, Noh, Khokhrakot, Hatt

**Ploughshare:** Iron- Jakhera

**Hoe:** Iron- Alamgirpur, Jakhera

C. VARIOUS CRAFT IMPLEMENTS

PGW people had interest in various crafts it shows by a numerous Implements like chisels, borers, needles, clamps, choppers, tangs, spindle whorls, bits and Adze etc. These are found from different PGW sites. The implements of PGW people were made of Iron, Copper, Stone, bone etc.

Chisel

These specimens of smithy and carpentry are discovered exclusively from Atranjikhera\textsuperscript{64}, Jakhera\textsuperscript{65}, Abhaipur\textsuperscript{66}, Ropar\textsuperscript{67}, and Hulas\textsuperscript{68} from PGW phase. The measurement of some chisel are given below
<table>
<thead>
<tr>
<th>S. No</th>
<th>Site</th>
<th>Measurement Length x Breath x thickness (cm) or (mm)</th>
<th>Cross section</th>
<th>Edge form profile shape etc</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Atranjikhera</td>
<td>12.5x1.4x0.8 cm</td>
<td>Roughly rectangular (Pl.4.19.2)</td>
<td>Roughly corroded double slop cutting edge sharpened</td>
</tr>
<tr>
<td>2.</td>
<td>Atranjikhera</td>
<td>7.0x1.8x0.5 cm</td>
<td>Roughly rectangular (Pl.4.19.1)</td>
<td>Flat bar with slightly tapering sides roughly curved squarish pointed working edge.</td>
</tr>
<tr>
<td>3.</td>
<td>Atranjikhera</td>
<td>3.15x1.4x1.2 cm</td>
<td>Squarish</td>
<td>Roughly flat square head, double slapped straight cutting edge</td>
</tr>
<tr>
<td>4.</td>
<td>Ropar</td>
<td>83x28x2.3(mm)</td>
<td>Roughly rectangular (Pl.4.20.2)</td>
<td>Round head pointed edge</td>
</tr>
<tr>
<td>5.</td>
<td>Ropar</td>
<td>84x7-16x8(mm)</td>
<td>Roughly rectangular (Pl.4.20.1)</td>
<td>Squarish pointed edge both side</td>
</tr>
</tbody>
</table>

Plate 4.19. Iron Chisels from Atranjikhera       Plate 4.20. Iron Chisels from Ropar

Wood working must have been a very important craft in the PGW period. The recovery of iron chisels indirectly hint at the technique of wood working\(^69\). Mostly chisels have been mentioned in archeological reports but the details related measurement, size and shape are not available. So it very difficult to decide the types of chisels.
Borer

A pointed and thin implement commonly used by Carpenter, cobbler and sometime by goldsmith. Both iron and copper borer are reported from Hastinapur (one)\textsuperscript{70} and Atranjikhera (six)\textsuperscript{71}. Only two specimens from Atranjikhera and one Hastinapur are illustrated. Details are tabulated here:-

<table>
<thead>
<tr>
<th>S. No</th>
<th>Site</th>
<th>Metal</th>
<th>Measurement</th>
<th>Cross section</th>
<th>Edge form profile shape etc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Length x Breadth x thickness (cm)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Hastinapur</td>
<td>Copper</td>
<td>18.4x0.3x0.3cm</td>
<td>Circular</td>
<td>Head square lower end is pointed and sharp</td>
</tr>
<tr>
<td>2.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>14.7x0.6x0.6</td>
<td>Circular (Pl.4.21.1)</td>
<td>Straight circular bar with pointed working end round tip</td>
</tr>
<tr>
<td>3.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>5.8x0.3x0.3 cm (ext.)</td>
<td>Circular (Pl.4.21.2)</td>
<td>Straight circular bar with sharply pointed working end</td>
</tr>
</tbody>
</table>

Plate 4.21. Iron Borers from Atranjikhera

A copper borer, round in section with length 5.07 cm is reported from Bhagwanpura\textsuperscript{72}. A fragment of grey coloured bone borer with sharp pointed found from Layer no. 1 at chack-86. It
may be used to chipping and grinding. The polished surface is circular in section\textsuperscript{73}, it is broken on butt end.

**Needle**

Copper needles which used for stitching, have been recovered from Jakhera\textsuperscript{74}, Bhagwanpura\textsuperscript{75} and Hulas\textsuperscript{76}, Sravasti.\textsuperscript{77} Iron needles are reported from Atranjikhera\textsuperscript{78} and bone needles were found from Singh Bhagwanpur\textsuperscript{79} and Bhagwanpura\textsuperscript{80} (Late Harappan and PGW overlapping phase).

