

## Chapter 25. STONE OBJECTS

Character of objects described

**O**F THE many objects of stone recovered from the ruins of Taxila the most interesting are the sculptures described in chapter 36, which served chiefly for the adornment of Buddhist buildings. But besides these there is a large collection of utensils and other articles of daily use, which come mainly from the Bhir Mound and Sirkap, and appertain to the period from about 300 B.C. to A.D. 100. These articles comprise pivot-stones, querns and mullers, pestles and mortars, grinding-mills, household vessels of various kinds, lamps, toilet-trays and vases, burnishers, touchstones, palettes, spindle-whorls, potters' *konoras* and *thatwās*, amulets and sacred ring-stones, moulds, stones for incrustation and inlay work, and a few miscellaneous pieces such as knife-handles and dies. In addition to these, there are a number of finger-rings, seals, gems and the like, made from precious or semi-precious stones, which the reader will find described in chapters 30, 31 and 34.

Local varieties of stone

As explained in a previous chapter, there are only two varieties of stone found in natural formation at Taxila itself, namely, the hard almost flint-like limestone of which the foothills round about are mainly composed, and the very coarse and soft lime *kankar* or *kañjūr*, as it is commonly called, which is abundant on every side in the alluvium of the plain. Although these stones were used freely as building materials, neither of them lent itself to the manufacture of small articles—the *kankar*, because it was altogether too soft and coarse; the limestone, because it could not be worked so well, and was not so attractive to look at, as other varieties of hard stone of which many, in the form of pebbles, are washed down in the torrent beds from the far-off Murree and Kashmīr hills. We shall find, therefore, that, while *kankar* was never used at all for small objects, limestone was only used very rarely for such simple little things as weights, mullers and moulds. There is only one example of it having been turned on the lathe, namely, the unguent bottle from Jāndiāl, no. 59, a.

Other varieties and their provenance

Apart from this local limestone, the hard stones used in the manufacture of many of the small articles enumerated above were: blue serpentine,<sup>1</sup> *sang-i-abri* or *abri*, basalt, quartzite, hornblende, hornblende-gneiss, gneiss, granite, pyroxene, diorite, epidiorite, epidote-quartz, dolerite, black basanite, black and white syenite, Lydian or touchstone and chert; to which must be added also the semi-precious stones used for personal and other small ornaments including beads, viz. crystal, agate, *porcelain-agate*, chalcedony, carnelian, red and green jasper, agate-jasper, jade, jadeite, jade-nephrite, turquoise, lapis-lazuli, amethyst, garnet and beryl. Of these, chert is found commonly in Sind and Balūchistān as well as in many other

<sup>1</sup> Among the many beads found at Taxila one is of red and six of blue serpentine. Cf. Beck, *op. cit.* Pls. I, 25 and X, 26, 27.

areas, and during the Chalcolithic Age was used freely for knives, scrapers, weights and polishers. *Abri*, which is a lower cretaceous shell limestone of a variegated chocolate and yellow colour, is abundant in the Hazāra and Attock districts, and in Mughal times was destined to become a favourite stone for the inlay-work on buildings and pavements. At Taxila it was used for bowls, cups or dishes, but is found only in the Bhīr Mound settlement up to about 200 B.C. Many of the other hard stones, such as basalt, quartzite, hornblende, hornblende-gneiss, gneiss, granite, dolerite and basanite, were obtainable in the form of pebbles from the beds of the neighbouring Tamrā nālā or Haro river, where the writer has himself picked up specimens of most of them, as well as of sandstone, marble and jasper. A few of those found in these torrent-beds to-day may, no doubt, have found their way there from the ancient settlements now crumbled to ruin on their banks, to which they were perhaps brought from afar in days gone by, but most of them have certainly been washed down from the distant highlands on the east.

Other stones such as blue serpentine, green diorite and black Lydian, of which there are only one or two specimens at Taxila, may have come from remote localities which it is now hardly possible to identify.

Of the semi-precious stones, rock-crystal, agate and chalcedony are found in so many localities in India that it is impossible to say whence the lapidaries of Taxila obtained their supply. Rock crystal, which is a form of silica or quartz, occurs in Kashmīr and in the red marls of Mari in the Miānwāli district of the Panjāb, but some of the best crystal nowadays comes from Tankāra in the Kathiāwār peninsula or from the bed of the Godāvārī in Madras. It is also found at Aurangpur, near Delhi, Sāmbhalpur, Morvī, and other places. The finest agates (and some of the agates from Taxila are unusually fine), together with the closely allied chalcedony, come from the Ahmadābād and Kaira districts of Bombay, from Kathiāwār and from the Rājpipla State, where agate-jasper is also found in company with them. Other sources of agate-jasper are the beds of the Kistna, Godāvārī and Bhīmā rivers, but the Taxila stones are more likely to have come from the Rājpipla hills. Good agates are also obtained from north of the Pangong Lake in the Rudok district of Kashmīr, from the Rājmahal hills and from the beds of the Narbadā and Godāvārī rivers. The main centre at which agates, chalcedony and carnelians are now cut and polished is Cambay, but the industry exists also at Jabalpur and other places within reach of the amygdaloidal Dekhan trap. In the first century A.D., when the *Periplus of the Erythræan Sea* was written, the principal market for the export of these stones to the Western world was at Barygaza, the modern Broach, whither some were brought from Ujjayinī (Ujjain), others no doubt from the Kathiāwār peninsula or from the Rājpipla State; and it seems highly probable that many stones from these sources found their way up the Indus to Taxila. Small vessels made of agate were in vogue there, particularly during the Parthian domination, and it is noteworthy that Pliny attributes vessels of this class, for which large prices were paid at Rome, to Parthia and Carmania, the fact being that at the time when Pliny wrote the trade was still mainly in the hands of the Parthians, who had

Semi-precious  
stones

command both of the sea-route via the Persian Gulf and Charax Spasini (Mohammerah) and of the land-route via Taxila, the Kābul valley and Herāt. At a later date, when the discovery by Hippalus of the monsoon trade-winds had opened up the Red Sea route to Roman commerce, these objects no longer had to pass through Parthian hands.<sup>1</sup>

Pebbles of jasper of various colours—red, green and yellow—are common in the river-beds of Rājputāna, Central India and the Central Provinces, particularly those which drain the Satpūra Range, as well as in the Sōn valley. Jade, comprising both jadeite and the nephrite variety, comes from the well-known mines in the Karakash valley of Eastern Turkestān;<sup>2</sup> nephrite jade is also found in Rewah State in Central India, and jadeite in the Tunga valley of the Pāmīrs and the Myitkyinā district of Northern Burma. The few specimens unearthed at Taxila are more likely to have come from Eastern Turkestān, the Pāmīrs or Rewah State than from so far afield as Upper Burma.

Of lapis-lazuli, the chief source has long been the Kokcha valley of Badakshān in Northern Afghānistān, but this stone is said vaguely to occur also in 'Tartary', Tibet and China. Turquoise was imported from Persia, where it is still quarried near Nīshāpur in the Khorāsān Province near Kermān, and Kārik, and near Māshīz.<sup>3</sup> Amethysts are found in the Santāl Parganas of Bihar and Orissa and at several spots in the Bashahr State on the Upper Sutlej; they occur also occasionally in the Dekhan trap. But the finest specimens come from the gem-gravels of Ceylon. Garnets are found in mica schists at various places in Rajputāna, notably at Rājmahal in Jaipur State, Sarwār in Kishengarh, Ajmer and Bhilwāra; they are also found in the Darjeeling district, Sikkim, Hyderābād State and at numerous localities in the Madras Presidency. Beryl and aquamarine, which occur commonly in the granite pegmatites of India, are nowadays obtained at Pādiyur in the Coimbatore district and at Vaniyambadi in the Salem district of the Madras Presidency, at Punnata in the Mysore, and in the Toda hills of the Jaipur State in Rajputāna. They are also known to occur in the Nellore district of Madras and in the Hazāribāgh district of Bengal.

**Porcelain-agate** The stone to which I have given the name of porcelain-agate, because of its remarkable resemblance to porcelain, is new to geology. It is found at Taxila only in the form of round flat disks, evidently used for some kind of inlay-work during the Maurya period. The disks vary from 2–3 in. in diameter, and 0·1 to 0·2 in. in thickness. The stone, which is banded, appears on one side like an opaline chalcedony, on the other, which is brilliantly polished, as an opaque glass-like porcelain. When first examined by experts of the Indian Geological Department, the material was taken to be an artificial porcelain, but further research has left no doubt that it is a natural stone produced, possibly in a volcanic region, by the long-continued heating of ordinary quartz. The specific gravity and chemical analysis of this stone, as well as the results of its microscopic examination, are discussed below (pp. 505–6).

<sup>1</sup> See Schoff, *Periplus of the Erythræan Sea*, pp. 193–4.

<sup>2</sup> Cf. M.I.C. pp. 541, 685.

<sup>3</sup> M.I.C. p. 678. Turquoise is also said to occur in Turkestān and in the Kojent and Kārātyube mountains.

The semi-precious stones enumerated above were used only for small articles of a more or less ornamental character, and the commoner varieties of hard stones, such as gneiss, hornblende, granite, *sang-i-abri*, etc., for those articles of daily use—celts, pivot-stones, querns, mullers, etc.—which were subject to excessive wear and tear. On the other hand, household vessels which had to be turned on a lathe, lamps, ladles, toilet-trays, caskets, palettes and objects generally which were not exposed to rough usage, as well as sculptures in relief and in the round, were naturally cut from the softer varieties of stone.

Uses to which  
hard and soft  
stones were  
put

This general observation, however, is subject to certain qualifications. In the prehistoric age, it had been customary to make certain vessels, particularly shallow dishes, bowls and saucers, of gneiss, hornblende, granite and other refractory stones, the stone being first chipped and then ground away with the help of a specially shaped stone-borer aided with sand as a fricative. One of these borers, dating from Chalcolithic times, was found at Mohenjo-daro, and is described in my *Mohenjo-daro and the Indus Civilisation*, vol. II, p. 459. The same practice seems to have been continued at Taxila into historic times, but the lathe also came early into use, and there are some fine specimens of Maurya vessels made of these hard stones, which have been turned on the lathe instead of being ground out with the borer. By the beginning of the Christian era, however, such vessels were almost invariably made of one or other of the soft schist stones, or of steatite or alabaster.

Another exception to the general rule stated above is provided by some of the querns and mullers. In the Chalcolithic Age saddle-querns had invariably been made of hard stone—generally basalt or gneiss, and the saddle-quern and its muller, like the mortar and pestle, continued to be made of some similar hard stone like quartzite, hornblende or *abri*; but when the stool-quern came into fashion, in the Maurya period, both it and the muller used with it were made of sandstone. This may have been because it had been found by experience that sandstone was peculiarly suited to the grinding of grains and spices, and because it lent itself more readily to the ornamental carving which is found on many of these stool-querns. The first part of this observation applies also to the circular grindstones (Class V, a) which were first introduced at Taxila during the first century of the Christian era, and for which sandstone is still usually preferred. On the other hand, the crushing mills of Class V, b, which had to be specially strong and durable, were invariably made of hard quartzite.

The sandstone used for these objects in the Bhir Mound settlements, i.e. up to the beginning of the second century B.C., is of four kinds: (1) the grey Tarakī or Kambiāl sandstone, which is found in plenty some 14 or 15 miles south-east of Taxila, and which was used for the pillars and pilasters of the Jandiāl temple.<sup>1</sup> (2) A spotted red and white sandstone which comes from Mathurā near Agra. (3) A buff-coloured, fine-grained hard sandstone, usually with small black spots, from Chunar near Benares. (4) A greyish quartz sandstone of very hard texture, the provenance of which has not yet been ascertained. The second of these is well

Varieties of  
sandstone  
used in Bhir  
Mound  
settlements

<sup>1</sup> A strong axis of this rock runs along the Chirpar hills.

known, not only from the many statues or reliefs of the early Mathurā School which are carved from it, but also from innumerable monuments of Moslem times which were built of it at Agra, Delhi and Mathurā. The third variety is also well known from the historic pillars of this stone which were set up by the Emperor Aśoka in the third century B.C. That this particular sandstone should be found in the form of mullers at so remote a spot as Taxila is at first sight surprising, since it could hardly have been brought such a distance for the sole purpose of making utensils which could have been equally well made of Tarakī sandstone or of one of the harder local stones. The explanation appears to be that Aśoka had set up one or more of his famous pillars, and possibly some other monuments as well, at Taxila; that these monuments had been thrown down and broken after the eclipse of the Maurya power; and that the mullers were made out of some of the fragments, just as a piece of one of these selfsame pillars was used last century for a road-roller and a piece of another for a sugar-cane press! However this may be, these mullers of Chunar stone are found only in the later deposits of the Maurya period in the Bhir Mound, not in Sirkap or on any of the later sites. On the other hand, the Tarakī, Mathurā, and quartzite sandstone all occur on the Sirkap site, in strata of the first century A.D., and besides them there occurs also on that site a variety of deeply coloured red and purple sandstone belonging to the Murree group, which is found in large deposits round about Sang-jani, some 10 miles south-east of Taxila.

Other soft stones used in Bhir Mound settlements

The other soft stones found on the Bhir Mound are steatite, alabaster and slate. All three of these have a wide distribution in India and are easily obtainable at Taxila—slate especially so, since it is found in large quantities in the Hazāra district within a few miles of the city, and, as we have already seen, it was freely used for the construction of drains and bathroom floors, while alabaster is equally prolific in the gypsum deposits at the foot of the Salt Range in the Panjab. Thanks to their fine texture, both slate and alabaster could be carved with the minutest figures in relief, and we find both of them employed for the exquisitely carved ring-stones of Maurya date described below (nos. 129–31). Slate, too, was employed for small jewellery and inlay moulds, since, apart from its fine texture, it was, unlike alabaster, capable of resisting considerable heat. Alabaster and steatite, on the other hand, were occasionally used during the Maurya period for small household vessels. That stone was not more freely employed during that period for household vessels and utensils was in all probability due to the religious conservatism of the people, who then as now were afraid of contaminating their food or drink if they took them from any vessels other than the orthodox ones made either of earthenware or of copper or brass. It was certainly not due to any lack of skill on the part of the Maurya craftsman, who was unsurpassed in the cutting, carving and polishing of hard stones.

Wider use of soft stones under Greeks and their successors

With the advent of the Bactrian Greeks at Taxila the carving of stone in relief and the turning of it on the lathe into vessels became increasingly common, and in the later cities on the Sirkap site we find not only far more objects made out of soft

stone but several more varieties of stone introduced. For vessels and other small household objects, the stones that now come into use (besides several kinds of slate, steatite and sandstone) are: schist, micaceous schist, hornblende schist, phyllite, phyllitic slate and indurated clay or mudstone; while the stones in use for sculpture are schist, micaceous schist, chloritic schist, quartz mica schist, phyllite, steatite or soapstone of various kinds, Tarakī grey sandstone and red ferruginous claystone. Of these, the commonest by far and the most important are the several kinds of schist and the dark grey phyllite which is used for the vast majority of Gandhāra sculptures. The use of both schist and phyllite was intimately bound up with the history of sculpture at Taxila. The earliest specimens of schist are the grey schist dishes nos. 38 and 39 and the carved toilet-tray no. 62, which are referable to the latter part of the second century or the beginning of the first century B.C. From that time onwards schist comes more and more into vogue, and during the Parthian domination is used commonly for caskets, household vessels, lamps and sculptures. For the last mentioned, a chloritised micaceous schist was at first favoured in preference to other stones, phyllite then being exceedingly rare, even for household vessels, but in the first century A.D. phyllite began to supersede schist, no doubt owing to its being more durable in other respects and less liable to split in the process of carving; and from that time onwards nine-tenths or more of the carvings found on the North-West Frontier and at Taxila are made of this stone.

