SEAL IMPRESSIONS FROM KAHÛN TOWN AND URONARTI FORT

A COMPARISON

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Introduction

THE object of this paper is to present two comparable groups of scarab designs from two excavated sites, Kahûn at the centre of pharaonic culture and Uronarti, one of its southern outposts in a Second Cataract fort. The comparisons demonstrate that the main classes of design, as already selected from scarabs and seals found elsewhere, are present in both places, though the detail differs, and there are clear fluctuations in size. The main classes of design can be used to set a framework for the occupational range of the sites in question, given the fact that both places were lived in during limited periods of time. It is only in Egypt that the course of history is reasonably well assured during the second millennium B.C. through astronomical means, and that there is sufficient inscriptional material to outline the occupational range of sites during a specific series of reigns. This is especially true of the two sites now under consideration at opposite ends of the Nile Valley, and through the scarab impressions from them it may be possible to work out the respective positions in time of scarab-seals found in closed deposits elsewhere. One of the advantages of using only the material from the workmen's town at Kahûn and the southern fort at Uronarti is the fortuitous circumstance that the collection of measurable sealings were originally about equal in number, though even these represent but a fraction of the total number recovered from the sites, many of which were duplicates, broken, or obscure.[1] The balance is not maintained in the illustrations provided on figs. 2–12, because only ten main classes of design have been used in the comparison, and more than one motif of design is often included on the plinth. The background to the problem of using scarabs in addition to pottery in establishing a viable seriation is partially discussed in various papers already published or in the press, particularly in respect of certain basic excavated sites in the Syro-Palestinian field.[2]

[1] 488 illustrations from Kahûn Town, see Petrie, *Kahun, Gurob, and Hawara* (1890), pl. 10—abbreviated hereinafter *KGH*; *Illahun, Kahun, and Gurob* (1891), pls. 9–10—abbreviated *IKG*; Petrie, Brunton, and Murray, *Lahun*, II (1920), pls. 4–5.

489 illustrations from Uronarti. A study of the sealings by G. A. Reisner and N. F. Wheeler was published in *BMFA* 28 (1930), 47 ff., 'The Art of Seal Carving in Egypt in the Middle Kingdom'. A fuller treatment of Reisner's material appeared posthumously in *Kush* 3 (1955), 26 ff. entitled 'Clay Sealings of Dynasty XIII from Uronarti Fort'. In the final account of the Second Cataract Forts, vol. II of *Uronarti Shalfak Mirgissa*, edited by Dows Dunham (Boston, 1967), the illustrations of seal impressions from Uronarti were republished on pp. 65–80 under the same numbers as in *Kush* 3. A few impressions were recovered from Shalfak (pl. 71) and even more at Mirgissa (figs. 9–12).

[2] W. A. Ward, *Egypt and the East Mediterranean World 2200–1900 B.C.* (Beirut, 1971) abbreviated

The Historical Setting

In the first place, it is necessary to consider any evidence which may help to define the inaugural and terminal dates of the two sites in question, based on any documentary information which may have survived, and on actual impressions on cylinder seals, stamps, and scarabs inscribed with royal names.

Kahûn Town. Recent study of the Kahûn papyri undertaken by Mr. C. H. S. Spaull does not provide any further dates to those recorded in them and summarized by F. Ll. Griffith in the original publication.[3] In brief, Griffith thought it doubtful that any fragment of the papyri dates from the reign of the founder of the city, Sesostris II. He noted that in all cases, where the name 'Usertesen' or 'Khakheperre' occurred, the cartouche was followed by the word 'deceased'. Many of the papyri were from the age of Ammenemes III (1842–1797 B.C.); some named the king as 'living', whilst in others his reign was recognizable by the high dates. There was at least one papyrus of the age of Ammenemes IV (1798–1790 B.C.) and dates in the reign of Sobkneferu may also be accepted (1789–1786 B.C.). Of early Thirteenth-Dynasty kings, there were the dates 'year 1' and possibly 'year 2' in the reign of Sekhemrēᶜ-Khutowy, with 'year 2 (?)' and 'year 3' in the reign of Sekhemkarēᶜ.

Turning to the evidence provided by seal impressions, the picture is not dissimilar. Whole or partial cylinders (or sealings) recorded the names of Sesostris I, II, III, and Ammenemes III.[4] It is not surprising that the name of the founder of the Twelfth Dynasty is missing, for there is no sound evidence to prove that scarabs inscribed with his prenomen were issued during his lifetime.[5] In any case, that king was a usurper, who set up a new capital on the borders of Upper and Lower Egypt to consolidate his hold on the Two Lands, and it seems that it was only under his son, Sesostris I, that the scarab industry expanded during his reign of fifty-three years, including a decade of joint rule with his father (1971–1928 B.C.). The prenomen of Sesostris I was invoked on more surviving scarabs than that of any other king, prior to the Thirteenth Dynasty, but there is a curious lack of scarabs bearing the name of his son and successor, Ammenemes II, even though he ruled for less time than his father (1929–1895 B.C.). Impressions of his name are hardly to be expected at Kahûn, since the town was not founded until the reign of his successor, Sesostris II (1897–1878 B.C.), in order to house the Egyptian and foreign workmen who were employed on building the latter's pyramid at Lahûn. The greatest activity on the site should therefore be attributed to his comparatively short reign of twenty years, though it is only reflected in one possible

EEMW; O. Tufnell and W. A. Ward, *Studies on Scarab-seals*, I–II (forthcoming) which will summarize results from preliminary work already published or in the press, e.g. *Syria* 43 (1966), 165–258, 'Relations between Byblos, Egypt and Mesopotamia at the end of the third millennium B.C. A study of the Montet Jar'; *Levant* 5 (1973), 69–82, 'The Middle Bronze Age Scarab-seals from burials on the mound at Megiddo'.

[3] F. Ll. Griffith, *Hieratic Papyri from Kahun and Gurob* (London, 1898), Appendix A, pp. 84 f.

[4] *KGH* pl. 10, 2–11; *Lahun*, II, 201. For scarabs see fig. 12: 437–47.

[5] Certain scarabs named for Seḥetepibrēᶜ in museum collections are generally considered to commemorate a Thirteenth-Dynasty king or kings using the same prenomen; see J. von Beckerath, *Untersuchungen zur politischen Geschichte der Zweiten Zwischenzeit in Ägypten* (Glückstadt, 1964), 36 ff., abbreviated hereinafter *Zweite Zwischenzeit*.

surviving impression bearing his name (fig. 12: 437). More surprising is the fact that no papyri can be positively identified as dating from the reign of Sesostris III, though there are cylinder seals (or impressions) bearing his name, at least once alongside that of his son, Ammenemes III. Many documents were definitely written in the latter's reign, who is represented among scarab impressions by five measurable pieces (fig. 12: 438–42). The tally of royal names recorded on the papyri is extended by a scarab or impression naming Neferḥotep (*c.* 1740–1730 B.C.). which completes the series at Kahûn (fig. 12: 444).

Uronarti Fort. Sesostris III built the island fort of Uronarti, north of Semna in the region of the Second Cataract, in his sixteenth year, when he also set up temple endowments (*c.* 1862 B.C.). The clay sealings were found in the floor debris of the inner fort, where presumably the archives were stored, and the excavator, G. A. Reisner, noted that they were of special importance because they covered only a short space of time. In his opinion the collection dated from the early part of the Thirteenth Dynasty in the reign of the 'first king the Horus Khabauw, that is Sekhemra-khuwtauwy' and of his near successors, 'the Horus Deduwy-kheperew and Merytauwy (?)'.[6] Neither of these last two kings is well known, and there is doubt as to the exact position of 'Sekhemra-khuwtauwy' in the sequence of Thirteenth-Dynasty kings.[7] Reisner considered that the seals which appear to bear the name of Sesostris III were not royal seals of that king, but were the official seals of the temple endowments founded by him, and renewed by Tuthmosis III in the Eighteenth Dynasty, but he was convinced that the seals were not of the latter period.[8] Except for 'ten memorial objects of plastered wood inscribed with dates of the reign of Amenemhat III', he found nothing datable to the Twelfth Dynasty.[9]

However, quite apart from the endowment sealings, a closer look at the details of design does support a date or dates much nearer to the historic foundation of the fort. There is at least one fragmentary sealing naming Sesostris II in a round-hook scroll border (*Uronarti*, 65: 13). Among symmetric designs, motifs are employed which are characteristic of the reign of Ammenemes III, in particular *red crowns confronted*, associated with scarabs bearing his name.[10] According to the occurrence of royal names in the collection, the deposition of archives in the fort is extended into the Fifteenth Dynasty by the impression of scarabs in typical style (so far unrecognized) of Mayibrēʿ, often identified with Sheshi, a king or kings, whose scarabs are more numerous than any others of the period (fig. 12: 446). The currently accepted date for the beginning of the Fifteenth Dynasty is *c.* 1674 B.C., which would give the collection a time-span of nearly two centuries in all, say in round figures from 1860 to 1670 B.C.[11]

[6] The seals of the three kings were found in the same deposit. Reisner considered that they were not impressions of a cylinder seal, but of a long rectangular stamp. The impressions, with those of a squared shape having a curved top or base are assembled in *Kush* 3, 53, fig. 1, and also in *Uronarti*, 64, but they are not classified or reproduced in the present study.

[7] *Zweite Zwischenzeit*, 222, Thirteenth Dynasty, 3 or 16.

[8] *Kush* 3, 37 f.

[9] Ibid. 26.

[10] H. R. Hall, *Catalogue of Egyptian Scarabs etc. in the British Museum*, 1; *Royal Scarabs* (London, 1913), nos. 141–2 = B.M. 37655 and 3931.

[11] Von Beckerath's dates will be used in this discussion, differing only slightly from those of W. C. Hayes in *CAH*, rev. edn. (1962).

The comparison

As far as we can tell, the collections from Kahûn Town and Uronarti Fort cover between them a period of about 220 years. Kahûn certainly had 35 years' start, and Uronarti lingered on for more than half a century after the desertion of the workmen's town. Both places were especially active between say 1862 and 1785 B.C., and correspondence between officials at all government centres was undoubtedly heavy and sustained. In anticipation of the full result of this inquiry, it can be said that the Kahûn collection shows best affinity with the scarab contents of Tomb 66 at Ruweise,[12] whereas the Uronarti sealings fit in closely with the graph for Jericho Groups IV–V and for the same criterion established for certain graves and the general collections found by Griffith and Petrie many years ago.[13] Thus the two collections from Kahûn Town and Uronarti Fort will take their place in the final analysis as historical markers in the development of the scarab industry as a whole (fig. 1).

Seal impressions

Dimensions. The clay seal impressions only provide two measurements, length and breadth, but they are sufficient to place each design in relation to others of the same kind in different collections. When only a small portion of the sealing is missing, then the estimated size is prefixed by a query. It will be appreciated that the fragmentary nature of most of the material does not permit of this precision, and at the end of each section which follows, an attempt will be made to estimate whether the indications of quantity established by measurable impressions is borne out by the numerous fragments. It is important to confirm in this way which motifs and designs are completely missing at Kahûn and Uronarti. In passing, it should be noted that some of the drawings published in *KGH*, pl. 10, actually represent scarabs and have been seen in Manchester, but as it is uncertain how many more there may be, all are treated as impressions only in this survey.[14]

Design class 1, *Linear patterns*, so characteristic of the First Intermediate period in Egypt, are rare at Kahûn and Uronarti.[15] Both *maze* and *geometric* patterns are missing (1A–B) and there are no true representatives of the stick-like human figure (1C).[16] Animals and insects executed in linear style (1D) may be represented by hedgehogs opposed,[17] the only case that I know of when the animal appears on the plinth, though attractive hedgehog-backed seals do occur.[18] Among floral elements (1E), the three-stem papyrus plant is very common at both sites, but in each case the average length is less than that at Jericho, the site which provides the nucleus of the basic excavated series, founded on the division of the pottery from Middle Bronze Age tombs into five

[12] *Berytus*, forthcoming.

[13] E. Naville, *Mound of the Jew and the City of Onias* and F. Ll. Griffith, *Antiquities of Tell el-Yahûdîyeh* (London, 1890), pl. 10; W. M. F. Petrie, *Hyksos and Israelite Cities*, double vol. (London, 1906), pls. 6–9.

[14] Manchester University Museum, nos. 170a–j, see *KGH* pl. 10, nos. 40, 44, 46, 47, 53–5, 58, and 71.

[15] *Syria* 43, 181.

[16] The determinative for 'child', *ḥrd*, appears on three impressions from Uronarti, but in those cases it should be interpreted as a hieroglyphic sign.

