



# THE LAPIDARY'S WORKSHOP AT KNOSSOS

PLATES 33-7

EVANS dates the Lapidary's Workshop,<sup>1</sup> located in the south-west basements of the Palace at Knossos, to his Re-occupation Period (LM IIIB),<sup>2</sup> thus making it and its contents one of three stone jewellery workshops known for the period LM/LH IIIB,<sup>3</sup> and implying that after LM IIIA 1(1/2)<sup>4</sup> part of the Palace at least remained an artistic and administrative centre (if the making of sealstones here implies their concomitant use as impressing agents for sealing sets of documents, tombs, etc.). Other scholars, however, such as Boardman,<sup>5</sup> date the Workshop prior to LM IIIA 1(1/2), on the basis of the styles of the motifs carried on the clay nodules and of the unfinished sealstones found in the Workshop.

The date of the Workshop is of major importance for two reasons. If the Workshop dates no later than the IIIA 1/2 period then, first, we would have supporting evidence for the common observation that later glyptic styles take a new direction from IIIA 2 on, and, second, we would have one less piece of evidence for a late, IIIB, date proposed for the collapse of Knossos as a bureaucratic centre.

Solid information about the Workshop, its character and its contents, is unfortunately scanty and contradictory. Evans describes the Workshop (PM iv. 594-5) as occupying an area of the basements south-west of the north-south corridor of the Southern Entrance system (FIG. 1). The Workshop then must be located near the Room of the Clay Signet (Room 4). Adjacent to this room is the Room of the Egyptian Beans (Room 2) in which<sup>6</sup> the lapidary, according to Evans, evidently made his home and stored in a small pithos his beans (*koukid?*) which were found carbonized. Also, according to Evans, the Workshop contained two unfinished lentoid seals (PLATE 33a-e), another unfinished lentoid (PLATE 33f-g, 34a-f) in the shape of a 'grey steatite core' with an intaglio of a cow suckling a calf, clay nodules that seem to have functioned as trial pieces with 'parts of very late animal designs', a number of marble pegs, steatite studs, shell beads, a worked oblong piece of jasper, and 'other materials for use' (FIG. 2; cf. PLATE 35a, b).

The general area produced much LM IIIB pottery. Popham<sup>7</sup> has managed to identify several of these vases; he locates nine or ten pots, his nos. 8-16 and possibly 31 here. Unfortunately, the small pithos that held the carbonized beans remains so far unidentified.

Prima facie, the character and date of the Workshop seem clear: the unfinished trial pieces

I wish to express my gratitude to Michael Vickers for allowing me to examine and publish both material from the Workshop and other sealstones now in the Ashmolean Museum, to Hector Catling for his permission to examine objects in the Stratigraphical Museum in Knossos, to John Boardman for permitting me to reproduce Evans's drawings of the Chessmen, and to John Betts and Lawrence Richardson, Jr. for their advice. The somewhat unexpected conclusions reached in this paper are, however, the responsibility entirely of the author.

<sup>1</sup> PM iv. 594-5. A preliminary publication appears in BSA vii (1900-1) 20-1. Quotes from the Daybook and Evans's Notebook appear in Palmer-Boardman's *On the Knossos Tablets* (hereafter OKT).

<sup>2</sup> The date is supported by Palmer, OKT passim and especially pp. 151-2.

<sup>3</sup> Two others are known, that in Mycenae possibly to

be located in or near the House of the Columns (i.e. the East Palace Wing; AE 1897 121 n. 1), and that in Thebes (*Kadmeia* I chapter V); both date probably to LH IIIB. Apart from these two identifiable workshops in stone jewellery there are many moulds for finger-rings and many unfinished sealstones and beads, all of which evoke more vividly the craft as a process than do the finished products; a full discussion of these is out of place here, but see Sakellarakis, AE 1972 pp. 234-44, and Younger, *Kadmos* xiii (1974) 1-5.

<sup>4</sup> The present writer accepts Popham's date, 'The Destruction of the Palace at Knossos,' SIMA xii (1970), but for the purposes of this paper he will not base his conclusions on this date in order to avoid a circular argument.

<sup>5</sup> OKT 12-13, 19-20, and 71, fig. 3 and pl. viib.

<sup>6</sup> PM iv. 595 n. 1.

<sup>7</sup> 'Last Days of the Palace of Knossos,' SIMA v.

and clay nodules, as described by Evans, would characterize the Workshop, while the LM IIIB pottery in the area should serve to fix a LM IIIB date for the deposit. Both inferences, however, are beset with problems.

*Location of the Workshop.* The description of the Workshop's location puts it somewhere about our Room 7 at the south end of Room 4, the Room of the Clay Signet, with Room 2 being the artist's dwelling. No identifiable wall is stated to have bounded the Workshop, nor is the storey identified; thus there is really no clear location for the Workshop.

*Date of the Area.* Popham was unable to locate specific LM IIIB pots in Room 2, the Room of the Egyptian Beans; all the identified vases come from elsewhere: his pots 8-11 from Room 1 to the north (Room of the Wheat), pots 6 and 7 from Room 6/5 to the west (Room of the Seal Impressions), and pots 12-15 from Room 3 to the north (Area of the Chessmen). There is, moreover, evidence for earlier deposits in the area. In the Room of the Clay Signet (Room 4) were found 'parts of a large inscribed tablet in its upper earth', while the clay signet Gill Q22 was found 'lower down'.<sup>8</sup> In *PM* ii. 767 this stratigraphical relationship is clarified: in the 'stratum underlying the tablets there came to light a clay matrix'. Associated with this clay signet were fragments of the Palanquin fresco (*PM* ii. 770-3); apropos of these fresco fragments, Evans states in his preliminary report (*BSA* vii. 19) that they 'were found underneath a deposit of clay like a simple flooring and beneath the fragments was a stratum of red earth apparently of another floor'. Cameron<sup>9</sup> suggests that the fresco may, like the Procession Fresco, have adorned two or more walls in this area; he dates the Palanquin fresco to IIIA 1, apparently on stylistic grounds, influenced by his acceptance of that as the destruction date for the Palace.

Evans's description strongly suggests a stratigraphical relationship between the tablets found in the upper level and the clay signet, along with the Palanquin fresco, found in the lower one, though it is unclear whether this relationship is the result of collapsed storeys of a single building or a succession of chronological levels.

The clay signet Q22 depicts a cult scene in intaglio (not in relief as it should were it a sealing), and in shape and motif it is obviously the counterpart of a gold ring but in clay. We also possess sealings from the ring, found in the East Quarter (Gill R1, R51, and R54). Whatever date we take for the destruction that fired them, we can determine a date for the manufacture of the ring because we also possess from the LM IB deposits at Kato Zakro a sealing<sup>10</sup> made either by the ring, by its twin the clay signet, or by a similar clay replica;<sup>11</sup> to strengthen this LM I date for the probable manufacture date of the gold ring, the vessel depicted on it (i.e., as to be seen on both the sealings and the clay signet) compares well with the double-handled polychrome goblets from Isopata T. 5 (*TDA* 26-30) dated LM I also.

It is obvious then that the gold ring was made no later than LM IB, and this early date for the ring may imply a similarly early date for the clay facsimile, and thus the clay signet and the Palanquin fresco found with it may have been deposited before the tablets were.

