

CLASS VIII. *Glass finger-rings* (nos. 67-9)

Nos. 67 and 68 are of the first century A.D.; no. 69 of uncertain date, probably early medieval.

67. Fragment of glass finger-ring with flat almond-shaped bezel. Diam. 0.81 in. The glass is colourless and transparent. Sk. '14-193; Block K (palace); sq. 163.52'; stratum II. Cf. p. 177 *supra*.

68. Similar but of yellow glass. Diam. 0.75 in. Sk. '16-161; Block E'; sq. 68.76'; stratum III. Cf. p. 185 *supra*.

69. Fragment of finger-ring of dark blue and green opaque glass. Diam. 0.75 in. Dh. '16-254; mon. court A; 3 ft. below surface. Cf. pp. 278, 294 *supra*.

CLASS IX. *Engraved gems of stone and paste intended for finger-rings* (nos. 70-5)

Like the rings themselves which have stones or pastes inset in their bezels, these have been found only on the Sirkap and later sites. Fourteen date from the first century A.D. (Parthian); the remaining one from the fifth century.

70. Oval intaglio of malachite with figure of a winged Nike armed with spear and holding wreath and fillet in outstretched hand, as on contemporary Indo-Parthian coins. Longer axis 0.75 in. Sk. '22-566; Block E'; sq. 73.97'; stratum II. Cf. p. 185 *supra*. (Pl. 208, no. 53.)

71, *a-i*. Nine oval intaglios of jacinth cut *en cabochon* and hollowed at back. They are engraved with various full-length figures and busts. The best in point of execution is a figure of Athene (10, *f*) with helmet, spear and shield, and a snake to left. Another draped and helmeted figure (10, *a*) may also be the same goddess, but what looks like a shield may be the badly drawn wing of a Nike. On *h* and *i* is portrayed a draped goddess with cornucopia, the one on the former being helmeted. This may perhaps be the same goddess that is figured in nos. 1 and 2 of the 'Stone Sculptures', ch. 36. On *b* and *g* are figures of the winged Nike, the former with the palm of victory between her legs instead of in her hand. The three remaining intaglios are very roughly executed busts. Their head-dresses, however, are interesting. Fig. *d* wears a plumed helmet with a curious projection above the rim in front; the other two (*c* and *e*) wear turbans with the same projection in front. All the intaglios, except *a* and *f*, are of such rough workmanship that on grounds of style they might well be attributed to the third or fourth century A.D. That they date, however, from the first century is proved by the association in which they were found. Sk. '13-194; Block E; sq. 77.65'; strata I-II (in jar). Cf. p. 160, no. 4 *supra*; *A.S.R.* (1912), p. 28. From same hoard as nos. 72 and 73 *infra*. (Pl. 207, no. 10, *a-i*.)

72. Oval carnelian with flat face engraved with bust intaglio. From the same jar as the preceding. Cf. p. 160, no. 5.

73, *a, b*. Two oval intaglios of glass, the former (*a*) with flat face, banded in green, white and blue; the latter (*b*) of dull brown glass fashioned *en cabochon*. In both specimens the engraving is very worn and blurred. From same hoard as the preceding. Cf. p. 160, no. 6 *supra*.

74. Oval intaglio of carnelian with figure of Nike holding wreath and fillet in right hand, cornucopia in left. Face flat; back convex. Longer axis 0.5 in. Ss. '15-95; Piṇḍorā; 3 ft. 6 in. below surface. Cf. p. 220 *supra*. (Pl. 207, no. 9.)

75. Oval intaglio of chert, engraved with legend *Śrī Kuleśvaradāsa* in Brāhmī characters of the fifth century A.D. Longer axis 0.75 in. Jn. '17-F586; cell 3; 8 ft. below surface. Cf. p. 385 *supra*. (Pl. 207, no. 15.)

Chapter 32. BONE AND IVORY OBJECTS

BONE AND IVORY were used at Taxila for the manufacture of a multitude of small objects of daily use: personal ornaments, toilet and domestic articles, gamesmen, toy furniture, and other miscellaneous things. All of these objects, however, were not manufactured at the same time. Some classes of them have been found only in the Bhir Mound; others only in Sirkap; while others are common to both sites. Those which come only from the Bhir Mound and are anterior to the middle of the second century B.C. are: ear-reels (nos. 5-7), gadrooned beads (nos. 8-11),¹ flesh-rubber (no. 60), spindle-whorls (nos. 82-4), draughtsmen or counters (nos. 85-91), and a doll (no. 121). Those which occur only in Sirkap and are referable to the period between the second century B.C. and the first century A.D. are: combs (nos. 18-23), ear-cleaners and toothpicks (nos. 39-42), handles of mirrors and fan (nos. 43-5, 47-52, 54-7), knife-handles (nos. 61-5), spoons (nos. 67-8), playing dice (nos. 92-8), knuckle-bones (no. 99), toy furniture (nos. 100-4) and cheek-bars for horses' bridles (nos. 115-17). Articles that are found on both sites comprise: bangles (nos. 1, 2), pendants and amulets (nos. 12-15, 17), hair-pins (nos. 24-34), antimony-rods (nos. 35-8), comb-handles (nos. 58, 59), writing stili (nos. 69-81)² and arrow-heads (nos. 105-14).

Many of these articles are traceable to a Greek or Western Asiatic origin. Such are the hair-combs, hair-pins with comb and cock heads, ear-cleaners and toothpicks in combination, mirror-handles, writing stili, knuckle-bones (ἀστράγαλοι), the tooth amulet no. 17, the ivory ram's head no. 119, and the ivory pendant or handle with the two philosophers' heads no. 120. The two last, indeed, were in all probability imports from the West. The cheek-bars for horses' bridles (nos. 115-18) seem likely to have been introduced by the Parthians from Central Asia.

Some general remarks on bone and ivory objects from the Bhir Mound will be found in vol. I at pp. 102, 105 and 109, and on those from Sirkap at pp. 129, 135, 204-9. Other references are given in the individual entries of the catalogue below.

GROUP A. PERSONAL ORNAMENTS

Comprising bangles, ear-reels, gadrooned beads, pendants and amulets.

CLASS I. *Bangles* (nos. 1-4)

The materials commonly used for bangles were shell and copper for the cheaper sorts, silver and gold for the more expensive ones. Bone or ivory was occasionally used in place of shell, but only one or two specimens of these materials have been

¹ Gadrooned beads of faience, however, are common in the Śaka-Parthian period.

² Only one doubtful specimen (no. 69) comes from the Bhir Mound.