[17] *Uronarti*, 76: 349.

[18] e.g. Petrie, *Ancient Gaza* 1 (London, 1931), pl. 13: 14, Level II Rm. Y.

groups, established by Dame Kathleen Kenyon.[19] Items with one, two, or four stems are missing or rare among fragments at Kahûn,[20] though there are measurable pieces at Uronarti.

Design class 2, *Scrolls and spirals*. Well developed on scarabs in the Montet Jar,[21] Z-, S-, and C-scrolls (2A) are surprisingly rare at Jericho, occurring only in single examples in Group I–IV and on two pieces in Group V. These deficiencies are made up at Kahûn and Uronarti, where the details are more elaborate (fig. 3: 58–116). At Fara and ʿAjjul, the design is proportionately rare. The same situation applies to the *round interlocking spiral with ends* (2B1), completely missing from Jericho Groups I–II and represented in Groups III–IV by scarabs with a larger average length than those at Kahûn and Uronarti (fig. 3: 117–57). A similar result is obtained from the *round interlocking spiral, unending* (2B2) in Groups III–V at Jericho, in relation to Kahûn and Uronarti (fig. 4: 158–221). Fragments of all these varieties are illustrated in the original publications.

Design class 3, *Egyptian signs and symbols*. In this, the largest class of designs, many further divisions are necessary. Monograms and varia (3A) include two important symbols already established in First-Intermediate-Period contexts. *The Sign of Union, the full* smȝ (3A1) is, however, missing in the Montet Jar. Based on the temporal unity of the Two Lands, that situation could have obtained in Ward's Period 3 of the First Intermediate Period, and also in the early decades of the Twelfth Dynasty. Four examples from Jericho, attributed to Group II,[22] come from late tombs in the group, and stand after the average lengths calculated for Kahûn and Uronarti (fig. 4: 222–37). Nbty *and plant* monograms (3A2) were a large class in the First Intermediate Period, and are just present in the Montet Jar and at Ruweise.[23] The design is missing at Jericho, but present at Kahûn, with one solitary example at Uronarti (fig. 4: 238–44) and there are only derivatives of the original pattern at ʿAjjul and Fara.

Varia (3A3) denotes designs in symmetric fashion composed of Egyptian hieroglyphic signs which have not been classified. To include every permutation would seriously overburden *Studies on Scarab-seals* and it might be even more difficult to distinguish the wood from the trees. These unclassified designs have not been singled out or illustrated as far as the Kahûn and Uronarti collections are concerned.

Horus hawk, with ntr *and other signs* (3A4), introduced at Ruweise, is most prominent at Megiddo, and occurs throughout the Jericho sequence,[24] but there is no trace of the design at Kahûn or Uronarti. The absence of this design at the sites now

[19] K. M. Kenyon, *Jericho I. The Tombs excavated in 1952–4*, 263–518; *Jericho II. The tombs excavated in 1955–8*, 167–478—hereinafter abbreviated *JT* I and II. The scarabs are discussed by D. Kirkbride in vol. II, Appendix E, pp. 580–655.

[20] The only significant piece in the collection is fig. 2: 3, which appears identical with scarabs from Tell el-ʿAjjul, Level II, Rm. Q, datable to the reign of Auserrē ʿApophis (*AG* I, pl. 13, 6–7). Otherwise, there is no indication that the workmen's town was still in occupation so late.

[21] *Syria*, 43, 181 f.

[22] *JT* II, fig. 286: 3, 11; 282: 3 and 285: 5; the first two at 15–16 mm. and the last two both at 19 mm.

[23] *Syria*, 43, fig. 2: 24–5; *Berytus*, forthcoming, 'Ruweise, near Sidon Tomb 66'.

[24] Ibid. fig. 1: 18–19; *Levant* 5, 75 ff.; *JT* II, fig. 282: 5–7, Group I Tomb B 48, and *passim*.

under consideration may prove to have regional or more probably chronological significance.

Symmetric patterns (3B) consist of Egyptian hieroglyphic signs and symbols arranged in pairs on either side of a central group or theme. The concept seems to be rare in First-Intermediate contexts in Egypt, but it occurs at Ruweise, and is paramount at Megiddo and Jericho.[25] The difference in motifs between these sites and Kahûn and Uronarti is very marked. *Cobras* in various positions (3B1a–d) are missing or reduced to single items (fig. 5: 245–7); the combination *King of Upper and Lower Egypt* (3B2) is absent, as it was also at Ruweise and in graves on the mound at Megiddo. Red crowns (3B3) concentrate more on positions which were rare at the earlier sites, in particular *red crowns addorsed on* nb and *red crowns confronted* (3B3a and 3B3c) (fig. 5: 248–50, 256–63), details of which appear on seals and scarabs naming Sesostris II and Ammenemes III.[26] Motifs *Horus eyes* (3B4), sedge plant (3B5), and forepart of lion (3B7) are well represented at both sites, but *GOLD-sign* (nbw) *in longitudinal setting* (3B6), is more popular at Uronarti, where all the motifs achieve a greater average length than at Kahûn (fig. 6: 268–306).

It is noteworthy that the so-called 'an-ra' style *formulae* (3C), composed almost entirely of low broad signs chosen from Egyptian hieroglyphic writing is missing at Kahûn and Uronarti. It remains to be seen whether the absence of this style, much identified with Hyksos rulers, has a regional or chronological significance. Meanwhile, it should be borne in mind that, as far as I know, there is only a scarab and a plaque on which such signs are associated with a royal name, that of Sesostris III.[27]

Cartouches (3D) on cylinder seals commemorate Sesostris I, II, III, and Ammenemes III at Kahûn, where the reign of Ammenemes II is ignored. The same site produced a scarab or impressions with the prenomen of Neferḥotep placed within a cartouche.[28] The squared seal, with curved top or base, seems to replace the cylinder at Uronarti.[29] For scarabs bearing a cartouche, with or without royal names, see fig. 6: 301, 307–12, and fig. 12: 441, 444, 445–7.

Panels (3E). In keeping with the lack of formulae at Kahûn and Uronarti, the arrangement of groups of signs divided into vertical panels is missing, unless the solitary example naming Mayibrēᶜ, midway between a cartouche and a panel, should be included in the latter category (fig. 12: 446).

Design class 4, *Concentric circles*, arranged in various ways, were most popular in the Montet Jar,[30] and from other instances it can be shown that the dotted circle, once thought to be exclusive to the Second Intermediate Period, also had a place in the Middle-Kingdom repertory: the tradition is maintained at Ruweise and Megiddo with the same variants beginning at Jericho in Group II.[31]

Design class 5, *Cross pattern*, is rare before the period of the Montet Jar, which

[25] *Berytus*, forthcoming; *Levant* 5, 76. [26] See note 10, p. 69.
[27] R. Weill, *Fin du Moyen Empire Egyptien* (Paris, 1918), 250; Oriental Institute, Chicago, no. 18438 (unpublished). [28] *KGH* pl. 10: 2, 3, 10, 11–15. [29] *Kush* 3, 53; *Uronarti*, 64.
[30] *Syria* 43, 183 ff.
[31] *Berytus*, forthcoming; *Levant* 5, 75.

contains four examples.[32] The design occurs at Ruweise;[33] it is somewhat rare at Megiddo, where two pieces can be assigned to Müller's Strata XII–XI = Kenyon's Group MB II ph. B, with two more attributed to Strata XI–IX = Kenyon's MB II ph. E–G.[34] At Jericho, Miss Kirkbride commented that the design 'is at its most popular in Group II and ceases completely after Group III'.[35] Versions of the cross pattern becoming almost a rosette at Kahûn and Uronarti are clearly distinguishable from all those to be seen in the excavated series (fig. 7: 323–37).

Design class 6, *Coiled and 'woven' patterns.* Only the first two versions of this complex design occurred in First-Intermediate material, with three out of four pieces found in the Montet Jar.[36] At Megiddo, the emphasis lay on more involved designs, mostly found in burials attributed to the later phases E–G of the cemetery on the mound.[37] All variants of the design are present at Jericho, though they are by no means common. On the whole, it can be said that these designs are in short supply at Kahûn and appear more frequently at Uronarti (fig. 8: 338–72; fig. 9: 373–7).

Design class 7, *Scroll borders.* Contrary to previous information, Ward will show that the scroll border dates back to Periods 2 and 3 of his First Intermediate Period, though there are only three well-dated examples.[38] Despite the fact that there are none in the Montet Jar, he is now able to show new material from Lisht which suggests that scroll borders were in use from the early years of the Twelfth Dynasty.[39] This is supported at Megiddo, where an example of the continuous-hook scroll border (7A) and several examples of paired scrolls (7B) occur in Müller's Strata XII–X equal to Kenyon's MB II ph. A–D.[40] As far as Kahûn is concerned there are few measurable impressions of scroll borders, though one piece encloses the prenomen of Ammenemes III—7A2b (fig. 12: 439). Other examples are inscribed with the names of officials (7B3b), and it is worth noting a small difference between the scroll borders of earlier sites where the scrolls themselves are nearly always hooked into the opposing convolution, though at Kahûn and Uronarti they are often completely joined and unbroken (fig. 10: 398–413). The change may indicate some small improvement in the lapidary's craft. The absence of yet another variety of paired scroll border, where the loop at top or bottom is omitted (7C) is conspicuous at Megiddo, and is limited at Jericho to one significant design occurring at the junction of Groups III and IV.[41] It indicates that room has to be found at about this point in the Jericho sequence for the insertion of other open-ended scrolls, many of which enclose the names of Fifteenth-Dynasty kings. The scarcity of such designs at Kahûn and Uronarti suggests that neither site was much occupied during the latter part of the reign of Mayibrēʿ Sheshi or his successors (fig. 10: 415–17).

Design class 8, *Rope borders.* In imitation of the rope, perhaps, enclosing the oblong of a well-drawn cartouche, the design on scarabs does not seem to predate the Twelfth Dynasty.[42] Indeed, it cannot yet be shown that it is found on any scarabs naming

[32] *Syria* 43, 185. In *StSc* 1 it will be seen that nos. 60, 61, 63, 64, 66, 67, 69, and 70 in the Jar have now been transferred to other classes.
[33] *Berytus*, forthcoming.
[34] *Levant* 5, 75.
[35] *JT* II, 586.
[36] *Syria* 43, nos. 63, 67, and 69.
[37] *Levant* 5, 75.
[38] Ibid. 77, and *StSc* 1.
[39] *EEMW*, 116–18.
[40] *Levant* 5, 77–8.
[41] *JT* II, fig. 294: 8 Group IV Tomb J 45(4) 7B2b+8B.
[42] Gardiner, *Egn. Gr.*[3] 74.

Sesostris I or Ammenemes II, though there is an isolated example for Sesostris II at 23 mm. The border is, however, common on scarabs naming Sesostris III between 12 and 16 mm., and there is a single scarab for Ammenemes III at 17 mm.[43] In the excavated series, rope borders form an outer finish to scroll borders at Jericho, and are also seen as the only decoration on scarabs of Group II, at an average length of 20 mm. At Megiddo, four examples cover the whole range of the pottery phases, but the average lengths of the items concerned tend towards those of Sesostris III.[44] At Kahûn, rope borders—barred—(8B) were found in three measurable pieces (fig. 11; 418, 422, and 428) but at Uronarti (8AA—twin strands, twisted) take over at greater lengths, mostly inscribed with official names and titles (fig. 11: 423–7).

Design class 9, *Animals*. Representations of animals filling most of the space on the plinth are confined at Kahûn to a couple of lions, one *rampant* and unique in its pose, the other *couchant*, both at 21 mm. (fig. 11: 430–1). Four sealings representing the hippopotamus goddess Taurt (most crudely executed) might be included under this heading, but as this deity of child-birth is not represented among the designs in the Syro–Palestinian field, as far as I know, it is sufficient to refer to the original publication, and to First-Intermediate comparisons from Middle Egypt.[45]

It will be shown in *StSc.* II that figures of animals taking up most of the field, usually deeply cut and often hatched or cross-hatched on the body, only begin at Jericho in pottery Group III.[46] Prior to that point in time there are some off-beat representations of animals at Megiddo, already discussed, as well as conventional pieces for which there are parallels at Jericho in Groups IV–V.[47] The scarcity of animal designs at Kahûn and Uronarti may have a regional and/or a chronological part to play in the final analysis.

