

*On Flint Implements from the Kon ravines of South Mirzapore.*—By JOHN COCKBURN, Asst. S. Dept., Opium Agent, Meja Road, E. I. R.

With Plates IV, V and VI.

This series of implements, 43 in number, was found in some deep ravines near the village of Kon, in South Mirzapore. The locality was originally discovered by me. These ravines seem to have cut through a Neolithic burial ground, as well as through the site of an implement manufactory, and I found tolerably perfect human calvaria together with glazed earthenware cups, stone hammers and flakes and spalls, &c., precisely similar to others I have found in such interments, when exposed by denudation. In many cases I have seen a perfect section of the grave exposed. I noticed two such at Barkacha,<sup>1</sup> five miles south of the town of Mirzapore, and again at Mozufferpore, near the stone dam over the Chunderpurba river, in the family domains of the Maharaja of Benares.

However, the implements to-day exhibited are none of them from graves. So numerous are waste flint chips in this locality (properly called spalls), that I collected several hundredweight, and after roughly picking out the choicer specimens buried the remainder under a marked tree, in a *câche*. Some time in 1883, I directed Mr. Hodges, Executive Engineer, then on special duty in Mirzapore, to the locality, and he employed the men I had trained to search for him, and some of his specimens are, I believe, in the Lucknow Museum.

Recently Mr. W. Crooke, C. S., Collector of Mirzapore and Director of the Ethnographical Survey, has visited the locality, and sent some of the flint chips he found to the Society—(see paper by Dr. W. King in the *Proceedings A. S. B.*, Feb. 1893, p. 53). The site, however, is Neolithic rather than Palæolithic, and I have here obtained some of the most perfect specimens of Neolithic stone industry found in India. Among them was a flat stone bangle made of slate, which had clearly been turned

<sup>1</sup> I was present at the excavation of two of these graves at Barkacha. The bodies lay north and south, within stone circles about 12 feet in diameter. They were extremely deep, from 6 to 8 feet. One contained the fossilized skeleton of an adult human male, of large size, with a flat dish of glazed pottery at the head, and one at each corner of the tomb. One of the articles found was a long, narrow lachrymal vase of green glass about 7 inches long. The other was not completely excavated, and contained two stone hammers and sundry flint flakes. The first body lay on a thick stone slab. I entered some dozens of built-up cairn graves here, but found every one of them had been rifled of their contents, probably by Nuts or Cunjurs.

on the lathe. I also found many perfect specimens of flat oblong polished celts of diorite. These specimens are shown in Figs. 37 to 40 but as the lithograph is from a photograph of the specimens as they lay flat on their sides an imperfect idea of their beauty and shape is conveyed. One of the celts, a highly finished and polished specimen of black basalt of the usual lanceolate type, had the side edges square and flattened, and is probably the first specimen of its class found in India, though they are common enough in England. This specimen is Fig. 41, Plate VI, and is unfortunately broken in halves.

I have recently unearthed the specimen from among others in my collection and it is of great beauty and made of very hard material.

It is almost a *facsimile* of the specimen figured at p. 105, Fig. 59, of Evans' "Ancient Stone Implements of Great Britain."

I also found half of a remarkable glans-shaped object of polished diorite with a perforation down the centre, the use of which I have not been able to discover. I have also again recovered this specimen which I thought I had lost.

From the great skill with which it had been perforated in a hard material, there can be little doubt that it belonged to highly advanced people of the stone age. The base did not exceed  $\frac{1}{8}$  of an inch in diameter with a depth of probably 3 inches. Ring-stones and hammers were also common. Two of the former (ring-stones) are to be seen at Figs. 13 and 22, Plates IV and V.