A iron needle of Atranjikhera has flat long bar with slightly tapering sides and a prominent eye to connect a stitching cord, length 9.8 cm. Probably It might have been used to leather stitching. Atranjikhera iron needle is 2.8x1.4x0.3cm in size with rectangular cross section. It is made of long bar which slightly tapering side having a prominent eye (Pl.4.22). The excavator rightly suggests it to be a cobblar’s needles\textsuperscript{81}. A copper needle with an eye round in section length 11.7 cm were reported from Bhagwanpura (Late Harappan + PGW overlapping phase)\textsuperscript{82}.

![Plate 4.22. Iron Needle from Atranjikhera](image)

Three needles of bone have been recovered from Bhagwanpura. The measurement of these needles are ranges 4.7 to 14.5 cm length. These have round section, pointed tip and divided by inside line toward tip\textsuperscript{83}.

**Clamp**

Iron clamps have been reported from Atranjikhera and Ropar. These might have been in use in craft of some kind. Twenty one iron clamps are reported from Atranjikhera, however only four specimens details collected in this research.
<table>
<thead>
<tr>
<th>S. No</th>
<th>Site</th>
<th>Metal</th>
<th>Measurement Length x Breadth x thickness (cm)</th>
<th>Cross section</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>6.5x2.4x0.4</td>
<td>Rectangular (Pl.4.23.3)</td>
<td>Straight band with a hole and apsidal heads</td>
</tr>
<tr>
<td>2.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>11.2x2.5x0.6</td>
<td>Rectangular (Pl.4.23.1)</td>
<td>Slightly bent clamp with a hole at one end.</td>
</tr>
<tr>
<td>3.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>9.2x2.5x0.6</td>
<td>Rectangular (Pl.4.23.2)</td>
<td>Slightly bent of metal with a hole at one end. The other end being slightly sharpened</td>
</tr>
<tr>
<td>4.</td>
<td>Ropar</td>
<td>Iron</td>
<td>36x24x9 (mm)</td>
<td>Circular (Pl.4.24)</td>
<td>Half broken and pointed edges.</td>
</tr>
</tbody>
</table>

In all twenty one iron clamps divisible into three groups are associated with period-III. The common shape is a straight band with one or two holes at either end for nailing. The holes seem to have been made mostly at the time of preparing the clamp, but in some cases these holes were made by driving in the nail. These clamps might have been used either to join different wooden planks or part of a wooden structure. Typologically these are not much difference among the three types.

An elongated copper strip folded at one end, remaining part slightly bent to give it a convex base, length 5.9cm found...
from Atranjikhera related to PGW period\(^87\) (Pl.4.25). It used like clamp for different craft works.

![Plate 4.25. Copper Clamp from Atranjikhera]

**Tong** (Pl.4.26)

A single iron pair of tong has been reported from Atranjikhera. It is thick and short width, and particularly, tapering arms to semi pointed ends suggest that it served the purpose of a tool of the blacksmith rather than a kitchen utensil. The tool is made of a long flat bar folded in two equal arms with a pronounced head without any joint. It has 39.5 cm length, 1.6 cm breadth and one cm to 2 cm thickness\(^88\).

![Plate 4.26. A pair of Iron Tong from Atranjikhera Period-III (PGW Phase)]

**Awl**

The bone awls are reported from Atranjikhera\(^89\), Chak-86\(^90\), Singh Bhagwanpur\(^91\), Allahapur\(^92\), Bhagwanpura\(^93\) etc. Fragment of a buff coloured awl with a broken sharp point, broken butt and polished surface is circular in section is discovered from chak-86. Allahapur bone awl is long tapering and with a groove near the point. It has tapering with simple point. These awls were used in making hole of various crafts.
**Spindle Whorl**

A number of spindle whorls found in Hatt excavation. A number of terracotta spindle whorls, big copper spindle rod (Takali) generally use in the spindle (Charkha), small copper spindle rod with notch at one end, use in spindle (Takali) were also found in the cultural remain of this period. These points were used to spinning and cloth weaving works\(^94\). A terracotta spindle whorl has discovered from Atranjikhera, It seems that the Painted grey ware people used to make the cloth with the help of these type of spindle whorls.

**Bit**

Iron bits are rarely reported from Kausambi\(^95\) and Allahapur\(^96\). These were used in various craft for a kind of purpose. Kausambi bits are reported in a few fragment without shapes. More details of these iron bit are not available.

**Adge or Axe**

These type of specimens were used in different type of wooden crafts. An iron adge or axe has been unearthed from Sonkh\(^97\). It has 2.8cm length and 2.7 cm breadth. It is unique piece of PGW craftsman. Some iron adges are reported from Atranjikhera\(^98\). The details of these were not available.