Design class 10, *Human and mythical figures*. Apart from a few 'stick-like' human figures, which are interpreted as the hieroglyphic determinative for 'child',[48] standing and kneeling figures are missing at Kahûn; the situation is little better at Uronarti, where two measurable impressions were found of kneeling figures with human heads (fig. 11: 432–3). For the *hez* vase held by the second figure there are parallels in the First Intermediate Period, and also on the base of a figurine found in the Montet Jar.[49] No hawk-headed deities or other zoomorphic gods are represented at either site. There are, however, five representations of the Hathor symbol (fig. 11: 434–6 A–C) already reproduced on scarabs in First-Intermediate times, drawn in some detail, and occasionally stylized to an almost unrecognizable degree.[50] The Kahûn and Uronarti symbols are drawn differently from any pieces found in the excavated series.

[43] Sesostris II—Cambridge, Lib. of Egyptology no. 2; Sesostris III—e.g. Petrie, *Scarabs and Cylinders* (London, 1917), pl. 13, 12. 5. 5–6; Ammenemes III—Hall, *Catalogue* no. 147 = B.M. 24128.

[44] *Levant* 5, nos. 26, 7, 50, and 85.

[45] *Uronarti*, 79, nos. 420–3, but an example is listed among scarabs in the Nat. Museum of Lebanon (F. 756).

[46] One notable exception exists in the scarab depicting antelopes *tête bêche*, which carries on an earlier tradition in design; cf. *Syria* 43, no. 5, references on p. 229.

[47] *Levant* 5, 79.

[48] Gardiner, *Egn. Gr.*, 443, Sign-list A 17; see above, n. 16.

[49] *StSc.* 1; *Syria* 43, 190, fig. 4: 100.

[50] *StSc.* 1.

Design class 11, *Names and titles.* The evidence provided by the royal names found on impressions at Kahûn and Uronarti (11A) was discussed above.[51] Both sites produced a useful collection of private-name and title impressions (fig. 12: 448–91), for the readings of which reference should be made to Dr. G. T. Martin's catalogue.[52] In this survey the emphasis lies on the ancillary designs, which may be summarized as follows:[53]

Kahûn Town			*Uronarti Fort*		
Total	*Average length mm.*	*Design*	*Total*	*Average length mm.*	*Design*
			1	25	7A1a
			2	19·5	7A2b
			6	20·1	7B3a
2	19·5	7B3b	6	21·1	7B3b
			1	21·0	7B4a
			1	18·0	7C3b
1	12·0	8A	1	21	8A
1	17·0	8AA	4	21·7	8AA
1	?22·0	8B	0	—	8B

The relationship of these lengths to the royal-name series must await the final study.

Finally, there are certain impressions which have been doubtfully identified as containing the elements of a royal name (11C). Both Kahûn and Uronarti provide specimens and there are several others all inscribed with two signs, *nfr rēʿ*. One of those from Jericho places the signs in a cartouche (3D2), with the combination of sedge plant and bee above, denoting the title 'King of Upper and Lower Egypt' (3B2). Even with these attributes of royalty, it is considered doubtful that these scarabs commemorate an actual ruler; at present it seems more likely that a good-wish motto is intended. However, they are singled out in the collections from the two sites now under review in case more information comes to light at some later time. The measurable examples (fig. 12: 492–6) are augmented by many fragments from the earlier site, see also certain items not reproduced on fig. 12 (fig. 6: 307–12). There are also two scarabs which may name Djedneferrēʿ; in the first case the signs are transposed (fig. 6: 304, fig. 10: 416).

Illustrations (Figs. 1–12)

The illustrations provided by Petrie and his staff at Kahûn, and by Reisner and members of his expedition and publication team must represent in themselves a considerable total of man-hours, and if I have used their careful work without due acknowledgement to each one individually, I feel that they would have been the first

[51] pp. 68 f.

[52] G. T. Martin, *Egyptian administrative and private-name seals* (Oxford, 1971).

[53] Items 408, 409 entered under 7B3b were omitted in error under the illustrations 11B and the same applies to 417. They are included in the averages.

to agree that the greatest amount of information possible should be extracted from their meticulous task.

The mere selection and arrangement of the drawings was also exacting and time-consuming, and I am extremely grateful to Mr. R. N. L. B. Hubbard for the successful completion of this assignment. Part of the cost of preparing the illustrations will be covered by a grant from the Wainwright Fund, which is also gratefully acknowledged.

The graph (fig. 1) was drawn by Miss Alison Urwick. It summarizes the results as far as Design classes 1–10 are concerned, and in due course other graphs and statistics will appear summarizing the conclusions from closed deposits elsewhere, with a view to establishing a relative sequence throughout the period under review.

The lists which identify the illustrations need some explanation. When more than one motif occurs on a single scarab, it is repeated under the appropriate class of design, with one important exception. Class 3B *symmetric patterns*, is too large to allow for this treatment, and it would be unhelpful to repeat the drawing for every pair of signs. In this case, therefore, illustrations are limited to one occurrence, usually when it first appears in the sequence. Subsequent occurrences are noted in the lists, placed according to size, and preceded by the number of the illustrated example placed within diagonals. In the last column class numbers in bolder type indicate where the illustration can be found.

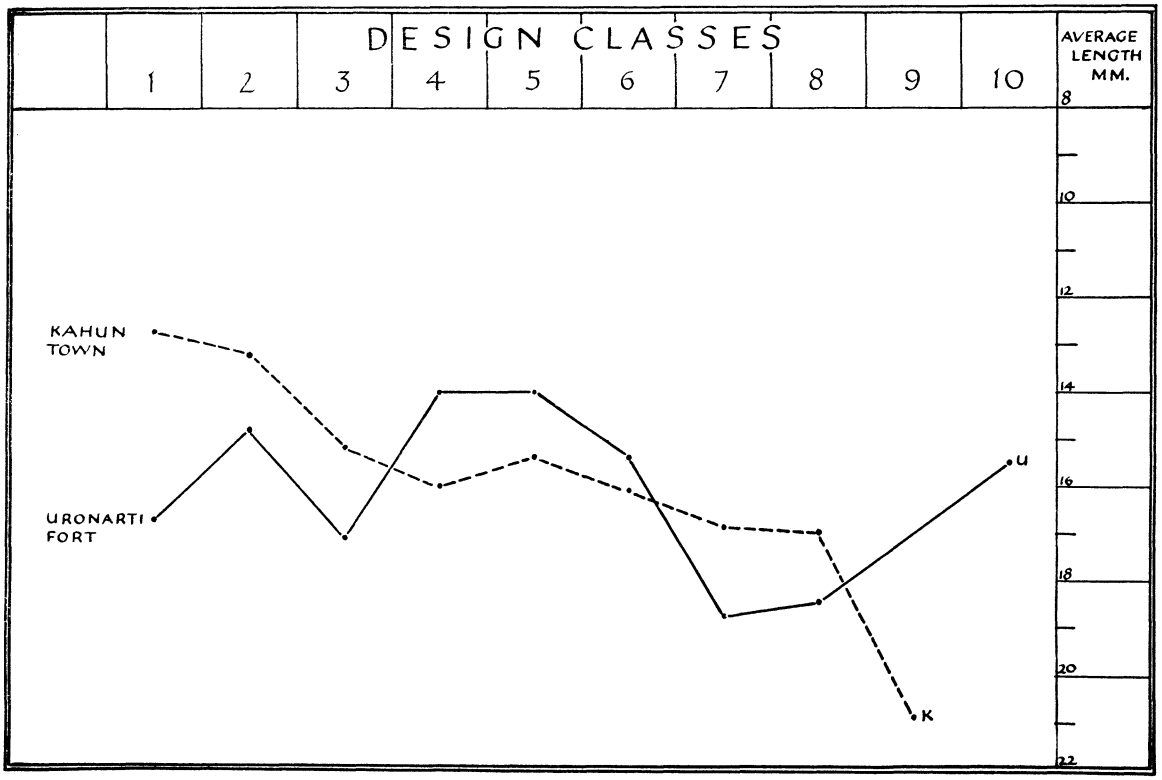

FIG. 1

CLASSES OF DESIGN

1. Linear Patterns

1E1: *floral motif, one stem*

KAHÛN TOWN				URONARTI FORT			
Sealing number	Dimensions mm.	Publication	Designs	Sealing number	Dimensions mm.	Publication	Designs
1	8×5	*Lah.* II 258		6	12×7	*Uro.*[54] p. 69: 110	
2	9×7	*Lah.* II 260	+2A	7	14×9	*Uro.* p. 73: 234	+3B3a +3B3e
3	10×6	*Lah.* II 291	+**nb**	8	15×10	*Uro.* p. 72: 211	
4	14×10	*IKG* 80	+3B1a +3B7	9	15×10	*Uro.* p. 73: 246	
5	14×10	*Lah.* II 307		10	15×10	*Uro.* p. 73: 230	
				11	16×10	*Uro.* p. 72: 219	+2A
				12	17×11	*Uro.* p. 72: 212	
				13	17×11	*Uro.* p. 73: 245	
				14	17×12	*Uro.* p. 73: 247	
Total = 5	Average length = 11 mm.			Total = 9	Average length = 15·3 mm.		

1E2: *floral motif, two stems*

	Nil			15	13×9	*Uro.* p. 76: 350	
				16	14×9	*Uro.* p. 76: 329	
				17	15×10	*Uro.* p. 69: 106	+2B1
				18	16×10	*Uro.* p. 76: 347	
				19	19×14	*Uro.* p. 76: 346	+8B
				20	22×15	*Uro.* p. 72: 217	
				21	23×18	*Uro.* p. 72: 216	
				Total = 7	Average length = 17·4 mm.		

1E3: *floral motif, three stems*

22	11×7	*Lah.* II 341		32	?12×8	*Uro.* p. 75: 311	
23	12×9	*Lah.* II 340		33	13×9	*Uro.* p. 73: 249	
24	14×10	*Lah.* II 339		34	13×9	*Uro.* p. 73: 248	
25	14×10	*Lah.* II 338		35	14×9	*Uro.* p. 75: 290	+**nb**
26	?14×10	*KGH* 43		36	14×9	*Uro.* p. 76: 343	
27	15×13	*KGH* 49		37	14×10	*Uro.* p. 70: 124	+2B2
28	16×10	*KGH* 36		38	15×10	*Uro.* p. 76: 320	
29	16×11	*Lah.* II 276	+3B3a +**3B7**	39	15×10	*Uro.* p. 76: 328	+2B2
				40	15×10	*Uro.* p. 72: 214	
30	16×11	*Lah.* II 337		41	15×10	*Uro.* p. 74: 261	+3B6
31	?17×11	*Lah.* II 268	+**3B3b** +3Bb7	42	15×10	*Uro.* p. 76: 348	
				43	16×10	*Uro.* p. 70: 123	+2B2
				44	16×10	*Uro.* p, 76: 344	
				45	16×11	*Uro.* p. 75: 294	+**nb**
				46	17×11	*Uro.* p. 76: 345	
				47	17×11	*Uro.* p. 76: 317	+6A
				48	?17×12	*Uro.* p. 75: 314	
				49	18×13	*Uro.* p. 75: 312	
				50	19×14	*Uro.* p. 74: 264	+3B6
				51	22×15	*Uro.* p. 74: 265	+3B6
				52	22×16	*Uro.* p. 72: 218	

[54] Dows Dunham, ed. *Uronarti Shalfak Mirgissa*, II (Boston, 1967).

1E3: *floral motif, three stems* (cont.)

KAHÛN TOWN				URONARTI FORT			
Sealing number	Dimensions mm.	Publication	Designs	Sealing number	Dimensions mm.	Publication	Designs
				53	22×16	*Uro.* p. 74: 268	+3B6
				54	23×16	*Uro.* p. 78: 395	+3A1 +3B3b +3B4 +3B7
				55	24×15	*Uro.* p. 73: 251	
				56	26×16	*Uro.* p. 76: 316	
				57	27×17	*Uro.* p. 73: 250	
Total = 10	Average length = 14·5 mm.			Total = 26	Average length = 17·5 mm.		