STRATIGRAPHICAL CHART OF BONE AND IVORY OBJECTS

Class	Bhir Mound strata				Sirkap strata					Other sites ¹	Class
	IV 5th to 6th century B.C.	III 4th century B.C.	II Maurya	I Surface	VII ? Pre- Greek	VI-V Greek	IV Early Śaka	III-II Late Śaka- Parthian	I Surface		
I. Bangles (nos. 1-4)	—	—	I	—	—	—	—	2-4	—	—	I
II. Ear-reels (nos. 5-7)	5, 6	—	II	—	—	—	—	—	—	—	II
III. Gadrooned or <i>amalaka</i> beads (nos. 8-11)	8-10	—	—	—	—	—	—	—	—	—	III
IV. Pendants and amulets (nos. 12-17)	12	13, 14	—	—	—	—	—	17	—	16 from Hl.	IV
V. Combs (nos. 18-23)	—	—	—	—	—	—	—	—	—	—	V
VI. Hair-pins (nos. 24-34)	24	25	36	—	—	26	18, 27, 28	19-21, 23	—	—	VI
VII. Antimony-rods, ear-cleaners and toothpicks (nos. 35-42)	—	35	—	—	—	—	37	29-34	—	—	VII
VIII. Handles of mirrors, fan-combs and other articles (nos. 43-59)	58	—	—	—	—	—	43, 59	44, 45, 48-52, 54-7	47	46 from Ml. 53 from Dh.	VIII
IX. Flesh-rubber (no. 60)	60	—	—	—	—	—	—	—	—	—	IX
X. Handles of knives and other articles (nos. 61-6)	—	—	—	—	—	—	—	61-5	—	66 from Dh.	X
XI. Spoons (nos. 67, 68)	—	—	—	—	—	67	81	68	—	—	XI
XII. Writing stili and modeling implements (nos. 69-81)	—	69	70	—	—	—	—	71-80	—	—	XII
XIII. Spindle-whorls (nos. 82-4)	—	82	83, 84	—	—	—	—	—	—	—	XIII
XIV. Draughtsmen or counters (nos. 85-91)	85, 86	87, 90, 91	88, 89	—	—	—	—	—	—	—	XIV
XV. Dice (nos. 92-8)	—	—	—	—	—	92	92, 94, 93	94-8	—	—	XV
XVI. Knuckle-bones (no. 99)	—	—	—	—	—	—	99 (?)	—	—	—	XVI
XVII. Toy furniture or miniature chests (nos. 100-4)	—	—	—	—	—	—	—	100-4	—	—	XVII
XVIII. Arrow-heads (nos. 105-14)	105, 106, 111	108	109, 110, 112-14	—	—	—	—	107	—	—	XVIII
XIX. Cheek-bars of horses' bridles (nos. 115-18)	—	—	—	—	—	—	—	115-17	—	118 from Ml.	XIX
XX. Miscellaneous (nos. 119-28)	122	—	119, 121, 125	—	—	120 (?)	123	124, 126, 128	—	—	XX

Note. The following objects found in spoil earth or debris are not included in the above list, viz.: no. 7 (ear-reel) from Bhir Mound; no. 15 (pendant), no. 22 (comb) and no. 127 (bone handle or terminal) from Sirkap.

¹ Dh. = Dharmarājikā; Hl. = Hathial; Ml. = Mahal.

TABLE SHOWING DISTRIBUTION OF BONE AND IVORY
OBJECTS IN SIRKAP

Block	Strata VI-V Greek	Stratum IV Early Śaka	Strata III-II Śaka-Parthian	Stratum I Surface
EAST SIDE OF MAIN STREET				
I	—	—	19, 56	—
A	—	—	4, 30, 103	—
B	—	—	100	—
C	—	—	31, 32, 34, 48, 61, 73, 76	—
D	—	120 (or Greek?)	38	—
E	—	—	33, 42, 77	—
F	—	18, 37, 123	29, 71	—
G	—	—	41, 49, 62, 97	—
H	—	—	55, 79, 80, 102	—
I	—	—	20, 72, 78, 98	—
J	—	—	75	—
K	—	—	51, 107, 117	—
L	—	—	—	—
WEST SIDE OF MAIN STREET				
I'	—	—	17, 57, 68, 96, 104	—
A'	—	27, 81	21, 54, 63, 94	—
B'	26, 67	—	52	—
C'	92	92, a, 93	95, 116	—
D'	—	—	23, 40, 101, 126	47
E'	—	—	—	—
F'	—	43	45, 99, 115	—
G'	—	—	—	—
H'	—	—	—	—
K'	—	—	2, 39, 74	—
Main Street	—	—	3, 44, 64, 124	—
Sixth Street (west)	—	28	—	—
Seventh Street (west)	—	—	50	—

Note. Objects found in trial trenches and spoil earth are not included in the above Table.

found—one of bone from the Bhir Mound (no. 1) and one of ivory from Sirkap (no. 2). Two other objects of bone and ivory (nos. 3, 4), which are described below, look at first sight like bangles, but could not have been used for this purpose as they show signs of wear only on the outer face and are rough inside.

1. Fragment of plain bone bangle. Diam. 1.62 in. Bm. '21-65; sq. 38.35'; stratum II. (Pl. 199, no. 1.)

2. Similar, of ivory, with incised cross-hatching between parallel lines on outer face. Length 1.5 in. Sk. '15-838; Block K'; sq. 160-106'; stratum II. Cf. p. 180 *supra*. (Pl. 199, no. 2.)

3. Ring of ivory. Diam. 2.5 in. This has the appearance of a bangle but seems rather to have been the base of a small pedestal like no. 56, though made in a separate piece. The inner face of the ring is rough; only the outer face is smooth. Sk. '14-1, 177; Main Street; sq. 86.72'; stratum III. (Pl. 199, no. 3.)

4. Similar to preceding. Diam. 2.25 in. Sk. '16-85; Block A; sq. 18.66'; stratum II. Cf. p. 146 *supra*.

CLASS II. *Ear-reels* (nos. 5-7)

The term 'ear-reel' for this kind of ornament seems preferable to 'ear-plug', since the form they take is that of a reel and they were worn in the lobe, not in the

orifice of the ear. Some are solid; others pierced with a hole at the centre. They have been found only in the Bhir Mound, in stratum IV. For other objects from the same early stratum, with which these ear-reels should have been included, see vol. I, p. 102.

5. Ear-reel of fine ivory, with one side convex and hole through centre, by which the reel may have been suspended on a cord. Diam. 0.93 in. Bm. '24-881; sq. 7.57'; stratum IV. (Pl. 199, no. 5.)

6. Similar, well turned on the lathe. One side slightly concave and decorated with incised concentric circles round a central projection. Diam. 1 in. Bm. '21-345; sq. 30.13'; stratum IV. (Pl. 199, no. 6.)

7. Similar, of bone, with hole through centre. It is of exceptionally large size. Diam. 1.31 in. Bm. '19-2,090; spoil earth. (Pl. 199, no. 7.)

CLASS III. *Gadrooned or āmalaka beads* (nos. 8-11)

This class of ornamental bead comes only from the Bhir Mound and dates from the sixth to third centuries B.C. All the specimens are of bone and divided into eight gadroons. The Indian term *āmalaka* is adopted from the *āmalaka* or gadrooned sphere or wheel with which the *śikhara* of a Hindu temple is usually crowned and which, in its turn, derived its name from the *āmalaka* fruit. Beads of the same shape but made of faience are found in Sirkap. They seem to have been fashionable in the first century A.D.

8. *Amalaka*-shaped bead of bone with eight gadroons and a hole through centre. Diam. 1 in. Bm. '19-1,978; sq. 10.38'; stratum IV. (Pl. 199, no. 8.)

9. Similar, with hole plugged up. Diam. 0.87 in. Bm. '21-175; sq. 8.51'; stratum IV. (Pl. 199, no. 9.)

10. Similar to no. 8. Diam. 1.12 in. Bm. '21-262; sq. 21.59'; stratum IV.

11. Similar to no. 9. Diam. 0.68 in. Bm. '24-180; sq. 9.60'; stratum II. (Pl. 199, no. 11.)

CLASS IV. *Pendants and amulets* (nos. 12-17)

Most of the articles in this class are dagger-shaped pendants of bone or ivory. Nos. 13 and 14 come from the Bhir Mound and are referable to the fourth to third century B.C.; nos. 15 and 16, from Sirkap and Hathiāl, may belong to the century following, but their date is problematical. Another and earlier object of quasi-human form from the Bhir Mound (no. 12, *c.* fifth century B.C.) was in all probability also a pendant, but might have been a child's toy. The little tooth or horn amulet no. 17, which is bound about the centre with a strip of copper, is akin to a tooth amulet of gold and lead from the Bhir Mound. Cf. 'Gold and Silver Jewellery', ch. 30, no. 80, where references are given to the use of such amulets by the Greeks and Romans, the former of whom may conceivably have introduced them at Taxila.