The specimens are not accessible to me at present, being stored, such as are not lost, in the godowns of a distant *koti*. The evidence is quite enough to show that the locality was Neolithic. On the other hand, the greatest interest attaches to the fact that well-marked Palæolithic types of chipped chert heart-shaped celts are very common, as well as a discoidal type of implements shown at Figs. 2, 3 4, 6 and 26. Of these Figs. 3 and 4 give a good idea, Fig. 21 is a side view of an indifferent heart-shaped celt; of this type, Figs. 26 to 36 which also represent these heart-shaped celts give no idea of their form. Neither the celts nor the discoidal implements would have caused comment had they been found at the Hinoutee Palæolithic locality, described by me in my paper on "Palæolithic Implements from the drift gravels of the Singrauli Basin, South Mirzapore," *Journal Anthropological Institute*, London 1887, pp. 57-65, except that chert implements are not common there, the bulk of them being quartzite; yet I have half a dozen good specimens of implements of chert from Hinoutee. One of these discoidal implements from Hinoutee made of chert, was declared by Mr. C. H. Read, in the discussion which followed the reading of my paper and exhibition of specimens, to correspond exactly in shape and color,

with specimens found in Suffolk, England, though the discoidal type, with an edge all round, is not common in England. The question here arises, must this intermingling of Palæolithic and Neolithic forms in the same locality be regarded as an accidental selection of the same site by two peoples at different ages or stages of civilization, or were both forms made and used together. I prefer to believe that they were made and used together in this particular locality. There is no reason why a hâche, or rude chipped hatchet of flint, should not be as serviceable as a polished hatchet of the same material. Indeed, as flint and chert are better and more efficient cutting implements, as the edge keeps chipping away and thus renewing itself, there is strong reason to believe that a roughly chipped flint axe was preferable to a polished one of the same material. The only hard materials of the quartz family that I have hitherto found polished, have been agate beads and bracelets, doubtless also of great antiquity, and of the stone age. The fact of the well made flakes and javelins and arrow-heads being of the same chert as the chipped celts and discoidal implements, is much in favor of their having been made at the same time. At the risk of being branded an antiquarian infidel, I must disclaim my belief in the theory that Palæolithic man did not possess sufficient intelligence to sharpen the edge of a hatchet by grinding, a process that the boar and stag perform every day with their natural weapons, while the wild elephant grinds his tusks to a lovely chisel-edge. I have myself found Palæolithic chipped implements of chert, of manufacture equal to the best Neolithic, in undoubted Palæolithic localities and alongside typical rough Palæolithic hâches of quartzite. This convinces me, that no want of knowledge of the art of grinding an edge to an implement prevented Palæolithic man from giving a high finish to his weapons; though a want of a capacity for taking trouble is eminently a savage trait. The implements used by pre-historic man, when he wandered, a heavy-fanged and nameless savage, half brute half man, along the banks of rivers or the sea shore, was a rudely split pebble. At the same time I am prepared to admit that the two ages may, and must have overlapped, and that the cases met with by me may have been instances of such overlap.<sup>1</sup> Similar instances of superior workmanship occur among implements from the river-drift in England. Figure 435 of Evans' "Ancient Stone Implements of Great Britain" is an instance in point (from Tanton, Downham). This very closely resembles my finest chert Palæolithic specimen from Hinoutee (now in the British Museum), except that my specimen is circular in outline.

<sup>1</sup> The now extinct Tasmanians apparently never progressed beyond the Palæolithic stage of stone implement manufacture.

It will be observed that the chipped implements are all made of a black siliceous material closely resembling flint, called chert. It is probably of the same origin as the flint of the cretaceous formation, *i. e.*, derived from the siliceous bodies of sponges and other marine animals at some depth under the sea. There can be no doubt that the chert is derived from the Lower Vindhian limestone rocks in the vicinity. Indeed, the Lower Vindhian strata crop up in the ravines themselves, and at the southern margin of the ravines abut against the red gneiss of South Mirzapore. From the large size of the implements exhibited, there can be no doubt whatever that this was an exceptionally favorable locality for procuring chert in large blocks, probably the finest on the borders of the Sone. There is only one other locality in India where flakes of similar dimensions and workmanship have been found, and that is near Rohri in Sind; and in this case the material was true nummulitic flint, and the flakes produced from it are so perfect that they could hardly be matched with the pick of the specimens from Denmark.

There can be little doubt that very fine specimens of arrow-heads, spears and daggers will be found at Rohri when searched for by an expert anthropologist, and I shall be happy to visit the locality if given facilities for so doing.