The precise provenance of the several kinds of schist and phyllite stones is not known, but there can be no doubt that all of them came from quarries in the Gandhāra region, probably in the neighbourhood of Southern Swāt, since it was there that the Gandhāra School of sculpture had its chief centre, and we may be sure that, wherever that centre was, the stone quarries could not have been far distant. Moreover, had the quarries been in the old North-West Frontier itself—that is, within the confines of what until recently was British India, it is virtually certain that they would long ago have been discovered. Some day, no doubt, they will be located, and it may be that fresh light will then be thrown on the history of this important school of sculpture. In the meantime it would be a helpful step, particularly for elucidating the early chronology of this school, if someone equipped with sufficient knowledge of the subject would examine the various collections of these sculptures in India and Europe and classify them according to the varieties of stone used.

Provenance of  
schist and  
phyllite

The stratigraphical chart which follows (pp. 482-3) shows the generic classification of the stone objects described below and their distribution in the successive strata of the Bhir Mound and Sirkap, as well as on other sites. These objects do not include the stone sculptures of an ornamental and mainly Buddhist character described in chapter 36.

Some general remarks on the stone objects from the Bhir Mound will be found in vol. I at pp. 102, 105, 108-9, 111; and on those from Sirkap at pp. 128, 133-4, 205, 207, 209-10. Other references are given in the individual entries of the catalogue below.

STRATIGRAPHICAL CHART OF STONE OBJECTS

Class	Bhir Mound strata	Sirkap strata					Other sites <sup>1</sup>	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 Saka	III-II Late Saka- Parthian	
I. Prehistoric artefacts (nos. 1-5)	—	—	—	—	—	—	—	—	—	I.
II. Pivot-stones (nos. 6-10)	8	—	13	—	—	6, 9	—	—	7, 10	II.
III. Querns (nos. 11-18)	—	—	—	—	14, 15	—	—	16, 17, b, 18	11, 12, 17, a	III.
IV. Mullers (nos. 19-26)	19	—	20-3	—	—	24	—	—	25, 26	IV.
V. Grinding-mills (nos. 27-31)	—	—	—	—	—	—	—	27, 30, 31	—	V.
VI. Pestles and mortars (nos. 32-5)	34	—	32	—	—	—	—	—	33, 35	—
VII. Dishes (nos. 36-41)	—	—	36, 37	—	—	—	38, 39	—	—	—
VIII. Saucers (nos. 42-7)	—	—	42	—	—	—	44	—	49, 41	VII.
IX. Standard cups (nos. 48, 49)	—	—	48	—	—	—	—	43, 45, 47	46	VIII.
X. Bowls (nos. 50, 51)	—	—	50	—	—	—	—	49	—	IX.
XI. Open-mouthed vases with flat bases (nos. 52-6)	—	—	—	—	—	—	—	52, 54-6	53	X.
XII. Unguent vases (nos. 57-59, a)	—	—	—	—	—	—	57	—	58	XI.
XIII. Goblets (nos. 60, 61)	—	—	—	—	—	—	63	—	60, 61	XII.
XIV. Trays (nos. 62-97)	—	—	95, 96	—	—	—	—	62, 78, 79, 82-4	64, 65, 67- 73-	XIII.
XV. Toilet caskets (nos. 98-106)	—	—	—	—	—	—	—	9, 71, 73- 85-90, 92-4, 97	7, 80, 81, 91 from Dh.	XIV.
						104 e	—	98-104,	106	XV.
								104, a from MI. 105		

XVI. Shell-shaped ladles (nos. 107, 108)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XVI
XVII. Lamps (nos. 109-17)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XVII
XVIII. Burnishers and polishers (nos. 118-20)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XVIII
XIX. Touchstones (no. 121)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XIX
XX. Palettes (nos. 122, 123)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XX
XXI. Spindle-whorls (no. 124)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XXI
XXII. Potters' <i>konoras</i> and <i>thatwās</i> (nos. 125-8)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XXII
XXIII. Amulets and other sacred objects (nos. 129-37)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XXIII
XXIV. Stones for inlay, in- crustation, etc. (nos. 138, <i>a-f</i> , 139)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XXIV
XXV. Eyes and <i>ūrnās</i> of images (nos. 140, <i>a-c</i> )	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XXV
XXVI. Moulds (nos. 141-52)	141	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XXVI
XXVII. Miscellaneous (nos. 153-65)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XXVII
XXVIII. Weights	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	XXVIII

Note. The following objects picked up from spoil earth or debris are not included in the above list, viz. no. 134 (amulet) from Bhîr Mound; nos. 104 (toilet casket),

no. 8 (ladle), 149, 150 (moulds), and 158, *a* (broken marble object) from Sirkap.

1. Dh. = Dharmarajika; Jl. = Janâdî; Kun. = Kunala; Mi. = Mohîrâ Morâdu; Pl. = Pippala; Ss. = Sirsukh.

TABLE SHOWING DISTRIBUTION OF STONE OBJECTS IN SIRKAP

Block	Stratum VII ?Pre-Greek	Strata VI-V Greek	Stratum IV Early Šaka	Strata III-II Šaka-Parthian	Stratum I Surface
EAST SIDE OF MAIN STREET					
I	—	—	—	—	—
A	—	—	—	74, 136	—
B	—	—	—	30, 126	—
C	—	—	109	55, 92, 127	11, 12
D	—	—	—	87, 159	—
E	—	—	—	43, 45, 86	110
F	—	—	—	102, 146, 164	—
G	—	—	—	4, 40, 60, 145	66, 72, 107
H	—	—	—	16	—
I	—	—	—	26	—
J	—	—	—	—	158, b
K	—	—	—	99	—
L	—	—	—	—	—
WEST SIDE OF MAIN STREET					
I'	—	—	82, 162	18, 90, 120	—
A'	—	63, 135, 138, e, 142, 143	2	3, 54, 58, 119, a, 144, 152	—
B'	—	38, 39, 57	62	35, 67, 69, 154	—
C'	156	104, e	—	47, 49, 56, 77, 85, 137, 151	—
D'	—	—	84	41, 98, 100, 101, 139, 140, a, 147, a, b, 148, 161	17, 46, 70
E'	—	—	79, 83	7, 25, 73, 75, 76, 89, 94, 105, 121	53, 122
F'	—	—	44	64, 65, 68, 88, 124	—
G'	—	—	78	71, 103	106
H'	—	—	—	—	—
K'	—	—	—	93	—
Main Street	—	—	—	132	—
Second Street (east)	—	—	—	61	—
Sixth Street (west)	—	—	—	52	—
Seventh Street (west)	—	—	—	97	—

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

#### CLASS I. *Prehistoric artefacts (nos. 1-5)*

The number of prehistoric artefacts is very small. Up to the present no prehistoric settlement has been discovered at Taxila, nor is there any reason to suppose that any ever existed there. The few celts and one mace-head described below were found in strata of the historic period on the Sirkap site, dating back no further than the first centuries B.C. and A.D. How they came to be present in these late strata can only be surmised, but a possible explanation is that stone weapons may have continued to be used for sacrificial or other ceremonial purposes many centuries

after the Neolithic and Chalcolithic Ages had passed, just as stone knives continued to be used until a late date for religious sacrifices by the Egyptians and Jews. On the other hand, it is noteworthy that the few artefacts found at Taxila are for the most part made of rare and striking stones, viz. green epidiorite, epidote-quartz, nephrite-jade and blue serpentine, and it may well be that such striking objects were kept in later times merely as curiosities or talismans.

1. Sk. '27; Trench D78; stratum II. Polished celt of fine-grained light green epidiorite, with slightly crescentic edge and flattened butt. Length 3·75 in. Sp. gr. of epidiorite = 3·14. (Pl. 140, a.)

2. Sk. '28-211; Block A'; sq. 15·86'; stratum IV. Short, splayed celt of dark green epidote-quartz, with crescentic cutting edge; polished. Length 2·68 in. Sp. gr. of stone = 2·98. (Pls. 140, b; 143, a.)

3. Sk. '29-1,163; Block A'; sq. 19·94'; stratum III. Short celt of polished nephritic jade, with crescentic cutting edge. Length 3·25 in. Sp. gr. of stone = 2·96. Cf. p. 195 *supra*. (Pl. 140, c.)

4. Sk. '17-585; Block G; sq. 100·58'; stratum III. Long celt of the Bandelkhand type, of grey quartzite, with blunted crescentic edge. Cf. p. 168 *supra*. Length 5·12 in. (Pl. 140, g.)

5. Sk. '16; Trench A728; stratum II. Pear-shaped mace-head of blue serpentine, of a type found at Mohenjo-daro and Harappā as well as in Western Asia. Cf. *M.I.C.* I, p. 36, and II, p. 459. (Pl. 140, d.)

### CLASS II. *Pivot-stones* (nos. 6-10)

Pivot-stones were used for two purposes, either for potter's wheels, with a small depression in the centre for the tenon of the wheel to turn in, or for house-doors, with a much larger cavity to take the projecting tenon at the bottom or top of the door. In both types a hard stone such as gneiss, quartzite, hornblende or granite was used, sometimes in the form of a natural pebble.

#### Type a. *Wheel-sockets*.

6. Bm. '19-G 53; stratum I. Circular slab of grey gneiss stone, with a small cavity sunk in the middle of one face. Diam. 7·12 in.

7. Sk. '19-869; Block E'; sq. 73·99'; stratum II. Natural pebble of white quartzite with a small cavity in one face. Length 5·25 in. Cf. p. 184 *supra*.

#### Type b. *Door-sockets*.

8. Bm. '19-1,801; sq. 5·59'; stratum IV. Circular pivot-stone of gneiss, with hole in middle pierced through the thickness of the stone. Diam. 5·5 in.

9. Bm. '20-1,582; sq. 14·30'; stratum I. Similar, of red granite, but with shallow depression on one side only. Diam. 5·75 in. (Pl. 143, b.)

10. Sk. '16; Trench A725; stratum II. Similar to no. 8, but of hornblende-gneiss. Diam. 5·12 in.

### CLASS III. *Querns* (nos. 11-18)

The oldest form of quern in India is the slab or saddle-quern, specimens of which have been found among the Chalcolithic ruins of Harappā and Mohenjo-daro (cf. *M.I.C.* pp. 25, 456-7). Querns of a similar type, dating from the first century A.D., occur on the Sirkap site at Taxila, and are still widely used in India as *sil* or *kari* stones, though rarely for the grinding of grain. Strange to say, no

querns of this type have been found in the Bhir Mound settlement, which is anterior to about 200 B.C. The quern then in use was the stool-quern with four legs. For Egyptian stool-querns, cf. Flinders Petrie, *Tools and Weapons*, Pl. LV, no. 105—a type which is found in ancient Egypt as early as the IVth Dynasty. The Indian examples are usually decorated with simple designs, which, as time went on, became more and more ornamental. Whether this type of quern was used generally for the grinding of corn is questionable. The ornamental carvings on many of the specimens suggest that they were meant for the grinding of spices, *kari*, etc., rather than of corn. It is true that the earliest example of the circular grinding-mill found at Taxila is not earlier than the first century A.D., but it is quite possible that the grinding of cereals was chiefly done at or near the farms where the grain was grown, not in the city. On the other hand, the grinding-mill is found in most of the early medieval monasteries, and this fact, contrasted with its complete absence from any of the earlier settlements, goes far to show that it did not supersede the quern until after the beginning of the Christian era. For Greek and Roman grindstones and mills, cf. Dar. et Sag. III, p. 1960 and IV, p. 167.

Type a. *Slab or saddle-querns.*

11. Sk. '24-9; Block B; sq. 37·50'; stratum I. Saddle-quern of quartzite without ornament. Size 16 x 6 in.
12. Sk. '24-200; Block B; sq. 36·50'; stratum I. Similar. Size 15 x 5 in. Cf. p. 148 *supra*. (Pl. 143, d.)

Type b. *Stool-querns.*

The stool-quern is invariably made of sandstone, never of quartzite or other hard stone, and is usually decorated with carvings in relief. Some of the earlier specimens from the Bhir Mound have the upper surface scored with zigzag lines or other patterns lightly incised. In the later specimens of Mathurā sandstone from Sirkap the carving is much more elaborate, and at one end the quern slab usually projects well beyond the legs and is supported on brackets.

These specimens were no doubt made by the stone-carvers of Mathurā and brought thence to Taxila.

13. Bm. '24-502; sq. 15·57'; stratum III. Stool-quern of red Mathurā sandstone, with four legs. Plain. Size 11·5 x 5 x 5 in.
14. Bm. '19-5; sq. 62·5'; stratum I. Similar, of quartzite sandstone with parallel zigzag lines scored on upper surface. Size 14 x 6 x 6·12 in.
15. Bm. '19-4; sq. 62·5'; stratum I. Similar, of grey sandstone. Size 13·75 x 6·75 x 6 in. The top is incised with parallel zigzag lines, and various emblems, including pairs of fishes, *dharmaacakras* and two figures which faintly resemble the image of Jagannāth. (Pl. 140, f.)
16. Sk. '26-1,804; Block H; sq. 118·55'; stratum II. Similar, but of red Mathurā sandstone, with projecting end carried on *makara* brackets. Length 11 in. The sides and legs are ornamented with floral patterns in low relief. Cf. p. 169; *A.S.R.* (1926), Pl. xxviii, no. 12 and p. 118, no. 12. (Pl. 140, e; 143, c.)
17. Sk. '28-1,122, 1,140 and 1,222; Block D'; sq. 65·97'; stratum I and stratum II. Similar, of spotted red Mathurā sandstone, with projection at one end. On the other end, engraved in low relief, are two pairs of fishes with small lotus flower, and above, two larger lotuses in

squares; on each side is a lotus 'Tree of Life' (*kalpa-laṭā*) springing from a vase with fishes in each bend of its sinuous stalk. The bracket supporting the projecting end was in the form of a *yakṣī* or *vrikshadevi*, of which only the head remains. The quern, which is 13·5 in. long, is broken in three pieces, and two of the legs, with the front brackets, are missing. Cf. p. 190 *supra*. (Pl. 140, *h*.)

18. Sk. '21-15; Block 1'; sq. 13·77'; stratum II. Similar, of reddish sandstone with projecting end, decorated with simple swag-like border, swastika and *triratna* devices. Length 14·5 in. Cf. p. 196 *supra*. (Pl. 140, *i*.)