<sup>8</sup> *OKT* p. 154 quoting *AE/NB* 1901 p. 34. Gill numbers refer here and hereafter to those in the article, 'Knossos Sealings: Provenance and Identification', *BSA* lx (1965) 58-98, by M. A. V. Gill.

<sup>9</sup> *AA* lxxix (1964) 785-804 and lxxxi (1967) 330-44. Evans's description of the Palanquin fresco (*PM* ii. 770: the 'fragments seem to have been derived from the adjoining chamber West which was also connected with the hoard of seal-impressions') implies that in his judgement the fresco was still to be seen on its wall when the Palace was burnt.

<sup>10</sup> Hogarth/Levi no. 3 (*JHS* xxii. 76-93 fig. 2). Betts,

*Kadmos* vi. 15-28, equates the Zakro sealing with the inferred Knossos gold ring.

<sup>11</sup> *Kadmos* vi (1967) 21-2. Betts suggests that the 'Zakro sealing may well have been impressed with a replica of the Knossos ring' to account for this sealing's smaller size. This shrinking of the clay sealing may instead be due to the violent fire that destroyed the palace there. Similar distortions are known; cf. *CMS* i. 307 from Pylos, probably produced by the Danicourt Ring (Sakellariou in *Festschrift Matz* pp. 19-22), and *Wr* 1416 in *AJA* lxxv (1961) pl. 58 impressed by *AGdS* ii. Berlin 21 from Elis.

The stratigraphy, however, may not be so unequivocal in its chronological implications. It is worth remembering that only the *BSA* preliminary report specifically mentions floors, while the excavation notebook and the final publication describe only levels. These levels may imply only a vertical relationship and not a chronological sequence, especially since the whole southwest area must have been an excavator's nightmare of collapsed storeys and reused rooms. At the moment, it seems best to leave open this whole question of the chronological implications of the stratigraphy in this area, though I shall suggest later that the common assumption that the clay signet Q22 was made from a ring is mistaken, and that the clay signet was actually the matrix from which the ring was made.

At any rate, the gold ring was probably in use just prior to the destruction of the Palace, for as Betts observes,<sup>12</sup> the sealings Gill R1, R51, and R54 found in the East wing of the Palace, all show the same scene (reversed, as a negative impression, and in relief) so distinctly that these sealings are unlikely to have been produced by the somewhat worn and blurred clay signet.

Another indication that the LM IIIB ceramic material does not constitute the only datable remains comes from the several sealings found in the area. These sealings are listed by Gill according to the presumed findplaces: Q1-18 from our Room 6 (Room of the Seal Impressions), Q19<sup>13</sup>-21 from Room 4 (Room of the Clay Signet), and from this general area also come A15 'numerous fragments of hunting scenes, cattle pieces, etc.' (*PM* iv. 602), Aa 'bull-grappling' scenes (*PM* ii. 766), and others specifically but erroneously described as coming from the Workshop (see below). None exhibits the mannerisms usually associated with the glyptic styles found on late sealstones and sealings from dated LM/LH III contexts.

*Character of the Workshop.* The Workshop is identified as such by unfinished lentoids, by various worked pieces of stone, and by nodules of clay with sketches. The clay nodules must actually be sealings, though which sealings among Gill's Q series is uncertain. Gill, p. 74, provides us with the following information: in his Notanda for March 25, 1901 (*AE/NB* 1901 pp. 16-17) Evans sketched and listed sealings Q1-18 as coming from Room 4, the Room of the Seal Impressions, though later the heading on the first page (his p. 16), which also carries the sketches for Q1-7, was changed to read 'Lapidary's Workshop', presumably after the Workshop, located near Room 2 (Room of the Egyptian Beans) to the east, was excavated in mid-April some weeks later; the sealings Q19-21, said to come from Room 2 were never, however, reassigned to this Lapidary's Workshop.

The sealings Q1-7 were therefore excavated in Room 4 and then ascribed to the unspecified room, the Lapidary's Workshop, apparently after the newly excavated unfinished lentoids had alerted Evans to their implication of the presence here of a stone workshop. Evans then tried, also apparently, to connect the sealings to this workshop by misidentifying them as trial pieces, a misleading description that implies (*PM* iv. 594-5 and 595 n. 1) that they are merely sketches: a dog seizing its quarry (= sealing Gill Q4?), couchant oxen (= Q2/3?), goats (= Q6), horned sheep (= Q1 and Q7), and 'conventional palmtree' (= the frond on Q2/3?, or perhaps

<sup>12</sup> *Kadmos* vi (1967) 21-2.

<sup>13</sup> For the sealing Q19 (*PM* iv. 387 fig. 32 and p. 594) Evans says that there exist 'some reasons for referring (it) to LM IB', though he does not explain whether these are stratigraphic or stylistic. This broken sealing made by a lentoid preserves a robed man on the left facing an ape seated on a campstool on the right, while below these is a couchant animal to right and in the field are several fronds. The cluttered composition and fairly naturalistic rendering may indicate an early style, but the general scene is imi-

tated on a sealing (*CMS* i. 377) from the Pylos Palace destroyed during the transition LH IIIB to C. While here too the style seems early (there are many sealtypes from Pylos which also seem much earlier than IIIB, notably *CMS* i. 305, 307, 312, 325/6, 358, 364, 367, 370, 373), this sole recurrence of this unusual motif at Pylos suggests a tie between the two palaces, not necessarily that of contemporaneity, but that sealstones in use at Knossos just before its destruction survived it to provide the bases for later examples.



better the palm on HMs. No no. 1 (= HMs. A), a sealing otherwise not assigned a findspot). All these are true sealings, however, and their designs find good parallels among those on other sealings and sealstones dated by secure contexts to periods preceding the end of LM IIIA.<sup>14</sup> These motifs therefore do not, as Evans would have it, depict 'very late animal designs'. It is thus also clear that these sealings, inasmuch as they are not trial pieces, cannot contribute to our knowledge of the Workshop but probably belong to the wider spread of Q sealings in this whole area.

The various worked pieces of stone and other material have heretofore been published only in line drawings reproducing Evans's own sketches (FIG. 2);<sup>15</sup> but in the summer of 1977 a casual search of the contexts of Box 1878 in the Stratigraphical Museum in Knossos produced some remarkably similar objects (PLATE 35a and b). Pictured are (PLATE 35a) three long pegs of marble (the second could well be the peg drawn in FIG. 2 at the upper left, marked '[flat] wh: marble') and one long and four short pegs of grey serpentine or limestone. PLATE 35b presents an unfinished conical bead, perhaps a whorl, like one of the 'steatite studs' mentioned by Evans as coming from the Workshop.

It is difficult, however, to imagine how any of these objects could have functioned as a tool for carving sealstones, though they might have been products of the Workshop, being fashioned from drilled cores.<sup>16</sup> The pegs might conceivably have been used as rubbers or polishers (see below), but the material of all these is too soft for them to have functioned as drills. Any attempt to identify these objects as belonging to the Workshop seems futile, for they are really some of the so-called chessmen found in the Rooms of the Wheat, Egyptian Beans, and the Area of the Chessmen (Rooms 1-3), that is, scattered over this general area, much like the Q sealings.