Figures 8, 10, and 12, are typical chert flake knives from Kon. They are of the usual type of flint knife. Specimen Fig. 8 has lost half an inch of its length while in my possession, but is shown in its perfect state in the Plate.

A comparison of these specimens with Nos. A, B, C, D, Agate\* flakes from the rock shelters of South Mirzapore (the Sorhow cave), will at once show their comparatively gigantic size. These Kon flakes are about the same size as the finest of English and Irish specimens. It must be here understood that these flakes, though often half the size of the fine specimens from Presigny, in France, as in the example figured at p. 28 of Evans' "Ancient Stone Implements of Great Britain," Fig. 6, have the merit of having their bevels made at a single blow. The very large French and English examples have all their ridges trimmed by secondary blows administered at right angles to their length, so as to form the ridge. Nos. 8 and 10 come under Evans' definition of flat flakes having had a flake struck off the ridge. No. 3 is a ridged flake and was probably intended to be made into a spear-head. No. 20 is a typical flint knife. Examples of large coarse flakes 10 and 12 inches

\* A, B, C, D, are Agate flakes from the Sorhow cave, South Mirzapore, and E. is a core from which such flakes are struck. They are to be exhibited along with the Kon specimens to show the variation in size and material. No figures of these have been given.

long, and rivalling the largest European specimen will be seen at Figs. 15, 16, 17 and 18.

Specimen 14 is a huge flat flake from Kon and is a beautiful specimen of the flint-knapper's art. It is so broad and flat that, it was probably used as a celt mounted in a handle. The specimen has seemingly lost about half its length, being fractured across its length. It is represented in Fig. 23. It is well worth figuring in outline and section, as, I believe, but few like it in width have ever been found in any part of the world.

Fig. 20, is, I take it, a javelin head, and I saw specimens in obsidian precisely like it from New Caledonia, in the Calcutta Exhibition of 1883-84. They were mounted in short handles, cemented to the shaft with some resinous material. A very similar specimen from the Admiralty Islands, is figured by Heape. ("Album of the Pacific Islands," Plate 361, Fig. 2.) The specimen bears very distinct traces of notching at the base so as to adapt it to a socket; and there can be no doubt whatever as to the use to which it was intended to be put.

No. VII is an arrow-head from Kon, and is a very fine specimen of its class. There is a peculiarity about the head that would in itself impart a rotary motion to an arrow. I have in my possession a modern iron arrow-head\* which I procured from a Baiga in Mirzapore, in which this peculiarity is intentionally reproduced. This is the now well-known principle on which the head of the Kaffir assagai is formed, and it has the effect of causing perfect rotation, so much so, that the slender shaft of an assagai in flight has an undulating spiral movement. The concavity and convexity of the flint arrow-head from Kon are not very apparent in the specimen itself, though quite sufficient, in my opinion, to give the desired rotary motion. It is very well marked in specimen No. VIII† looked

\* I should mention that the Baiga disclaimed any knowledge of the effects of this curve, and, indeed, stated that he had found the arrow-head in the jungles; and as it is somewhat rusted, it may be a century or so old, and represent a lost art. The arrow, moreover, was strongly feathered with the chestnut primary feathers of the peacock, and it occurred to me that the spiral imparted by these might be antagonistic to the spiral of the arrow-head; but I found that the feathers were so attached at the end, near the notch, that the passage of the arrow through the air caused the three feathers to dispose themselves in a spiral round the shaft. I have constantly seen a savage straighten these feathers after picking up the arrow.

The Zulu Kaffirs do not seem to be generally aware of the properties of the assagai-heads they use, and it is doubtful if the average volunteer rifleman could reproduce or explain the principle of the rifling in his weapon.