2. Scrolls and Spirals

2A: *Z-, S-, C-scrolls*

58	9×6	*Lah.* II 260	+1E1	79	11×7	*Uro.* p. 72: 207	+5
59	9×6	*Lah.* II 400		80	12×7	*Uro.* p. 77: 353	+3B3a +3B3e
60	10×7	*Lah.* II 286	+3B3e	81	12×8	*Uro.* p. 68: 85	+2B1
61	10×8	*Lah.* II 408		82	12×8	*Uro.* p. 68: 87	
62	11×7	*Lah.* II 369		83	12×8	*Uro.* p. 68: 88	+2B1
63	11×8	*Lah.* II 333	+3A1	84	12×9	*Uro.* p. 72: 206	+5
64	11×8	*Lah.* II 401		85	13×9	*Uro.* p. 69: 105	
65	11×8	*Lah.* II 368		86	13×9	*Uro.* p. 71: 168	
66	11×8	*KGH* 54		87	13×9	*Uro.* p. 73: 226	
67	12×10	*Lah.* II 356		88	13×9	*Uro.* p. 73: 227	
68	?13×10	*Lah.* II 367		89	13×10	*Uro.* p. 73: 252	+3B6
69	14×8	*Lah.* II 349		90	14×9	*Uro.* p. 69: 103	
70	14×9	*KGH* 44		91	14×9	*Uro.* p. 74: 273	+3A1
71	14×11	*IKG* 151		92	14×9	*Uro.* p. 70: 137	+6A
72	15×10	*Lah.* II 364		93	14×9	*Uro.* p. 68: 84	
73	15×11	*Lah.* II 399		94	14×9	*Uro.* p. 72: 202	+5
74	15×12	*IKG* 149		95	14×9	*Uro.* p. 69: 101	
75	15×12	*IKG* 175	+6A	96	14×9	*Uro.* p. 69: 100	
76	16×9	*Lah.* II 347		97	14×9	*Uro.* p. 68: 89	
77	16×11	*IKG* 37	+3A1	98	14×9	*Uro.* p. 70: 129	
78	17×11	*Lah.* II 348	+3B4	99	14×9	*Uro.* p. 72: 204	+5
				100	15×9	*Uro.* p. 72: 205	+5
				101	15×10	*Uro.* p. 73: 228	
				102	15×10	*Uro.* p. 71: 164	
				103	15×10	*Uro.* p. 69: 102	
				104	15×10	*Uro.* p. 71: 163	
				105	16×10	*Uro.* p. 68: 86	
				106	16×10	*Uro.* p. 68: 90	
				107	16×10	*Uro.* p. 70: 138	+6A
				107A	16×10	*Uro.* p. 72: 219	+1E1
				108	16×11	*Uro.* p. 71: 165	
				109	17×11	*Uro.* p. 74: 283	+3A1
				110	17×12	*Uro.* p. 70: 128	
				111	17×12	*Uro.* p. 72: 203	+5
				112	17×13	*Uro.* p. 69: 94	+2B2
				113	18×12	*Uro.* p. 80: 448	
				114	18×13	*Uro.* p. 70: 136	+6A
				115	20×12	*Uro.* p. 65: 1	+3D2 +11A
				116	20×12	*Uro.* p. 65: 8	+11B
Total = 21	Average length = 12·3 mm.			Total = 39	Average length = 14·3 mm.		

2B1: *round, interlocking spirals. 1. with ends*

KAHÛN TOWN

Sealing number	Dimensions mm.	Publication	Designs
117	10×8	*Lah.* II 321	
118	11×8	*Lah.* II 402	
119	12×8	*Lah.* II 394	
120	12×8	*Lah.* II 386	
121	13×9	*KGH* 51	
122	13×9	*Lah.* II 391	
123	13×10	*Lah.* II 366	
124	14×10	*KGH* 50	
125	15×11	*IKG* 171	
126	15×11	*KGH* 40	
127	16×11	*KGH* 41	
128	16×12	*Lah.* II 355	
129	17×11	*IKG* 146	
130	18×12	*KGH* 17	
131	18×14	*Lah.* II 378	
132	19×11	*KGH* 28	
133	20×15	*IKG* 150	
134	22×15	*Lah.* II 375	

Total = 18 Average length = 15·2 mm.

URONARTI FORT

Sealing number	Dimensions mm.	Publication	Designs
135	11×7	*Uro.* p. 67: 57	
136	12×8	*Uro.* p. 68: 88	+2A
137	12×8	*Uro.* p. 68: 85	+2A
138	12×8	*Uro.* p. 67: 58	
139	12×8	*Uro.* p. 67: 59	
140	12×8	*Uro.* p. 67: 60	
141	13×8	*Uro.* p. 69: 112	
142	13×9	*Uro.* p. 69: 97	
143	13×10	*Uro.* p. 68: 77	
144	14×9	*Uro.* p. 69: 113	
145	14×9	*Uro.* p. 68: 78	
146	14×9	*Uro.* p. 68: 81	
147	15×10	*Uro.* p. 69: 106	+1E2
148	15×11	*Uro.* p. 67: 53	
149	15×11	*Uro.* p. 68: 67	
150	16×11	*Uro.* p. 69: 108	
151	16×11	*Uro.* p. 69: 114	
152	17×11	*Uro.* p. 69: 107	
153	17×11	*Uro.* p. 71: 156	
154	18×12	*Uro.* p. 69: 95	
155	20×14	*Uro.* p. 68: 91	+7A1a
156	21×13	*Uro.* p. 67: 56	
157	21×14	*Uro.* p. 69: 96	

Total = 23 Average length = 14·3 mm.

2B2: *round, interlocking spirals. 2. unending*

158	12×8	*Lah.* II 387	
159	13×9	*IKG* 144	
160	13×9	*Lah.* II 390	
161	13×9	*Lah.* II 351	
162	13×9	*Lah.* II 389	
163	13×10	*KGH* 20	
164	14×9	*KGH* 48	
165	14×9	*Lah.* II 382	
166	14×9	*Lah.* II 410	
167	14×9	*Lah.* II 377	
168	14×9	*Lah.* II 363	
169	14×10	*Lah.* II 381	
170	14×10	*Lah.* II 358	+3B4
171	14×10	*Lah.* II 383	
172	14×10	*IKG* 169	
173	15×10	*Lah.* II 395	
174	15×11	*IKG* 159	
175	15×12	*IKG* 154	
176	16×10	*KGH* 42	
177	16×10	*IKG* 172	
178	16×11	*IKG* 176	
179	16×11	*Lah.* II 350	
180	17×12	*KGH* 27	
181	17×12	*Lah.* II 379	
182	17×12	*IKG* 166	+5
183	18×12	*IKG* 160	
184	18×12	*Lah.* II 376	
185	22×16	*IKG* 158	
186	24×16	*Lah.* II 392	+7A2a
187	?12×7	*Uro.* p. 80: 445	
188	12×9	*Uro.* p. 68: 69	
189	13×8	*Uro.* p. 68: 71	
190	13×9	*Uro.* p. 68: 72	
191	13×9	*Uro.* p. 68: 74	
192	13×9	*Uro.* p. 69: 105	
193	14×9	*Uro.* p. 73: 234	+3B3c
194	14×9	*Uro.* p. 80: 446	
195	14×10	*Uro.* p. 70: 127	+5
196	15×9	*Uro.* p. 70: 125	
197	15×10	*Uro.* p. 67: 66	
198	15×10	*Uro.* p. 67: 62	
199	15×10	*Uro.* p. 68: 73	
200	15×10	*Uro.* p. 69: 109	
201	?15×10	*Uro.* p. 70: 122	+10D2
202	15×10	*Uro.* p. 70: 123	+1E3
203	15×10	*Uro.* p. 70: 132	
204	15×10	*Uro.* p. 80: 449	
205	15×10	*Uro.* p. 80: 450	
206	16×10	*Uro.* p. 68: 80	
207	16×10	*Uro.* p. 67: 65	
208	16×11	*Uro.* p. 68: 70	
209	16×11	*Uro.* p. 71: 184	+6B1
210	17×11	*Uro.* p. 71: 157	
211	17×12	*Uro.* p. 80: 447	
212	17×13	*Uro.* p. 69: 94	+2A
213	17×13	*Uro.* p. 69: 92	
214	18×12	*Uro.* p. 69: 93	
215	18×13	*Uro.* p. 69: 98	
216	19×12	*Uro.* p. 79: 410	+3B4

2B2: *round, interlocking spirals. 2. unending* (cont.)

KAHÛN TOWN				URONARTI FORT			
Sealing number	Dimensions mm.	Publication	Designs	Sealing number	Dimensions mm.	Publication	Designs
				217	19×13	*Uro.* p. 70: 133	
				218	20×13	*Uro.* p. 67: 61	
				219	20×13	*Uro.* p. 71: 158	
				220	20×15	*Uro.* p. 68: 79	
				221	23×15	*Uro.* p. 71: 154	+3B4
Total = 29	Average length = 15·3 mm.			Total = 35	Average length = 15·9 mm.		

3. Egyptian Signs and Symbols

3A: Monograms and Varia

3A1: *sign of union*, sm3

222	11×8	*Lah.* II 333	+2A	228	13×9	*Uro.* p. 74: 271	
223	12×9	*IKG* 121		229	14×9	*Uro.* p. 74: 273	+2A
224	15×10	*Lah.* II 334		230	16×10	*Uro.* p. 74: 276	
225	16×11	*KGH* 37	+2A	231	16×11	*Uro.* p. 74: 269	+**nb**
226	16×12	*IKG* 120	+11C	232	16×11	*Uro.* p. 74: 285	
227	17×11	*Lah.* II 332		233	17×11	*Uro.* p. 74: 274	+3B3a
				234	17×11	*Uro.* p. 74: 282	
				235	17×11	*Uro.* p. 74: 283	+2A
				236	20×14	*Uro.* p. 74: 270	+**nb**
				237	23×16	*Uro.* p. 78: 395	+1E3 +3B3b +3B4 +3B7
Total = 6	Average length = 14·5 mm.			Total = 10	Average length = 16·9 mm.		

3A2: nb.ty *and plant*

238	?10×7	*Lah.* II 310	244	20×12	*Uro.* p. 75: 307	
239	13×7	*Lah.* II 314				
240	14×9	*IKG* 79				
241	14×10	*KGH* 47				
242	16×11	*KGH* 45				
243	22×13	*IKG* 113				
Total = 6	Average length = 14·8 mm.		Total = 1	Average length = 20 mm.		

3A3: *varia*

Omitted	Omitted

3A4: *Horus hawk, with* ntr *and other signs*

Nil	Nil

3B: Symmetric patterns

3B1a: *symmetric patterns 1. cobras a. addorsed*

KAHÛN TOWN					URONARTI FORT			
Sealing number	Dimensions mm.	Publication		Designs	Sealing number	Dimensions mm.	Publication	Designs
245	14×10	*IKG*	80	+1E1 +3B7	Nil			
Total = 1	Average length = 14 mm.							

3B1b: *symmetric patterns 1. cobras b. addorsed and linked*

Nil	Nil

3B1c: *symmetric patterns 1. cobras c. confronted*

246	15×9	*Lah.* II 269		247	16×10	*Uro.* p. 76: 321
Total = 1	Average length = 15 mm.			Total = 1	Average length = 16 mm.	

3B1d: *symmetric patterns 1. cobras d. addorsed, linked and crowned*

Nil	Nil

3B1e: *symmetric patterns 1. cobras e. confronted and crowned*

Nil	Nil

3B2: *symmetric patterns 2. King of Upper and Lower Egypt*, n-sw bit

Nil	Nil

3B3a: *symmetric patterns 3. red crowns addorsed a. on* nb

248	10×7	*Lah.* II 288		/266/	12×7	*Uro.* p. 77: 352	+2A +3B3e
249	11×7	*Lah.* II 309					
/303/	16×11	*Lah.* II 276	+1E3 +**3B7**	/259/	15×10	*Uro.* p. 76: 334	+3B3e
				/304/	15×11	*Uro.* p. 80: 457	+3B4 +**3B7** +11C
/302/	16×11	*IKG* 58	+3B4 +**3B7**				
/274/	22×15	*Lah.* II 271	+**3B4**	250	16×11	*Uro.* p. 73: 242	
				/262/	17×11	*Uro.* p. 73: 235	+**3B3c** +7B1a
				/233/	17×11	*Uro.* p. 74: 274	+**3A1**
				/267/	17×12	*Uro.* p. 77: 354	+**3B3e**
Total = 5	Average length = 15 mm.			Total = 7	Average length = 15·5 mm.		

3B3b: *symmetric patterns 3. red crowns b. addorsed*

KAHÛN TOWN				URONARTI FORT			
Sealing number	Dimensions mm.	Publication	Designs	Sealing number	Dimensions mm.	Publication	Designs
251	?17×11	*Lah.* II 268	+1E3 +3B7	252	14×9	*Uro.* p. 76: 319	+6A
				253	15×10	*Uro.* p. 77: 371	
				254	19×13	*Uro.* p. 78: 408	+3B4 +3B7
				255	?21×14	*Uro.* p. 77: 361	
				/237/	23×16	*Uro.* p. 78: 395	+1E3 **+3A1** +3B4 +3B7
Total = 1	Average length = 17 mm.			Total = 5	Average length = 18·4 mm.		