There are in addition two unfinished lentoids (PLATE 33a-e) and the 'grey steatite core' with the intaglio of a cow and calf (PLATE 33f-g, 34c-f). The lentoids may be described as follows:

Oxford 1938.1088 (Plate 33a, b, d). Unfinished lentoid of black steatite. D. 1.6 × 1.8 cm., th. 0.7 cm., securing hole D. 0.35 cm. and depth 0.2 cm.

Oxford 1938.1089 (Plate 33c, e) Unfinished lentoid of green steatite. D. 1.7 cm., th. 0.7 cm.

This bead is rough cut in broad (c. 0.6-0.7 cm.) facets, one on the reverse face, six around a central one on the obverse (Plate 33e). The reverse was then abraded longitudinally, the obverse clockwise (on the stone).

These two unfinished lentoids are only roughly shaped by the saw. The first has an apparent stringhole (PLATE 33b) begun at one end only. Its shallowness and wide diameter suggest, however, that this boring's real purpose is to allow the bead to be held securely while its shape is completed. Such a boring on the bottom rim would serve the same purpose during the engraving of the face; cf. HM 607 (PLATE 35c, e, f),<sup>17</sup> CMS i. 386 from the Menidi Tholos (LH IIIB context—securing hole d. 0.1 cm.), and v. 413. After the shape and motif are engraved, the securing hole was presumably used to begin the stringhole. The two unfinished lentoids from the Workshop then show the first main stage of the normal engraving sequence: (1) shaping; (2) engraving; and (3) boring the stringhole.<sup>18</sup>

<sup>14</sup> For Q1 cf. CS k. 315 (LM II context; *PM* iv. 588) for the pose and the style, HM 175 probably from Kalyvia T. 8 (LM IIIA 2 context; *MA* xiv [1904] 551-666 fig. 96, and Furumark, *Chronology* 105 for the date). For Q2/3 see Levi no. 66 (*Ann* 8-9 [1925-6] 71-156 fig. 87) from Ayia Triada (LM IB context), and CMS i. 272 from Rutsi Tholos 2 cist 2 (LH IIA context; *Antiquity* xxxi (1957) 97-100 correcting CMS i. 304). For Q4 see CMS i. 253 and the frond on CMS i. 242 both from the Vapheio Tholos cist (LH IIA context). Q5 is not identified among extant sealings. Q6 may be HMs. Nu-Delta and, if so,

may be likened to the style of Q1 above. For Q7 see HM. 177 also from Kalyvia Tomb 8 (op. cit. fig. 89).

<sup>15</sup> *OKT* 14 fig. 3.

<sup>16</sup> An idea proposed by M. S. F. Hood and published in Boardman's *Greek Gems and Finger Rings*, p. 63.

<sup>17</sup> Published in *AE* 1972 pl. 90 a-gamma, omitting a view of the begun stringhole.

<sup>18</sup> See the full discussion on the stringhole in my forthcoming publication of the rock crystal lentoid from the Phylakopi Sanctuary.

The steatite core obviously does not fit into this normal sequence, for its intaglio was almost completed before the shaping of the seal, if such it was to be. Since it is technically peculiar, and since both this peculiarity and the style of the engraving may provide clues as to its date and thus to that of the Workshop, this piece deserves careful attention.

*The 'Core'.* (PLATES 33f-g, 34a-f) Oxford 1938.1087. Conoid of dark green steatite. H. max. 1.8 cm., th. max. 2.7 cm., d. of intaglio: outer 1.85 cm., inner ring 1.5 cm.

In section the conoid is a tetragon, the face cut at an angle to the bottom, so that when the conoid is placed on a flat surface the face is raked and the cow's forequarters are higher than her hindquarters.

The face is slightly convex with the intaglio cut within

a free hand (i.e. not compass drawn) circle (note the irregular arc below the calf's hindquarters).

Design. The cow stands right in impression, her hind-legs wide apart, the horns displayed, the head down to lick the back of the suckling calf which kneels below left, neck extended to suckle. The style appears summary or the seal is unfinished; the cow's tail and forelegs are missing, and the calf's head is unarticulated on a disproportionately long neck.

The motif of a cow suckling a calf is a common one (see the catalogue appended to this article), though there are certain oddities in the depiction on our core.

The catalogue (appendix) clearly shows that the majority of these suckling scenes are depicted on agate (80 per cent) lentoids (85 per cent) with the cow to the right (80 per cent). Those in the softer stones and in other shapes tend to come from Crete, while the two rings Nos. 10 and 24 were both found at Mycenae. Thus our core, on the presumption that it is a lentoid in the making, fits the Minoan conventions for depicting the cow and suckling calf.

Of the fourteen examples of this motif from dated contexts, three date definitely the before end of LM/LH IIIA; three others come from destruction deposits at Knossos, probably LM IIIA 1/2. The Gournes lentoids Nos. 7 and 8 (LM IIIB 1 context) should also be dated in manufacture to this period, on the basis of style; the heavy drill work for the eyes and joints fits the style seen on similar sealstones from the Kalyvia tombs (LM IIIA contexts).<sup>19</sup> The bronze cushion from Maleme No. 9 (LM IIIB context) seems to fit better with similar metal cushions, like CMS i. 9-11 of gold from Mycenae Shaft Grave III (LH I context) and V 593 also from Mycenae (MH-LH III A2 context), but its corroded condition makes its style difficult to assess. No. 11 from Pylos (LH IIIB late-C context) seems, by its odd proportions to relate to CMS i. 192 from the Midea Tholos (LH IIIA 1 context), though this latter seal carries a motif that was left unfinished, and subsequently altered.<sup>20</sup>

The remaining three seals dated by context (Nos. 11, 13-15) come from the mainland and seem to be stylistically later than IIIA early. No. 12 appears to belong to the LH IIIB period because of its mannered and decorative styles; No. 13 is transitional between the drilled style of the Gournes lentoids and mannered pieces; and No. 14 fits into that group of schematic animals called the Mainland Popular Style (LH IIIA 2-B).<sup>21</sup>

It therefore does not seem likely that the motif of cow and calf in a relatively naturalistic rendering was used in Crete after LM IIIA. If this is correct, then it follows that the example from the Lapidary's Workshop was probably created before the close of IIIA and does not therefore belong to Evans's LM IIIB Reoccupation Period.

In pose, our Knossos example seems fairly canonical. The kneeling position of the calf may be compared with the couchant position on No. 23 from the mainland and on No. 29, possibly from Crete (the dolphin depicted above this latter group is typical Minoan marine filler).<sup>22</sup>

<sup>19</sup> MAXIV (1904) 501-666, especially those sealstones from Tombs 1 and 8.

<sup>20</sup> A recent discussion of this seal occurs in *Kadmos* xiii (1974) 3 n. 11.

<sup>21</sup> A discussion of this group appears in the present writer's unpublished Ph.D. dissertation, 'Towards the Chronology of Aegean Glyptic in the Late Bronze Age'

(University of Cincinnati, 1973) pp. 439-41. Sealstones in this group came almost exclusively from the mainland, and when from excavated contexts they date to LH III(A 2)-B.

<sup>22</sup> Dolphins appear as the main motif on Gill R105 from Knossos's East Quarters, and as a filler on CMS v. 600 from Thera (LM IA context).