12. Ivory object in quasi-human form. Height 2.5 in. Probably it was a pendant, but may have been a child's toy. Very similar figures are classed as toys by Flinders Petrie, *Objects of Daily Use*, Pl. LV, no. 600. It is provided with a small hole near the top, for suspension. Bm. '24-937; sq. 15.55'; stratum IV. (Pl. 199, no. 12.)

13. Dagger-shaped pendant of bone. Length 1·81 in. One side is decorated with six incised circlets, one on the handle and the rest on the blade. On the handle is a hole for suspension. Bm. '20-1,249; sq. 27·27'; stratum III. (Pl. 199, no. 13.)

14. Similar to preceding, but of ivory. Length 1·31 in. Decorated on one side of the blade with parallel lines and two circlets. Bm. '20-1,247; sq. 27·26'; stratum III. (Pl. 199, no. 14.)

15. Similar to preceding, with decoration of incised lines only on handle and blade. Length 1·87 in. The workmanship is noticeably rougher than in the Bhīr Mound specimens. Sk. '14-151; spoil earth. (Pl. 199, no. 15.)

16. Similar, with two small holes near base of blade and incised parallel lines on handle and blade. Length 2·62 in. Hl. '12-28; 1 ft. below surface. (Pl. 199, no. 16.)

17. Amulet in form of crude bucranium, consisting of a pair of animal teeth bound together with strip of copper. Length 1·43 in. Sk. '29-1,172; Block 1'; sq. 11·100'; stratum III. In Greece the ox-skull was apotropaic. For another tooth amulet, see 'Gold and Silver Jewellery', ch. 30, no. 80. Cf. p. 196 *supra*. (Pl. 199, no. 17.)

GROUP B. ARTICLES OF DRESS AND TOILET

Comprising combs and comb-handles, hair-pins, antimony-rods, ear-cleaners and toothpicks, handles of mirrors, fan and other articles.

CLASS V. *Combs* (nos. 18-23)

These come exclusively from the Sirkap site and date from the first centuries before and after Christ, that is, from the Śāka-Parthian period. They are of a type familiar in the Graeco-Roman world and were no doubt introduced from the West.¹ (Cf. *B.M. Guide to Greek and Roman Life*, nos. 387 and 387, *a*, fig. 141.) One of the Taxila combs (no. 22) is a big, heavy comb with a straight top. The rest are smaller and of lighter make, with curved tops. One only (no. 18) is plain; the rest are decorated with incised circlets or more elaborate designs, including a shell, foliate devices, duck, and a pair of human busts of the kind that are familiar in Graeco-Roman art as well as in the carvings of Gandhāra and Mathurā. Such teeth as survive are sawn very evenly with a fine saw and are only slightly rounded at the ends, not pointed. The smaller and lighter combs may have been used as ornaments in the hair. Ivory and bone were both used in their manufacture.

18. Hair-comb of bone with curved top and no decoration. All teeth broken. Length 2·87 in. Sk. '26-2,770; Block F; sq. 91·51'; stratum IV. First century B.C. Cf. pp. 135, 166, n. 1 *supra*. (Pl. 199, no. 18.)

19. Similar, of bone, with eleven incised circlets on one side and ten on the other. Eight teeth complete. Length 2·31 in. First century A.D. Sk. '26-4,236; Block 1; sq. 13·47'; stratum II. Cf. p. 142 *supra*. (Pl. 199, no. 19.)

20. Similar and of same date but of ivory, with seven incised circlets on one side and eight on the other. Length 1·75 in. Sk. '26-460; Block I; sq. 132·65'; stratum II. Cf. p. 171 *supra*.

21. Similar, of ivory, engraved with male and female busts on one side and a duck on the other. Teeth missing. The 'pair of busts' motif was familiar in Graeco-Roman art and no

¹ The hair-comb of the kind described here was called κτεῖς or κτένιον by the Greeks. Ζάνιον was the comb used for wool.

doubt derived from the West; it is frequently seen in Gandhāra and still more frequently in Mathurā reliefs. For the bird motif on this comb, cf. *B.M. Guide to Greek and Roman Life*, no. 387, and Hackin, *Recherches Archéologiques à Begram*, ch. 2 (1937), Pl. LXXVII, fig. 237. Length 1·81 in. Sk. '28-194; Block A'; sq. 23·93'; stratum II. Cf. p. 195 *supra*. (Pl. 199, no. 21.)

22. Similar, of ivory, decorated with floral design in beaded border on one side and conch shell and floral design in beaded border on the other. Length 1·87 in. Sk. '19-1,680; spoil earth. (Pl. 199, no. 22.)

23. Hair-comb of ivory with straight edge at top and sides slightly curved inwards. Decoration of incised circles between parallel beaded borders, which are also incised. The comb is unusually large and heavy, measuring 4·12 × 3·5 × 0·45 in. Sk. '19-708; Block D'; sq. 58·115'; stratum II. Cf. p. 191 *supra*. (Pl. 199, no. 23.)

CLASS VI. *Hair-pins* (nos. 24-34)

These are made of both bone and ivory, and range in date from the fifth century B.C. to the first century A.D. Only two specimens, however, have been found in the Bhir Mound site and both of them have plain knob heads (nos. 24, 25). The pins with ornamental heads come exclusively from Sirkap, and with one exception (no. 26) are referable to the Śaka-Parthian period. Most characteristic of the motifs carved on the heads are the inverted comb and standard cock, the latter of which seems to be copied from Hellenistic prototypes. There is also a peculiar wave design with projecting mouldings on either side (no. 29). Less distinctive are the heads of nos. 28 and 33, which take the form of a bell or pot capital with incised rings below.

24. Hair-pin of bone, with separate knob head of shell. Length 1·56 in. Bm. '19-1,829; sq. 56·6'; stratum IV. (Pl. 199, no. 24 and Pl. 206, no. 15.)

25. Fragment of ivory hair-pin with knob head. Length 1·62 in. Bm. '21-237; sq. 22·59'; stratum III. (Pl. 199, no. 25.)

26. Bone hair-pin, with head in form of inverted comb set up on base. Length 4·87 in. The comb as an ornamental or amuletic motif was familiar in India as far back as the Indus period (*M.I.C.* p. 105 and Pls. xci and xcii) and is also found on punch-marked coins.¹ Here it was evidently substituted for the open-hand motif found on Greek and Roman pins and used frequently as a lucky amulet.² Sk. '29-2,621; Block B'; sq. 35·85'; stratum VI. Cf. p. 129 *supra*. (Pl. 206, no. 18.)

27. Hair-pin of bone, with head in form of cock standing on tree. Length 3·5 in. See nos. 30 and 32 below. The bird motif is also found on early pins from Luristān and on Greek and Roman pins, specimens of which may be seen in the Room of Greek and Roman Life in the British Museum. Sk. '29-2,556; Block A'; sq. 23·87'; stratum IV. Cf. p. 135 *supra*. (Pl. 206, no. 16.)

28. Hair-pin of ivory, with head in form of inverted bell capital and incised rings below. Sk. '29-1,057; Sixth Street (west); sq. 66·113'; stratum IV. Cf. p. 135 *supra*. (Pl. 199, no. 28 and Pl. 206, no. 20.)

29. Part of bone hair-pin, with wave-shaped head and projecting mouldings on either side. Length 3·25 in. Sk. '26-2,969; Block F; sq. 93·50'; stratum III. Cf. p. 166 *supra*. (Pl. 199, no. 29 and Pl. 206, no. 12.)