#### CLASS IV. *Mullers* (nos. 19-26)

The mullers used with these querns are generally between 9 and 11 in. in length (but some are shorter) and 2 to 3 in. in diameter. Some are made of basalt, quartzite, hornblende or other hard stone; others of sandstone. The former are used along with the hard-stone querns, the latter with the sandstone ones. The most orthodox shape seems to have been a long slightly barrel-shaped cylinder. Some, however, were true cylinders, and others were natural pebbles rubbed roughly into shape. Many of the cylindrical specimens have been worn down by use in the middle or flattened on one side. The following few examples from among the many found on the Bhir Mound and in Sirkap will suffice.

19. Bm. '19-1,325; sq. 58·6'; stratum IV. Stone muller of green quartzite; broken. Length 4·62 in.

20. Bm. '19-812; sq. 10·38'; stratum III. Similar, of basalt; broken. Length 4·87 in.

21. Bm. '19-1,519; sq. 5·61'; stratum III. Similar, of green quartzite. Length, 5·25 in.

22. Bm. '19-654; sq. 10·36'; stratum III. Similar, of quartzite sandstone, highly polished by the rubbing. Lenticular in section in the middle. Length 6·93 in.

23. Bm. '19-654; sq. 10·36'; stratum III, but probably a stray from stratum I. Similar, of Chunar sandstone, highly polished; barrel-shaped but worn down on one side. Size 6·8 × 2·5 × 1·78 in. (Pl. 140, *j*.)

24. Bm. '19-1,592; sq. 62·5'; stratum I. Similar, of Chunar sandstone; barrel-shaped. Length 9·25 in.

25. Sk. '19-326; Block E'; sq. 76·100'; stratum II. Similar, of purple-grey quartzose sandstone, cylindrical and slightly barrel-shaped, with flat ends. Highly polished with wear. 9·75 in. long and 2·75 in. diam. Cf. p. 184 *supra*.

26. Sk. '26-354; Block I; sq. 135·62'; stratum II. Similar, of fine-grained chloritic quartzite. A singularly fine specimen of dark grey-green colour and perfectly cylindrical in shape, with flat ends. Length 8·37 in. Sp. gr. of stone = 2·66. Cf. p. 171 *supra*.

#### CLASS V. *Grinding-mills* (nos. 27-31)

Type *a*. As indicated above, circular grinding-mills came into use at Taxila for the first time during the late Śaka-Parthian period. The earliest specimen is no. 27.

27. Sk. '12; Trench A 461; stratum II. From Sirkap; made of grey Tarakī sandstone. Diam. 16·5 in. In this and the following specimens, the centre hole, through which the grain was introduced, was pierced through the nether as well as the upper millstone, the nether hole being then plugged with wood and furnished with a pivot or spike. In no. 27, the upper stone is convex above, concave underneath, thinning rapidly towards the edge, while the nether is convex above in order to fit with the upper one. As this grinding-mill was meant to be worked by two persons, the upper stone was provided with socket-holes for two handles. (Pl. 140, *k*.)

28. Sk. '14-844. This is a later example of the fifth century A.D. from the Kunāla monastery. The surfaces between the two stones, instead of being curved, slope downwards in a straight line to the outside; there is a projecting boss on the upper stone round the central hole, and towards this boss the top surface of the upper stone has a gentle slope. This mill is also made of Tarakī grey sandstone and has a slightly bigger diameter (16·62 in.) than no. 27, but it is provided with a socket-hole for one handle only. Possibly the changes introduced in the shapes of the stones and other details had tended to reduce the friction and so lessen the labour. (Pls. 140, l; 143, h.)

29. The third grinding-mill illustrated on Pl. 140 is of a heavier type. It comes from the Pippala monastery (Pl. '21-38) and probably dates from the fifth century A.D. In diameter (13 in.) it is smaller than the two preceding examples, but the stones are more ponderous, and it is made of hard dark grey quartzite instead of the softer sandstone. Three other noticeable differences are: first, that the surface of the nether-stone is concave (instead of straight, as in no. 28, or convex, as in no. 27); secondly, that crossing the upper stone from side to side is a deep groove into which a stout piece of wood could be fixed horizontally, with a handle projecting on either side; thirdly, that the hole in the nether-stone into which the centre pivot was fixed is not pierced through the entire thickness of the stone but sunk to rather less than half its thickness. (Pl. 140, m.)

Type b. *Crushing-mills.* This type of mill, which was also introduced at Taxila during the Śaka-Parthian period, was designed probably for the crushing and grinding of harder substances (e.g. *chunam*) than ordinary grain. It is made of hard quartzite instead of sandstone; the diameter is smaller (about 11 in. only); the nether-stone is conical at the top; and the upper stone takes the form of a deep heavy cylinder, concave below so as to fit on to the top of the nether-stone, and with a funnel-shaped hole above. Across its top is a deep groove, as in no. 29, to take the wooden handle-piece, the latter being pierced with a hole in its centre into which fitted the iron pivot of the nether-stone.

30. Sk. '24-14 and 268; Block B; sq. 36·57'; stratum II. Crushing-mill of quartzite in two pieces (height 21·5 in.; diam. 10·8 in.), with centre pivot of iron still fixed into the nether-stone. See drawing on Pl. 140, s, and photos on Pl. 143, e, f, g.

31. Sk. '12; Trench A 461; stratum II. Similar, of quartzite (height 16·5 in.; diam. 11·5 in.), with iron pivot still attached to nether-stone, but in this specimen the nether-stone is not so high as in no. 30.

General  
remarks on  
household and  
toilet vessels,  
etc.

Vessels made of stone are relatively few in the earlier Bhīr Mound cities and are restricted to those of simple shapes—mortars (with pestles), dishes, saucers, bowls and cups. The stones used for them are the hard *abri* (lower cretaceous shell limestone) and hornblende-gneiss, soft steatite and alabaster, and the semi-precious rock crystal and agate. Of alabaster there is only one example—a saucer of pinkish-white colour, no. 42. *Abri* and hornblende-gneiss were used during this early period for pestles and mortars; *abri* also for cups and bowls; steatite (soapstone) for bowls and dishes; crystal for little toilet-trays; and agate for ornamental bowls, of which there is only one example. These stones were usually turned on the lathe, but sometimes ground down by hand.

Schist, as already indicated, was not introduced at Taxila until after the advent of the Bactrian Greeks (c. 190 B.C.); but from that time onwards this soft stone

came more and more into vogue, first for simple articles like dishes and carved toilet-trays, but later on for a multitude of vessels and sculptures of all sorts. The earliest objects made of this stone are the two lathe-turned dishes nos. 38 and 39, and the two ornamental toilet-trays nos. 62 and 63, all four of which are referable to the second century B.C. Later on, in the first century A.D., we find schist being used for vases of many shapes, goblets, caskets, ladles and lamps, besides unguent-bottles and elaborately carved toilet-trays. The three kinds of schist employed for these articles are the common grey schist of Gandhāra, and a micaceous and hornblende schist from the same region; quartz mica-schist and the deep green chloritised mica-schist, favoured at this period by the sculptors of the North-West, were not used for household articles.

Other soft stones employed during this period were steatite, phyllite, slate, clay-stone and alabaster, but so far as Sirkap is concerned, no household objects made of these stones have been found in strata earlier than the Parthian, and even then their use is restricted to a few articles—mainly toilet-trays and caskets. Specimens made of phyllite, slate, claystone and alabaster are very few; those of steatite are not so rare.

During the Kushān period phyllite, as we shall see, was to become the favourite stone for sculpture, and other objects were to be made from it as well as from the other soft stones named above, which continued in use up to the early medieval period.

With the introduction of schist for household vessels in the second century B.C., hard stones like gneiss and hornblende gradually ceased to be used for this purpose. Apart from pestles and mortars, for which particularly hard varieties of stone are needed, only one example (no. 43) of a hard stone vessel has been found in Sirkap, and there is reason for believing that this was a survival from one of the earlier settlements.

In regard to the use of agate for small bowls, cups, caskets, etc., the fragments of these vases found at Taxila correspond very closely with Pliny's description of the famous *vasa myrrhina*, which fetched such big prices at Rome. Pliny alleges that these vases came from Parthia and Carmania, but no importance need be attached to his statement, because, up to the time when the Red Sea route was opened up, the carrying trade between India and the West was exclusively in the hands of the Parthians, and it is hardly likely that the precise provenance of some of the goods would be known to the Romans.<sup>1</sup> The manufacture of agate vases is an age-old industry in India, especially in Kathiāwār and round about the gulf of Cambay, and there can be little doubt that it was from there that the Parthian merchants exported them to Italy. On the strength of a line of Propertius,<sup>2</sup> it has been inferred (e.g. Ramsay and Lanciani, *Manual of Roman Antiquities*, p. 497), that the myrrhine vases must have been some sort of porcelain, but the *foci* referred to by Propertius were not ordinary kilns but the special trenched kilns in which it was the Indian practice to roast agates and carnelians in order to bring out their colours. This process of burning agates was fully described by Barbosa as far back as 1517. Cf. Sir G. Watt, *Commercial Products of India*, p. 561, and Schoff, *Periplus*, pp. 193–4.

<sup>1</sup> Schoff, *Periplus*, p. 194.

<sup>2</sup> 'Murreaque in Parthis pocula cocta foci' (iv, v, 26).

CLASS VI. *Pestles and mortars* (nos. 32-5)

Pestles and mortars are found at all periods at Taxila. The mortar takes the form of a cup with a shallow depression at the top and with a round or flat base. The pestle resembles a small, short muller worn at the ends instead of the sides. Both are invariably made of hard stone such as *abri*, gneiss, hornblende, hornblende-gneiss or syenite.

- 32. Bm. '30-931; sq. 30·66'; stratum III. Cup-shaped mortar of hornblende-gneiss, with flat bottom. Diam. 8·12 in. (Pl. 140, q.)
- 33. Sk. '16; Trench A254; stratum II. Cup-shaped mortar of hornblende-gneiss, with rounded bottom. Diam. 4·5 in. (Pl. 140, t.)
- 34. Bm. '19-1,485; sq. 10·36'; stratum IV. Pestle of hornblende; length 7·37 in.
- 35. Sk. '19-475; Block B'; sq. 31·99'; stratum II. Pestle of hornblende; length 3·75 in. Cf. p. 194 *supra*.

CLASS VII. *Dishes* (nos. 36-41). Cf. 'Pottery', ch. 23, Class XVI, *a, b*;

'Iron', ch. 27, Class IV; 'Copper and Bronze', ch. 28,

Class XVII, *a, b*; 'Silverware', ch. 29, Class V

- 36. Bm. '20-789; sq. 30·28'; stratum II. Part of rim of shallow dish of *abri* (lower cretaceous shell limestone). Length 6·12 in.
- 37. Bm. '19-1,333; sq. 5·62'; stratum II. Dish of fine grey and white hornblende-gneiss, turned on lathe. Diam. 9·62 in. Rim and bottom much damaged. (Pls. 140, o; 143, l.)
- 38. Sk. '29-2,451; Block B'; sq. 32·86'; stratum V. Broken rim of a large dish of grey schist, decorated with incised concentric circles. Diameter of dish, when complete, 16 in. Of very fine workmanship, turned on lathe.
- 39. Sk. '29-2,571; Block B'; sq. 36·89'; stratum V. Broken dish, resembling Greek *phiale mesomphalos*, of grey micaceous schist, with central boss inside surrounded by concentric circles. Diam. 8 in. Rim and upper part missing. Similar to certain earthenware, silver and copper dishes with central boss (*omphalos*). For this and the following, cf. 'Pottery', ch. 23, no. 109; 'Silverware', ch. 29, no. 10; 'Copper and Bronze', ch. 28, no. 289. (Pl. 140, n.)
- 40. Sk. '13-198; Block G; sq. 108·62'; stratum II. Similar. Diam. 6·5 in. Rim missing. Cf. p. 168 *supra*. (Pls. 140, p; 143, m.)
- 41. Sk. '29-1,807; Block D'; sq. 61·92'; stratum III. Fragment of a dish of grey hornblende-schist; length 7 in. On inside, three concentric circles incised; on outside, foliate border in relief; beneath, square projection with socket-hole for leg. A particularly attractive vessel of Parthian date, in the Gandhāra style. Cf. p. 190 *supra*. (Pl. 140, v.)

CLASS VIII. *Saucers* (probably for toilet use; nos. 42-7). Cf. 'Pottery', ch. 23, Class XV; 'Iron', ch. 27, Class IV; 'Copper and Bronze', ch. 28, Class XVII, *c, d*; 'Silverware', ch. 29, Class V

- 42. Bm. '20-863; sq. 26·26'; stratum II. Saucer of pinkish white alabaster, turned on lathe. Diam. 4·25 in. (Pls. 140, w; 143, p.)
- 43. Sk. '13-1,215; Block E; sq. 74·52'; stratum II. Similar, of hornblende-gneiss, turned on lathe. Diam. 4·37 in. Cf. p. 162, no. 7 *supra*.

Although this saucer was found in the Saka-Parthian stratum in Sirkap, it was probably older by some two centuries or more. No other example of a vessel made of hard stone has been found in Sirkap, and in this case the shape, and its blunted exterior mouldings, point to an earlier date. Saucers of the Parthian period, if they have mouldings at all, usually have them sharply

defined, and are almost always carinated like the specimens described below, with which we may compare also the earthenware saucer no. 107 (p. 418). (Pl. 143, *j.*)

44. Sk. '28-2,211; Block F'; sq. 84·89'; stratum IV. Saucer of grey schist, finely turned on lathe; carinated sides and everted lip. Incised concentric circles in bottom, inside. Diam. 2·37 in.

45. Sk. '13-1,332; Block E; sq. 69·61'; stratum II. Saucer of micaceous schist, with carinated sides and everted rim. Border of lattice triangles on rim and foliate pattern below, inside. Diam. 4·25 in. Cf. p. 162, no. 8 *supra*. (Pls. 140, *r*; 143, *k.*)

46. Sk. '20-764; Block D'; sq. 57·92'; stratum I. Similar, of grey schist, with incised network on everted rim, and quatrefoil rosette on bottom, inside, surrounded by foliate circle. Diam. 3·62 in. Cf. p. 190 *supra*. (Pls. 140, *u*; 143, *i.*)

47. Sk. '14-481; Block C'; sq. 41·78'; stratum II. Similar, but with flat base and rounded sides. Quatrefoil rosette on bottom, surrounded by concentric circles. Diam. 2·62 in. Cf. p. 193 *supra*. (Pl. 140, *x.*)

#### CLASS IX. *Standard cups* (nos. 48, 49). Cf. 'Pottery', ch. 23, Class XX, *a*

The difference between the earlier and later saucers noticed above extends also to the standard cups or low tazzas described below. No. 49, which comes from the Šaka-Parthian city in Sirkap, has a much more stylish and sharply defined form than no. 48, which comes from the Maurya level in the Bhir Mound.