The wide space between the cow's hindlegs would more pleasingly accommodate the calf, as on Nos. 5 and 30 (PLATE 36a) but probably was left to receive the cow's tail, as on No. 3. On our piece, however, the omitted details—the cow's tail and forelegs—and the calf's peculiar neck and head make it likely that the engraving is unfinished.

We still, however, have not determined what the 'core' really is, since it is not an unfinished sealstone.

In most (85 per cent) of the suckling compositions the cow's horns are depicted as parallel wavy grooves, i.e. as horns seen in profile. Four of the seals, however, depict the horns displayed, i.e. seen from the front: Nos. 19, 24, 29, and 33,<sup>23</sup> the arrangement that appears on our core. Two of these, Nos. 33 and 19, depict the cow standing, the first regardant, the second with her head turned up, so the displayed horns respectively either fill the upper field or frame the neck in a pleasing manner. The other two cows on Nos. 24 and 29 bend their heads down in the usual manner to lick the calf's hindquarters. The stylized head of No. 29 resembles a schematic bucranium, and it is probably this curious trait that led its publishers to doubt its authenticity, though it certainly is genuine.

The remaining composition showing the cow with her head down but her horns displayed appears on the gold ring No. 24 (PLATE 35d) from Mycenae T. 90. Here the cow's horns appear almost exactly as those on our core. In fact, the two pieces closely resemble each other in many ways: the elongated body of the cow, her widely placed hindlegs (to make room for the tail), her proportionately short forelegs, her large eye, the elongated calf's neck and the unfinished appearance of its head, and the over-all summary modelling. This close resemblance strongly suggests a close relationship, that the two pieces were created by the same artist in the same workshop—the Lapidary's Workshop at Knossos, and that the Knossos core is actually a stone mould for a metal plate, presumably gold.<sup>24</sup>

There is only one other mould for similar plates known, *CMS* v. 422 from Eleusis T. Hπ9 used in making gold rings, both bezels and hoops (PLATE 36c, e). One bezel mould (422a) shows two birds, the other (422b) shows two female adorants before a shrine. Both motifs are engraved in recessed (approximately 0.20 cm. deep) elliptical fields, and both motifs are only summarily rendered, presumably so that finer details could be added in retouching the bezel's plate. Since these designs are engraved in the stone, the gold plates could not have been cast directly, for then the designs would appear on each plate in relief, that is, as a negative of the original, while the top of course would be flat. Either the gold plate must have been cast as a positive from a clay negative taken from the mould, or else a sheet of gold foil was laid in the engraved recessed field to receive the design by tapping and rubbing, much as inscriptions in stone are copied by squeezing (even though these are normally read in negative); thus, on the thin gold plate a negative impression of the design would be created in relief on its bottom (the reverse) and in intaglio in a positive impression on its upper (obverse) surface, the latter then to be used as the face of the ring's bezel.

Most gold rings have elliptical bezels formed from two fairly thick plates, for the front and back of the ring, facing a core of bronze or iron, or hollow and filled with a fine dense sand.<sup>25</sup> Such rings would probably have been cast either from clay impressions taken from

<sup>23</sup> The *CMS* drawing for No. 12 from Pylos (LH IIIB late-C context) is inaccurate. The horns are in the usual position, but a crack in the sealing has been interpreted as the horn on the right.

<sup>24</sup> Another mould has been occasionally discussed as a trial piece, *CMS* xii 262, said to be from Poros near Herakleion; it has three recessed tondi with animals in relief. It is thus

for casting impressions in intaglio in some soft or fluid material as clay, glass or molten metal like gold. Kenna first thought (*CS* p. 77) that glass was used, but later (*CMS* xii p. 353) suggested both glass and gold with which Sakellarakis (*AE* 1972 p. 238) agrees. The present writer thinks glass only is appropriate (*JHS* xcvi [1976] 254).

<sup>25</sup> Personal inspection of the gold rings (*CMS* i. 15 and

those stone moulds that have their designs engraved like those of the Eleusis mould or, more probably, from stone moulds with designs in relief, though none survives.

A few rings, however, are made in another way. An elliptical bronze or iron plate is plated with gold and set into a shallow gold cup, the ends of the hoop being inserted into this cup behind the plated bezel core. Several such rings are extant: a bezel from Sellopoulo T. 4 (PLATE 36b),<sup>26</sup> two other bezels from Kalyvia,<sup>27</sup> one from Perati T. S51 (ANM 8803), and a complete gold ring from Zafer Papoura T. 7<sup>28</sup>—four come from LM IA contexts, while the Perati example comes from a LH IIIC context. Two other similar but undated gold rings have their hoops intact: the Benaki ring CMS v. 198 (PLATE 36d, f, g), said to be from Thebes, and the rings from Pyrgos (PM ii. 75 fig. 34b) and Koukaki (ANM 7743), the latter two now lacking their bezel. Though the Knossos 'core' could not have been used to create elliptical bezels for rings, it is probably not a coincidence that its motif is surrounded by an engraved circle which would have produced in a thin plate a shallow ridge on its reverse; this rim on the plate could have then been used to secure it to backing—such a rim can be seen on all the bezels mentioned above.

While examining the 'core' at the Ashmolean Museum in the summer of 1977, I tested the hypothesis that it is a matrix for a thin gold plate by placing a sheet of aluminium foil (common baking foil) over it and rubbing it gently with the eraser (rubber) end of a pencil. This process produced an adequate reproduction of the suckling scene (PLATE 34d, e show the design as taken directly from the 'core', i.e. in intaglio; PLATE 34f, showing the design in relief, reads better since the foil on this side is matt). Similar results could well have been produced in gold foil with the stone pegs, the Chessmen, of FIG. 2 as rubbers.

On the assumption that the Knossos 'core' is a mould for a gold plate, it could have produced circular ring bezels like that of the LM IIIA 1 ring from Archanes Tholos B (LM IIIA 1 context),<sup>29</sup> the ring from Mavrospelio T. IX (LM IA context),<sup>30</sup> and CMS vii. 68, provenance unknown; these three, however, have flat bezels of solid gold attached directly to their plain hoops, and therefore hoop and bezel were probably cast together, and the face engraved after casting. It is, however, more likely that the Knossos mould produced a thin gold plate for the face of a gold lentoid seal<sup>31</sup> like CMS v. 200 in the Benaki Museum (PLATE 37a, b, d). The latter piece may be even more directly connected to our mould, since it seems to have been made of two plates soldered together over a core, probably of sand as the seal is now hollow, and since it carries the motif of a cow with head down under the belly to be scratched by a hind leg, much like the pose of our own cow.

Gold and stone working have long been casually associated, and while a catalogue of stone objects originally covered with gold foil is unnecessary, a few reminders may be in order: a rhyton from Palaikastro (PM i. 676 fig. 496) depicts a gold-plated boar; HM 3323, a bull's head rhyton from Kato Zakro, preserves bits of gold foil in the nostrils; and the Sanctuary rhyton, also from Kato Zakro preserves traces of gold foil here and there.