¹ Cf. Allan, *B.M. Cat. of Anc. Ind. Coins*, pp. xxv, lxiv, 55. For beads at Taxila in the shape of combs, cf. the chapter on 'Beads', p. 748 *infra*.

² The fingers are called 'comb-teeth' (κτένως) in Aeschylus, *Agam.* l. 1594.

30. Similar, with head in form of cock standing on abacus. Length 2.37 in. Sk. '29-2, 146; Block A; sq. 23.45'; stratum III. Cf. p. 146 *supra*. (Pl. 206, no. 14.)

31. Similar to no. 26, but lower part of pin missing. Length 3.37 in. Sk. '24-419; Block C; sq. 41.48'; stratum II. Cf. p. 149, no. 5 *supra*. (Pl. 206, no. 13.)

32. Similar to no. 30, but the cock is mounted on a capital instead of abacus only. Length 3.37 in. Sk. '24-62; Block C; sq. 41.51'; stratum II. Cf. p. 149, no. 5 *supra*. (Pl. 206, no. 17.)

33. Similar to no. 28; head in form of pot with three incised circles beneath. Length 3.18 in. Sk. '15-370; Block E; sq. 77.49'; stratum II. Cf. p. 162, no. 17 *supra*. (Pl. 199, no. 33 and Pl. 206, no. 22.)

34. Head of bone object of a wave pattern somewhat resembling no. 29, but without the side projections. Length 2.87 in. At the top is a groove with three holes for rivets; the shaft at the other end is broken. It may have been either a hair-pin or a knife-handle. In the former case, the groove and rivet holes may have been meant for the attachment of an additional ornament, possibly of metal. Sk. '15-813; Block C; sq. 45.59'; stratum II. Cf. p. 149, no. 2 *supra*. (Pl. 199, no. 34.)

CLASS VII. *Antimony-rods, ear-cleaners and toothpicks* (nos. 35-42)

These are classified under one head, as two of them are frequently combined together. They take the form of short rods of bone, ivory, copper, bronze or lead, measuring from 3 to 6 in. in length. If required for smearing antimony or *kohl* round the eyes the rod is slightly clubbed; if required as a toothpick or nail-cleaner, it is pointed; if as an ear-cleaner, it is furnished with a tiny scoop. Some of the rods are clubbed at both ends; others have a club at one end and a point or scoop at the other; others have a point at one end and a scoop at the other. The earliest specimens found at Taxila date from the third, or possibly fourth, century B.C.; the latest from the first century A.D. In the earliest specimens from the Bhir Mound, bone or ivory is used for the simple clubbed antimony-rod, copper for the antimony-rod and ear-cleaner combined. In the later specimens from Sirkap, bone, ivory, copper, bronze and lead are used for the antimony-rods; bone, ivory and copper for the combination of ear-cleaner and toothpick; and copper only for the combination of antimony-rod and toothpick. The combination of antimony-rod and ear-cleaner has not been found in Sirkap. Antimony-rods or *kohl*-sticks, as they are sometimes called, were used in Egypt and the West from a very early age, and it is not unlikely that they and the ear-cleaners were introduced at Taxila by the Greeks. The usual Greek word for antimony was στίμμι or στίμι. Ear-cleaners were called ὠτογλυφίς by the Greeks, *auriscalpium* by the Romans. The clubbed antimony-rod was doubtless used also for ordinary painting under the eyes with lamp-black (ἄσβολος). See 'Copper and Bronze', Class VIII, nos. 212-25, where references are given to similar Egyptian and Roman objects.

Type *a*. *Antimony-rods of bone and ivory*. From the Bhir Mound and Sirkap.

35. Ivory rod for smearing antimony or *kohl* round the eyes. Length 4 in. The ends are rounded but scarcely clubbed at all. Bm. '19-324; sq. 5.59'; stratum III. (Pl. 206, no. 26.)

36. Similar, of bone, roughly finished. Length 3·93 in. Bm. '20-1,588; sq. 13·30'; stratum II. (Pl. 206, no. 25.)

37. Similar, of ivory, with both ends clubbed. Length 5·87 in. Broken in middle. Sk. '26-2,773; Block F; sq. 91·57'; stratum IV. (Pl. 206, no. 24.)

38. Similar, of bone, broken at ends. Length 3·37 in. Sk. '24-1,456; Block D; sq. 63·57'; stratum III. Cf. p. 155 *supra*.

Type *b*. *Ear-cleaners and toothpicks combined*. From the Śaka-Parthian strata in Sirkap only.

39. Combination of ear-cleaner and toothpick, of bone. Length 3·56 in. Sk. '27-137; Block K'; sq. 163·112'; stratum III. Cf. p. 180 *supra*. (Pl. 206, no. 29.)

40. Similar. Length 4·5 in. Sk. '29-1,742; Block D'; sq. 65·88; stratum III. Cf. p. 191 *supra*. (Pl. 206, no. 27.)

41. Similar, damaged. Length 3·37 in. Sk. '26-2,181; Block G; sq. 97·53'; stratum II. Cf. p. 169 *supra*.

42. Similar, of ivory, broken. Length 2·5 in. Sk. '13-1,168; Block E; sq. 75·54; stratum II. Cf. p. 162, no. 17 *supra*.

CLASS VIII. *Handles of mirrors, fan, combs and other articles* (nos. 43-59)

Like the metal mirrors themselves ('Copper and Bronze', nos. 208-11), mirror-handles come exclusively from Sirkap and are referable to the first century B.C. and A.D. Mirrors are one of the many things introduced from the Greek Orient either by the Greeks themselves or by their successors, the Śakas or the Parthians. Their handles are made of both bone and ivory, and fall into two classes, viz.: (a) those decorated with figure-carvings in relief, and (b) those turned on the lathe and decorated with mouldings and incised lines and hatching.

Type *a*. *Handles of mirrors carved in relief*.

43. Bone handle, with the figure of a woman carved in relief on one side. She wears long ear ornaments, necklace with pendant, girdle, heavy anklets and bangles. The bone is hollow. For the anklets, cf. 'Gold and Silver Jewellery', nos. 148-65. Length 6·31 in. Sk. '28-2,483; Block F'; sq. 91·92'; stratum IV. Cf. pp. 135, 183 *supra*. (Pl. 203, *k*.)

44. Similar, of rough workmanship. The woman's hair is dressed in a plain mass on either side of head. Length 6·2 in. Sk. '37; sq. 72·75'; Main Street; stratum II.

45. Similar. Length 5·25 in. Feet and anklets missing. The woman wears a garland on her head, as in no. 47 and in numerous stucco and other figures of the Parthian period. The 'diamond and reel' motif of her girdle resembles that found in stone carvings of the Early Indian School. Observe the long pendants on either side of the head, which, like those in no. 46, seem to be suspended from the head-dress, not from the ears. There is a socket-hole in the right top corner to take the tenon of the mirror. Sk. '28-1,777; Block F'; sq. 85·89'; stratum II. Cf. p. 183 *supra*. (Pl. 203, *l*.)

46. Similar to preceding, but without garland; and the girdle consists of a plain broad band. Length 6·75 in. Ml. '20-91; sq. 63·84'; 2 ft. 6 in. below surface. Cf. p. 215 *supra*. (Pl. 203, *m*.)

47. Handle of bone, broader than the preceding specimens, with male and female figures standing side by side. The male figure (to the left) wears a garment falling over his left shoulder, garland on head, bangles and girdle. The female wears her hair dressed in a double tier, crossed breast chain, bangles, girdle and anklets. The workmanship is crude and primitive.

There are two socket-holes in the top. Size 4.37×2.37 in. Sk. '20-769; Block D'; sq. 57.82'; stratum I. Cf. p. 191 *supra*. (Pl. 203, n.)