48. Bm. '20-1,568; sq. 17·33'; stratum II. Standard cup of hard *abri* stone, turned on lathe. Diam. 3·87 in. (Pl. 140, *y.*)

49. Sk. '14-966; Block C'; sq. 45·80'; stratum II. Similar, but of grey schist, with incurved sides and wide angular rim. Diam. 3·6 in. Cf. p. 193 *supra*. (Pl. 140, *z.*)

#### CLASS X. *Bowls* (nos. 50, 51). Cf. 'Pottery', ch. 23, Class XV; 'Iron', ch. 27, Class III; 'Copper and Bronze', ch. 28, Class XVI; 'Silverware', ch. 29, Class IV

The only example of a stone bowl from the Bhir Mound is the small bowl of highly polished agate no. 50, and the only example from Sirkap is the steatite one from the Mahal site, no. 51. The former is of the third century B.C., the latter of the second half of the first century A.D.

50. Bm. '21-983; sq. 16·63'; stratum II. Piece of banded-agate bowl, highly polished inside and out. Length 1·62 in.

51. Sk. (Ml.), '25-252; sq. 42·115'; 2 ft. 10 in. below surface. Small bowl of purple-grey steatite; diam. 3·25 in. Outside is ornamented with horizontal bands of incised linear designs—network, swags and lotus leaves—and a simple beading in relief. (Pl. 141, *a.*)

#### CLASS XI. *Open-mouthed vases with flat bases* (nos. 52-6).

Cf. 'Pottery', ch. 23, Class VII

These correspond with Class VII of the pottery vessels, except that there is no example in stone of this type of vessel with a standard base. They are found only in the Šaka-Parthian city in Sirkap.

52. Sk. '27-1,342; Sixth Street (west); sq. 66·119'; stratum II. Small open-mouthed vase of grey hornblende-schist, with flat base, beading at base of neck, and three incised bands round body. The neck is pierced with four holes for suspension or for attaching a cover. Height 5·5 in. Cf. p. 184 *supra*. (Pl. 141, *b.*)

53. Sk. '28-715; Block E'; sq. 73.100'; stratum I. Similar and of same size, but with three bands of engraved leaves round body, and without any holes in neck. (Pl. 141, c.)

54. Sk. '20-220; Block A'; sq. 26.78'; stratum II. Similar to no. 53, but smaller, and with plain beading in relief round shoulder. Height 2.62 in. Cf. p. 195 *supra*. (Pls. 141, d; 143, n.)

Two small vases of this class are more open-mouthed and at the same time more squat than the above.

55. Sk. '24-614; Block C; sq. 47.54'; stratum III. Small open-mouthed squat vase of grey schist, with beading round base of neck; no rim. Incised bands below middle of body. Height 2.37 in. Cf. p. 149, n. 2 *supra*. (Pl. 143, q.)

56. Sk. '22-670; Block C'; sq. 43.86'; stratum II. Similar, of hornblende-schist, with flanged neck-beading, and incised bands round lip, neck and middle of body. Height 2.37 in. Cf. p. 193 *supra*. (Pl. 141, e.)

**CLASS XII. Unguent vases (nos. 57-9, a).** Cf. 'Pottery', ch. 23, Class III; 'Copper and Bronze', ch. 28, Class VI; 'Silverware', ch. 29, Class II

Only two complete specimens of this class of vessel have been found, both from the Šaka-Parthian city in Sirkap, but from the Greek level in the same site comes the fragment of a small cylindrical vessel of agate, which may have been used for the same purpose; and from Jāndīāl a small phial of limestone, which was probably meant for some unguent or for kohl. The last-mentioned is of the early medieval period.

57. Sk. '29-2,480; Block B'; sq. 34.86'; stratum V. Fragment of a cylindrical vessel of agate, with outer surface incompletely polished. Length 2.25 in.

58. Sk. '20-166; Block A'; sq. 27.84'; stratum II. Pear-shaped *alabastron* of veined alabaster. Height 4.62 in. Cf. p. 195 *supra*. (Pls. 141, no. 58; 143, r.)

59. Sk. '27; Trench H56; stratum I. Tall cylindrical unguent vase of grey schist, with cordon and incised bands round body. Height 6.37 in. (Pls. 141, f; 143, s.)

59, a. Jl. '12-138; Mound C; 3 ft. below surface. Kohl or unguent bottle of limestone, turned on lathe. Height 1.87 in. Cf. p. 197 *supra*. (Pl. 141, g.)

**CLASS XIII. Goblets (nos. 60, 61).** Cf. 'Pottery', ch. 23, Class XIV; 'Copper and Bronze', ch. 28, Class XIV; 'Silverware', ch. 29, Class III

There are many goblets of earthenware, copper, bronze and silver belonging to the Parthian period at Taxila, but only two specimens in stone. Both are of the standard type, but owing to their material very heavy, inconvenient vessels, and without the widely flared mouth which distinguishes so many of the earthenware and metal specimens. Cf. 'Pottery', ch. 23, nos. 88-91; 'Silverware', ch. 29, nos. 5, a, b; 'Copper and Bronze', ch. 28, nos. 266-73. This standard type of goblet is identified with the Greek κιβώπιον, Lat. *ciborium*, by Dar. et Sag. I, p. 1171, but on what grounds is not clear.

60. Sk. '13-173; Block G; sq. 108.62'; stratum II. Standard goblet of micaceous schist, decorated in low relief with band of quatrefoil rosettes between dog-tooth borders, and with lotus leaves below, springing upwards from the stem. Height 6.12 in. Damaged on one side and at foot. Cf. p. 168 *supra*; A.S.R. (1912), Pl. xxx, d. (Pls. 141, j; 143, o.)

61. Sk. '16-846; Second Street (east); sq. 14.58'; stratum II. Similar, of grey schist, with three-stepped base and plain stem; body decorated with three bands of triple incised lines. Height 4.62 in. (Pls. 141, k; 143, t.)

CLASS XIV. *Trays (nos. 62-97)*

Nearly all the articles under this head belong to the class of round toilet-trays usually divided into two or more compartments and embellished with figures or scenes sculptured in relief. Besides this important series of toilet-trays there are a few miniature trays of rock-crystal, emanating from the Bhir Mound, which in all probability were also meant for the toilet table, and a larger tray of hornblende micaceous schist from Sirkap, which was used no doubt for household purposes.

Type *a*. *Toilet-trays*. The ornamental toilet-trays are made of schist, steatite, indurated claystone, slate or phyllite. Of the thirty-three specimens described below, thirteen are of grey schist, eleven of micaceous schist, five of steatite, two of indurated claystone, one of slate, and one of phyllite or phyllitic slate. No. 64, which is probably of the Śaka period, is of steatite, but with this exception all of pre-Parthian date are of schist.

The subjects portrayed in these toilet-trays are not numerous. They comprise the following:

Subject	No. of specimens
(1) Satyr and nymph . . . . .	1
(2) Figure reclining on couch attended by females <sup>1</sup> . . . . .	2
(3) Drinking and dancing scenes . . . . .	2
(4) Pair of figures (male and female) holding drinking-cups . . . . .	5
(5) Lions, leogryphs, winged stag, hippocamps and other fish-tailed monsters with riders . . . . .	6
(6) Ditto, without riders . . . . .	14
(7) Geometric and floral designs . . . . .	3

Most of these subjects are clearly Hellenistic, and there can be no doubt that this kind of toilet-tray was introduced with Hellenistic culture from the West, where specimens of them have been found, especially in Egypt.<sup>2</sup>

Local Indian influence, however, is to be seen in the lotus rosettes or leaves used as a background for many of the reliefs, in the *makara*-like treatment of some of the sea-monsters, and possibly also in the pairs of figures holding drinking-cups, though, as to the last, it is perhaps more likely that this motif, so familiar in the early Mathurā School, may also have had a Hellenistic origin.

In point of style no. 62, which comes from the Graeco-Bactrian city, has a distinctive character of its own, which apart from its place of finding would justify us in assigning it to the second century B.C. Instead of this tray being divided up, as nearly all the later examples are, into two or more compartments, the two figures occupy the centre of the field and stand out with effective simplicity against the plain background. The figures themselves are treated almost as if they were in the round, rather than in relief,<sup>3</sup> and the modelling of their forms, albeit sketchy,

<sup>1</sup> The same subject is also represented on the lid of the vessel no. 106 *infra*.

<sup>2</sup> E.g. Flinders Petrie, *Objects of Daily Use*, Pl. XXXIV, nos. 23-31.

<sup>3</sup> This characteristic of most Hellenistic relief work is shared also by the reliefs round the abacus of the Aśoka capital at Sārnāth, which, as I have shown elsewhere, was executed by a Greek or a Perso-Greek artist of the third century B.C. Cf. C.H.I. vol. I, p. 621, and Marshall and Foucher, *The Monuments of Sāñchī*, pp. 87, 88.

is more conscientious than in the later trays. There is a certain distinctiveness, also, about the style of no. 63, which dates probably from the first century B.C. and reflects the increasing decadence of Hellenistic art under Śaka rule. The scene is of course a purely Greek one, and, although the figures individually are crudely modelled and stiff and wooden in their poses, their composition still reflects the older Hellenistic tradition. In no. 65, on the other hand, we recognise the effect of the Graeco-Roman art popularised at Taxila under Parthian rule, with its more crowded figures, and much greater freedom of composition and drawing; and we are on quite safe ground in referring to the same century (first century A.D.) nos. 64, 66 and 76. But, apart from these few specimens, it is difficult to determine the respective ages of these toilet-trays on the strength of their style alone. This difficulty arises from the fact that, with the passing of the Bactrian Greeks and coming of the Śakas, Hellenistic art in India rapidly declined, but revived again in the first century under the rule of the Parthians, and though in the interim Hellenistic art in Western Asia had to some extent been Romanised and undergone considerable changes in consequence, nevertheless it is often impossible to determine whether a particular example of debased Indo-Hellenistic work was executed before or after the Parthian revival. And this is true not only of these stone carvings but of other branches of art as well. To be sure, the Indianised treatment of the couple in no. 70, so strongly reminiscent of the Mathurā School, enables us to relegate this particular piece with confidence to Parthian times, but it is not often that we get such light from the Indian side. Take, for example, nos. 78, 79 and 82. We infer from their findspots that they probably belong to the Śaka period, but from their style alone it would be impossible, in the present state of our knowledge, to affirm that they were not strays from the Parthian level above.

In regard to Graeco-Roman toilet-trays from Egypt, a paper by Sir John Evans in *Proc. Soc. Antiq.* (13 Feb. 1908) may be consulted, and also Flinders Petrie, *Objects of Daily Use*, ch. x, pp. 37-9, where he summarises whatever had then (1927) been published about these trays, their types and purpose.

62. Sk. '29-1,894; Block B'; sq. 35·89'; stratum IV. Circular toilet-tray of fine grey schist. Diam. 4·31 in. Round top of rim, beaded border, encircled by running spiral. In centre, erotic scene: to left, standing male figure, with hooded mantle over back; to right, kneeling woman clad in *himation* or shawl, which her companion is pulling from her. Beneath them, triple line of small rocks with larger rock on extreme right, which the woman holds with her left hand. On back of tray, full-blown lotus in low relief. This is a familiar scene in Greek art, the two figures being usually a satyr and a nymph, e.g. *Brit. Mus. Sculpture Cat.* no. 2202: a marble relief representing a bearded satyr pulling aside the mantle of a nymph. Cf. Baumeister, *Denkmäler*, vol. III, p. 1564, and S. Reinach, *Répertoire des peintures grecques et romaines*, p. 125, no. 9. The figures are in high relief on a plain ground; the modelling is characteristic of the Hellenistic age and superior to that of any of the other toilet-trays. (Pl. 144, no. 62.)

63. Sk. '29-2,572; Block A'; sq. 15·98'; stratum V. Toilet-tray of grey schist, divided into two registers. Diam. 5·31 in. In the upper register, a draped male figure reclining on couch, with wine-cup in left hand. At head of couch, a draped female seated on stool, with a wine-cup in left hand. Behind the couch, a second female, standing, with garland in upraised right hand.

The figures are clad in the Greek *chiton* and *himation*. In the lower register, seven lines suggestive of a palmette. On rim, beaded border in low relief. This toilet-tray is referable to the first century B.C., when Hellenistic art was becoming barbarised under the rule of the Śakas. Observe that the figures in this scene are more widely spaced than in the later Parthian reliefs, in this respect being nearer to the Hellenistic tradition, in spite of their stiff and rigid formality. The wig-like treatment of the hair and the wide-open, prominent eyes are peculiarly characteristic of nascent Gandhāra sculpture during the late Śaka period. These traits are well exemplified also in nos. 70, 74 and 75, and in 'Stone Sculptures', ch. 36, nos. 3, 4, 12, 13, etc. Cf. p. 693 *infra*. For Yavanas reclining on couches as they eat or drink, see Schol. on Pānini, cited by S. Levy, *Quid de Graecis*, p. 22. (Pl. 144, no. 63.)

64. Sk. '28-1,486; Block F'; sq. 85·90'; stratum II. Half of a broken toilet-tray of yellowish brown steatite (soapstone), divided into two registers. Diam. 4·12 in. In the upper register, man reclining on bed and kissing woman, who is seated on stool by his side. On rim, four concentric circles. Two small holes drilled near centre and in rim appear to have served for rivets, when the tray was mended in old days. On the back is an inscription in Kharoshthī: (along the edge) *Thireasa tritavi(na) mudrao Uraše Arya—Ro...*; (in the middle) *Thiraka*. Cf. p. 182 *supra*; A.S.R. (1928), Pl. xx, 11 and p. 56. (Pl. 144, no. 64.)

65. Sk. '28-1,776; Block F'; sq. 85·89'; stratum II. Toilet-tray of greenish grey steatite (soapstone). Diam. 6·62 in. On rim, border of double arcading, incised. In centre, drinking scene.<sup>1</sup> Although the scene is a composite whole, filling virtually the entire field, it is divided by convention into three tiers separated one from the other by projecting floors, so that the figures in the upper and middle parts of the field may have something on which to rest their feet. In the top register, in centre, a man and woman are seated on a bench, the former clasping his companion with his left arm and holding a sceptre with his right, while she offers him a cup of wine. To left of them, a woman seated and draped, playing on a lyre; and, behind her, a youth playing on the Pan-pipes; to right, a standing male figure with his right hand wrapped in his mantle and his left holding a staff. In the middle register, to right, a large wine-vat, rising from acanthus leaves, in which two men, one on the back of the other, are treading the grapes, while a lad, in the centre, draws off the juice in a tall flagon (*ὑπολήνιον*). To the left, another man is carrying a wine-skin on his back and emptying its contents into a *krater*, while his companion on the left of the vase is raising a bowl to his lips. Below, in the bottom register, two figures are lying drunk. Framing the top of the scene from side to side is an undulating vine. The back of the plaque is relieved with concentric bands, both incised and in relief. Cf. A.S.R. (1928), Pl. xix, 1 and p. 56, no. 55. The style is typical of Hellenistic art of the first century A.D., and the relief is reminiscent of the 'Wedding of Ariadne and Bacchus'—a familiar scene in Graeco-Roman art. Cf. Dar. et Sag. II, p. 421; p. 182 *supra*. (Pl. 144, no. 65.)