Three sealstones still preserve their gold plating: CMS ix. 204 and V 197, and CS no. 203

16 [Mycenae Shaft Grave IV; LH I], 128 and 129 [Mycenae T. 91; LH II-III]; BSA lxix [1976] 195-257, J8 [Sellopoulo T. 4; LM IIIA 1]; MA xiv [1904] 501-666 figs. 51 and 50 [Kalyvia Ts. 2 and 11; LM IIIA]; and of the following gold seals (CMS i. 9 and 11 [Mycenae Shaft Grave IV; LH I], 274 [Rutsi Tholos 2; LH IIA], 293 from Pylos T. Delta, and CMS v. 200) has convinced the present writer that it is unlikely that any gold ring is of solid gold. All the above are hollow, with the Shaft Grave rings, the Sellopoulo ring, and the Rutsi seal showing visible evidence

of a bronze core.

<sup>26</sup> BSA lxix (1976) 195-257, J7.

<sup>27</sup> MA xiv (1904) 501-666 figs. 11 and 12.

<sup>28</sup> PTK pp. 25-7 fig. 21.

<sup>29</sup> Praktika 1967 pl. 137a.

<sup>30</sup> BSA xxviii (1926-7) 264-9 fig. 37 pls. 18 and 19.

<sup>31</sup> The 'core' as a matrix could also have produced articles like the gold sequins of the Mycenae Shaft Graves. The motif of cow suckling her calf, however, is almost exclusively used for sealstones and rings.



(PLATE 37*c, e, f, g*); we may add the gold covering *CMS* iv. 39D for a lost cushion seal. All these pieces are genuine, in spite of the doubt raised about the last. The gold plating on *CS* no. 203 might be thought to be a later addition to protect the soft stone; the motif, however, is still crisp, which implies that the gold was laid over the seal while the carving was fresh. In addition, note the incised horizontal groove at top and bottom, obverse and reverse, apparently to anchor the foil in place, as in previous examples. This groove, which perhaps caused the foil to weaken here, may have also caused the foil over the ends to come away.

We may infer that, if the groove is essential to the process of covering sealstones with gold foil, then such seals as *CMS* i. 172 and x. 261 may also have once carried gold foil, especially when we note the small straight lines in the field of both seals, lines similar to those on the gold lentoid *CMS* v. 200 and on the seal of green stone *CM* 237. Other grooves found incised on seals, however, may be fillers like that on *CMS* v. 642, or intended to give in impression the illusion that the seal was fitted with gold caps, like the grooves on *CMS* v. 439. In any case, we may now see the groove around the scene on our stone matrix as designed to give the foil moulded over it a ridge to anchor the foil to its backing.

*CS* no. 203 also provides us with additional information about the process of gold-plating seals; a green substance can be seen in the reverse cracks (dark grey in PLATE 37*f*); a similar green substance occurs on *CS* no. 228, a bronze cushion seal, and Kenna (*CS* p. 122) suggests that this green substance was a solder to hold some kind of gold covering, though he imagines it to be part of an enamelling process. In addition, the stringhole of *CS* no. 203 was made large (d. 0.4 cm.) to receive a bronze pin, remains of which can barely be seen in PLATE 37*c*; perhaps this is part of a hoop,<sup>32</sup> but more likely it is part of a swivel pin that secured the seal to a ring.

#### CONCLUSIONS

The Lapidary's Workshop is only an inference from a group of objects excavated in the south-west basement of the Palace at Knossos by Evans. The unfinished lentoids and the steatite core, here identified as a matrix for circular gold plates, may have been found together, but the other pieces Evans associated with the Workshop, the stone and ivory objects (the Chessmen) and the clay nodules (now recognized as sealings) were found scattered over a wider area. If the stone and ivory objects found in Room 3 and the room adjacent to the west, also belong to this Workshop, they may be tools for tapping gold foil over the steatite matrix in order to reproduce its motif.<sup>33</sup>

Since it now seems likely that the Workshop produced stone and gold seals, it is tempting to reinterpret the clay signet Q22 also as another matrix. We do not know exactly where the objects that actually identify the Lapidary's Workshop were found, but Evans seems to put them near Room 4 where the clay 'signet' came to light, and it is therefore conceivable that it too is part of the Lapidary's stock. If it is, then we have one firm date for our artist and his tools, LM IB, since Q22 may be the matrix for the ring that made sealings found at Kato Zakro and Knossos.

There is nothing against this early date for the Workshop. Stratigraphically Q22 was found below a level containing tablets and therefore may be earlier than the Destruction of the Palace; the parallels to the composition of cow and calf engraved on the steatite matrix point

<sup>32</sup> A similar hoop has been hypothesized for the seal that impressed the sealing from Dawkins's excavation of the Menelaion (*BSA* xvi (1909-10) 4-11 fig. 5 and pl. iii*a*). A closer inspection of the sealing, however, reveals the

impression of a string, not of a hoop, that secured the seal probably to the wrist of its owner.

<sup>33</sup> Compare the tools from the Artisan's Grave (LH IIIA late-B), *Athenian Agora* xiii. 231-2.

to a date no later than LM IIIA 1; and all the ring bezels consisting of thin plates resembling the circular ones that could have been taken from our steatite mould come also from LM IIIA 1 contexts, with the implication, if not the certainty, that they were produced earlier.

If the unfinished lentoids and the steatite core do belong to one artist whose workshop need not be located anywhere near the findspots of his tools, and if the core is really a mould for thin circular gold plates, as seems likely, then the Workshop housed at least two separate, if related, industries, production of stone beads and sealstones, and production of gold rings (specifically *CMS* i. 125 and that attested by the Kato Zakro and Knossos sealings) and gold seals, like the Benaki lentoid *CMS* v. 200.<sup>34</sup>

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# APPENDIX<sup>35</sup>

## A. By dated context

1. LM IB, Hogarth/Levi no. 158 from Kato Zakro. Impression made by a lentoid. Cow to right, calf not preserved.
2. LH IIB, *CMS* i. 140 from Mycenae Ch. T. 515. Lentoid of agate. Cow to left.
3. LH IIIA 1, *Prosymna* fig. 582 from *Prosymna* T. 33. Lentoid of agate. Cow to right.
4. LM IIIA 1/2(?), Gill R10 from Knossos. Impression made by a lentoid. Cow contorted right, calf regardant.
5. LM IIIA 1/2(?), Betts 13 from Knossos. Impression made by a lentoid. Cow to right; cow suckles her between the hind legs.
6. LM IIIA 1/2(?), Betts 61 from Knossos. Impression made by a lentoid. Cow to right.
7. LM IIB 1, *Deltion* 4 pl. 5.4 from Gournes T. 1. Lentoid of agate. Cow to right, calf regardant.
8. LM IIB 1, *Deltion* 4 pl. 5.6 from Gournes T. 2. Lentoid of agate. Cow contorted right.
9. LM IIB, *CMS* v. 298 from Maleme. Cushion of bronze. Cow to right, calf regardant?
10. LH IIB late-C 1, *CMS* i. 20 from Mycenae, House of the Warrior Vase.<sup>36</sup> Ring of rock crystal. An antithetic pair of cows suckling a calf.

<sup>34</sup> Contrary to Boardman's statement (*GGFR* p. 63) that 'there is no need to suspect that the seal engraver was also a jeweller, although the gold rings at least may always have been jeweller's works, including their intaglios. Their style seldom quite matches that of the stone seals.'