**List of various craft implements**

**Chisel:** Iron – Atranjikhera(six), Jakhera, Abhaipur, Ropar(two), Hulas

**Borer:** Copper – Hastinapur, Nagiri., Iron – Atranjikhera., Bone – Chak-86

**Needle:** Copper- Jakhera, Sravasti, Hulas, Bhagwanpura (L.H + PGW overlapping phase)., Iron – Atranjikhera., Bone – Singh Bhagwanpur, Bhagwanpura (L.H + PGW overlapping phase)

**Clamp:** Copper- Atranjikhera., Iron- Atranjikhera, Ropar

**Tong:** Iron- Atranjikhera
Awl: Bone- Allahapur, Atranjikhera, Chak-86, Singh Bhagwanpur, Bhagwanpura (L.H + PGW overlapping phase)
Spindle Whorl: Copper- Nagiri, Terracotta- Atranjikhera, Hatt
Bit: Iron- Kausambi, Allahapur
Adze: Iron- Atranjikhera

D. HOUSEHOLD IMPLEMENT

A numerous of Household Implements, which are made up copper, iron, stone and terracotta have been reported from numerous PGW sites. Main implements were included like knives, antimony rod, antimony rod-cum-parer, nails, nail parers, bar, rods, fish hooks, points, pins, antlers etc.

Knife

Iron knives are reported from Atranjikhera, Jakhera, Ujjain, Hastinapur, Abhaipur and Ropar. Three knives of Iron are discovered from Atranjikhera, two of them are illustrated. A knife of iron is lodged in archaeological museum Ropar. Different types of knives have been tracked down from Atranjikhera and Ropar. These are described below.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Site</th>
<th>Metal</th>
<th>Measurement Length x Breadth x Thickness (cm)</th>
<th>Cross section</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>10.4x1.5x0.37 (cm)</td>
<td>Triangular</td>
<td>Concave blunt blade with tapering sharp convex edge.</td>
</tr>
<tr>
<td>2.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>9.3x1.8x0.6</td>
<td>Triangular</td>
<td>Almost straight back tapering to a round tip, convex edge sharp Plano- convex in out lines.</td>
</tr>
<tr>
<td>3.</td>
<td>Ropar</td>
<td>Iron</td>
<td>124x25x2-6 (mm)</td>
<td>Triangular</td>
<td>Tail portion missing pointed with tip and convex edge.</td>
</tr>
</tbody>
</table>
Plate 4.27. Iron Knives from Atranjikhera

These knives were probably used by PGW culture women in their kitchen to cut soft and hard material.

**Antimony Rod (Kohl Sticks)**

Almost antimony rods were made of copper. They are reported from Atranjikhera (two), Jakhera (One), Hastinapur, Hulas, Nagiri, Noh, Purana Qila and Bhagwanpura. Antimony rods from Atranjikhera and Jakhera have thin cylindrical rod having pointed clubbed ends. From Atranjikhera one measures 10.2 cm length, 0.3x0.3 cm breadth and thickness with circular section. Three copper antimony rods have been unearthed from Bhagwanpura (Late Harappan + PGW overlapping phase) The measurement range is 6 cm to 10.5 cm long, round shaped, thicken from one side, bended from the centre.

Plate 4.29. Copper Antimony Rod from Atranjikhera

An antimony rod has been unearthed from Kasithal in Kurukshestra District, It has round section, thickened at the end,
measuring 9.40 cm in length and 0.46 cm thickened at centre\textsuperscript{114}(Pl.4.30.1). Three copper antimony rods have been found from Hatt excavation, displayed at Archaeological museum deptt. of History, Maharshi Dayanand University Rohtak. These have measures length range 6.50 to 9 cm and rounded section.

Plate 4.30. 1. Copper Antimony Rod From Kasithal. 2. Copper Antimony Rod from Jognakhera. 3. Copper Antimony Rod from Agond (PGW Phase)

A copper Antimony rod has been reported from Jognakhera. It has round section thickened at the ends, measuring 7.53 cm in length and 0.42 cm thick at center one end of which is broken(Pl.4.30.2). Such as similar copper, an antimony rod has been discovered from Agond(Pl.4.30.3). It is round section thickened at end, measuring 10.7 cm in length and 0.44 cm thick at center of PGW period\textsuperscript{115}.

Bone made Kohl stick have been discovered from Bhagwanpura and Mathura. A Kohl stick has round in section, length 14.3 cm from a mid level of period IB of Bhagwanpura. Several unique specimens of ivory Kohl sticks have been found from Ropar the details are not available\textsuperscript{116}.

**Antimony-rod-cum parer**-(Pl.4.31) A thin cylindrical rod of copper with one end clubbed and other flattened for nail paring, Length 6.3 cm has been found from Atranjikhera\textsuperscript{117}
Chopper

A few chopper of Iron have been unearthed from Ujjain, these are used in household purpose for cutting the things. The detail of these is not available.