Type *b*. *Mirror and other handles turned on lathe and decorated with mouldings and incised lines and hatching.*

48. Bone mirror (?) handle turned on lathe and decorated with incised parallel rings, mouldings and hatching. Length 3.37 in. Sk. '24-796; Block C; sq. 45.45'; stratum III. Cf. p. 149, n. 2 *supra*.

49. Similar. Length 2.87 in. Sk. '26-2,487; Block G; sq. 107.49'; stratum III. Cf. p. 169 *supra*. (Pl. 199, no. 49.)

50. Similar, with base-like end and more pronounced mouldings. Length 3.31 in. Sk. '17-40; Seventh Street (west); sq. 80.78'; stratum II. (Pl. 199, no. 50.)

51. Similar. Length 3.25 in. Sk. '14-219; Block K; sq. 172.55'; stratum II. Cf. p. 177 *supra*.

52. Similar, but smaller and with deeper mouldings, and transverse hole near bottom. This and the three handles following were probably not mirror-handles. Length 2 in. Sk. '12-400; Block B'; sq. 38.87'; stratum II. Cf. p. 194 *supra*. (Pl. 199, no. 52.)

53. Similar to preceding, with double torus moulding and without cross-hatching. Remains of iron fitting at top. Length 2.43 in. Dh. '16-752; mon. court A; 14 ft. 6 in. below surface. Cf. pp. 278, 294 *supra*. (Pl. 199, no. 53.)

54. Similar but plainer, with projecting tenon at one end and two holes pierced transversely across body. Length 2.31 in. Sk. '22-334; Block A'; sq. 16.98'; stratum II. Cf. p. 195 *supra*. (Pl. 199, no. 54.)

55. Similar, with broken end. Length 2.12 in. Sk. '15-514; Block H; sq. 125.68'; stratum II. Cf. p. 170 *supra*. (Pl. 199, no. 55.)

56. Mirror-handle of ivory, with single torus moulding resembling the handle of a Greek mirror from the Bulandi Bagh at Patna (Pāṭaliputra), now in the museum at Patna. Length 2.62 in. Sk. '16-1,564; Block I; sq. 11.64'; stratum II. Cf. p. 142 *supra*. (Pl. 199, no. 56.)

Type *c*. *Handle of fan or fly-whisk.*

57. Ivory handle of a fan or fly-whisk provided with a hole at the butt-end for suspension and three holes at the other end for attaching the fan or whisk. The fan (ῥίπτις) was in daily use among the Greeks, and the fly-whisk (κάλλυντρον) was also familiar to them, but either object may equally well have been Indian. Length 10.43 in. Sk. '28-2,647; Block I'; sq. 12.89'; stratum III. Cf. p. 196 *supra*. (Pl. 200, o.)

Type *d*. *Handles of combs (?)*. These may have been intended for metal combs, possibly for combing wool, but their purpose is uncertain. One is of bone and dates from the fourth or fifth century B.C., the other of ivory and dates from about the beginning of the Christian era.

58. Broad handle of bone with a groove underneath for a metal comb (?). Length 2.81 in. Bm. '19-1,523; sq. 5.59'; stratum IV. (Pl. 200, f.)

59. Similar, but of ivory and decorated on the back with incised parallel lines running the length of the handle. Length 4 in. Sk. '27-358; Trench D 85; stratum IV. (Pl. 200, g.)

CLASS IX. *Flesh-rubber* (no. 60)

60. Irregular disk of bone with a number of punctured dots on one surface. Diam. 2.25 in. Bm. '30-1,126; sq. 13.62'; stratum IV. (Pl. 205, i.)

GROUP C. DOMESTIC ARTICLES

Comprising knife-handles, spoons, stili, and spindle-whorls.

CLASS X. *Handles of knives and other articles* (nos. 61-6)

These date from the Śaka-Parthian period and are made of bone and ivory.

61. Bone handle of a small knife. Length 2.56 in. At one end there is a groove with three rivet holes for fixing the blade; at the other a heart and circle design is fretted through the thickness of the handle. Sk. '12-1,014; Block C; sq. 44.64'; stratum III. Cf. p. 149, n. 2 *supra*. (Pl. 200, b.)

62. Similar, of ivory, with a *triratna* at the butt-end of the handle. Length 2.81 in. Sk. '13-17; Block G; sq. 97.65'; stratum III. Cf. p. 169 *supra*. (Pl. 200, d.)

63. Bone side-piece of a knife-handle decorated with incised circlets and chevrons. Near one end is an iron rivet. Length 3.12 in. Sk. '28-67; Block A'; sq. 15.87'; stratum II. Cf. p. 195 *supra*. (Pl. 200, c.)

64. Similar, of ivory, without decoration. Two holes for rivets. The ivory is burnt black, and part is broken. Length 2.25 in. Sk. '17-266; Main Street; sq. 106.73'; stratum II. (Pl. 200, n.)

65. Similar to preceding but decorated with incised circlets. Two holes for rivets. Length 2.81 in. Sk. '20-2; spoil earth; stratum II. (Pl. 200, e.)

66. Bone handle with leaf-shape terminal, slightly convex on both sides. Length 3.56 in. For copper handles with leaf-shape terminals, cf. 'Copper and Bronze', no. 310; Dh. '13-1,725; 3 ft. below surface. Cf. p. 294 *supra*. (Pl. 200, l.)

CLASS XI. *Spoons* (nos. 67, 68)

There are only two specimens of spoons made of bone, one from the Greek stratum, the other from the late Śaka-Parthian stratum, in Sirkap.

67. Spoon of bone with shallow bowl. The handle, partly broken, is flat in front, convex at back. Length 4.25 in. Sk. '29-2,761; Block B'; sq. 35.89'; stratum VI. Cf. p. 129 *supra*. (Pl. 200, h.)

68. Similar, with leaf-shaped shallow bowl. Handle missing. Length 1.75 in. Sk. '22-163; Block 1'; sq. 11.93'; stratum II. Cf. p. 196 *supra*. (Pl. 200, k.)

CLASS XII. *Writing stili* (γραφίς, στῦλος, stilus) and modelling implements (nos. 69-81)

With two or three exceptions all the bone and ivory stili, like the copper calami, come from Sirkap, and there can be no doubt of their western origin. The stilus was used for writing on wax; the calamus for writing with ink on parchment, birch-bark, etc. The average length of the stili is about 4.5 in., but some are considerably shorter, others considerably longer. Some have a fine smooth point, others a ball point. In some, again, the butt is flattened like a chisel for smoothing out the wax; in others it is rounded.

The exceptions referred to were found in the Bhir Mound and date from the third or possibly fourth century B.C. One of them, no. 69, looks like one of the

rough bone arrow-heads described below (nos. 105-7), but a tiny ball at the point leaves no doubt that, even if it was intended for an arrow-head in the first instance, it was converted into a stilus or modelling tool afterwards. The other (no. 70) is the usual kind of stilus with plain point and rounded butt, but somewhat heavier than the Sirkap examples. It should be added that the ball-pointed specimens may have served as modelling tools.¹ An example of a modelling tool furnished with such a ball point at one end is figured among some ancient Roman specimens from Arezzo in Blümner, *Technologie*, II, p. 110 and Schreiber, *Atlas of Classical Antiquities*, Pl. LXVIII, 11.

69. Stilus (?) of bone, resembling a rough arrow-head of Class XVIII, but with ball point. Length 2.5 in. Bm. '21-205; sq. 22.60'; stratum III.

70. Bone stilus, with plain point and rounded butt. Length 5.75 in. Bm. '20-716; sq. 35.28'; stratum II. For examples of classical stili with rounded or knob butts, cf. Schreiber, *op. cit.* Pl. xci, 3, 5, 7. (Pl. 206, no. 30.)