There is, instead, probably a closer relationship than Boardman credits here. Surely the lion on the gold cushion seals (*CMS* i. 9 and 10) from Mycenae Shaft Grave III is the same to be seen on the agate lentoids *CMS* i. 243 from Vapheio and v. 435 from Nichoria, among many others (see my article, 'The Mycenae-Vapheio Lion Group' *AJA* lxxii, 1978, 285-99). The griffin on *CMS* i. 389 is probably by the Danicourt Master who was first identified by Boardman (*RA* 1970, 3-8) to have created the Danicourt Ring and *CMS* i. 17 and 18, and probably *CMS* i. 307 from Pylos (Sakellariou, *Festschrift Matz* 19-22), though Boardman seems to disagree since he places this sealing in his Mycenaean Group C as opposed to the others which are in his Group A (*GGFR* p. 395). And our steatite mould and *CMS*

11. LH IIB late-C, *CMS* i. 364 from Pylos. Impression made by a lentoid. Cow to right.
12. LH IIB late-C, *CMS* i. 376 from Pylos. Impression made by a lentoid. Cow to right.
13. LH IIIC, *CMS* v. 317 from Krissa Ch. T. 3. Lentoid of agate. Cow to right.
14. LH IIIC, *CMS* v. 404 from Medcon T. 239. Lentoid of bone. Cow to right.

## B. Undated Minoan contexts

15. Gill Q7 from Knossos. Impression made by a lentoid. Cow (contorted?) right.
16. *CM* 303 from Knossos. Lentoid of steatite. Cow contorted right.
17. *CMS* xiii. 28 from Chersonisos(?). Cushion of agate. Cow contorted to left.
18. *CMS* i. 509 from Crete. Lentoid of meteorite. Cow contorted right, calf kneeling.
19. *CMS* xii. 306 (Seager collection suggests Crete). Lentoid of grey-green steatite. Cow stands to right, head back.
20. *CMS* viii. 85 (Dawkins collection suggests Crete). Cut-down lentoid of dark-green steatite. Cow contorted right.
21. *CMS* viii. 91 (Dawkins collection suggests Crete). Broken lentoid of carnelian. Cow to left.

i. 125 the ring from Mycenae probably are by the same hand, while the Eleusis stone mould for gold ring bezels demonstrates that such a hand belonged to a stone engraver as well as a jeweller.

In addition, *CMS* i. 91 a gold and, probably, silver ring carries a motif, two bulls couchant, the far one's head averted, found otherwise only on stone seals.

<sup>35</sup> The sealstone figured in *Munich Jahrbuch* iv (1909) 99 pl. 2.2 is omitted since the present writer has not been able to consult it.

<sup>36</sup> Schliemann, *Mycenae* 112 no. 175, 131-2, states that the ring was found 'at a depth of 20 feet below the surface', which, according to his plans B and BB, Vertical section on AB, would place the ring near the basement floor of the House of the Warrior Vase; this house, like the others south of Grave Circle A was built when the citadel was enlarged and refortified in LH IIB. The Warrior Vase is LH IIIC 1 and dates to the first destruction c. 1120 B.C. Other finds from this house support a LH IIB-C 1 date.

## C. Undated Helladic contexts

- 22. *CMS* i. 67 from Mycenae T. 27. Lentoid of agate (called onyx). Cow contorted right.
- 23. *CMS* i. 104 from Mycenae T. 68. Lentoid of agate (called onyx). Cow contorted left, calf couchant left and regardant.
- 24. (PLATE 35d) *CMS* i. 125 from Mycenae T. 90. Gold ring. Cow to right.
- 25. *CMS* v. 663 from Thebes. Megalo Kastelli Ch. T. 1. Lentoid of agate. Cow to left.

## D. Provenance outside the Aegean

- 26. *CMS* vii. 160 said to be from Calabria. Lentoid of agate. Cow to left. Above, a lion(?) in flying gallop attacks the cow's hind quarters.
- 27. *Tocra* ii. F 160, pp. 80-1, 83, 85 fig. 38 and pl. 40.

Lentoid of red serpentine. Cow stands right, regardant.

## E. Provenance unknown

- 28. *CMS* vii. 236. Lentoid of agate (said to be sapphirine chalcedony). Cow contorted right.
- 29. *CMS* ix. 24D. Lentoid of haematite. Cow contorted right; calf couchant. Above, a porpoise.
- 30. *CS* k. 243. Lentoid of haematite. (a) Boar of bull's head; (b) (PLATE 36) Cow contorted right; calf kneels between the hind legs.
- 31. *AGDS* ii. Berlin 47. Lentoid of agate. Cow to right, calf regardant. Above, an impaled triangle.
- 32. *CMS* xiii. 29. Lentoid of chalcedony. Cow to left, tree at left.
- 33. *CMS* xiii. 30. Lentoid of red jasper. Cow stands to left, regardant.



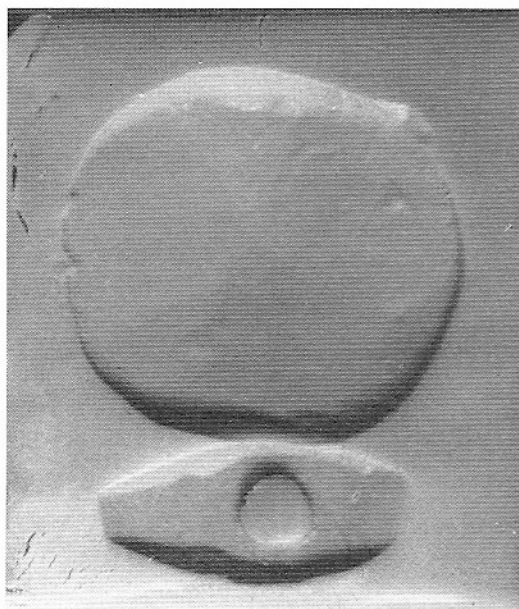
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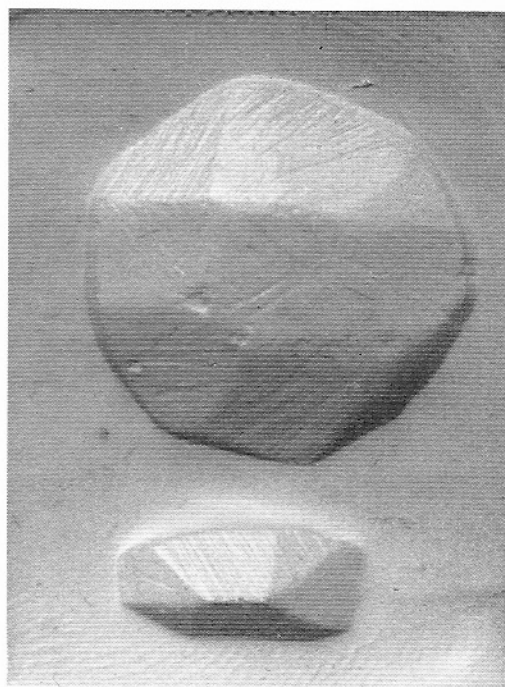
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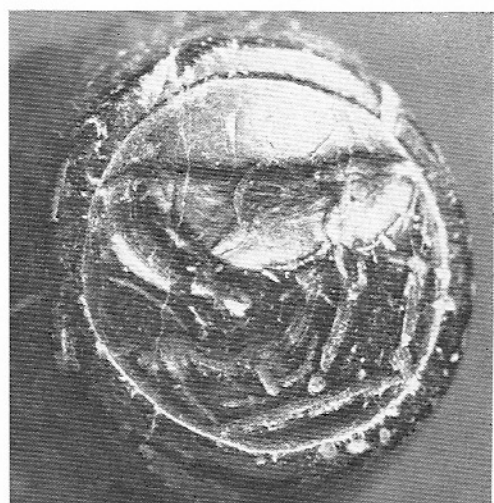
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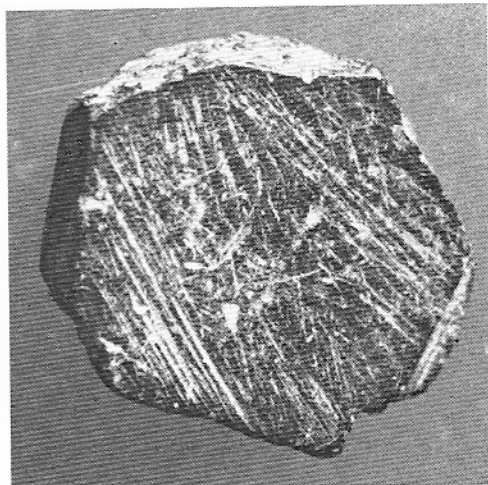
# THE LAPIDARY'S WORKSHOP AT KNOSSOS