Nails

Iron nails have been discovered from Atranjikhera, Jakhera, Singh Bhagwanpur, Nagiri, Alamgirpur, Abhaipur, Sravasti, Ropar etc. Some copper nails have also been found at Atranjikhera and Ahichchhatra. Besides, Jajmau yielded many Iron nails from the overlapping phase of PGW and NBPW. Nails may have been used inside the house along with other material like copper and wood. Some details of nails are available, which are below follows.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Site</th>
<th>Metal</th>
<th>Measurement (Length x Breadth x Thickness (cm))</th>
<th>Cross section</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>7.0x1.20x1.20 Circular</td>
<td></td>
<td>Straight knob-headed, nail, and Pointed</td>
</tr>
<tr>
<td>2</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>7.0x1.20x1.20 Hexagonal</td>
<td></td>
<td>Straight, hook-headed nail.</td>
</tr>
<tr>
<td>3</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>4.6x0.67x0.67 Square</td>
<td></td>
<td>Featureless, flattened, squarish head, tapers toward pointed end.</td>
</tr>
<tr>
<td>4</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>4.5x0.52x0.52 Circular</td>
<td></td>
<td>Featureless short nail.</td>
</tr>
<tr>
<td>5</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>5.0x0.75x0.75 Square</td>
<td></td>
<td>Nail pointed and both ends.</td>
</tr>
<tr>
<td>6</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>3.2x0.60x? -</td>
<td></td>
<td>Nail with flattended</td>
</tr>
</tbody>
</table>
Plate 4.32. Iron Nails from Atranjikhera

**Nails Parer**

Copper nail parers are unearthed from Atranjikhera\(^\text{127}\), Allahapur\(^\text{128}\), Hastinapur\(^\text{129}\), Purana Qila\(^\text{130}\), Bhagwanpura,\(^\text{131}\) Thapli\(^\text{132}\) etc. A nail parer from Antranjikhera measures 6.3 cm Length and 0.3 cm diameter. It is thin cylindrical rod with one sharp flattened end, the other end broken (Pl. 4.33).

Plate 4.33. Copper Nail Parer from Atranjikhera

One copper nail parer from Bhagwanpura has 6.3 cm long and rectangular in section. Second copper nail parer has been tracked down from Bhagwanpura. It is round and 15 cm long.

**Bar and Rod**

A numerous copper and iron bar and rods reported from different P.G.W. sites. Copper bar and rods discovered from Bhagwanpura (Late Harappan + PGW overlapping phase\(^\text{133}\)) Iron bar and rods have been reported from Atranjikhera (seven\(^\text{134}\)), Allahapur (One\(^\text{135}\)) and Jakhera (One\(^\text{136}\)) etc. It is interesting to note that a bone-point is fitted in the Allahapur Specimen. Generally these rods are straight. The exact use of these are not known but they might have been used for various domestic purposes their use in various crafts can also not be denied.
Seven iron bar from Atrantikhera may be divided into three types viz. Rectangular (Pl.4.34), circular and flat in section. Perhaps chisels were made from such bar by hammering. Two of them are illustrated.

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Site</th>
<th>Metal</th>
<th>Measurement Length x Breadth x Thickness(cm)</th>
<th>Cross section</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>17.50x0.70x0.50</td>
<td>Oval</td>
<td>Straight flat bar with pointed working end.</td>
</tr>
<tr>
<td>2.</td>
<td>Atranjikhera</td>
<td>Iron</td>
<td>8.70x0.80x0.30</td>
<td>Rectangular</td>
<td>Straight rectangular bar.</td>
</tr>
</tbody>
</table>

**Fish hook**

The evidence of various types of fish hooks shows that PGW peoples were interested in fishing. Some copper fish hooks are unearthed from Atranjikhera, Jakhera and Hulas etc. Atranjikhera has one measures of fish hooks, 2.0cm length, 0.15cm breadth and 0.15cm thickness, with circular section and without barbs, it is prominently bent (Pl.4.35). Many fish hooks have been unearthed from Jajmau from an overlapping phase of PGW and NBPW.
Simple hook

Seven iron hooks were recovered from Atranjikhera period-III representing two main types. There are good number of bent nail looking like hooks, but these have not been counted among hooks (Pl.4.36). The hooks were evidently intended to be fixed in the wall at convenient place for use as hanger\textsuperscript{140}. Out of seven specimens only three are illustrated with following details\textsuperscript{141}: A iron hook found from Ropar is bended and pointed (Pl.4.37).