66. Sk. '12-814; Block G; sq. 108·63'; stratum I. Circular toilet-tray of indurated light grey claystone, divided by partition into two registers. Diam. 5·25 in. In the upper register is a man dancing with two women, one on either side. The lower compartment is empty. On the rim, two concentric circles incised; on partition, short parallel lines. Of Parthian period; first century A.D. Cf. p. 168 *supra*; A.S.R. (1912), Pl. xxix, b and p. 32, no. 1. (Pl. 144, no. 66.)

67. Sk. '28-635; Block B'; sq. 34·92'; stratum III. Toilet-tray of grey schist (diam. 3·62 in.), divided into three compartments, with lotus rosette in background of all three. In upper compartment, upper halves of two draped figures holding wine-cups. On rim, toothed border; on partitions, diagonal lines incised. The workmanship is very rough, as if done by a wood-carver. Cf. p. 194 *supra*. (Pl. 144, no. 67.)

68. Sk. '28-2,159; Block F'; sq. 90·84'; stratum II. Toilet-tray of micaceous schist, divided

<sup>1</sup> Drinking and banquet scenes, it may be remarked, were favourite subjects of Parthian art. Cf. C.A.H. xi, p. 129.

into nine sunk compartments. Diam. 5·12 in. In centre are busts of male and female figures with wine-cups in their hands. Both wear necklaces. In each of the four corner compartments is a quatrefoil rosette. On the rim is a border of incised network, and on the back an incised lotus design. Cf. p. 182 *supra*; A.S.R. (1928), Pl. xx, 6 and p. 57, no. 60. (Pl. 144, no. 68.)

69. Sk. '19-695; Block B'; sq. 28·116'; stratum II. Toilet-tray of grey schist, divided into three compartments. Diam. 4·12 in. In the top compartment are the busts of a male and a female holding wine-cups in their hands. Behind them, half lotus rosette. On the rim is a network pattern incised; and on the partitions, toothed and cable beadings. On back, incised eight-petalled lotus. Cf. p. 194 *supra*. (Pl. 144, no. 69.)

70. Sk. '20-763; Block D'; sq. 57·92'; stratum I. Toilet-tray of grey schist divided into three compartments. Diam. 6·86 in. In the upper half are figured, in relief, a male and a female, three-quarter length, holding wine-cups in their hands. Both wear necklaces and the woman has a shawl (*sārī*) about her head and shoulders. On the rim is a double-cable border; on the partitions, a dotted cross pattern. The Indianised character of the figures and the concise quality of the carving point to the influence of the Mathurā School. Cf. p. 190 *supra*. (Pl. 144, no. 70.)

71. Sk. '29-2,285; Block G'; sq. 105·89'; stratum II. Fragment of a grey schist toilet-tray or perhaps the lid of a vessel, divided by radii into eight compartments, with lotus rosette in centre. Length 6·26 in. Each compartment contains a pair of figures, male and female, standing with wine-cups in their hands. Network and toothed borders on rim and partitions. Cf. p. 181 *supra*. (Pl. 144, no. 71.)

72. Sk. '26-2,367; Block G; sq. 107·46'; stratum I. Broken toilet-tray of claystone, divided into two compartments. Diam. 4·5 in. In upper compartment, lion, with rider seated sideways, moving to right among rocks. In exergue, chequer pattern. Beaded border on rim and partition. Cf. p. 169 *supra*. (Pl. 144, no. 72.)

73. Sk. '27-501; Block E'; sq. 77·90'; stratum II. Toilet-tray of slate, divided into two compartments. Diam. 6 in. In upper compartment, to left, winged stag ridden by winged rider. To right, goat in foreground; winged lion behind. On rim, double arcading. On partition, narrow vandyke pattern. The exergue is plain. The style is unusual and appears to betray a certain measure of Indian influence. Cf. p. 184 *supra*. (Pl. 145, no. 73.)

74. Sk. '15-277; Block A; sq. 24·59'; stratum II. Circular toilet-tray of grey schist, without compartments. Diam. 4·62 in. In upper field, fish-tailed hippocamp with rider seated astride; below, palmette rays. Dog-tooth border on rim. Cf. p. 145 *supra*. (Pl. 144, no. 74.)

75. Sk. '27-607; Block E'; sq. 75·91'; stratum III. Similar, of grey micaceous schist, with a fish-tailed griffin and rider instead of hippocamp. Diam. 4·56 in. Broken on right side. Cf. p. 184 *supra*. (Pl. 145, no. 75.)

76. Sk. '28-763; Block E'; sq. 74·98'; stratum II. Similar, of micaceous steatite with sea-monster resembling Indian *makara*, ridden by a half-draped female figure holding a baby in left arm. Diam. 3·12 in. In exergue, acanthus leaf in low relief. Incised concentric circles on both sides of rim. On back, inscription of five Kharoshthī letters: *Manjuminasa*, i.e. of Manjumina—probably the name of the person to whom the object belonged. Parthian period. Cf. A.S.R. (1928), Pl. xx, 10 and p. 55, no. 42. The style of the carving resembles that of no. 65, but the workmanship is coarser. For the motif of a nereid riding on a hippocamp or sea-monster, see Roscher, *Lexikon*, s.v. 'Nereid'; also Dalton, *Treasure of the Oxus*, no. 197, Pl. xxvi (2nd ed.). Draped nereids were common in Greece in the fifth to fourth centuries B.C. Later, they were more often half-draped. Cf. p. 184 *supra*. (Pl. 145, no. 76.)

77. Sk. '29-306; Block C'; sq. 44·92'; stratum II. Similar, of grey schist, divided into two compartments. Diam. 5·43 in. In upper compartment, draped woman riding sideways on fish-tailed sea-monster. On neck of monster, uncertain object, which may be a garland. On rim, incised cable border. Cf. p. 193 *supra*. (Pl. 145, no. 77.)

78. Sk. '28-2,400; Block G'; sq. 102·82'; stratum IV. Similar, of micaceous schist, divided into nine compartments. Diam. 4·5 in. In the central compartment is a lion, and in the four larger compartments around are pairs of lotus leaves; in the smaller ones are quatrefoil rosettes; network border on rim; lotus on back. Cf. p. 181 *supra*. (Pl. 145, no. 78.)
79. Sk. '27-13; Block E'; sq. 67·115'; stratum IV. Similar, with two lions fronting each other in central compartment. Length 6·37 in. Fragmentary. (Pl. 145, no. 79.)
80. Sk. '13; Trench A461, d; stratum II. Toilet-tray of micaceous schist, divided into two compartments. Diam. 5·12 in. In upper compartment, winged griffin; in lower one, palmette or rays. On rim, scale border incised. Both motif and style suggest Persian influence. Cf. p. 161, no. 5 *supra*; A.S.R. (1912), Pl. xxiii, a and p. 28, no. 5. (Pl. 145, no. 80.)
81. Sk. '12; Trench A461, c; stratum II. Similar, of micaceous steatite, with serpentine. Diam. 5·62 in. Circular depression in centre with four compartments around, each containing a winged griffin seated. Style and period same as preceding example. (Pl. 145, no. 81.)
82. Sk. '29-2,455; Block 1'; sq. 12·99'; stratum IV. Similar, of steatite, divided into two compartments. Diam. 3·5 in. In upper compartment, a winged hippocamp with scaly body and fish-tail. In exergue, half-lotus rosette. Around rim, border of lotus petals with cable edging on side of partition. Śaka period. The motif is Hellenistic, but the style partly Indianised. (Pl. 145, no. 82.)
83. Sk. '22-801; Block E'; sq. 70·91'; stratum IV. Similar, of grey schist, with cable border on rim and reel-and-bead border on partition. Diam. 6 in. In upper compartment, winged sea-monster of *makara* type with garland(?) round neck. In exergue, acanthus lines. (Pl. 145, no. 83.)
84. Sk. '29-1,138; Block D'; sq. 60·112'; stratum IV. Similar, of whitish micaceous schist, divided into three compartments. Diam. 4·75 in. In upper compartment, winged monster on lotus background. Incised network border on rim; lotus on back. Cf. p. 190 *supra*. (Pl. 145, no. 84.)
85. Sk. '29-394; Block C'; sq. 51·87'; stratum III. Toilet-tray of grey-white micaceous schist. Diam. 4·87 in. In upper compartment, winged monster with scaly body, fish-tail and double pairs of horns, on lotus background. In exergue, half-lotus rosette. Lotus-leaf border round rim. Cf. p. 193 *supra*. (Pl. 145, no. 85.)
86. Sk. '12-1,336; Block E; sq. 76·65'; stratum II. Similar, of micaceous schist, with three compartments. Diam. 3·75 in. In the upper compartment, a fish-tailed winged monster; in lower ones, quarter-lotus rosette. Network border on rim. Cf. p. 162, no. 6 *supra*. A.S.R. (1912), Pl. xxiii, b and p. 28, no. 2. (Pl. 145, no. 86.)
87. Sk. '12-642; Block D; sq. 57·66'; stratum II. Similar, of dark grey mica-schist, divided into two compartments. Diam. 4·5 in. In upper compartment, winged fish-tailed sea-monster with hare-like head, on lotus background; in lower, lotus ground. Broken.
88. Sk. '29-2,292; Block F'; sq. 92·95'; stratum II. Similar, of schist-stone, divided into three compartments. Diam. 4·75 in. In the upper compartment, a winged *makara*-like sea-monster. Lotus ground in all three compartments. Network border round rim. Beading on partition, and lotus on back. Cf. p. 182 *supra*. (Pl. 146, no. 88.)
89. Sk. '27-1,649; Block E'; sq. 74·108'; stratum II. Similar, of grey schist, divided into two equal compartments. Diam. 5·87 in. Winged fish-tailed hippocamp in upper, on lotus ground; half-lotus rosette in lower. Both the hippocamp and the lotus are treated in a florid style. Beaded border on rim. Cf. p. 166, n. 1 *supra*. (Pl. 146, no. 89.)
90. Sk. '22-384; Block 1'; sq. 10·93'; stratum II. Similar, of grey schist, with three compartments. Diam. 4·37 in. Winged monster with *makara*-like head, but no fish-tail, in upper compartment; network border on rim. Crude lotus on reverse. Cf. p. 196 *supra*.
91. Dh. '15-613; T2; 2 ft. below surface. Similar, of grey schist, divided into four quadrants with circular depressions in centre. Diam. 4·5 in. Two quadrants contain lotus leaves, the

third a winged sea-monster, and the fourth a figure with human body and fish-tail legs. On one of the legs is seated a small female figure. Chevron pattern on partitions and chevron and scale border on rim. Five-petalled rosette in central depression. Cf. *A.S.R.* (1915), Pl. v, b and p. 8, no. 29.

For the two fish-tail legs, see *Dar. et Sag. s.v. 'Aloadae'* and *R.U.C.*, ch. 39 *infra*, no. 94. (Pl. 146, no. 91.)

92. Sk. '24-316; Block C; sq. 50·51'; stratum II. Similar, of phyllitic slate. Diam. 4·5 in. In centre, swastika with four arms dividing the tray into four compartments. Engrailed border on swastika and on rim. Cf. p. 149 *supra*; *A.S.R.* (1924), Pl. XII, 5. (Pl. 146, no. 92.)

93. Sk. '15-841; Block K'; sq. 166·99'; stratum II. Similar, of micaceous schist. Diam. 4·75 in. Divided by curved cross into four sunk compartments with ground of lotus petals. Hatched and network border on rim; foliate medallion with beaded border on cross. Cf. p. 180 *supra*; *A.S.R.* (1915), Pl. VIII, g. (Pl. 146, no. 93.)

94. Sk. '27-501; Block E'; sq. 77·90'; stratum II. Similar, of mica-schist, with centre divided into nine compartments. Diam. 5·75 in. In the four corner triangles are quatrefoil rosettes. The other compartments are plain. On rim, double-cable border. Cf. p. 184 *supra*. (Pl. 146, no. 94.)

Type *b*. *Miniature trays of rock-crystal*. We may surmise that these were used for toilet cosmetics, but there is no proof of it. They have been found only in the Bhir Mound.

95. Bm. '19-1,082; sq. 26·12'; stratum II. Fragment of crystal tray with projecting rim, through which a fine hole is pierced on one side. Length 1·5 in. Of fine workmanship; highly polished. The complete tray may have been in the form of a quadrant with three other trays making up the circle. (Pls. 141, h; 147, a.)

96. Bm. '21-983; sq. 16·63'; stratum II. Similar to preceding, but smaller, and with two holes pierced through two edges. Length 1·12 in. (Pls. 141, i; 147, a.)

Type *c*. *Household tray of soft stone*.

97. Sk. '22-676; Seventh Street (west); sq. 66·112'; stratum II. Rectangular tray of hornblende mica-schist with lug-handle on one side. Length 12·75 in. Broken. (Pl. 146, no. 97.)

#### CLASS XV. *Toilet caskets (nos. 98-106)*

Numbers of vessels of this class have been found in Sirkap and later sites, and, thanks to the fact that they were used not only for toilet purposes but as convenient receptacles for the sacred relics enshrined in stūpas, many of them are still in a perfect state of preservation. Usually they are made of grey or micaceous schist, but not infrequently of steatite; only one specimen is made of phyllite. Similar caskets, almost always of steatite, had been made in other parts of India—notably in Hindustān and Central India—as far back, at least, as the Maurya period and probably much earlier, but not a single specimen has been found in the Bhir Mound. The earliest—belonging to the early Śaka period (first century B.C.)—comes from the Dharmarājikā.

The shapes of these caskets are not many. The commonest are globular and slightly squat, like the modern lady's puff-box, the division between body and lid being just above the middle; others are cylindrical and tall; others cylindrical and shallow, like the Greek *pyxis*; others again—and these are smaller in size—have a

spherical form with a small closely-fitting lid; and there is one—the earliest of all—which is square, and another which resembles a vase with wide-open mouth. Examples of these types are given below. For other examples, cf. Pls. 35, 36, 49 and 50.

Type *a*. *Globular and of slightly squat shape, the division between body and lid being just above the middle.*

98. Sk. '28-1,307, *a*; Block D'; sq. 63·96'; stratum II. Casket of grey schist, with lotus and other patterns in low relief round body and lid. Height 3·12 in. The knob-handle on the top of the lid, which is now broken, was made in a separate piece and affixed with cement. Cf. p. 190 *supra*.

99. Sk. '14-387; Block K; sq. 158·51'; stratum II. Similar to preceding, of grey schist. Diam. 4 in. Below the rim of the body is a band of incised network. Cf. A.S.R. (1914), Pl. xxvii, 8. Other examples of this type are Pl. 141, *p* (Sk. '26-3,067); Pl. 141, *q* (Sk. '14-160); Pl. 141, *r* (Sk. '13-50). All these are of grey or micaceous schist. Sk. '24-375 is of grey soapstone and Sk. '15-459 of phyllite. Cf. p. 176 *supra*. (Pl. 146, no. 99.)

Type *b*. *Tall, cylindrical shape.*

100. Sk. '19-1,342; Block D'; sq. 58·110'; stratum II. Cylindrical casket of steatite (height 3·37 in.), with two cordon mouldings in relief and broader bands of incised network and lattice triangles. Lid missing. Other examples of this shape, both of micaceous schist, are Sk. '22-923 and Sk. '12-762; and to the same type apparently belong also two small caskets, one of agate the other of rock-crystal, of which pieces only were found in the jeweller's store-jar in Block D'<sup>1</sup> (Sk. '19-933/22, length 1·87 in., agate; and Sk. '19-933/15, height 1·87 in., rock-crystal). Cf. p. 190 *supra*; A.S.R. (1919-20), Pl. x, 32 and p. 19. (Pl. 141, *m*.)