(a) AM 1938.1088. Unfinished sealstone(?) from the Lapidary's workshop; (b) same. Detail of securing hole; (c) AM 1938.1089. Unfinished sealstone(?). Detail of profile; (d) AM 1938.1088. Impression; (e) AM 1938.1089. Impression; (f) and (g) AM 1938.1087. The 'steatite core' from the Lapidary's workshop. View of face

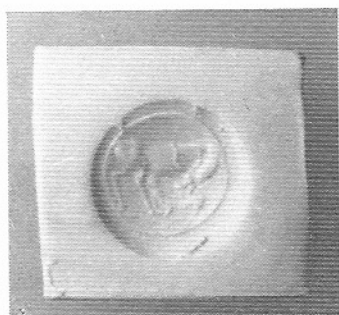




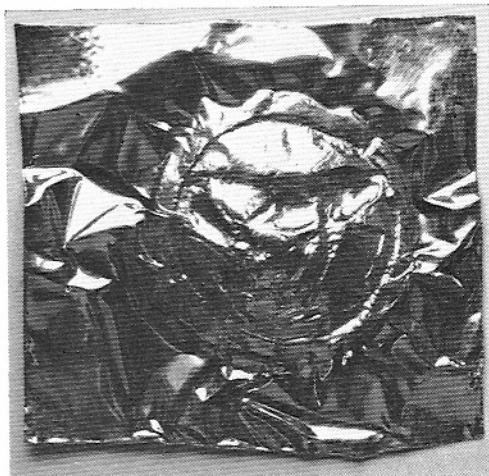
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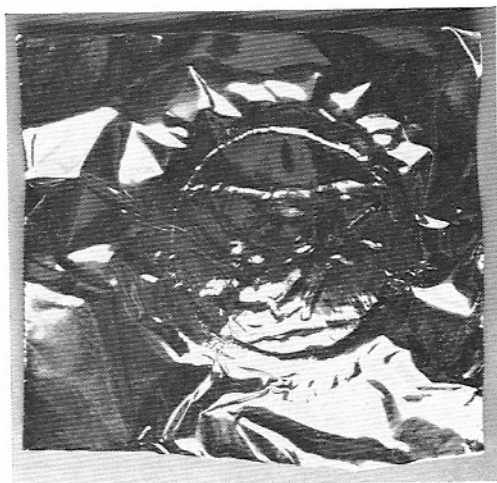
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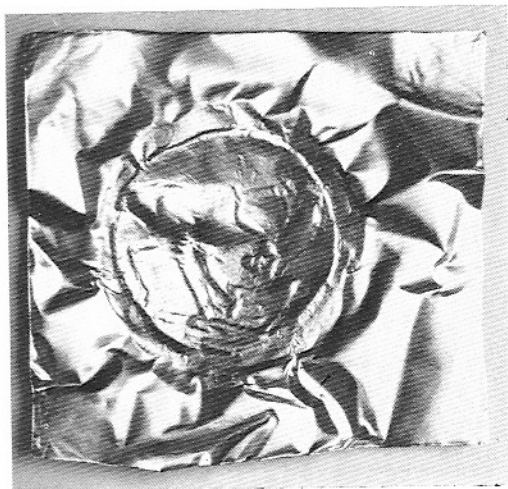
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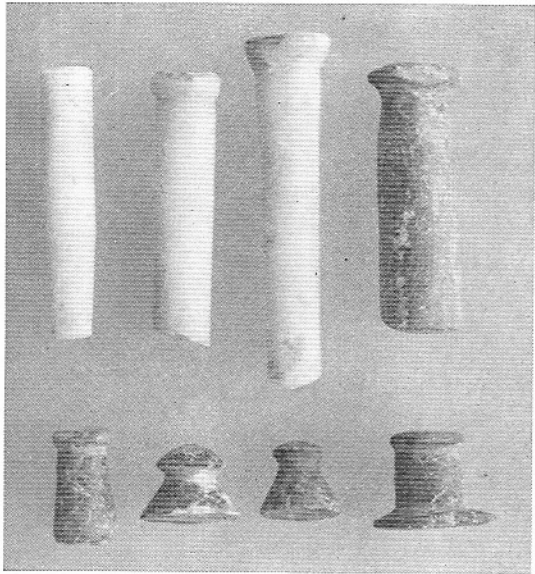
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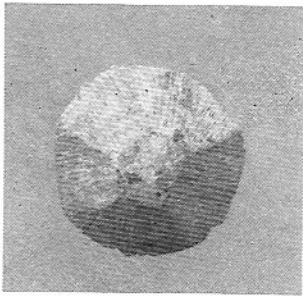
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THE LAPIDARY'S WORKSHOP AT KNOSSOS

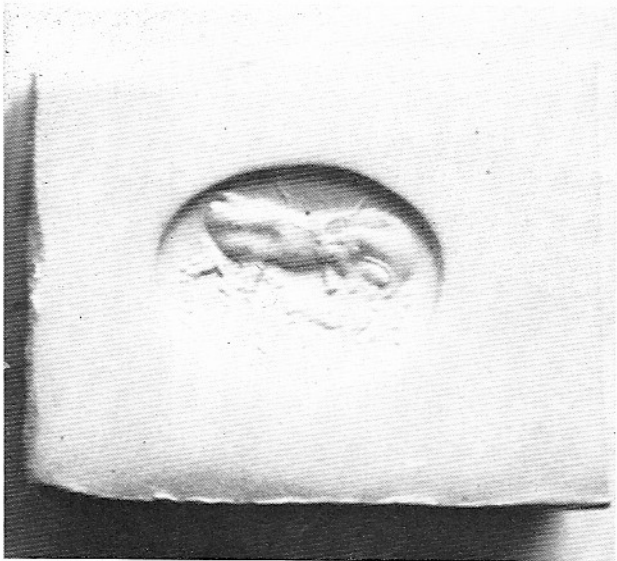
AM 1938.1087: (a) profile; (b) back; (c) impression; (d) and (e) aluminium foil impression; (f) foil impression, reverse