† VIII. Found at the mouth of the Gopit Godowle cave, in the Purwa Jagir, Banda. [These Roman numbers and others not agreeing with figures in the plates probably refer to specimens in the writer's own collection.—Ed. Part III.]

at endwise, either point first, or butt-end towards the eye. In either case the form of the bend of a screw is clearly discernible in a well-marked sloping curve. This form is clearly due to the peculiar conchoidal fracture of flint and chert, the convexity being on one side of the bulb of percussion which is well marked, and the concavity on the other. These curves seem to have been prolonged along the entire length of the fracture. There can be no doubt that our iron implements, such as hammers, daggers and spear-heads, are copies of previous forms in stone, and this theory on the form of the arrow-head is by no means far-fetched, and is further capable of demonstration by experiment, *viz.*, mounting the arrow-head on a shaft and firing it from a bow (on soft ground), with a thread attached loose along the shaft, tied behind the arrow-head—a spiral motion communicated to the arrow would have the effect of winding the thread round the shaft. As to the beauty of some of the ancient models of stone implements, I may mention that I am now having reproduced in steel, a hammer on the pattern of that figured at page 187 of Evans' "Ancient Stone Implements of Great Britain," Fig. 137. I have never seen a modern iron hammer come up to this for elegance or utility of design.

The last specimen to be described is shown in Plate IV, Fig. 11. This implement is believed to be of a type never before found in India, and is, I am inclined to think, a spear or rather halberd-head. The material of which it is made well exemplifies the characteristics of chert as distinguished from flint, the nearest approach to flint being in No. 8 of the collection. The chert of which the halberd-head is made shows on its weathered surface numerous black crystalline bodies with the appearance of specks and dashes, no doubt due to the presence of some foreign mineral.

This implement though rudely made and approaching the palæolithic specimens in material and roughness of manufacture, yet bears evidence of design. A somewhat similar implement from Honduras is in the Blackmore Museum, Salisbury, and is figured by Stevens in "Flint Chips."

It is of very much ruder construction, and, possibly, the supplementary conical blade was a part of the stone from which the implement was made, and instead of being trimmed off by chipping was utilized as an additional part of the weapon. However, when it is recollected how important a part projecting spikes play in the war-clubs of savages, notably among the North American Indians, it will at once be seen that this implement mounted in a short stout handle, could be used both for thrusting, and as a club. The projecting spike, in a downward blow, would act with most deadly effect on the cranium of an adversary.

In concluding this paper I would like to draw the attention of travellers to the very fine field for pre-historic research that exists in this part of India. All along the Southern border of the Gangetic valley in the older alluvium fringing the Vindhians and Kymores and as far south of those hills as I have been in Sergoojah and Rurah, the soil teems with fragmentary remains of ancient stone weapons. I have picked up as many as 50 perfect chert knives and two broken celts in a cotton field within 500 yards of my bungalow at Banda, and do not remember ever having gone out on a search for implements to return unrewarded. In this branch of archæology India is almost an unexplored country considering the abundance of the materials. Mr. A. C. L. Carleyb of the Archæological Survey, made a very fine collection of stone implements in Bundelkhand, but apparently has not yet published on the subject and his collection is in England. He has ample materials for a volume on the subject.

## EXPLANATION OF PLATES IV, V and VI.

## Plate IV.

Fig. I. Waste chip or spall of quartzite struck in the manufacture of a Palæolithic celt—Loc. Hinoutee, S. Mirzapore.

Figs. 2, 3, 4 and 6. Discoidal implements of chert from Kon.

Figs. 5 to 7. Pointed flakes of chert; Kon.

Figs. 9-10. Large flake knives of black chert; Kon.

Fig. 11. Stone halberd-head of chert.

Figs. 12, 14. Large flakes of chert.

## Pl. V.

Fig. 15. Large flake of chert.

Fig. 16. Stone chert like the New Zealand Merai.

Figs. 17, 18 and 19. Large sized flakes of chert.

Fig. 20. Javelin head of chert.

Fig. 21. Chert celt from the Kon ravines.

Fig. 22. Broken ring-stone of chert; Kon.

Figs. 23, 24 and 25. Oblong celts of polished diorite; Kon.

## Pl. VI.

Figs. 26 to 36. Three-quarter edge view of chert celts from Kon.

Figs. 37, 38, 39, and 40. Polished oblong celts of diorite from the Kon ravines.

Fig. 41. Broken polished celt of black basalt with squared sides.

Fig. 42. Small oblong celt of green quartz; Kon.

Fig. 43. Large flat stone knife of pink Tirhowan cherty limestone.—Loc., Chopan.