Type *c*. *Shallow, cylindrical shape, resembling the Greek pyxis. Cf. 'Copper and Bronze', ch. 28, Class XI.*

101. Sk. '28-1,086 and 1,136; Block D'; sqs. 62·105' and 61·106'; stratum II. *Pyxis*-shaped casket of grey schist (height 2 in.), with lotus-leaf band at base of body and incised circles above. Bands of concentric fluting on top of lid, calling to mind the fluting on the silver and bronze goblets nos. 5, *a*, *b*, 'Silverware', ch. 29, and nos. 272, 273, 'Copper and Bronze', ch. 28. Cf. p. 190 *supra*. (Pl. 141, *o*.)

102. Sk. '13-588; Block F; sq. 82·65'; stratum II. Similar to preceding but of coarse steatite, with sides tapering upwards. Round body, two lines of incised lattice triangles with parallel vertical lines between. Another example is figured in Pl. 141, *n* (Sk. '22-556). Cf. p. 166 *supra*. (Pl. 141, *u*.)

Type *d*. *Small and spherical, with lid inset. All are of grey schist.*

103. Sk. '28-2,041; Block G'; sq. 107·87'; stratum II. Small spherical casket of grey schist, adorned with six rosettes within concentric bands. Diam. 1·87 in. The lid, with one rosette, is missing. Cf. p. 181 *supra*. (Pl. 141, *s*.)

104. Sk. '30-558; spoil earth. Similar to preceding, but with different patterns round rosettes. Diam. 2·25 in. (Pl. 141, *t*.)

104, *a-e*. Other examples of this type of casket are Pl. 141, *v* (Ml. '23-137); Pl. 141, *w* (Sk. '24-970); Pl. 141, *x* (Sk. '26-4,022); and of the lids only: Pl. 141, *y* (Sk. '16-702).

Type *e*. *Square.*

104, *f*. Sk. '30-389; Block C'; sq. 50·90'; stratum VI. Square casket of grey steatite, with lattice pattern incised on outside. Size 2·375 in. sq. by 2 in.

<sup>1</sup> Cf. vol. I, pp. 188-9. Also nos. 138-40, 148, and Class XXVIII, nos. 1-25 *infra*.

Type f. *Vase-shaped*.

105. Sk. '28-1,042; Block E'; sq. 71·90'; stratum II. Vase-shaped casket of grey schist, with open mouth in lid. Height 4·75 in. Incised horizontal bands round body. Cf. p. 184 *supra*.

106. Here, too, should be mentioned the lid of a casket (Sk. '28-2,530; Block G'; sq. 115·91'; stratum I) of grey schist-stone, which is decorated with the same motif as the toilet-trays nos. 63 and 64, viz. a man lying on a couch with a wine-cup in his left hand, and two women in attendance, one with a wine-cup, the other fanning him. It is 5·06 in. in diam., and in the exergue is a demilune hole in which the finger could be inserted. Cf. p. 181 *supra*; *A.S.R.* (1928), Pl. xx, 12 and p. 59, no. 7. (Pl. 146, no. 106.)

CLASS XVI. *Shell-shaped ladles* (nos. 107, 108)

These ladles are in the shape of a shell, with the neck and head of an eagle forming a loop handle. They are of grey or yellow steatite and have been found only in the top stratum in Sirkap.

107. Sk. '26-2,214/8; Block G; sq. 109·52'; stratum I. Shell-shaped ladle of yellow steatite, with eagle-headed loop handle. Length 3·37 in. Cf. p. 169 *supra*. (Pl. 141, z.)

108. Sk. '29-970; spoil earth. Similar to preceding, but of grey steatite. Length 3·37 in. Broken. (Pl. 141, aa.)

CLASS XVII. *Lamps* (nos. 109-17)

Lamps do not appear to have been made of stone until the Šaka-Parthian period, when schist and other soft stones came into use for the manufacture of many household utensils. No specimens of stone lamps have been found in the Bhiṇ Mound or in the earlier cities of Sirkap; and none of those from the Dharmarājikā Stūpa can be assigned to an earlier date than the second century A.D.

The commonest shape is a leaf- or heart-shaped vessel, sometimes provided with a handle projecting from the back, sometimes with pierced lugs for suspension. A few specimens are bowl-shaped or rectangular, with spouts for the wicks. The former, and perhaps the latter also, were copied from Hellenistic prototypes.

Type a. *Leaf- or heart-shaped lamps, with open reservoirs*.

109. Sk. '24-882; Block C; sq. 45·46'; stratum IV. Leaf-shaped lamp of grey schist, with three lug-ears, pierced for suspension. Length 4·12 in. (Pl. 141, bb.)

110. Sk. '13-1,094; Block E; sq. 74·53'; stratum I. Similar to preceding, of micaceous schist, with lotus-leaf design on outside. Length 4·62 in. Cf. p. 162, no. 8 *supra*. (Pl. 141, cc.)

111. Dh. '12-112; D8; 8 ft. below surface. Similar (length 4·62 in.), with Kharoshṭī inscription on outside: *Taksha(s)ilaamī dhamarāi(e Dhamadasabhikskun)o (esha)saputrasa danamukhe(o)=* 'In the Dharmarājikā compound of Takshaśilā this is the gift of the friar Dharmadāsa(?)'. Cf. pp. 249, 252 *supra*; *A.S.R.* (1912), Pl. xiv, d; and for the inscription, *C.I.I.* II, pp. 89-90. According to Prof. Konow, the characters are later than the silver-scroll inscription of the year 136=A.D. 78-9 (see above, ch. 10, p. 256), but earlier than Kanishka's reign. The lamp may, therefore, be assigned to about the beginning of the second century A.D. (Pl. 146, no. 111.)

112. Mm. '15-274; central court of monastery. Leaf-shaped lamp of phyllite, with three solid lugs at sides and back, and two small projections inside, near the lip. Length 5 in. The outside is carved in low relief with a lotus-leaf pattern, and the rim with a rough bead moulding. This lamp comes from the Mohrā Morādu monastery and is almost certainly of the fifth century A.D. (Pl. 141, dd.)

113, a. Mm. '15-286; cell 15; 10 ft. below surface. Heart-shaped lamp of micaceous schist, with projecting handle at back and beaded border on rim. Length 6·12 in. This also is from the Mohrā Morādu monastery, and of the same date as the preceding. (Pl. 142, a.)

b-e. Other lamps of the same leaf- or heart-shaped type are Sk. '14-132, stratum II, of schist; Dh. '16-666, of hornblende-schist; Dh. '13-1,848, of phyllite; and Dh. '12-1,087, of schist.

Type b. *In the form of a squat vase, with animal-headed spout.* Copied from Hellenistic prototypes.

114. Ml. '25-133; Trench B; room 4; 5 ft. 2 in. below surface. Bowl-shaped lamp of green steatite, with spout and three lugs pierced for suspension (length 3·75 in.). Between the lugs are acanthus leaves, and on the spout an elephant's head in low relief; the lower part of the body is turned on the lathe and relieved with incised horizontal bands. Pieces of iron wire still remain in the lug-holes. This lamp, which comes from the Mahal site in Sirkap, is referable to the middle or later part of the first century A.D. (Pls. 142, b; 146, no. 114.)

115. Jl. '12-35; Mound D. Similar in shape to the foregoing but of pink Vindhyan sandstone and much cruder workmanship. Length 4·12 in. The spout, which takes the form of an animal's head, is longer, and the body adorned with lotus instead of acanthus leaves. Round the mouth at the top is a zigzag pattern. Early medieval period. (Pl. 142, c.)

Type c. *Rectangular in shape, with human-headed spout.*

116. Dh. '17-160; T2; 2 ft. below surface. Rectangular lamp of micaceous schist, with human-headed spout; length 2·37 in.; three pierced lugs on side for suspension. Beneath the rim, dog-tooth moulding. Probably fifth century A.D. (Pls. 142, d; 146, no. 116.)

117. Dh. '12-764; G3; 3 ft. 6 in. below surface. Similar to foregoing but of phyllite, with lotus pattern round body. Length 4·43 in. (Pl. 142, e.)

117, a, b. Another lamp of this type, also of phyllite, is figured in Pl. 142, h (Dh. '12-2,230) and a small stucco lamp of the same shape in Pl. 142, i (Dh. '16-1,072).

### CLASS XVIII. *Burnishers and polishers* (nos. 118-20)

These may have served various purposes, but it is probable that they were chiefly used for the polishing of small gold and silver articles.<sup>1</sup> The larger kind are from 2·5 to 4 in. in length, spindle-shaped, and generally with one end more pointed than the other. They are made of sardoine, banded agate, chalcedony or chert. But there is another and smaller type of burnisher intended for exceptionally fine work, which consists of a tiny point of agate set in a copper handle. This latter type has been found only in Sirkap; the larger type occurs in the Bhir Mound as well as in Sirkap.

Type a:

118. Bm. '15-323; stratum II. Burnisher of impure chalcedony, blotched white and grey. Length 4 in. (Pls. 142, g; 146, no. 118.)

119, a. Sk. '29-190; Block A'; sq. 25·88'; stratum III. Burnisher of brown sardoine. Length 2·75 in. Cf. p. 195 *supra*. (Pl. 146, no. 119, a.)

119, b, c. Other burnishers of this type are figured in Pls 142, f; 146, no. 119, b (Sk. '26-2,195; stratum II) and Pl. 146, no. 119, c (Sk. '27-1,533; stratum II). The former is of chalcedony; the latter of black chert.

<sup>1</sup> Cf. Petrie, *Objects of Daily Use*, Pl. LVI, 33-5.

Type *b*:

120. Sk. '29-1,173; Block 1'; sq. 11·100'; stratum III. Point of banded agate set in copper handle and used as metal burnisher for very fine work. Length 1 in. Cf. p. 196 *supra*. (Pl. 142, o.)

CLASS XIX. *Touchstones* (no. 121)

For the testing of gold, natural pebbles of black basanite or Lydian stone, highly polished, were sometimes used (e.g. Bm. '24-357; stratum III; and Sk. '12-257; stratum II) but most of the touchstones found at Taxila are made of hard siliceous slate cut into long strips, which still retain upon them the marks of the gold. Touchstones of this type, however, have been found only in the later strata in Sirkap.

121. Sk. '14-1,953; Block E'; sq. 73·75'; stratum III. Touchstone of hard siliceous slate, with gold streaks still visible on its surface. Size 8·25 x 1·12 x 0·75 in. Cf. p. 184 *supra*; A.S.R. (1914), p. 20. (Pl. 146, no. 121.)

Other specimens of the same shape and material are: Sk. '26-4,148; Sk. '19-933/46; Sk. '12-667. They vary in length from 5·55 to 10·37 in.

CLASS XX. *Palettes* (nos. 122, 123)

Only two specimens of palettes have been found, one made of slate, from the top stratum in Sirkap, the other of claystone from Mound C at Jāndiāl.

122. Sk. '19-257; Block E'; sq. 79·98'; stratum I. A circular palette of slate. Diam. 5·5 in.

123. Jl. '12-243; Mound C. Palette of claystone, three-sided, with circular depression on one side for a single pigment.

CLASS XXI. *Spindle-whorls* (no. 124)

124. Spindle-whorls of stone are also rare and are found only in Sirkap. They are generally made of micaceous schist or soapstone (e.g. Sk. '12-81 and '24-1,196) and are of the same shapes as the terra-cotta ones; but there is one noteworthy specimen of rock-crystal, no. 124 (Sk. '28-1,681), which takes the form of a rather flat barrel-disk bead, with a diam. of 1·62 in. It comes from the Śaka-Parthian city in Sirkap; Block F'; sq. 84·89'; stratum II. Cf. p. 182 *supra*. (Pl. 142, k.)

CLASS XXII. *Potter's konoras and thatwās* (nos. 125-8)

The *konora* and *thatwā* were used by the potter to thin out the clay walls of his vessels. The *konora* is pressed with the left hand against the wall inside the vessel, while with the *thatwā* in his right hand the potter gently taps the wall on the outside. Both implements are still in use throughout India, the *konora* being frequently made of earthenware and the *thatwā* of wood.

- *Konoras*.

125. Sk. '16; Trench A707; stratum II. Potter's *konora* of white marble. Length 3·12 in. (Pl. 142, q.)

126. Sk. '15-756; Block B; sq. 29·53'; stratum II. Similar to foregoing, of grey quartzite. Height 4 in. Cf. p. 148 *supra*.

*Thatwās.* Three of these implements were found at one spot in Sirkap, viz.:

127, a. Sk. '24-1,301; Block C; sq. 47·46'. Of hornblende-gneiss (length 6·37 in.) with cylindrical handle and flat body. Two others are of gneiss but the handles are unfinished (length 8·25 in.). Saka-Parthian period. Cf. p. 210 *supra*. (Pl. 146, no. 127, a.)

128. Another specimen of hornblende-gneiss (length 7·5 in.) came from Piñdorā in Sirsukh and is probably of the fourth or fifth century A.D. Cf. p. 220 *supra*. (Ss. '15-81; 2 ft. 3 in. below surface.) (Pl. 146, no. 128.)

### CLASS XXIII. *Amulets and other sacred objects* (nos. 129-37)

A. *Ring-stones.* Four specimens of these singularly interesting stones have been found at Taxila—three in the Bhir Mound and one in the second stratum of Sirkap, but the style and workmanship of the latter leave no room for doubt that it belongs to the same (Maurya) age as the others. The peculiar sanctity with which ring-stones are invested in India is well known and can be traced back to an immemorial age. Large numbers of them, dating from the fourth or third millennium B.C. have been unearthed at Mohenjo-daro and Harappā—some no bigger than a finger-ring, some so large that it takes half a dozen men to lift them; while among famous examples of to-day may be mentioned the Śrigundi stone at Malabar Point near Bombay, which is believed to purify those who crawl through it of disease and sickness, and the equally potent one at Śatrunjaya, the hole in which is known as *muktdwāra* = 'door of absolution'—the door which gives happiness to anyone who can creep through it. The idea underlying all these ring-stones is the same: they are regarded as *yonis* or female symbols of generation<sup>1</sup>—the idea being that those who pass through them are, as it were, born again, while in the case of the smaller stones of the same class the mere passing of the hand or finger through them is an act of special virtue. That the same idea attached to the specimens found at Taxila (probably ex-voto offerings) is evident from the nude figures of a 'goddess of Fertility' which are engraved with consummate skill inside the central hole, thus indicating in a manner that cannot be mistaken the connexion between them and the female principle.<sup>2</sup> It is not unlikely that the 'Fertility goddess' here represented may have been identified with the 'Earth goddess' Prithivī. The earth itself was conceived of as wheel-shaped in the *Rigveda*,<sup>3</sup> and it is said to be 'circular' in the *Satapatha Brāhmaṇa*. A disk of terra-cotta bearing an image in relief of a 'Fertility goddess' was unearthed by me at Bhitā in 1911-12, and is published in my *Report* for that year.<sup>4</sup> It belongs to the Kushān or Early Gupta period and depicts the goddess with legs wide apart and with a lotus (emblem of birth) issuing from her neck in place of her head. A similar plaque was also found at Kosam and is now in the Indian Museum.<sup>5</sup> With these may be compared a sealing from

<sup>1</sup> Cf. Crooke, *Religion and Folklore of Northern India*, p. 322.