3B3c: *symmetric patterns 3. red crowns c. confronted*

256	12×?10	*IKG* 50	+3B6	257	14×9	*Uro.* p. 73: 234	+2B2
				258	14×10	*Uro.* p. 73: 253	+3B6
				259	15×10	*Uro.* p. 76: 334	+3B3a
				260	15×11	*Uro.* p. 73: 254	+3B6
				261	17×11	*Uro.* p. 73: 257	+3B6
				262	17×11	*Uro.* p. 73: 235	+3B3a +7B1a
				263	19×12	*Uro.* p. 73: 256	+3B6
Total = 1	Average length = 12 mm.			Total = 7	Average length = 15·8 mm.		

3B3d: *symmetric patterns 3. red crowns d.* 'L-*shaped*'

Nil				Nil			

3B3e: *symmetric patterns 3. red crowns e.* tête bêche

264	10×7	*Lah.* II 286	+2A	266	12×7	*Uro.* p. 77: 253	+2A +3B3a
265	14×8	*Lah.* II 284		267	17×12	*Uro.* p. 77: 354	+3B3a
Total = 2	Average length = 12 mm.			Total = 2	Average length = 14·5 mm.		

3B4: *symmetric patterns 4. Horus eyes*

268	14×10	*Lah.* II 358	+2B2	275	15×10	*Uro.* p. 73: 237	
269	15×8	*Lah.* II 277		276	15×10	*Uro.* p. 73: 238	
270	15×10	*Lah.* II 270		277	15×10	*Uro.* p. 77: 372	
/301/	15×11	*Lah.* II 215	**+3B7** +3D1 +11A	/304/	15×11	*Uro.* p. 80: 457	+3B3a **+3B7** +11C
/300/	15×11	*Lah.* II 278	**+3B7**	278	16×10	*Uro.* p. 75: 299	**+nb**
/302/	16×11	*IKG* 58	**+3B7**	279	17×11	*Uro.* p. 73: 241	
271	17×11	*Lah.* II 348	+2A	280	17×11	*Uro.* p. 78: 403	
272	?17×12	*IKG* 110		281	19×12	*Uro.* p. 79: 410	+2B2
273	19×15	*KGH* 32		/254/	19×13	*Uro.* p. 78: 408	**+3B3b** +3B7
274	22×15	*Lah.* II 271	+3B3a	281a	23×15	*Uro.* p. 71: 154	+2B2
				/237/	23×16	*Uro.* p. 78: 395	+1E3 **+3A1** +3B3b +3B7
				/306/	25×17	*Uro.* p. 78: 396	**+3B7** +8A
Total = 10	Average length = 16·5 mm.			Total = 12	Average length = 18·2 mm.		

3B5: *symmetric patterns 5. sedge plant*, swt

KAHÛN TOWN

Sealing number	Dimensions mm.	Publication	Designs
282	?14×11	*IKG* 118	
283	16×11	*Lah.* II 325	
284	16×13	*IKG* 119	

Total = 3 Average length = 15·3 mm.

URONARTI FORT

Sealing number	Dimensions mm.	Publication	Designs
285	15×9	*Uro.* p. 77: 363	
286	15×10	*Uro.* p. 77: 373	+10D2
287	16×11	*Uro.* p. 76: 326	
288	18×12	*Uro.* p. 76: 324	
289	18×12	*Uro.* p. 76: 327	

Total = 5 Average length = 16·4 mm.

3B6: *symmetric patterns 6.* Nbw (*GOLD-sign*) *in longitudinal setting*

/256/	12×?10	*IKG*	50	**+3B3c**
290	15×11	*KGH*	33	
291	15×?11	*IKG*	41	
292	20×13	*IKG*	44	

Total = 4 Average length = 15·5 mm.

293	13×10	*Uro.* p. 73: 252	+2A
/258/	14×10	*Uro.* p. 73: 253	**+3B3c**
294	15×10	*Uro.* p. 74: 261	+1E3
295	15×10	*Uro.* p. 74: 260	
/260/	15×11	*Uro.* p. 73: 254	**+3B3c**
296	16×11	*Uro.* p. 74: 259	
/305/	16×12	*Uro.* p. 74: 262	**+3B7**
/261/	17×11	*Uro.* p. 73: 257	**+3B3c**
/263/	19×12	*Uro.* p. 73: 256	**+3B3c**
297	19×14	*Uro.* p. 74: 264	+1E3
298	22×15	*Uro.* p. 74: 265	+1E3
299	22×16	*Uro.* p. 74: 268	+1E3

Total = 12 Average length = 16·9 mm.

3B7: *symmetric patterns 7. forepart of lion* ḥ3t

/245/	14×10	*IKG*	80	+1E1 **+3B1a**
300	15×11	*Lah.* II 278		+3B4
301	15×11	*Lah.* II 215		+3B4 +3D1 +11A
302	16×11	*IKG*	58	+3B3a +3B4
303	16×11	*Lah.* II 276		+1E3 +3B3a
/251/	17×11	*Lah.* II 268		+1E3 **+3B3b**

Total = 6 Average length = 15·5 mm.

304	15×11	*Uro.* p. 80: 457	+3B3a +3B4 +11C
305	16×12	*Uro.* p. 74: 262	+3B6
/281/	19×12	*Uro.* p. 79: 410	+2B2+ **3B4**
/254/	19×13	*Uro.* p. 78: 408	**+3B3b** +3B4
/237/	23×16	*Uro.* p. 78: 395	+1E3 **+3A1** +3B3b +3B4 +3B7
306	25×17	*Uro.* p. 78: 396	+3B4 +8A

Total = 6 Average length = 19·5 mm.

3C: *symmetric patterns C. formulae*

Nil

Nil

3D1: *cartouche 1. simple oblong*

/311/	15×11	*Lah.* II 215		+3B4 **+3B7** +11A
307	17×11	*Lah.* II 240		+7A2a +11C

Total = 2 Average length = 16 mm.

308	15×10	*Uro.* p. 78: 385	+11C
309	15×10	*Uro.* p. 78: 380	+11C
310	16×11	*Uro.* p. 78: 383	+11C
311	17×12	*Uro.* p. 78: 381	+11C
312	20×14	*Uro.* p. 78: 382	+11C

Total = 5 Average length = 16·6 mm.

3D2: *cartouche 2. oblong with single-line base*

KAHÛN TOWN				URONARTI FORT			
Sealing number	Dimensions mm.	Publication	Designs	Sealing number	Dimensions mm.	Publication	Designs
Nil				313	20×12	*Uro.* p. 65: 1	+2A +11A
				314	24×17	*Uro.* p. 65: 3	+11A
				Total = 2	Average length = 22 mm.		

3D3: *cartouche 3. oblong with single-line base joined by lines*

Nil	Nil

3D4: *cartouche 4. oblong with triangular base*

315	21×15	*KGH* 15	+11A	Nil
Total = 1	Average length = 21 mm.			

3D5: *cartouche 5. neck between oblong and base*

Nil	Nil

3D6: *cartouche 6. varia*

Nil	Nil

3E1: *panels 1. three or more signs in margins*
3E2: *panels 2. two signs in margins*
3E3: *panels 3. double* nṯr *signs, one reversed in margins*
3E4: *panels 4. cross-bars in margins*
3E5: *panels 5.* serekh *or shrine*

Nil	Nil

3E6: *panels 6. varia*

Nil	316	14×10	*Uro.* p. 71: 162
	Total = 1	Average length = 14 mm.	

4A2: *concentric circles A. with lines 2. double ring*

317	15×10	*KGH* 46	Nil
318	17×?12	*IKG* 182	
Total = 2	Average length = 16 mm.		

4B2: *concentric circles B. linked 2. double ring*

Nil	319	14×8	*Uro.* p. 75: 301	+nb
	320	14×10	*Uro.* p. 71: 174	+5
	321	17×11	*Uro.* p. 71: 172	
	Total = 3	Average length = 15 mm.		

4B3: *concentric circles B. linked 3. triple ring*

KAHÛN TOWN				URONARTI FORT			
Sealing number	Dimensions mm.	Publication	Designs	Sealing number	Dimensions mm.	Publication	Designs
Nil				322	13×8	*Uro.* p. 71: 173	
				Total = 1	Average length = 13 mm.		

5: *cross pattern*

323	12×8	*Lah.* II 396		328	11×7	*Uro.* p. 72: 207	+2A
324	14×10	*Lah.* II 397		329	12×9	*Uro.* p. 72: 206	+2A
325	16×10	*KGH* 71		330	14×9	*Uro.* p. 72: 202	+2A
326	17×12	*IKG* 166	+2B2	331	14×9	*Uro.* p. 72: 204	+2A
327	18×12	*KGH* 35		332	14×10	*Uro.* p. 70: 127	+2B2
				333	14×10	*Uro.* p. 71: 174	+4B2
				334	14×10	*Uro.* p. 72: 208	
				335	15×9	*Uro.* p. 72: 205	+2A
				336	15×10	*Uro.* p. 70: 126	
				337	17×12	*Uro.* p. 72: 203	+2A
Total = 5	Average length = 15·4 mm.			Total = 10	Average length = 14·0 mm.		

6A: *coiled and 'woven' patterns A. single-line thread*

338	12×8	*Lah.* II 371		340	12×8	*Uro.* p. 73: 231	
339	15×12	*IKG* 175	+2A	341	14×9	*Uro.* p. 70: 137	+2A
				342	14×9	*Uro.* p. 76: 319	+3B3b
				343	16×10	*Uro.* p. 70: 138	+2A
				344	17×11	*Uro.* p. 76: 317	+1E3
				345	18×13	*Uro.* p. 70: 136	+2A
				346	20×13	*Uro.* p. 73: 233	
				347	21×14	*Uro.* p. 73: 232	
Total = 2	Average length = 13·5 mm.			Total = 8	Average length = 16·5 mm.		

6B1: *coiled and 'woven' patterns B. convoluted 1. coils*

348	14×9	*Lah.* II 414		351	10×7	*Uro.* p. 72: 198	
349	15×11	*Lah.* II 411		352	12×8	*Uro.* p. 72: 197	
350	15×11	*Lah.* II 415		353	13×8	*Uro.* p. 71: 178	
				354	14×9	*Uro.* p. 71: 177	
				355	14×9	*Uro.* p. 72: 195	
				356	14×9	*Uro.* p. 71: 180	
				357	14×10	*Uro.* p. 71: 175	
				358	15×10	*Uro.* p. 72: 190	
				359	15×10	*Uro.* p. 72: 188	
				360	15×11	*Uro.* p. 80: 451	
				361	16×9	*Uro.* p. 72: 189	
				362	16×10	*Uro.* p. 72: 186	
				363	16×10	*Uro.* p. 72: 187	
				364	16×11	*Uro.* p. 71: 184	+2B2
				365	17×10	*Uro.* p. 71: 182	
				366	19×13	*Uro.* p. 71: 181	
Total = 3	Average length = 14·6 mm.			Total = 16	Average length = 14·7 mm.		

6B2a: *coiled and 'woven' patterns B. convoluted coils 2. knot-like a. central '×' cross*

Nil				367	14×9	*Uro.* p. 71: 176	
				368	14×9	*Uro.* p. 71: 179	
				369	15×10	*Uro.* p. 72: 194	
				Total = 3	Average length = 14·3 mm.		

6B2b: *coiled and 'woven' patterns B. convoluted coils 2. knot-like b. central bar*

KAHÛN TOWN				URONARTI FORT			
Sealing number	Dimensions mm.	Publication	Designs	Sealing number	Dimensions mm.	Publications	Designs
Nil				370	17×12	*Uro.* p. 72: 192	
				Total = 1	Average length = 17 mm.		

6B3: *coiled and 'woven' patterns B. convoluted 3. varia*

371	21×15	*IKG* 186		372	13×8	*Uro.* p. 72: 196	
Total = 1	Average length = 21 mm.			Total = 1	Average length = 13 mm.		

6C1: *coiled and 'woven' patterns C. encompassed 1. central '+' cross*

6C2: *coiled and 'woven' patterns C. encompassed 2. central twist*

Nil				Nil			

6C3: *coiled and 'woven' patterns C. encompassed 3. central cable*

373	?15×11	*Lah.* II 416		375	17×11	*Uro.* p. 72: 199	
374	?16×11	*KGH* 29		376	17×12	*Uro.* p. 80: 452	
				377	18×12	*Uro.* p. 72: 191	
Total = 2	Average length = 15·5 mm.			Total = 3	Average length = 17·3 mm.		