71. Bone stilus, with plain point and flattened butt. Length 4 in. Sk. '26-2,788; Block F; sq. 89.50'; stratum III. For examples of classical stili with flattened butts, cf. Schreiber, *op. cit.* Pls. xc, 5 and xci, 6. Cf. p. 166 *supra*. (Pl. 206, no. 31.)

72. Similar, but with rounded butt. Length 4.5 in. Sk. '26-1,108; Block I; sq. 135.49'; stratum III.

73. Similar to no. 71. Length 3.93 in. Sk. '24-149; Block C; sq. 45.40'; stratum II. Cf. p. 149, n. 2 *supra*. (Pl. 206, no. 33.)

74. Similar, but with tenon at head. Length 3.25 in. Sk. '15-933; Block K'; sq. 168.99'; stratum II. The tenon was presumably intended for fixing an ornamental terminal such as that figured in Schreiber, *op. cit.* Pl. LXXXIX, 5. Cf. p. 180 *supra*.

75. Similar, but with rounded butt, roughly cut. Length 4.49 in. Sk. '26-1,437; Block J; sq. 145.47'; stratum II. Cf. p. 171 *supra*. (Pl. 206, no. 34.)

76. Bone stilus (?) with ball point and flattened butt. Length 4.5 in. This and the following specimens may have served as modelling tools rather than writing stili. See above. Sk. '24-502; Block C; sq. 41.53'; stratum III. Cf. p. 149, n. 2 *supra*. (Pl. 206, no. 36.)

77. Similar, with ball point broken. Butt slightly flattened. Length 5.6 in. Sk. '13-1,345; Block E; sq. 72.57'; stratum II. Cf. p. 162, n. 1 *supra*.

78. Similar, with ball point and flattened butt. Length 4.31 in. Sk. '26-2,009; Block I; sq. 129.40'; stratum II. Cf. p. 171 *supra*. (Pl. 206, no. 35.)

79. Similar to preceding, but of ivory. Length 4 in. Sk. '15-395; Block H; sq. 118.49'; stratum II. Cf. p. 170 *supra*.

80. Similar, but of bone. Length 3.18 in. Sk. '15-248; Block H; sq. 116.43'; stratum II. Cf. p. 170 *supra*.

81. Similar, but with longer shaft, broken and rounded off, and well-made chisel-shaped butt. Length 6.12 in. Sk. '28-217; Block A'; sq. 15.92'; stratum IV. Cf. p. 135 *supra*. (Pl. 200, m and Pl. 206, no. 38.)

CLASS XIII. *Spindle-whorls* (nos. 82-4)

Very few specimens of spindle-whorls made from bone or ivory have been found at Taxila, and all of them come from Bhir Mound strata of the fourth to third centuries B.C.

¹ It is noteworthy in this connexion that the Greek word γράφῃς is used for both a stile and a graver.

82. Spindle-whorl of bone in form of flat disk pierced with hole at centre. Diam. 1 in. Bm. '19-2,027; sq. 29.11'; stratum III. (Pl. 200, *r* and Pl. 203, *r*.)

83. Similar, but of ivory and plane-convex shape. Diam. 0.93 in. Bm. '19-1,397; sq. 51.8'; stratum II. (Pl. 204, *y*.)

84. Similar to no. 83. Diam. 1.6 in. Bm. '21-1,088; sq. 36.20'; stratum II. (Pl. 200, *u*.)

GROUP D. GAMESMEN AND PLAYTHINGS

These comprise: (*a*) flat tablets, circular, square, or hexagonal in shape, which probably served as draughtsmen or counters; (*b*) playing dice of the long Indian type; and (*c*) knuckle-bones for playing the Greek game of *astragaloï*.

CLASS XIV. *Draughtsmen or counters* (nos. 85-91)

These come exclusively from the Bhir Mound and are referable to the fifth to third centuries B.C. They are made of both bone and ivory, and usually take the form of flat circular disks, flat on the lower side and with a raised boss in the centre of the upper side, surrounded by concentric circles or two concentric rows of slightly raised excrescences. Others are thin, square, or hexagonal tablets. The circular ones vary in diameter from 0.7 to 1.15 in. and in thickness from 0.8 to 0.18 in. The upper surface is highly polished.

85. Disk of ivory, with two concentric rows of circular excrescences round centre—four in inner row, eight in outer. Probably used as a draughtsman or counter. Diam. 0.68 in. Bm. '21-909; sq. 19.56'; stratum IV. (Pl. 200, *i*.)

86. Similar, with nine concentric rings round embossed centre. Diam. 1 in. Bm. '21-345; sq. 30.13'; stratum IV. (Pl. 203, *q*.)

87. Similar, with three concentric circles round central boss. Stained reddish and grey. Diam. 0.81 in. Bm. '24-613; sq. 16.54'; stratum III. (Pl. 203, *s*.)

88. Similar to no. 85. Slightly damaged. Diam. 1.12 in. Bm. '19-63; sq. 8.44'; stratum II. (Pl. 203, *t*.)

89. Hexagonal ivory piece, slightly concave on upper surface. Diam. 0.68 in. Bm. '20-1,336; sq. 28.20'; stratum II. (Pl. 203, *v*.)

90. Square tablet of ivory with crossed diagonal lines incised on one side. 0.56 in. square. Bm. '21-722; sq. 47.60'; stratum III. (Pl. 200, *j*.)

91. Similar, but of bone, with arrow, *nandipada* and swastika symbols engraved on one side—perhaps for luck. Size 0.62 × 0.68 in. Bm. '20-1,596; sq. 29.36'; stratum III. (Pl. 203, *u*.)

CLASS XV. *Dice* (nos. 92-8)

With one doubtful exception from the Bhir Mound, all the playing dice found at Taxila come from Sirkap and Sirsukh, and are referable to the Greek and Śaka-Parthian period and later. They are made of ivory, bone, slate¹ and terra-cotta;² are invariably oblong in shape, not cubical; and range in size from 1.8 × 0.22 in. to 3.78 × 0.65 in.³ The numbers 1, 2, 3 and 4 are indicated by concentric circles or simple dots and as a rule follow each other consecutively round the four long

¹ Cf. 'Stone Objects', ch. 25, no. 154.

² Cf. 'Terra-cottas', ch. 24, nos. 122-5 (Class XX).

³ The smallest specimen comes from Sirsukh and is probably of late date.

sides, but occasionally 1 is placed opposite to 2 or 4. All specimens of bone and ivory come from Sirkap.

92. Three oblong dice of bone with 1 to 4 marked on sides. The marks consist of four circlets within a circle. Length 3.75 in. Sk. '26-9; Block C'; sq. 47-48.95'; stratum V. Cf. pp. 125, 135 *supra*.

92, a. Oblong playing die of ivory with 1 to 4 marked on sides. The marks consist of four circlets within a circle. The ends of the die are decorated with incised lines and circlets. Mark 1 is on the side opposite to mark 4. Length 3.62 in. Sk. '29-1,658; Block C'; sq. 46.88'; stratum IV. Cf. p. 135 *supra*. (Pl. 200, p.)

93. Similar, but of bone, and marks consist of dot surrounded by two concentric circles. Mark 1 is opposite to 3. Length 3.5 in. Sk. '14-680; Block C'; sq. 52.75'; stratum IV. Cf. pp. 135, 193 *supra*. (Pl. 200, q.)

94. Similar, of ivory. Bands of three parallel lines at either end. Mark 1 is opposite to 3. Length 3.62 in. Sk. '20-631; Block A'; sq. 18.81'; stratum III. Cf. p. 195 *supra*.