<table>
<thead>
<tr>
<th>S. No</th>
<th>Site</th>
<th>Measurement Length x Breadth x thickness(cm)</th>
<th>Cross section</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Atranjikhera</td>
<td>16.10x0.80x0.35</td>
<td>Rectangular</td>
<td>Long straight bar, bent at one end with tapering pointed tip.</td>
</tr>
<tr>
<td>2.</td>
<td>Atranjikhera</td>
<td>4.70x0.60x0.30</td>
<td>Circular</td>
<td>As above</td>
</tr>
<tr>
<td>3.</td>
<td>Atranjikhera</td>
<td>3.50x1.95x0.60</td>
<td>Circular</td>
<td>A prominently bent hook, rounded in the lower part, the upper part broken</td>
</tr>
</tbody>
</table>

Spatula

Fragment of a bone spatula has been discovered from Bhagwanpura period IB related to Late Harappan and PGW
overlapping phase. It has been polished and 8.5 cm long\textsuperscript{142}. Probably it was used in kitchen for different purpose.

**Points**

Bone points are common implements of PGW people. These were used in projectile for hunting to birds and mostly used in various craft for making hole. Numerous bone points have been found from Allahapur\textsuperscript{143}, Jakhera\textsuperscript{144}, Sringverpur\textsuperscript{145}, Priar\textsuperscript{146}, Beteswar\textsuperscript{147}, Hulas\textsuperscript{148}, Singh Bhagwanpur\textsuperscript{149}, Sanghol\textsuperscript{150}, Ropar\textsuperscript{151} and Madina\textsuperscript{152}, Kasithal\textsuperscript{153}, Daulatpur\textsuperscript{154}. One Iron point has been also reported from Madina. Four types of bone points have been discovered from Allahapur.

(a) **Double ended points**

It is sharp pointed, tapering tang and body similar in form to the extent that they can not be differentiated. They are generally without polish.

(b) **Tanged pointed**

It has circular point divided from the tang by a flange. The tang and point are well defined, highly polished and long circular point with a small tapering tang.

(c) **Long socketed points**

These type of specimens have long circular point with socket behind and also having simple incised designs on both the surface.

(d) **Hollow point with iron filling and tang hollow**

These are interesting example of a thin iron rod that is found inserted in the cavity. The blade body was hollow since the portion of the bone used was either naturally or intentionally made hollow. The iron was used to achieve the required heaviness not only to avoid flying off mid-way but also to make it an effective piercing weapon. In all probility the tang was also of Iron, in fact, it appears to be an extension of the portion inside
the cavity. Big hollow throws of babul tree used in this fashion in many part of India\textsuperscript{155}. Kasithal bone point (fragment) has measures 2.45 cm long and 0.71 cm diameter, grey coloured circular and polished surface. A buff coloured bone point from chak-86 has been pointed tip and the polished surface and oval in section. It has a circular socket at the butt end possibly for hafting\textsuperscript{156}.

Ten bone points are displayed at archaeological museum Ropar related to PGW phase. Five bone points are broken, These have been measuring length range 29-76 mm and thickness diameter range 1-11mm, pointed and socketed (Pl.4.38). Five fully intact bone points have been measuring range 29-91 mm long, 1-8mm diameter, pointed and hafting end very distinct. Two bones points have been discovered in Jognakhera excavation. These are 3.5cm to 7cm length and 5mm to 0.9 cm diameter, round and brownish or whitish coloured\textsuperscript{157}. Fourteen bone points have been excavated from Bhagwanpura (Late Harappan and PGW overlapping phase). These have measuring length range 4.3 to 11.50 cm and breadth range 3mm to 0.7cm. Four bone points are double pointed and sharped having creamish colour. Ten bone points are pointed creamish coloured and sharped\textsuperscript{158}.

Plate 4.38. 1-3 Socketed Bone Points. 4,7,10 One Sided Pointed Bone Points. 5,6,8,9 Double Pointed Bone Points from Ropar. (PGW Phase)
Pin

PGW people used copper and iron pin for different purpose. Copper pins have been reported from Atranjikhera (two\textsuperscript{159}), Alamgirpur (one)\textsuperscript{160}, Ahichchhatra (several)\textsuperscript{161}, Kampil\textsuperscript{162}. Fragment of a pin from Atranjikhera has thin cylindrical bar, probably part of a hair pin, measure length 3.4cm(Pl.4.39). Iron pins have been discovered from Alamgirpur\textsuperscript{163}, Hastinapur\textsuperscript{164}, these have circular section and pointed tip(Pl.4.40). A bone pin has been also found from Daulatpur\textsuperscript{165}. An Iron pin has been discovered in Hatt excavation, it is displayed at Archaeological museum department of History Maharshi Dayanand University Rohtak

Antler

A numerous antlers have been unearthed from Allahapur. Dikshit examined the specimens from Allahapur. The microscopic studies of these object revealed some important clues regarding the mode of fabrication of bone tools. The bone antlers were softened by immersion in hot water for some time. In same cases coconut oil was used as a softner in cases of a few
object antler piece were first burnt as is evident from the carbonization of the outer surface, then they were dipped in a suitable softening medium and finally cut to the desired shape by the use of a fixed crude lathe which could have been made of iron. On one of the objects these are regular con-centric lines over the whole body. They appear to have been made by some sharp crude type of lathe and as the pattern is more or less regular it appears that the bone object was revolving on a definite axle\textsuperscript{166}.