7A1a: *scroll borders A. continuous 1. round a. hooked*

Nil				378	20×14	*Uro.* p. 68: 91	+2B1
				379	25×17	*Uro.* p. 65: 11	+11B
				Total = 2	Average length = 22·5 mm.		

7A1b: *scroll borders A. continuous 1. round b. joined*

Nil				Nil			

7A2a: *scroll borders A. continuous 2. oblong a. hooked*

380	13×10	*Lah.* II 388		384	16×10	*Uro.* p. 70: 147	+11C
381	?15×11	*IKG* 164		385	16×11	*Uro.* p. 70: 148	
382	17×11	*Lah.* II 240	+3D1 +11C				
383	17×11	*Lah.* II 243	+11C				
Total = 4	Average length = 15·5 mm.			Total = 2	Average length = 16 mm.		

7A2b: *scroll borders A. continuous 2. oblong b. joined*

386	14×10	*Lah.* II 216	+11A	388	14×10	*Uro.* p. 71: 151	
387	19×13	*KGH* 31		389	15×10	*Uro.* p. 71: 150	
				390	16×11	*Uro.* p. 69: 115	
				391	17×11	*Uro.* p. 71: 159	
				392	19×12	*Uro.* p. 65: 10	+11B
				393	20×13	*Uro.* p. 65: 9	+11B
				394	20×13	*Uro.* p. 70: 142	
Total = 2	Average length = 16·5 mm.			Total = 7	Average length = 17·2 mm.		

7B1a: *paired scrolls, loop top 1. one pair (ii) oblong a. hooked*

KAHÛN TOWN				URONARTI FORT			
Sealing number	Dimensions mm.	Publication	Designs	Sealing number	Dimensions mm.	Publication	Designs
Nil				395	13×9	*Uro.* p. 77: 355	
				396	17×11	*Uro.* p. 73: 235	+3B3a &c
				Total = 2	Average length = 15 mm.		

7B1b: *paired scrolls, loop top 1. one pair (ii) oblong b. joined*

397	15×10	*Lah.* II 346	Nil
Total = 1	Average length = 15 mm.		

7B2a: *paired scrolls, loop top 2. two pairs (ii) oblong a. hooked*

7B2b: *paired scrolls, loop top 2. two pairs (ii) oblong b. joined*

Nil	Nil

7B3a–b: *paired scrolls, loop top 3. three pairs (i+ii) round and oblong scrolls a. hooked and b. joined*

398	15×11	*Lah.* II 345	Nil
Total = 1	Average length = 15 mm.		

7B3a: *paired scrolls, loop top 3. three pairs (ii) oblong a. hooked*

Nil				399	17×11	*Uro.* p. 66: 28	+11B
				400	20×15	*Uro.* p. 66: 27	+11B
				401	21×13	*Uro.* p. 66: 26	+11B
				402	21×13	*Uro.* p. 66: 19	+11B
				403	21×13	*Uro.* p. 66: 20	+11B
				404	21×14	*Uro.* p. 66: 21	+11B
				405	28×19	*Uro.* p. 79: 434	
				Total = 7	Average length = 21·2 mm.		

7B3b: *paired scrolls, loop top 3. three pairs (ii) oblong b. joined*

406	19×12	*Lah.* II 237	+11B	408	16×10	*Uro.* p. 80: 442	+11B
407	?20×13	*IKG* 30	+11B	409	21×13	*Uro.* p. 65: 17	+11B
				410	21×15	*Uro.* p. 65: 14	+11B
				411	22×14	*Uro.* p. 65: 16	+11B
				412	?23×16	*Uro.* p. 65: 15	+11B
				413	24×16	*Uro.* p. 80: 441	+11B
Total = 2	Average length = 19·5 mm.			Total = 6	Average length = 21·1 mm.		

7B4(i)a: *paired scrolls, loop top 4. four or more pairs (i) round a. hooked*

Nil				414	21×13	*Uro.* p. 65: 12	+11B
				Total = 1	Average length = 21 mm.		

7B4(ii)a: *paired scrolls, loop top 4. four or more pairs (ii) oblong a. hooked*

Nil	Nil

7C1a: *paired scrolls, open at top and/or base 1. one pair (ii) oblong a. hooked*

7C1b: *paired scrolls, open at top and/or base 1. one pair (ii) oblong b. joined*

7C2a: *paired scrolls, open at top and/or base 2. two pairs (ii) oblong a. hooked*

7C2b: *paired scrolls, open at top and/or base 2. two pairs (ii) oblong b. joined*

KAHÛN TOWN				URONARTI FORT			
Sealing number	Dimensions mm.	Publication	Designs	Sealing number	Dimensions mm.	Publication	Designs
Nil				Nil			

7C3a–b: *paired scrolls, open at top and/or base 3. three pairs a. hooked b. joined*

415	?20×13	*KGH* 34		416	15×10	*Uro.* p. 71: 152	+11C
				417	18×12	*Uro.* p. 80: 443	+11B
Total = 1	Average length = ? 20 mm.			Total = 2	Average length = 16·5 mm.		

8A: *rope border A. twisted strand*

418	12×10	*Lah.* II 228	+11B	419	9×6	*Uro.* p. 70: 139	
				420	21×14	*Uro.* p. 66: 38	+11B
				421	25×17	*Uro.* p. 78: 396	+3B4 +3B7
Total = 1	Average length = 12 mm.			Total = 3	Average length = 18·3 mm.		

8AA: *rope border AA. double twisted strand*

422	17×11	*Lah.* II 227	+11B	423	15×10	*Uro.* p. 70: 140	+11C
				424	21×13	*Uro.* p. 66: 35	+11B
				425	21×14	*Uro.* p. 66: 36	+11B
				426	22×14	*Uro.* p. 66: 34	+11B
				427	23×15	*Uro.* p. 66: 37	+11B
Total = 1	Average length = 17 mm.			Total = 5	Average length = 20·4 mm.		

8B: *rope border B. barred strand*

428	?22×16	*IKG* 26	+11B	429	19×14	*Uro.* p. 76: 346	+1E2
Total = 1	Average length = ?22 mm.			Total = 1	Average length = 19 mm.		

8C: *rope border C. full cable*

9A: *animals A. equine*

9B: *animals B. antelope*

9C: *animals C. cobras*

9D: *animals D. crocodile*

Nil				Nil			

9E: *animals E. lions*

430	21×12	*IKG* 39		Nil			
431	21×13	*Lah.* II 256					
Total = 2	Average length = 21 mm.						

9F: *heraldic beasts*

KAHÛN TOWN				URONARTI FORT			
Sealing number	Dimensions mm.	Publication	Designs	Sealing number	Dimensions mm.	Publication	Designs
Nil				Nil			

10A1: *human and mythical figures A. standing 1. human head*

10A2: *human and mythical figures A. standing 2. mythical head*

10B: *Two or more figures B. standing or kneeling*

Nil				Nil			

10C1: *human and mythical figures C. kneeling 1. human head*

Nil				432	14×10	*Uro.* p. 70: 424	+**nb**
				433	17×12	*Uro.* p. 70: 425	
				Total = 2	Average length = 15·5 mm.		

10C2: *human and mythical figures C. kneeling 2. mythical head*

Nil				Nil			

10D1: *goddess standing 1. regardant*

Nil				Nil			

10D2: *goddess 2. Hathor-symbol*

434	13×9	*IKG* 95		435A	?15×10	*Uro.* p. 70: 122	+2B2
435	14×9	*Lah.* II 289		435B	15×10	*Uro.* p. 77: 373	+3B5
				436C	16×10	*Uro.* p. 75: 302	+**nb**
Total = 2	Average length = 13·5 mm.			Total = 3	Average length = 15·3 mm.		

11A: *names and titles A. royal names*

437	9×6	*Lah.* II 202		445	20×12	*Uro.* p. 65: 1	+2A
438	?12×7	*Lah.* II 213					+3D2
439	14×10	*Lah.* II 216	+7A2b	446	20×13	*Uro.* p. 77: 378	
440	15×10	*IKG* 1		447	24×17	*Uro.* p. 65: 3	+3D2
441	15×11	*Lah.* II 215	+3B4 +**3B7** +**3D1**				
442	20×12	*Lah.* II 211					
443	?21×12	*Lah.* II 209					
444	21×15	*KGH* 15	+3B4				
Total = 8	Average length = 15·8 mm.			Total = 3	Average length = 21·3 mm.		

11B: *names and titles B. private-names*

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Sealing number	Dimensions mm.	Publication	Designs
448	12×10	*Lah.* II 228	+8A
449	13×11	*IKG* 16	
450	14×10	*Lah.* II 230	
451	16×11	*Lah.* II 224	
452	16×11	*Lah.* II 225	
453	?16×11	*Lah.* II 226	
454	17×11	*Lah.* II 217	
455	17×11	*Lah.* II 227	+8AA
456	18×12	*IKG* 17	
457	19×12	*Lah.* II 237	+7B3b
458	?19×12	*IKG* 20	
459	?20×13	*IKG* 30	+7B3b
460	?22×16	*IKG* 26	+8B
461	?31×19	*IKG* 18	

Total = 14 Average length = 17·8 mm.

URONARTI FORT

Sealing number	Dimensions mm.	Publication	Designs
462	15×10	*Uro.* p. 67: 44	
463	16×10	*Uro.* p. 67: 46	
—	16×10	*Uro.* p. 80: 442	see 7B3b
464	16×11	*Uro.* p. 67: 45	
465	17×11	*Uro.* p. 66: 28	+7B3a
—	18×12	*Uro.* p. 80: 443	see 7C3b
466	19×11	*Uro.* p. 65: 6	
467	19×11	*Uro.* p. 65: 10	7A2b
468	20×12	*Uro.* p. 65: 8	+2A
469	20×13	*Uro.* p. 65: 9	+7A2b
470	20×14	*Uro.* p. 67: 42	
471	20×15	*Uro.* p. 66: 27	+7B3a
472	21×13	*Uro.* p. 65: 12	+7B4 (i)a
473	21×13	*Uro.* p. 66: 26	+7B3a
474	21×13	*Uro.* p. 66: 19	+7B3a
475	21×13	*Uro.* p. 66: 20	+7B3a
476	21×13	*Uro.* p. 65: 17	+7B3b
477	21×13	*Uro.* p. 66: 35	+8AA
478	21×14	*Uro.* p. 66: 21	+7B3a
479	21×14	*Uro.* p. 66: 36	+8AA
480	21×14	*Uro.* p. 66: 38	+8A
481	21×15	*Uro.* p. 65: 14	+7B3b
482	22×13	*Uro.* p. 65: 5	
483	22×14	*Uro.* p. 65: 16	+7B3b
484	22×14	*Uro.* p. 66: 34	+8AA
485	22×16	*Uro.* p. 67: 43	
486	23×13	*Uro.* p. 65: 4	
487	23×15	*Uro.* p. 66: 37	+8AA
488	?23×16	*Uro.* p. 65: 15	+7B3b
489	24×16	*Uro.* p. 80: 441	+7B3b
490	25×15	*Uro.* p, 65: 7	
491	25×17	*Uro.* p. 65: 11	+7A1a

Total = 32 Average length = 20·5 mm.

11C: *names and titles C. doubtful readings*

492	14×10	*IKG* 85	
493	17×10	*Lah.* II 243	+7A2a
494	17×11	*Lah.* II 240	+3D1 +7A2a

Total = 3 Average length = 16 mm.

495	15×10	*Uro.* p. 70: 140	+8AA
(see 416)	15×10	*Uro.* p. 71: 152	+7C3b
(see 308)	15×10	*Uro.* p. 78: 385	+3D1
(see 309)	15×10	*Uro.* p. 78: 380	+3D1
(see 304)	15×11	*Uro.* p. 80: 457	+3B3a +3B4 **+3B7**
496	16×10	*Uro.* p. 70: 147	+7A2a
(see 310)	16×11	*Uro.* p. 78: 383	+3D1
(see 311)	17×11	*Uro.* p. 78: 381	+3D1
(see 312)	20×14	*Uro.* p. 78: 382	+3D1

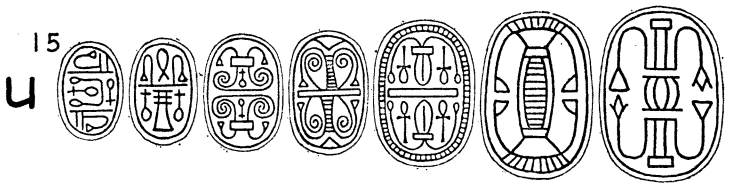
Total = 9 Average length = 16 mm.