<sup>2</sup> Cf. my remarks in *M.I.C.* vol. I, pp. 62 and 63. The same 'goddess of Fertility' is depicted on the gold leaf from the burial mound at Lauriyā-Nandangarh. *C.H.I.* vol. I, Pl. xi, fig. 21.

<sup>3</sup> *Rv.* x, 89-4. Macdonell and Keith, *Vedic Index*, I, p. 362.

<sup>4</sup> *A.S.R.* (1911-12), p. 75, no. 40 and Pl. xxiii, 40.

<sup>5</sup> *Ind. Mus. Cat.* II, p. 286, no. KM. 36.

Harappā (no. 649) exhibiting the goddess with her legs wide apart, as on the plaques referred to, but portrayed upside down with a plant issuing from her womb instead of from her neck. The cult of the *yoni*, as of the *linga*, has long been recognised as pre-Āryan in origin, and examples of it might naturally be expected to occur among the antiquities of Harappā and Mohenjo-daro, which there are the strongest reasons for regarding as pre-Āryan. Whether the pre-Āryan 'goddess of Fertility' afterwards came to be identified with the Vedic Pr̄ithivī and whether it is the latter or the former who is represented on the Taxila ring-stones are questions on which further light is needed.

129. Bm. '21-828; sq. 45·71'; stratum II. Circular ring-stone of purplish brown alabaster, carved on upper face with three concentric bands of cable-moulding, divided one from the other by band of 'cross-and-reel' pattern. Diam. 2·62 in. Round the central hole are three standing figures of a nude goddess, alternating with a foliate design, which we may presume to represent the Indian 'Tree of Life and Fortune' (*kalpa-vriksha* or *kalpa-druma*), so familiar on the carved balustrades and gateways of the Buddhists at Bharhut and Sāñchī. For jewel-like workmanship and exquisite finish this and the following ring-stones are as fine as any specimens of stone-carving in ancient India. Cf. *A.S.R.* (1920), Pl. xvii, 30 and *M.I.C.* vol. I, p. 62. (Pl. 147, b.)

130. Bm. '21-829; sq. 46·71'; stratum II. Fragment of ring-stone similar to preceding, but of quartzite sandstone. Original diam. 4 in. In this example, the inner cross-and-reel band is replaced by a line of elephants, and to the side of the central hole is a conventional mountain with a hand on one side and a hand holding a bow on the other. (Pl. 147, c.)

131. Bm. '24-609; sq. 13·57'; stratum III. Similar to no. 129, but a fragment only, of ferruginous claystone. Length 2·25 in. (Pl. 147, d.)

132. Sk. '27-1,241; Main Street; sq. 229·73'; stratum II. Similar to no. 129, but of slate-stone. Diam. 3·25 in. Round the central hole are four instead of three figures of the 'Nude goddess', alternating with the 'Tree of Life and Fortune'. This specimen, found in stratum II of Sirkap appears to be a survival from the Maurya period. Cf. *M.I.C.* vol. III, Pl. CLIX, nos. 9, 10. (Pl. 147, g.)

### B. *Āyāgapāta tablet.*

133. Only two *āyāgapāta* tablets have been found at Taxila—one of burnt clay (see 'Terracottas', ch. 24, no. 56) and the other of stone. The latter (no. 133) is an insignificant specimen of indurated claystone, 4·5 × 3·5 in., with a circular depression in the middle of the upper face and representations of shells (*śankha*), shield-symbols, swastika, lotuses and fish (*matsya*) round the edges. It was found at Tofkiāñ in Sirsukh (Ss. 15-65), 2 ft. 6 in. below surface, and dates probably from the fourth or fifth century A.D. Cf. *A.S.R.* (1915), p. 22, no. 19 and Pl. XVI, g. (Pl. 146, no. 133.)

### C. Amulets.<sup>1</sup>

134. Bm. '19-2,078; spoil earth. This little amulet (broken) in the form of a *triratna* comes from spoil earth on the Bhir Mound and is referable to the Maurya period. It is 1 in. in length, made of ferruginous claystone and engraved with a spiraliform pattern all over its front surface, the back being plain and flat. Like most Mauryan work, the carving is strikingly neat and precise. (Pl. 142, m.)

135. Sk. '29-3,197, is a claw or tooth amulet of white marble, 2·37 in. long, with a pair of

<sup>1</sup> For a crystal lion, symbolic of the Buddha, which no doubt possessed amuletic properties, see vol. I, p. 245 and Pl. 49, b. It was found in stūpa N 7 at the Dharmarājikā.

cross-holes at the thicker end. It was found in Sirkap (Block A; sq. 19·88'; stratum V) and is referable to the second century B.C. Tiger-claws and teeth have long had a talismanic value in the eyes of Indians, and there is a beautiful example of one from the Bhir Mound made of lead and half-covered with filigree gold. See 'Jewellery', ch. 30, no. 80. (Pl. 142, *l.*)

136. Sk. '16-149; Block A; sq. 20·59'; stratum II. Hexagonal piece of plain rock-crystal quartz (2·12 in. in length), which was evidently regarded as possessing amuletic value. It is bound round with a copper band and doubtless intended to be worn round the neck. Cf. p. 145 *supra*. (Pls. 142, *n*; 147, *f.*)

137. Sk. '29-405; Block C'; sq. 44·87'; stratum III. Similar to the foregoing, but of black basanite instead of rock-crystal (length 1·37 in.). Cf. p. 193 *supra*.

#### CLASS XXIV. *Stones for inlay, incrustation, etc.* (nos. 138, *a-f*, 139)

Most of the stones comprised in this class were found in the store-jar of Parthian date described on pp. 188-9 (Deposit E), the contents of which evidently formed part of a jeweller's stock-in-trade. Some of the stones were used for ornamental inlay work in wood, ivory, etc.; others for the eyes or *urnās* of images.

No. 138, *a-f*. To the former class belong the thin disks of porcelain-agate referred to on pp. 478-9 above. As there explained, these disks vary in diameter from 2 to 3 in., and in thickness from 0·1 to 0·2 in., and are polished only on the upper porcelain-like surface, not on the under-surface, which resembles opaline chalcedony. They come from the top strata of the Bhir Mound and from Sirkap, and are referable to the third and second centuries B.C.<sup>1</sup> Cf. p. 188 *supra*.

In view of the unusual character of this porcelain-agate, hitherto unknown to geology, it is desirable to give here the results of the examination made by Prof. H. B. Baker at the Royal College of Science, South Kensington. An air-dried sample yielded the following analysis:

	%
Silica	98·40
Ferric oxide and alumina	0·99
Lime	0·12
Magnesia	0·05

This corresponds very closely to an analysis of natural quartz, and the microscopic examination made by the Department of Geology points to the same conclusion, though no specimen of quartz has yet been found in a natural state which has the same peculiar arrangement of crystals. Prof. Baker endeavoured to reproduce the material by heating quartz for three months in an electric furnace to about the highest temperature of a furnace which would have been available in early times. This, he says, gave an opalescent material, which, however, was not identical microscopically with the sample of porcelain-agate examined.

The quartz of these disks could not have been fused, since the substance has a specific gravity of 2·64, identical with that of natural quartz, compared with 2·38, the specific gravity of melted quartz. On fusion in the oxyhydrogen flame a fragment first splits like ordinary quartz, and then fuses.

<sup>1</sup> Their reference numbers are: Bm. '19-117 (sq. 12·28'; stratum I); Bm. '21-966 (sq. 34·118'; stratum I); Bm. '21-1,426 (sq. 27·64'; stratum II); Bm. '20-1,403 (sq. 18·26'; stratum II); Sk. '30-22 (sq. 19·87'; stratum VI) and Sk. '19-933 (sq. 59·114'; stratum II; Block D'; deposit E).

Prof. Baker's conclusion, as already indicated, was that the porcelain-agate was a natural substance produced, possibly in a volcanic region, by the long-continued heating of ordinary quartz. Whence it came, however, is not known. Cf. *A.S.R.* (1920-21), pp. 45-6.

139. Other stones that are also used, but at a later date, for the same kind of disks or roundels for inlay and incrusted work, are veined agate, rock-crystal and jade. Most of the specimens of these that we possess come from the jeweller's store-jar found in Deposit E of Block D' (Sk. '19-933, stratum II) and belong to the Parthian period.<sup>1</sup>

Some specimens of the agate pieces are illustrated in Pl. 147, *h, j-m, o, p*. All are plano-convex, the round disks being from 1·37 to 1·62 in. in diameter, the amygdaloid piece 2·62 in. in length. Dating as they do from the first century A.D., these specimens of agate are interesting in connexion with Pliny's description of the *myrrhina vasa*, since they illustrate precisely what he means when he says that some of them contain crystals and depressed spots that look like warts.<sup>2</sup> Of the rock-crystal pieces, one is round (diam. 1·62 in.) and two oval (length 0·93 and 1·37 in. respectively). Since rock-crystal was transparent and colourless, it is probable that silver or gold foil was put at the back of the crystal, just as silver foil was put at the back of carbuncles to enhance their brilliancy. Of jade, only two pieces have been found, both in the jeweller's store-jar. One is a flat lenticular piece with a hole in its middle (diam. 1·75 in.), the other a broken disk (length 1·87 in.).

A much finer kind of inlay is represented by a number of small bits of turquoise cut into various shapes—hearts, commas, crescents, circles, etc. These turquoise pieces also come from the same jeweller's hoard, and were no doubt designed for *cloisonné* jewellery. Cf. for examples, 'Jewellery', ch. 30, nos. 56-8, 137-40, 167-8.

#### CLASS XXV. *Eyes and ūrṇās of images* (nos. 140, *a-c*)

No. 140, *a* is the eye of an image (diam. 1 in.) made of lapis-lazuli inlaid with a circle of shell. It is of the Parthian period and from the same jeweller's hoard as the preceding. Cf. *A.S.R.* (1919), Pl. VIII, 8. (Pls. 142, *p*; 203, *i*.)

Nos. 140, *b* and *c* are spherical ūrṇās of rock-crystal, of which many other examples have been found; the former has a diameter of 1 in., the latter of 0·68 in. Both come from the Dharmarājikā Stūpa, and are probably of the fourth or fifth century A.D. For stone eyes of Greek and Roman images, cf. Dar. et Sag. IV, 1492, fig. 6614. Cf. p. 188, no. 16 *supra*. (Pl. 147, *e, i*.)

#### CLASS XXVI. *Moulds* (nos. 141-52). Cf. 'Terra-cottas', ch. 24, Class XXII; 'Copper and Bronze', ch. 28, Class V

Small moulds for the casting of metal ornaments were in use at Taxila from an early age—at least from the fifth century B.C., but only one example of them (no. 141) has been found in the Bhiṁ Mound.

This is a mould for two pendent beads, cut out of a fine banded grey slate. The rest come from the Sirkap site, and are made of various stones—claystone, limestone, slate, steatite, grey schist and micaceous-schist, the two earliest, which are referable to the Bactrian-Greek period, being of claystone and steatite.

Ten of these Sirkap moulds are for pendants, finger-rings and other small personal ornaments, while two are for the small metal pieces—dots, commas, crescents, lozenges, etc., required in inlay work. The former are found in all the

<sup>1</sup> Cf. also no. 100 *supra*.

<sup>2</sup> Pliny, xxxvii, 7, 8; Schoff, *Periplus*, p. 194.

Sirkap strata from the time of the Bactrian-Greeks onwards; the latter only during the Parthian period, when inlay-work first became fashionable.

141. Bm. '30-1,048; sq. 28·65'; stratum IV. Half of a slate mould engraved with two ball-and-crescent pendants for necklace. Size, 1·43 × 1 × 0·37 in. The slate is a fine blotched grey variety. (Pls. 142, *w*; 147, *q*.)

142. Sk. '29-3,153; Block A'; sq. 15·93'; stratum VI. Part of a claystone mould for a pair of finger-rings; size 2·62 × 1·75 × 0·5 in. One of the rings is adorned with six plain flat bezels; the other with a single bezel and beaded edge. Presumably there were two other pieces belonging to this mould, one for the front with round bosses for the interior of the rings, the other closing up the back. (Pl. 142, *y*.)

143. Sk. '28-270; Block A'; sq. 15·92'; stratum V. Mould of grey-green steatite, engraved with small beaded medallion. Length 1·37 in. The mould is pierced with two holes for adjustment to the other section. (Pl. 142, *x*.)

144. Sk. '29-891; Block A'; sq. 27·88'; stratum III. Similar, of purple-brown sandstone, with crescent, star, 'shield' and other designs engraved on one side. Size 3·75 × 3·25 × 0·87 in. Cf. p. 195 *supra*. (Pl. 142, *r*.)

145. Sk. '26-2,543; Block G; sq. 106·50'; stratum III. Similar, of micaceous schist, with lotus and star ornaments. Size 2·5 × 2 in. Cf. p. 169 *supra*; *A.S.R.* (1926), Pl. XXVIII-13, and p. 118, no. 13. (Pls. 142, *u*; 203, *c*.)

146. Sk. '13-826; Block F; sq. 91·66'; stratum III. Similar, of claystone, for two finger-rings. As in no. 142, the mould appears to have been in three pieces. Size 2·25 × 1·87 in. Cf. p. 166 *supra*. (Pl. 142, *v*.)

147, *a*, *b*. Sk. '19-615, and 616; Block D'; sq. 58·115'; stratum II. Two pieces of limestone mould for a pair of ear-pendants. Size 1·5 × 1·12 in. On the back of *a* is a Kharoshthī inscription: *Ga : Gayalasa* = 'Of Gayala'. On the back of *b* is another Kharoshthī inscription, but it is not legible. Cf. *C.I.I.* vol. II, part I, p. 102, no. 13; p. 190 *supra*. (Pls. 142, *bb*, *cc*; 203, *d*, *e*.)

148. Sk. '19-933/48; Block D'; Deposit E. From jeweller's store-jar. Half of mould of grey schist engraved with figure of *Simha Vahini*(?) riding side-saddle on her vehicle the lion, and holding aloft a sword in her right hand. Length 1·37 in. Cf. *A.S.R.* (1919), Pl. x, 28. For other objects from the same hoard, see vol. I, pp. 188-9, and no. 100 *supra* and footnote. (Pls. 142, *t*; 147, *n*.)

149. Sk. '17-404. Spoil earth. Mould of slate for small medallion, with *nandipada* in centre encircled by beaded border. Size 1·37 × 0·75 in. (Pl. 142, *s*.)

150. Sk. '20-911. Spoil earth. Half of a slate mould for a pair of small ring-pendants. 2·75 × 1·5 in. At the other end of the mould, which is broken, is a remnant of the engraving for two ball beads or pendants. (Pl. 142, *aa*.)