95. Similar, of bone. Mark 1 is opposite to 4. Length 3.5 in. Sk. '14-100; Block C'; sq. 42.74'; stratum III. Cf. p. 193 *supra*.

96. Similar to preceding. Length 3.5 in. Sk. '24-86; Block 1'; sq. 14.94'; stratum II. Cf. p. 196 *supra*.

97. Similar, but marks consist of group of three circlets surrounded by two concentric circles. Bands of three circlets between two incised parallel lines on each side at ends. Mark 1 opposite to 4. Length 3.87 in. Sk. '14-392; Block G; sq. 107.56'; stratum II. Cf. p. 169 *supra*. (Pl. 200, t.)

98. Similar, but marks consist of single dot in circle. Two incised parallel lines at ends. Mark 1 opposite to 4. Length 3.12 in. Sk. '26-436; Block I; sq. 140.62'; stratum II. Cf. p. 171 *supra*. (Pl. 200, v.)

CLASS XVI. *Knuckle-bones* (no. 99)

Knuckle-bones (ἀστράγαλοι) were used by the Greeks from an early age for playing a game somewhat similar to dice. Later the word ἀστράγαλοι was applied to dice proper, but they continued to have only four flat sides, the other two being round. The four flat sides were marked with the number 1 (represented by a pip as in the dice of Class XV) opposite to 6, and 3 opposite to 4. 'The numbers 2 and 5 were wanting. In playing they threw four ἀστράγαλοι out of the palm of the hand or from a box (πύργος). The best throw (βόλος), when each die came up differently, was called Ἀφροδίτη or Μίδας or Ἡρακλῆς; the worst, when all the dice came up alike, κύων.' (Liddell and Scott, *Lex. s.v.* ἀστράγαλος.)

99. The only *astragaloi* found at Taxila were a large group of the old-fashioned, uncut knuckle-bones, such as are depicted in Greek vase paintings of the fourth and fifth centuries B.C. They were unearthed in Block F'; sq. 89-90.97'; stratum III. Cf. p. 182 *supra*.

CLASS XVII. *Toy furniture or miniature chests* (nos. 100-4)

These articles are usually made of ivory (there is only one of bone), and are referable to the first century A.D. They call to mind the toy furniture from Hawāra in Roman Egypt figured in Flinders Petrie, *Objects of Daily Use*, Pl. LIV, 554 and 555, though the latter is more roughly made. The specimens described below, all from Sirkap, seemingly belong to six different pieces—probably

diminutive trinket chests (Gk. κιβώτιον), but possibly toy tables or even bedsteads. Pl. 204, *p* shows a restoration of a chest or table made up of members from several specimens.

100. Ivory corner-post of a miniature chest or toy table, with six holes for the attachment of the side-pieces. Provided with foot-mouldings and decorated on the outer faces with incised horizontal lines and concentric circles. Height 2.93 in. Sk. '24-523; Block B; sq. 39.46'; stratum II. Cf. p. 148, no. 6. (Pl. 204, *n*.)

101. Similar, but of bone. Lower part rounded by chisel, not turned on the lathe. Height 2.81 in. Sk. '20-294; Block D'; sq. 54.98'; stratum II. Cf. p. 191 *supra*.

102. Similar to no. 100, but slightly plainer. Length 2.68 in. Sk. '26-1,935; Block H; sq. 116.56'; stratum II. Cf. p. 170 *supra*. (Pl. 204, *o*.)

103. Rectangular side-piece of chest or table made of ivory and decorated with incised circlets on outer side. Seven peg-holes for fixing to legs and top. Size 3.5 × 1.62 in. Sk. '29-2,104; Block A; sq. 17.43'; stratum II. Cf. p. 146 *supra*. (Pl. 204, *r*.)

104. Similar to preceding, but decorated with two rows of double concentric circlets between line-borders. Length 3.5 in. Sk. '28-119; Block I'; sq. 14.86'; stratum III. Cf. p. 196 *supra*. (Pl. 204, *q*.)

GROUP E. WEAPONS AND HORSE-BRIDLES

CLASS XVIII. *Arrow-heads* (nos. 105-14)

The bone and ivory arrow-heads from Taxila are of four types, viz.: (*a*) roughly shaped and sharpened at both ends. These are the objects which Cunningham took to be 'spillikins' or 'tip-cats', but they are much too small for the game in question and there can no longer be any doubt that they served as arrow-heads; (*b*) with smooth circular point and well-defined tang; (*c*) with a point similar to (*b*) but with a hollow socket-hole behind for the shaft-tenon; (*d*) with a trilateral point and hollow socket-hole behind. Type (*a*) is found in both the Bhir Mound and Sirkap and was in use from the fifth or sixth century B.C. to the first century A.D.; but the earlier Bhir Mound specimens are distinguished from the Sirkap ones by having the point of the arrow-head somewhat better finished than the tang. Types (*b*), (*c*) and (*d*) are found exclusively in the Bhir Mound and date from the fourth and third centuries B.C.

Kautilya (bk. II, ch. 18) mentions arrows tipped with bone or wood as well as with metal, but these bone and ivory arrow-heads from Taxila could hardly have been intended for serious warfare, unless they were poisoned. Possibly they were employed for practice archery¹ or for shooting birds; or it may be that they were found useful for the town police as being less deadly than iron ones.

The following are typical specimens:

Type *a*. *Roughly shaped and sharpened at both ends.*

105. Bone arrow-head with sharp point and tapering tang. Length 3.18 in. Bm. '19-1,995; sq. 10.38'; stratum IV. (Pl. 206, no. 9.)

106. Similar. Length 2.5 in. Bm. '21-254; sq. 27.60'; stratum IV. (Pl. 206, no. 6.)

¹ For a classical scene of boys practising archery, cf. Schreiber, *op. cit.* Pl. LXXX, 7.

107. Similar, but no difference between the point and tang. Sk. '15-482; Block K; sq. 157·112'; stratum II. Cf. p. 177 *supra*. (Pl. 206, no. 10.)

Type *b*. *With smooth circular point and well-defined tang.*

108. Arrow-head of bone with circular point divided from tang by projecting flange. Length 3·12 in. Bm. '21-207; sq. 20·59'; stratum III. (Pl. 206, no. 3.)

109. Similar but with rebate between point and tang. Length 2·5 in. Bm. '19-422; sq. 12·30'; stratum II. (Pl. 206, no. 4.)

110. Similar. Length 2·37 in. Bm. '21-898; sq. 45·130'; stratum II.

Type *c*. *With circular point as in Type b, but with hollow socket at back for insertion of shaft tenon.*

111. Bone arrow-head with long circular point and socket-hole at back. Length 3·62 in. Bm. '24-894; sq. 14·57'; stratum IV. (Pl. 206, no. 11.)

112. Similar, but with shorter point. Length 1·81 in. Bm. '19-2,063; sq. 12·29'; stratum II. (Pl. 206, no. 7.)

113. Similar. Length 1·37 in. Bm. '21-587; sq. 21·8'; stratum II.

Type *d*. *With trilateral point and hollow socket behind.*

114. Ivory arrow-head with trilateral point and circular shaft provided with socket-hole behind. Length 2·37 in. Bm. '20-809; sq. 18·39'; stratum II. (Pl. 206, no. 8.)

CLASS XIX. *Cheek-bars of horses' bridles* (nos. 115-18)

Cheek-bars of horses' bridles have been found only among the Parthian remains in Sirkap. Some are made of horn, others of bone usually curved in imitation of horn, and others of iron (cf. 'Iron Objects', ch. 27, nos. 99, 100). As explained in the chapter on 'Iron Objects', Class XXII, the cheek-bar or cheek-ring was used with the snaffle-bit to prevent the rein slipping into the mouth. The horn and bone specimens are invariably pierced with two holes in which an iron staple was fixed for the bit-rings to pass through, as shown in Pl. 205, *b*, which illustrates an ancient bit, with cheek-bars complete, from Central Asia.