KAHUN TOWN

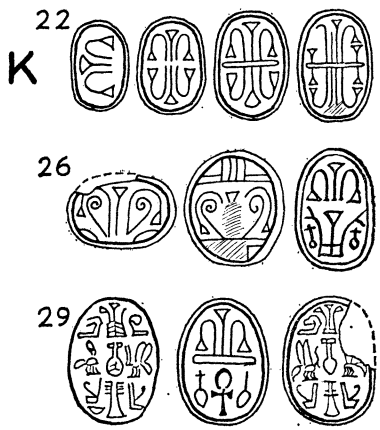
URONARTI FORT

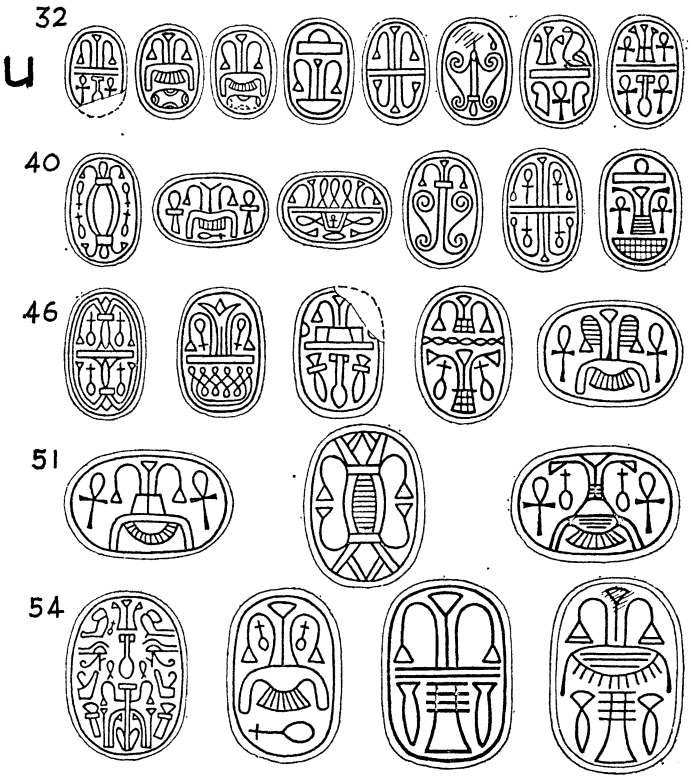
CLASS 1E1

CLASS 1E2



CLASS 1E3

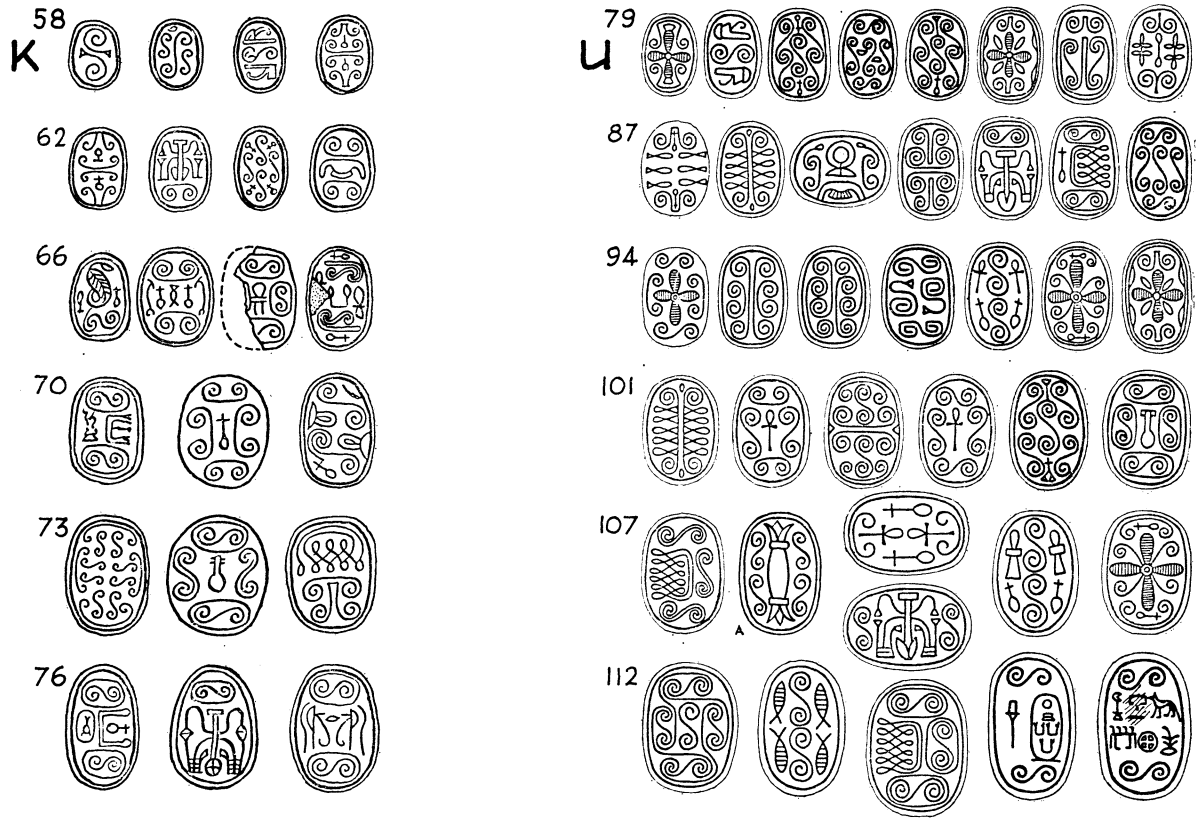




Scale 1 : 1 (in all figures)