After febric, the tools seem to have been polished with the help of a smooth stone and finally rubbed with soft skin. These were use in very kind of purpose.

**Stone Grinder**

The pestles are the most commonly found kitchen gadget, at almost all PGW yielded sites. Two type of them have been found. One is stone grinder found at site like Sardargarh, Daulatpur, Jognakhera\textsuperscript{167} and Atranjkhera (an intact specimen with red sand stone). The second types are more interesting, these specimens are made with clay by shaping them in an ablong fashion. Both the ends are thinner than the middle and the section is roundish unbaked, raw clay specimens have been found from Alamgirpur, Allahapur and Noh\textsuperscript{168}. These are used in kitchen for making flour and different purpose.

**List of Householding Implements of PGW Culture**

**Knife:** Iron- Atranjkhera (three), Jakhera, Ujjain, Hastinapur, Abhaipur, Ropar.

**Antimony Rod:** Copper- Atranjkhera (two), Jakhera (one), Hastinapur, Hulas, Purana Qila, Nagiri, Daulatpur (one), Bhagwanpura (Late Harappan + PGW overlapping phase). Hatt (three)

**Kohl Stick:** Bone- Bhagwanpura, Mathura., Ivory- Ropar.
Antimony-Rod-cum Parer: Copper- Atranjikhera (one)
Chopper: Iron- Ujjain
Nail: Copper- Atranjikhera, Ahichchhatra (one more)
Iron- Atranjikhera (Twenty), Alamgirpur (Several), Jakhera (one more), Abhaipur, Sravasti, Singh Bhagwanpur, Nagiri, Ropar.
Spike: Iron- Ropar
Nail Parer: Copper- Atranjikhera (two), Allahapur (one), Hastinapur, Thapli, Purana Qila, Bhagwanpura.
Bar and Rod: Copper- Bhawanpur., Iron- Atranjikhera (Seven), Allahapur (one), Jakhera (one) Hatt (one)
Fish hook: Copper- Atranjikhera (Two), Jakhera, Hulas.
Simple hook: iron- Atranjikhera (seven).
Spatula: Bone- Bhagwanpura (one) (Late Harappan + PGW overlapping level)
Pin: Copper- Atranjikhera (two), Alamgirpur (one) Ahichchhatra (one more) Kampil.
Iron- Alamgirpur (few) Hastinapur., Bone- Daulatpur, Hatt (one)
Antler: Allahapur,
Stone grinder- Sardargarh, Atranjikhera, Daulatpur, Jognakhera.

Weapons and Implements in Painted Grey Ware Culture

Uttar Pradesh
Hastinapur (Merrut Distt.) Copper : Arrowhead, borer, antimony rod, nail parer., Iron – Arrowheads, Spearhead, Knife, Pin., Bone Points.
Atranjikhera (Etah Distt.)
Copper- Axe or Celt(one), clamp (one), antimony rods, fish hook, nail, antimony-cum-nail parer, nail parer, pin (two), Iron – Arrowheads, Spearhead (eight), dagger, shaft, axe (one), sickle,
chisel (six), borer (six), needle (one), clamp (twenty one),
tang(one), hook (seven), knives (three), nail, bar and rod, adze.,
Terracotta – Spindle whorls., Stone – Grinder, bone awls.
Allahapur (Ghaziabad Distt.) Copper – Nail parer., Iron -
Arrowheads, spearhead, axe, bit, bar and rod., Bone -
Arrowheads, awls, points, antler.
Alamgirpur (Meerut Distt.) Copper – Pin., Iron - Arrowheads,
spearhead (one), nail, pin., Bone - Spearhead, points and pin.
Jakhera (Etah Distt.) Copper - Needle, antimony rod, fish hook.,
Iron – Arrowhead, spearhead, dagger, axe, sickle, plough-share,
hoe, knives, chisel, nail, bar and rod., Bone – Arrowheads,
points., Terracotta sling ball
Ujjain (Ujjain Distt.) Iron – arrowhead, spearhead, chopper,
knife.
Sravasti (Bonda- Baharaich Distt.) Iron – Arrowhead, nail.,
copper needles.
Abhaipur (Pilibhit Distt.) Iron – Arrowhead, chisel, knife, nail.
Bone – Arrowhead.
Khalua (Agra Distt.) Bone – Arrowheads.
Sringeverpur (Allahabad Distt.) Bone – Arrowhead.
Beteswar (Agra Distt.) Bone points
Thapli (Tehri - Gorhwal) copper-nail parer
Ahichchhatra (Bareily Distt.) copper nail and pin.
Parar (Unao Distt.) bone points
Kampil (Farrukhabad Distt.) Copper pin
Hulas (Saharanpur distt.): Copper-Antimony rod, fish hook,
chisel, needle., Iron- spearhead., bone- points.
Mathura: Bone- arrowhead, stylus
Sonkh (Mathura Distt.): Iron- Arrowheads, adge or axe (one)
**Rajasthan**