115. Cheek-bar of horn with two tines. Length 8·75 in. The bar is pierced with two holes at 2·25 and 3·5 in. above the base. Decorated with three incised parallel bands near base. Sk. '15-166; Block F'; sq. 90·79'; stratum III. Cf. p. 183 *supra*; *A.S.R.* (1915), Pl. IX, 4. (Pls. 200, *w*; 205, *e*.)

116. Similar, but of bone curved in imitation of a horn. Length 4 in. Sk. '14-1,555; Block C'; sq. 45·79'; stratum II. Cf. p. 193 *supra*. (Pl. 200, *x*.)

117. Similar to preceding, but longer. Decorated with incised parallel lines and chevron near base. Length 6·37 in. Sk. '14-134; Block K; sq. 167·48'; stratum II. Cf. p. 177 *supra*. (Pl. 200, *y*.)

118. Similar, but not curved. Decorated with two bands of incised lines round upper half. Broken. Length 3·62 in. Ml. '25-222; sq. 64·74'; 2 ft. below surface. Cf. p. 216 *supra*. (Pl. 200, *s*.)

GROUP F. MISCELLANEOUS

CLASS XX. (Nos. 119-28)

119. Profile head of ram in low relief, of fossilised ivory. Length 1 in. The relief is admirably carved. It is flat at the back and may have been affixed to a knife-handle or pin-head. Among the Romans a ram's head was an auspicious symbol of hospitality (cf. *Dar. et Sag. s.v.* 'Hospitum'). For another ram's head carved on a scaraboid seal, see 'Seals and Sealings', ch. 34, no. 11. Both objects come from the Bhir Mound and are referable to the same period. For the ram motif in other objects, see 'Copper and Bronze', ch. 28, nos. 298, 299; 'Seals', ch. 34, no. 10; 'Beads', ch. 37, pp. 737 and 749. The fossilised ivory of which this and no. 122 are made probably came from Siberia, whence the Mughals also obtained their supply of it. Bm. '20-596; sq. 34.27'; stratum II. (Pl. 208, no. 52.)

120. Ivory handle or pendant adorned on either side with a bearded Greek head of the philosopher type, seemingly of Socrates. The carving is good Hellenistic work. Through the middle of the pendant is a vertical hole and, at the back of the heads, two diagonal channels, presumably for metal bands. The two heads are much worn, and this, coupled with the large size of the hole, suggests that the object served as a handle rather than as a pendant. Width 2.12 in. Illustrated in *A.S.R.* (1912), Pl. xx, *d.* Sk. '12; Trench A 459; from Early Śaka or Greek level beneath forecourt of stūpa-chapel in Block D. Cf. p. 151 *supra*. (Pl. 203, *p.*)

121. Crude standing figure of a man, in the round—probably a doll. The man wears a long tunic with a band above the waist and a necklace. Through the body from shoulder to shoulder there is a hole for the attachment of movable arms; and another tiny hole from the back to the front of the shoulder, for the same purpose. Height 2.75 in. Bm. '16-324; stratum II. (Pl. 203, *o.*)

122. Side-piece of dagger-hilt of fossilised ivory (cf. no. 119 *supra*). Two holes for rivets. Length 4.25 in. Bm. '24-515; sq. 26.57'; stratum IV. Cf. p. 122 *supra*. (Pl. 200, *a.*)

123. Leaf-shaped lid of small box with a depression underneath, contrived to slide over the top of the box. It is 2 in. long and made of ivory. Cf. Flinders Petrie, *op. cit.* Pl. xxvi, 11, *a.* Sk. '26-2,705; Block F; sq. 91.48'; stratum IV; Śaka period. Cf. pp. 135, 166, n. 1 *supra*. (Pl. 204, *x.*)

124. Leg of ivory belonging to a piece of furniture. At the bottom is a well-turned base moulding; at the top, a tenon. Length 7.12 in. Sk. '16-10; Main Street; sq. 69.73'; stratum III. (Pl. 204, *s.*)

125. Bone handle or terminal, with bead-and-reel moulding and square tenon at base. Length 2.62 in. Bm. '21-1,546; sq. 43.127'; stratum II. (Pl. 204, *t.*)

126. Similar, but broken at top. Length 2.06 in. Sk. '29-600; Block D'; sq. 59.103'; stratum III. Cf. p. 191 *supra*. (Pl. 204, *u.*)

127. Similar, with pear-shaped head; broken at other end. Length 1.56 in. Sk. '22-491; spoil earth. (Pl. 204, *w.*)

128. Stopper or terminal of bone. Length 1.25 in. Sk. '13; Trench A 456; stratum II. (Pl. 204, *v.*)

Chapter 33. SHELL OBJECTS

THE USE of shell for the manufacture of such objects as bangles, dippers and beads, as well as for inlay-work, goes back to a remote antiquity in India. That the industry had reached a high degree of proficiency among the people of the Indus civilisation as early as the beginning of the third millennium B.C., as it did also among the Sumerians and Babylonians, is evident from the many fine specimens of shell-work found among the ruins of Mohenjo-daro¹ and Harappā; and that it was widely diffused at that time in other parts of the peninsula is proved by the discovery of shell-cutting centres in the Southern Dekhan, Kāthiāwār and Gujarāt, where fragments of the cut shells have been found in association with flint and stone implements, just as they have been in the Chalcolithic sites on the banks of the Indus.² It seems safe, therefore, to assume that this indigenous industry came down in an unbroken tradition from prehistoric to historic times, and that the methods of manufacture two thousand years ago were much the same as they had been two or three thousand years earlier, and as they still are among the shell-workers who carry on the industry at Dacca and many other places. These methods have been described in detail by James Hornell in *Memoirs of the Asiatic Society of Bengal*, vol. III (1910-14), and summarised in chapter XXVIII of *Mohenjo-daro and the Indus Civilisation*. They need not, therefore, be repeated here. It is to be noted, however, that the industry is nowadays mainly concerned with the manufacture of bangles, as it evidently was at Taxila, and that the shell from which the bangles were then as now usually made was the *sank* or *Xancus pyrum*, formerly known as *Turbinella pyrum*.

Below is given a list (nos. 1-18) of the various kinds of shells which have been found in their natural uncut state at Taxila. With the exception of the two freshwater molluscs (nos. 6, 7) and of the rare scallop shell from the Pacific (no. 1), all are more or less common round the coasts of India. The first in the list is especially interesting as indicating a trade connexion (presumably through Central Asia) between the North-West and the shores of the Pacific as early as the first century of our era. The second, *Xancus pyrum*, is the shell still used in the manufacture of bangles and other objects, and is common on the coasts of Kāthiāwār, South India and Ceylon. Like *X. pyrum*, *Murex (Chicoreus) anguliferus* (no. 3) might also have been used as a trumpet, but did not lend itself to the manufacture of bangles. Of the remaining shells, no. 5 (*Pinctada margaritifera*) is the familiar pearl oyster of the Ceylon and South Indian fisheries. Three others yield mother-of-pearl, viz.: *Arca granosa* (no. 4), *Lamellidens marginalis* (no. 6), and *Parreysia favidens* (no. 7); while four are cowries, used in ancient as in modern times for money,

Shell industry
in prehistoric
times

Methods of
manufacture

Varieties of
natural shells
at Taxila

¹ M.I.C. pp. 32, 171, 173, 195, 478-9, 563-5, 669-71.

² *Ibid.* pp. 670-1.