151. Sk. '14-375; Block C'; sq. 51·78'; stratum II. Section of mould of micaceous schist, with heart, dot-and-comma, leaf and other patterns sunk on one side for the casting of metal dies. 4·25 × 1·37 × 0·62 in. Cf. p. 193 *supra*; *A.S.R.* (1914), Pl. XXVII-6, p. 16, no. 3; and for the use to which this and the following moulds were put, see 'Copper and Bronze', ch. 28, Class V, *infra*. (Pls. 142, *z*; 203, *f*.)

152. Sk. '17-65; Block A'; sq. 24·77'; stratum II. Similar to foregoing, of micaceous schist, with devices on all sides. Length 3·25 in. This appears to have been part of a vase rim converted into a matrix. Cf. p. 195 *supra*. (Pls. 142, *dd*; 203, *g*.)

### CLASS XXVII. *Miscellaneous* (nos. 153-65)

153. This is a perfume-holder of agate from the Mahal site in Sirkap and is referable to the Parthian period. (Ml. '23-90; sq. 63·84'; 2 ft. 6 in. below surface.) Its length is 12·75 in., and the long handle is made up of fourteen pieces of agate strung together on a thin iron rod. The

beauty of the polished agate is very striking and well explains why the Romans set such store on the *myrrhina vasa* made of this stone. (Pl. 147, s.)

154. An oblong die of slate with the numbers 1 to 4 shown by small circlets on the four sides, no. 1 being opposite to no. 4 instead of no. 3, as is usual in the dice of this period. Length 2·75 in. Sk. '20-416; Block B'; sq. 31·86'; stratum II. Cf. 'Bone and Ivory', ch. 32, nos. 92-8, and 'Terra-cottas', ch. 24, nos. 122-5; also p. 194 *supra*. (Pl. 142, kk.)

155. Jl. '13-72; Mound C; 5 ft. below surface. Circular stand of green jasper from Janḍīāl, turned on the lathe and highly polished, the workmanship being particularly fine. Diam. 3 in. Probably of the Parthian period, though the findspot would point to a later date. (Pl. 142, ff.)

156. Sk. '30-547; Block C'; sq. 47·94'; stratum VII. Handle of mirror(?) 2·75 in. in length. It is made of dark grey hornblende-schist, and provided at the smaller end with a socket-hole for tenon. Found at a depth of 19 ft. and, unless a stray, is referable to the Bactrian-Greek or Maurya period. (Pl. 142, hh.)

157. Side-piece of a knife-handle, made of black and white hornblende-gneiss, 1·87 in. long. In it are three rivet-holes. Maurya period. Bm. '20-112; sq. 39·25'; stratum II. (Pl. 142, ii.)

158, a, b. Two broken objects of marble, one white, the other grey—the purpose of which is unknown. Both come from the latest stratum in Sirkap and are similar in shape. No. 158, a (Sk. '28-1,461; spoil earth) is 3·12 in. long and furnished with three iron rivets on its underside. The other is 2·25 in. long and has no iron rivets. Sk. '26-1,120; Block J; sq. 146·54'; stratum I. Cf. pp. 171, 182 *supra*. (Pls. 142, jj; 203, h.)

159. Ear-plug of rock-crystal made of two pieces with socket-hole in each. The front part is hexagonal; the back round. Length 0·87 in. The shape is generally similar to a lead ear-plug from the Bulandi Bagh at Patna, of Maurya date. (Pl. 147, r.) Sk. '13-129; Block D; sq. 56·55'; stratum II. (Pl. 142, j.)

160. Ear-reel of rock-crystal. Diam. 1·12 in. Probably suspended from the ear. Pippala '21-189. Debris on north side of monastery.

161. Similar, of yellow jasper. Diam. 1 in. Highly polished. Sk. '27-1,403; Block D'; sq. 63·118'; stratum II. Cf. p. 190 *supra*. (Pl. 142, gg.)

162. Similar, of red jasper with haematite streaks. Diam. 1 in. Length 1·25 in. Sk. '29-1,365; Block 1'; sq. 14·99'; stratum IV.

163. Similar, of yellow riband jasper, polished. Diam. 0·65 in. Bm. '30-378; stratum II.

164. Similar, of banded agate, polished. Diam. 0·87 in. Length 0·62 in. Sk. '13-376; Block F; sq. 93·59'; stratum II. Cf. p. 166 *supra*.

165. Ink-grinder of rock-crystal, square in section, with four heads carved in relief at the four corners. Handle on top broken. Size 0·62 x 0·62 in. Dh. '14-903. B27. 4 ft. below surface. (Pl. 142, ee.)

### CLASS XXVIII. *Weights* (Pl. 203, j)

The weights found at Taxila are more than usually valuable, as they are the first of their kind to be found in sufficient number for us to fix their values with virtual accuracy, as well as the ratios which they bear to one another. These weights are invariably made of a hard stone—granite, hornblende-gneiss, pyroxene, diorite or chert—and are spherical in shape, that being, so far as we know, the usual shape then in vogue in Hindustān and other parts of India. In this respect they differ from the weights in use in prehistoric times, which are usually cubical in form,<sup>1</sup>

<sup>1</sup> Cf. M.I.C. ch. xxix, p. 589.

though, in the case of larger weights, sometimes conical. Why a spherical weight should have been preferred to a cubical or conical one, is not apparent, since it is neither a convenient shape when the weights are being piled together in the scales, nor, on the other hand, would it have stood in the way of dishonesty, if anyone had wished to grind down their weights. Possibly there was some reason with which we are not now acquainted.

Apart from their shape, there is another feature of these stone balls that requires particular notice, because it may have to be taken into account when calculating their original weight. Many of them have a small cylindrical hole drilled into their surface, which was probably made when the weights were being officially checked, and left hollow, if the weight had to be reduced, or filled with lead, if it had to be increased. Some of the balls still retain this lead packing in their cavities; in others the cavities are hollow. We must not, however, take it for granted that the cavity was always hollow, since in the course of the ages, the lead may obviously have decayed or fallen out. Nor, on the other hand, must we take it for granted that any given cavity was necessarily intended to be filled or partly filled. It may have been made, merely to reduce the weight, when the balls were being officially tested, this being the quickest means of achieving that end. In the same way modern iron weights often have circular cavities drilled out of their underside, which are either left hollow or filled with lead according as the weight has to be reduced or increased.

Altogether, some fifty-four spherical weights have been found at Taxila, but of these, two are evidently unfinished and eleven have their edges so rubbed or chipped that it is impossible to draw reliable conclusions from them. The remaining thirty-nine all come from Sirkap, twenty-five from the jeweller's hoard in Block D' (Sk. 933/56);<sup>1</sup> seven from another group (Sk. 729); and three from another (Sk. 225). In discussing them I shall deal first with the series of twenty-five from the jeweller's hoard, since these not only comprise the largest number, but belonging as they did to a jeweller, by whom they would no doubt be used for the weighing of precious metals, they are likely to have been more than usually accurate.

It needs but a glance at the serial figures of these weights given below to perceive that the majority of them fall into a regular binary sequence of ratios. Thus, starting from the last and smallest unit no. 25, which is 51·5 gr. tr., the ratios of the last eighteen are, with one exception, as 1, 2, 4, 8, 16, 32 and 64. The exception is no. 13, which has a weight of 1,075 gr. tr. equivalent to twenty times the smallest unit. Now, eliminating the two weights 16 and 23, which are damaged, and taking the average of the remainder, we find that the unit works out at 52·3 gr. tr. or, allowing for wear and tear, say 53 gr. tr. This is the weight of the standard Indian punch-marked coin known as *kārshāpana*, and also one of the commonest units in the prehistoric weights of the Indus valley. The series of weights, then, should be, 53, 106, 212, 424, 848 (1,060), 1,696, 3,392 gr. tr. It may be that the loss from wear and tear

<sup>1</sup> See vol. I, pp. 188-9.

*Spherical weights from jeweller's hoard in Sirkap (Cf. pp. 188-9.)*

Those marked with an asterisk have a small cavity sunk in their surface.

Sk. 933/56	gr. troy	
I	6,393	—
*2	6,305	Chipped; part of lead filling in cavity
3	6,159	Add 5 gr. for small chip
*4	6,148	—
5	6,110	Add 40 gr. for chip
6	6,030	—
7	5,480	—
*8	64 { 3,362	—
*9	3,354	Some filling preserved
*10	1,686	Ditto
*11	1,671	—
12	1,669	—
13	1,075	—
*14	840	Some filling preserved
*15	16 { 808	—
*16	803	Damaged
17	430	—
*18	8 { 416	—
*19	409	—
20	210	—
*21	208	Some filling preserved
22	4 { 204	—
23	195	Damaged
24	2 109	—
25	1 51.5	—

was somewhat greater than the small allowance of 0·7 gr. tr. made for the smallest unit, but having regard to the heavier weights, it seems unlikely that it could have been much greater; had it been so, the wear and tear in their case would have been excessive. Comparing these calculated figures with the individual weights, we see that, out of the last eighteen items in the series, there are only two whose weight exceeds the figure calculated, viz. nos. 17 and 24, the former being 6 gr. in excess of 424 and the latter 3 gr. in excess of 106. This is a very slight error when we consider the great irregularities in the weights of coins belonging to one and the same issue, and the difficulty of determining exact weights with the kind of scales or other instruments which were then available. Moreover, it is to be noticed that these two are among the weights which have no cavities in them, and it is quite possible, therefore, that they had not passed the official test.

So far, then, the sequence of ratios is clear; but the remaining items of the list, viz. nos. 1-7, offer more difficulty. Taking no. 7 first, it is to be noted that this weight is a particularly well-preserved one, without chip or cavity, and that there is no allowance, therefore, to be made except for ordinary wear and tear, which with a heavy ball such as this may be put down at, say, 20 or 30 gr. The ratio, then, which this weight evidently represents is the 104th in the series, having a calculated weight of 5,512 gr. tr., as compared with the actual weight of 5,480 gr. tr. or 5,510,

if we allow 30 gr. for wear and tear. We shall see presently that we have some smaller weights with the ratio 13, and evidently this weight was intended to be a multiple of those,  $13 \times 8$  equalling 104.

No. 6, with a weight of 6,030 gr. tr. is also a well-preserved weight, without cavity or chip, and the ratio that it represents is the 114th with a calculated weight of 6,042 gr. tr. Nos. 5 and 3 are both chipped, the loss in the former being some 40 gr. and in the latter about 5 gr. Seemingly, therefore, these and no. 4 are to be grouped together, the ratio to which they belong being the 116th, with a calculated weight of 6,148 gr. tr. There remain nos. 1 and 2, with weights, respectively, of 6,393 and 6,305 gr. tr. The second is chipped and has a cavity, which is only half-filled with lead. For this and the chipping an addition of 50 to 60 gr. may be made. This weight, therefore, may be taken to belong to the 120th ratio group with a calculated weight of 6,360 gr. tr. The other, though 33 gr. in excess, probably belongs to the same group.

The whole series, then, of these twenty-five balls from the jeweller's hoard presents the following ratios and weights:

(gr. tr.)	(gr. tr.)	(gr. tr.)
1 = 53	16 = 848	104 = 5,512
2 = 106	20 = 1,060	114 = 6,042
4 = 212	32 = 1,696	116 = 6,148
8 = 424	64 = 3,392	120 = 6,360

The other twelve weights from Sirkap, which are in a good state of preservation, fall into the same scale but give us three more ratios, viz. 11, 13 and 60. They are as follows:

Weight	Ratio	Calculated weight (gr. tr.)
26. Sk. 729, $a = 3,100$	60	3,180
27. Sk. 729, $b = 3,092$	60	3,180
28. Sk. 1,679 = 3,019	60 (?)	3,180
29. Sk. 225, $a = 1,686$	32	1,696
30. Sk. 225, $b = 844$	16	848
31. Sk. 729, $c = 829$	16	848
32. Sk. 729, $d = 671\cdot5$	13	689
33. Sk. 729, $e = 669$	13	689
34. Sk. 729, $f = 555$	11 (?)	583
35. Sk. 376 = 419	8	424
36. Sk. 225, $c = 417$	8	424
37. Sk. 729, $g = 205$	4	212

Nos. 26 and 27 would correspond more closely with the ratio 59, but it seems more likely that the ratio is 60, particularly as we have the ratio 20 in the first series, and that the difference is due to wear and tear. The same remark applies also to no. 28. No. 34, with a weight of 555 gr., might be in a ratio of 10 or 11, but, whereas in the former case we should have to explain away a surplus of more than 25 gr. over the calculated weight, in the latter a shortage of 28 gr. can easily be accounted for by wear and tear.

The remaining ball weights from Taxila, which are too much rubbed or damaged

to be taken into the above calculations, are given below. Like the others, they are made of granite, hornblende-gneiss, pyroxene and diorite.

	(gr. tr.)		(gr. tr.)
38. Sk. 190	52,381	45. Sk. 906	6,486
39. Sk. A 733	19,980	46. Bm. 48	6,384
40. Bm. 618	9,304	47. Bm. 994	6,324
41. Sk. 41	8,306	48. Bm. 29	6,009
42. Bm. 295	8,174	49. Bm. 1,388	3,073
43. Sk. A 731	7,978	50. Bm. 607	2,927
44. Bm. 1,472	7,896		

The above weights show a remarkably close correspondence not only with those of the punch-marked coins (*kārshāpana*) of the early historic period, but also with the prehistoric weights of the third and fourth millennia B.C. found at Mohenjodaro and Harappā. The latter follow a binary system, like those of Taxila, in the smaller weights and then decimal, the succession of weights being in the ratios 1, 2 ( $\frac{1}{3} \times 8$ ), 4, 8, 16, 32, 64, 160, 200, 320, 640, 1,600. The commonest weight, of the ratio 16 in this series, has a mean calculated value of 211.5 gr. tr.,<sup>1</sup> which to all intents is identical with the corresponding weight at Taxila of something under 212 gr. Similarly, the fourth in the Indus series has an average weight of 52.875 gr., which is only one-eighth of a grain different from the mean calculated average of the corresponding weight at Taxila. It is quite evident, therefore, that these weights had come down from an immemorial antiquity in India—and it is natural to find them employed for the silver *kārshāpana* coinage which was current in the third century B.C. throughout the Maurya Empire. The commonest and most widely diffused of these *kārshāpanas* averaged, under the Mauryas, between 51.5 and 52.5 gr., although good specimens exist as high as 54 and as low as 50 gr.<sup>2</sup> It was only in the North-West of India, which had come under Persian influence during the rule of the Achaemenids, that a somewhat heavier *kārshāpana* was used, weighing some 56 gr. or more, the purpose of increasing it to this weight being to equate it with the Persian *sigloi*, two of which would go to three of these heavier *kārshāpanas*.

<sup>1</sup> Cf. Hemmy in ch. xxix of *M.I.C.* p. 596.

<sup>2</sup> John Allan in *B.M. Cat. of Early Indian Coins*, pp. clxi sq. Cf. also Sir W. Elliot, 'Coins of Southern India' (*Int. Numis. Orient.*), p. 49.