**Noh** (Bharatpur Distt.): Copper- antimony rod., Iron- Arrowheads, spearhead, axe, sickle

**Chak-86** (Ganga nagar Distt.): Bone- spearhead, borer, awl., Terracotta slingball

**Sardargarh** (Hanumangarh Distt.): stone grinder

**Punjab**

**Ropar:** Iron- Arrowheads, chisels, clamp, knife, nails, barb, hilt, Bone- points, slingball of terracotta., ivory- kohl stick

**Singh Bhawanpur** (Ropar Distt.): Iron- Spearhead (Piece), nail., Bone- needle, awl, points.

**Rohira** (Sangrur Distt.): Terracotta sling ball

**Sanghol** (Fatehabad Sahab Distt.): Bone- points.

**Nagiri** (Ropar Distt.): Copper- borer, antimony rod, spindle whorls., Iron- nail., Bone- Arrowhead.

**Haryana**

**Madina** (Rohtak Distt): Iron-arrowheads, points., Bone points., Terracotta sling ball.

**Daulatpur** (Kurukshetra Distt): Copper- antimony rod., Bone-arrowheads, points and pin., stone-grinder.

**Bhagwanpura** (Kurukshetra Distt.) (Late Harappan + PGW overlapping phase):
Copper- Dagger, spike, needle, antimony rod, nail parer.
Bone- Arrowhead, needle, awls, spatula, Kohl stick., Terracottasling ball

**Jognakhera** (Kurukshetra Distt.): Stone ball, bone points, stone grinder

**Khokhrakot** (Rohtak Distt.): Iron- Sickle

**Hatt** (Jind Distt): Copper antimony rod., Iron- sickle, arrowheads, spearheads, pin., bone points, spindle whorls (Terracotta).
Delhi

**Purana Qila** Copper nail parer, sickle, antimony rod

**Similarity between Later Vedic and PGW culture**

The Painted Grey were sherds have been reported in the same area as are represented by the later vedic text although the PGW ware have been noticed in eastern Uttar Pradesh and even in Bihar, their epicentre seem to be the upper Ganges and Satluj basin. Almost PGW sites like Hastinapur, Purana Qila, Mathura, Kampil, Kausambi, Kuru area etc. These were mention in the vedic texts. Iron weapon and implements and PGW sherds show the area of Aryans habitation. A number of weapons and implements have been cited in the vedic and PGW evidence. Both evidences likely to match the time span of 1000 BC to 600 BC.

<table>
<thead>
<tr>
<th>Vedic word/Literary work</th>
<th>PWG weapons and Implements</th>
<th>Archaeological evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isu, Sarya, Sari, Bana</td>
<td>Arrowhead</td>
<td></td>
</tr>
<tr>
<td>Pavira and Srika</td>
<td>Spearhead</td>
<td></td>
</tr>
<tr>
<td>Kharaga, Kriti</td>
<td>Daggar</td>
<td></td>
</tr>
<tr>
<td>Parasu, Kulisha, Kuthara, Swadhit</td>
<td>Axe</td>
<td></td>
</tr>
<tr>
<td>Nail cutter</td>
<td>Nail parers</td>
<td></td>
</tr>
<tr>
<td>Pari-sas</td>
<td>Tong</td>
<td></td>
</tr>
<tr>
<td>Datra</td>
<td>Sickel</td>
<td></td>
</tr>
<tr>
<td>Paver or Phala, sita</td>
<td>Plough share</td>
<td></td>
</tr>
<tr>
<td>Suchi</td>
<td>Needle</td>
<td></td>
</tr>
<tr>
<td>Sula</td>
<td>Nail</td>
<td></td>
</tr>
<tr>
<td>Salaka</td>
<td>Bar or Rod</td>
<td></td>
</tr>
<tr>
<td>Langala</td>
<td>Plough</td>
<td></td>
</tr>
<tr>
<td>Asani</td>
<td>Sling ball</td>
<td></td>
</tr>
</tbody>
</table>

The word Ayas in Rigveda has been used for metal. During Later vedic era, Loh Ayash was used for copper and यामा Ayas was used for iron. Most of the excavated PGW sites do match with later vedic era.
References:

17. Displayed at Archaeological museum Ropar, Punjab.
29. IAR 1977-78, p. 23.
40 Ibid. p. 291
42 Tripathi, Vibha (1976) The Painted Grey Ware and Iron Age of Northern India, p. 39.
49 Displayed in Archaeological Museum at Ropar in Punjab.
59 Tripathi, Vibha (1976) The Painted Grey Ware and Iron Age Culture of Northern India. P. 111
60 IAR 1986-87 p. 34.
61 IAR 1954-55, p.13
63 Ibid., p. 149., IAR 1975-76, p. 44.
67 Two chisels are displayed at Ropar Archaeological Museum, Punjab.
70 Gaur, R.C (1983) op. cit., p. 226, fig. 66.
74 IAR 1975-76, p. 51.
75 Joshi, J.P (1993) op. cit., p. 136
76 Possehl, G.L (1987-88) op. cit., p. 135.
77 Tripathi, Vibha (1976) op. cit. p. 107.
It is displayed in Archaeological museum Ropar, Punjab.

Des Gupta, Nupur (1997) \textit{op. cit.}, p. 504

Tripathi, Vibha (1976) \textit{The Painted Grey Ware}, pp. 100-01

Herbert, Hartel (1993) \textit{Excavation at Sonkh}, p. 283

Jain, K.C (1978) \textit{Pre and Protohistory of India} p. 191

Gaur, R.C (1983) \textit{op. cit.}, p. 230


Jain, K.C (1978) \textit{op. cit.}, p. 192

Tripathi, Vibha (1976) \textit{The Painted Grey Ware, An Iron age culture of Northern India}, p.26


It is displayed at archaeological museum Ropar, Punjab


\textit{IAR} 1988-89, p.74.

Tripathi, Vibha (1976) \textit{op. cit.}, p.28.


\textit{IAR} 1968-69, p.9.

Sandee (2006) \textit{Archaeology of Hansi (Block-2)} unpublished M.Phil dissertation M.D.U. Rohtak. p. 54


\textit{Ibid}, p. 357

Tripathi, Vibha (1976) \textit{The Painted Grey Ware}, p. 96

Gaur, R.C (1983) \textit{op. cit.}, p. 232

Tripathi, Vibha (1976) \textit{op. cit.}, p. 39

Gaur, R.C (1983) \textit{op. cit.}, p. 228, fig.69

\textit{IAR} 1975-76, p.51

\textit{IAR} 1980-81, p.51.

\textit{IAR} 1988-89, p.74.

Benerjee, N.R(1965) \textit{The iron Age in India}, p. 4., Tripathi, Vibha (1976) \textit{op. cit.} p.100.


It is displayed at archaeological museum Ropar, Punjab.
127 Gaur R.C (1983) op. cit. p.232, fig. 69.
130 IAR 1954.55, p.13.
133 Ibid., p.136.
134 Gaur, R.C (1983) op. cit. p.226, Fig. 66.
136 IAR (1975-76) p.17.
138 Singh, Ramjit (2001-02) Copper Bronze object from Jakhera in Puratattva No.32, p. 180
140 Gaur, R.C (1983) op. cit. p.228
141 Upadhyaya, J.P (2000) op. cit. p.144
142 Joshi, J.P (1993) op. cit. p. 134
144 Singh, A.K (2000) op. cit. p. 121
145 Ibid
146 Ibid
147 Nigam, J.S (1997) op. cit. p. 295
148 Ibid, p. 294
149 IAR, 1980-81, p. 51
151 It is displayed at Archeological museum Ropar, Punjab.
152 Dangi, Vivek(2010) op. cit. p.119
153 Ibid, p.367
154 IAR , 1977-78, p.23
155 Dilksit, K.N (1970-71) op. cit. pp. 53-54
157 These are displayed at Shri Krishna museum, Kurukshetra
158 These are displayed at Archaeological museum Thaneshwar (Haryana)
159 Gaur, R.C (1983) op. cit. p. 233. Fig. 69
160 IAR 1958-59, p. 54
161 Upadhyaya, J.P. (1998) Metal Implements Northern India, In Tripathi, Vibha(eds.) Archaeometallurgy in India, p. 280
162 IAR 1975-76, pp. 51-52
163 IAR , 1958-59, p. 54
164 Tripathi, Vibha(1976) op. cit. p. 25
165 IAR 1968-69, p. 9
167 Acharya, Madhava and R.S Dahiya, Jognakhera Kurukshetra Excavation under Sarasvati Heritage project pp. 15-16
168 Tripathi, Vibha (1976) op. cit., p. 112
169 Sharma, R.S(1975-76) “Archaeology and Tradition The Later Vedic Phase And The Painted Grey Ware Culture” in Puratattva No. 8, p. 65