FIG. 2

Class 2 A



Class 2 B 1

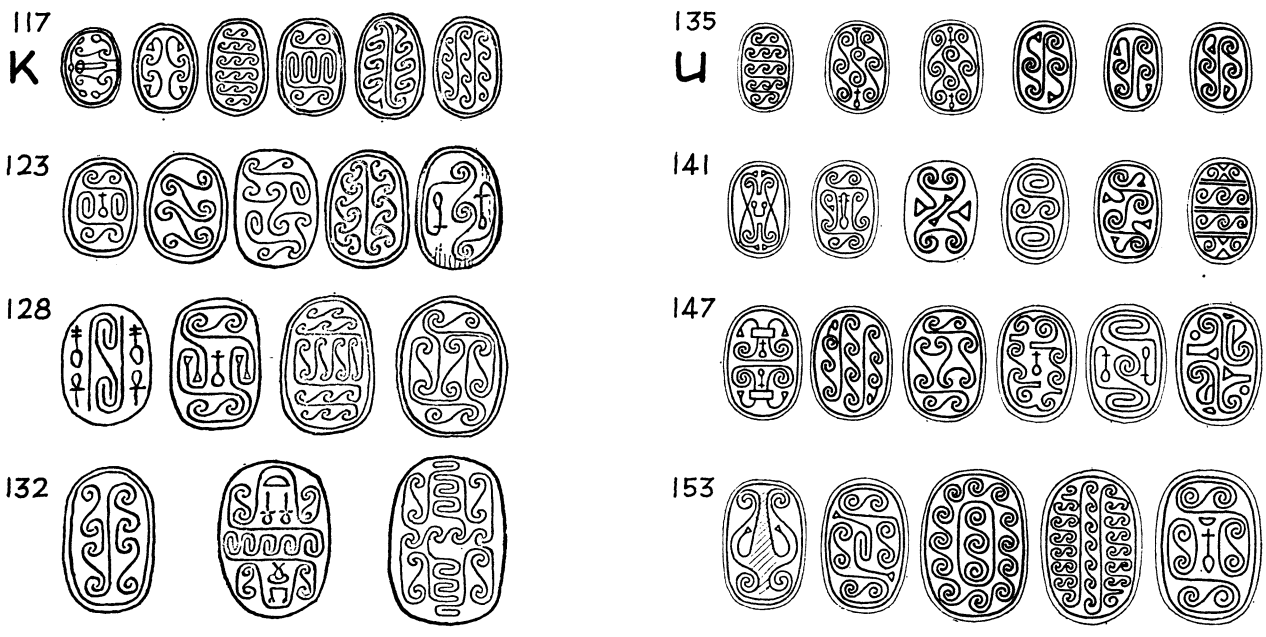


Fig. 3

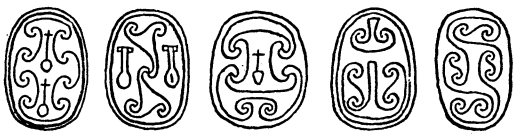
Class 2 B2

158 K

163

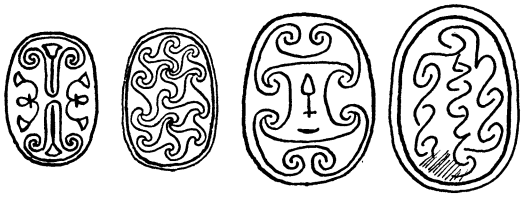
168

173

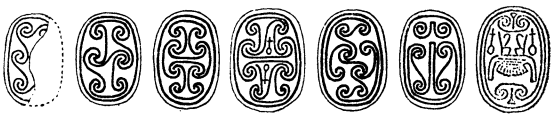


178

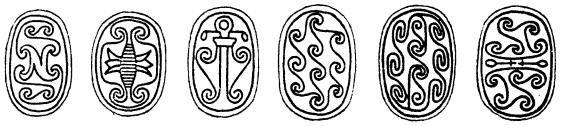
183



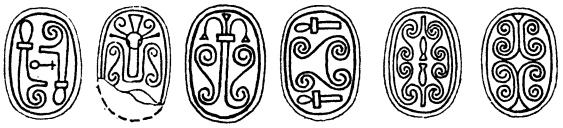
187 U



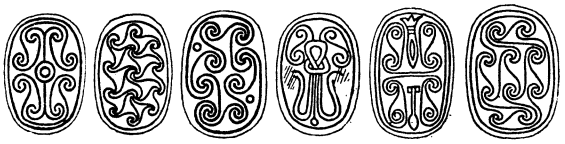
194



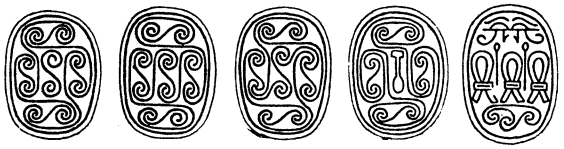
200



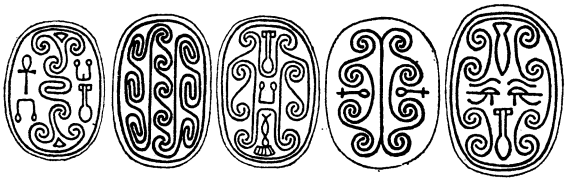
206



212

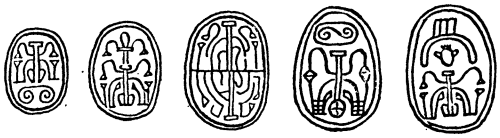


217



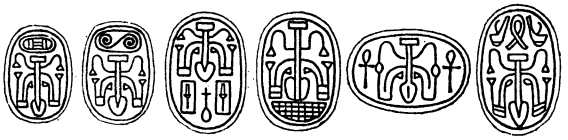
Class 3A1

222 K

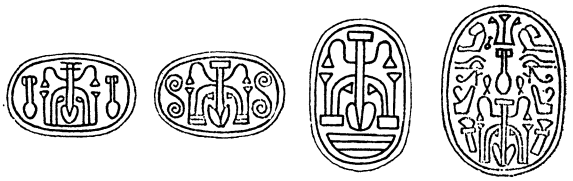


227

228 U



234



Class 3A2

238 K

241

244 U

Fig. 4

CLASS 3 B 1a

245
K

CLASS 3 B 1c

246
K

247
U

CLASS 3 B 3a

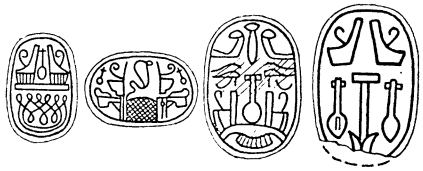
248
K

250
U

CLASS 3 B 3b

251
K

252
U



CLASS 3 B 3c

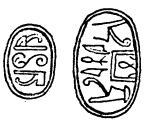
256
K

257
U

261

CLASS 3 B 3e

264
K



266
U

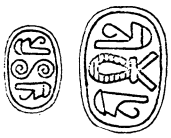


FIG. 5

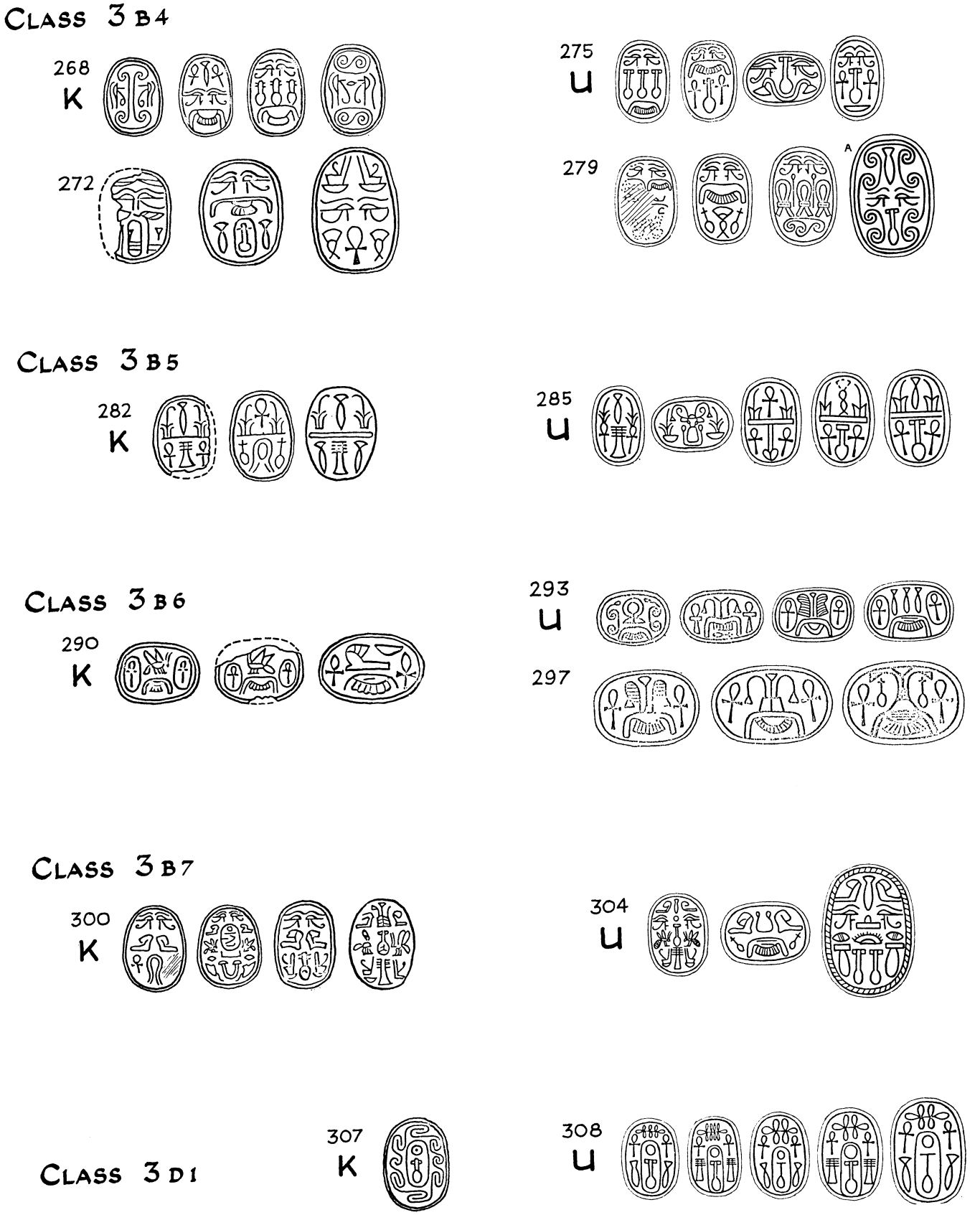
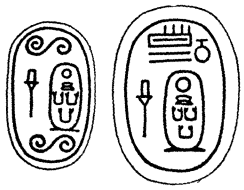

CLASS 3 B4
268
K
272
275
U
279
A
CLASS 3 B5
282
K
285
U
CLASS 3 B6
290
K
293
U
297
CLASS 3 B7
300
K
304
U
CLASS 3 D1
307
K
308
U

FIG. 6

CLASS 3 D 2

313
U



CLASS 3 D 4

315
K

CLASS 3 E 6

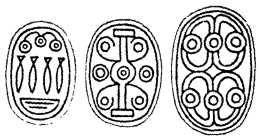
316
U

CLASS 4 A 2

317
K

CLASS 4 B 2

319
U

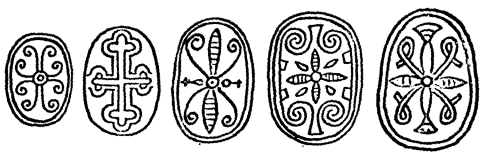


CLASS 4 B 3

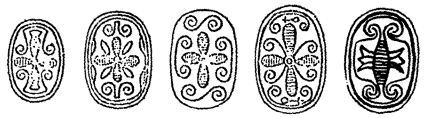
322
U

CLASS 5

323
K



328
U



333

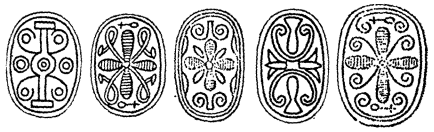
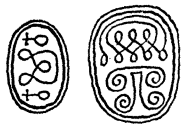


FIG. 7

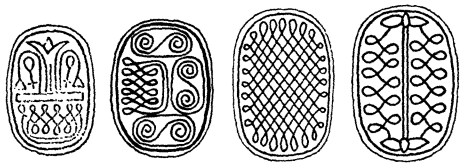
CLASS 6A

338
K



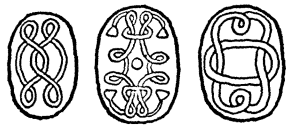
340
U

344

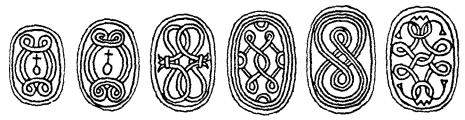


CLASS 6B1

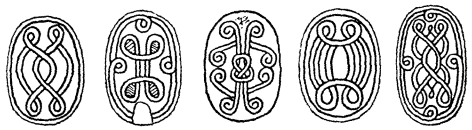
348
K



351
U



357



362

CLASS 6B2a

367
U

CLASS 6B2b

370
U

CLASS 6B3

371
K

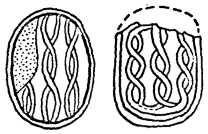
372
U

FIG. 8

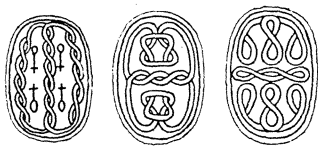
H

CLASS 6 C 3

373
K

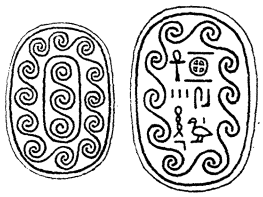


375
U



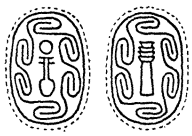
CLASS 7 A 1 a

378
U

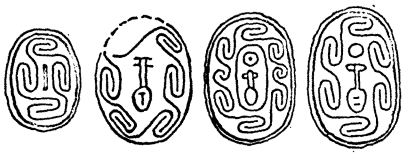


CLASS 7 A 2 a

384
U



380
K

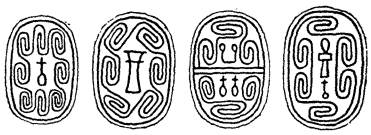


CLASS 7 A 2 b

386
K

387

388
U



392

CLASS 7 B 1 a

395
U

FIG. 9

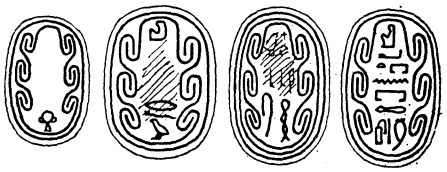
CLASS 7 B 1 b

397
K

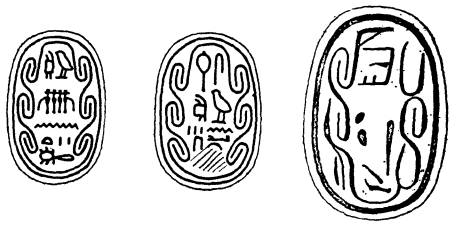
CLASS 7 B 3 a

398
K

399
U

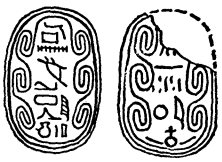


403



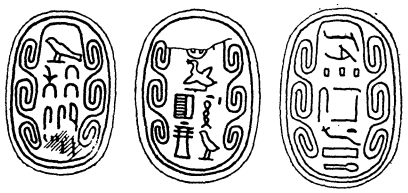
CLASS 7 B 3 b

406
K



408
U

411



CLASS 7 B 4 a

414
U

CLASS 7 C 3

415
K

416
U

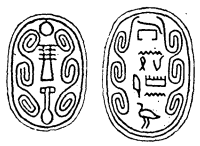


FIG. 10

CLASS 8A

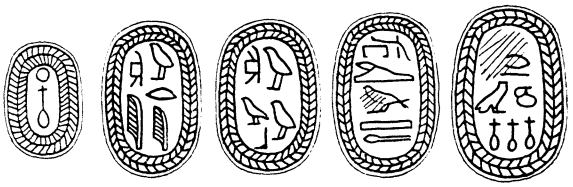
418
K

419
U

CLASS 8AA

422
K

423
U



CLASS 8B

428
K

429
U

CLASS 9E

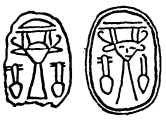
430
K

CLASS 10 C1

432
U

CLASS 10 D2

434
K



436
U

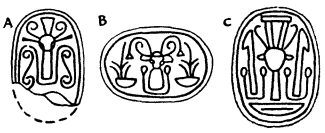


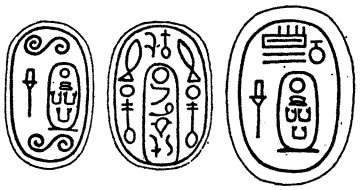
FIG. 11

Class 11 A

437
K

442

445
U



Class 11 B

448
K

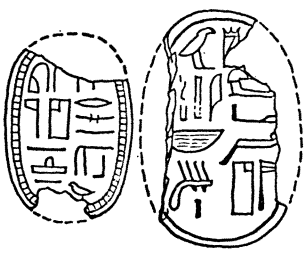
451

454

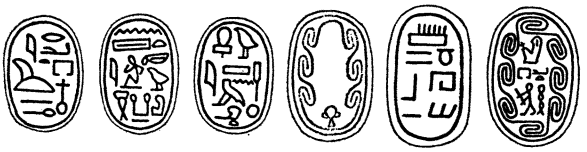
456

458

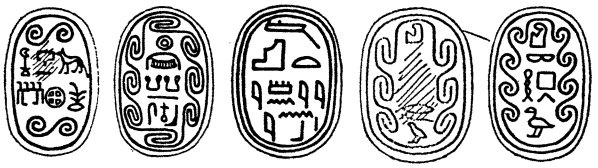
460



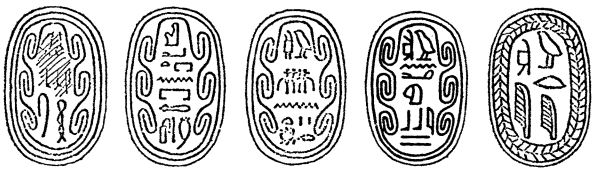
462
U



468

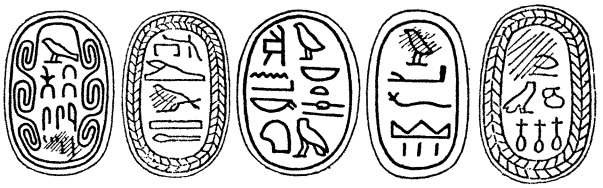


473

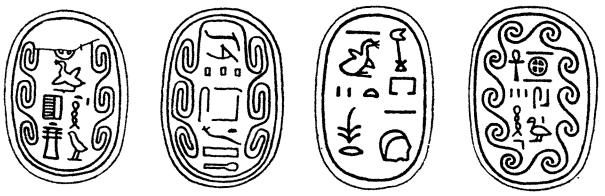


478

483



488



Class 11 C

492
K

495
U

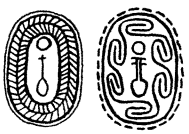


Fig. 12