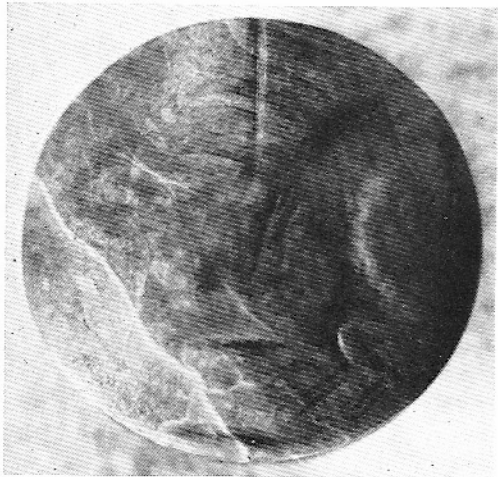
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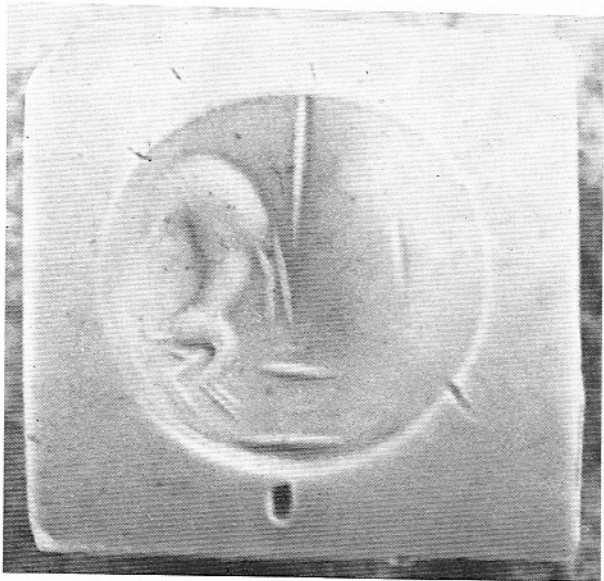
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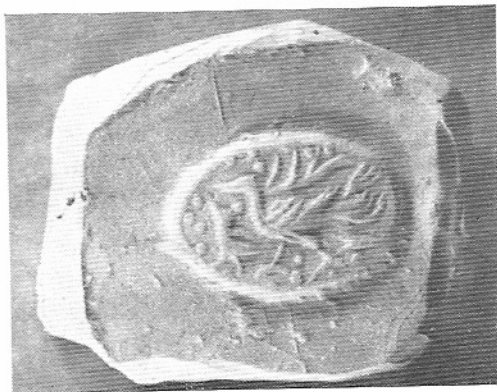
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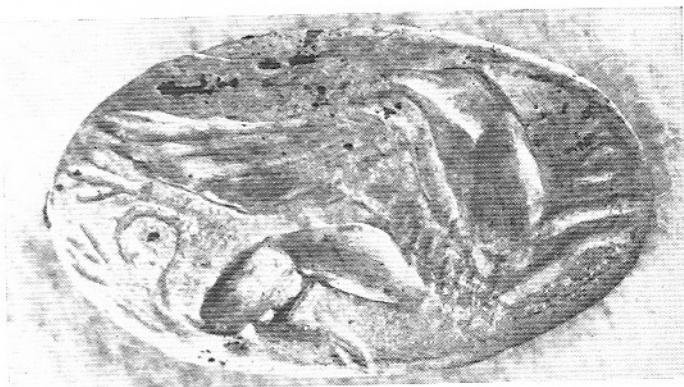
(f)

THE LAPIDARY'S WORKSHOP AT KNOSSOS

(a) Chessmen, found in box 1878, Stratigraphical Museum, Knossos; (b) unfinished bead in box 1878; (c) HM 607. Unfinished lentoid Face; (d) CMS I 125, gold ring from Mycenae T. 90. Impression; (e) HM 607. Detail of securing hole; (f) HM 607. Impression



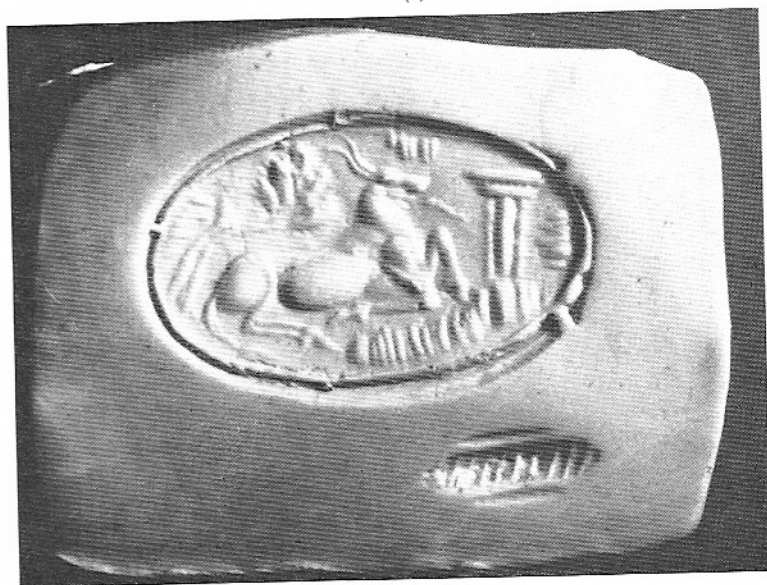
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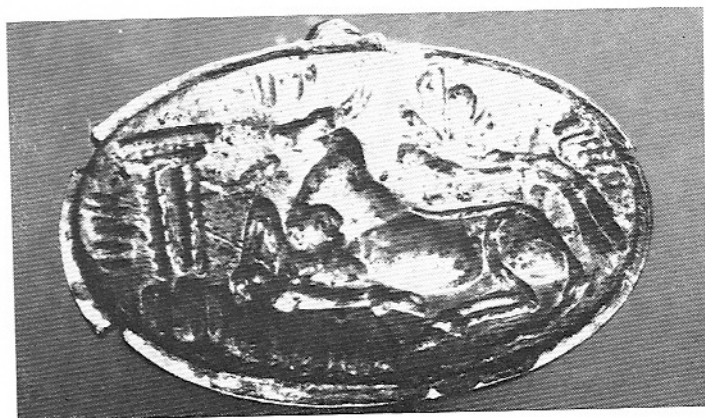
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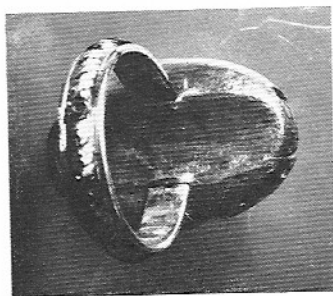
(d)



(e)



(f)



(g)

# THE LAPIDARY'S WORKSHOP AT KNOSSOS

(a) CS k. 243 b. Lentoid of haematite. Sealface; (b) bezel from Sellopoulo T. 4 (LM III A:1 context); (c) and (e) CMS V 422(a) and (b). Mould for rings from Eleusis T. H/II 9. Impression; (d) CMS V 198. Gold ring in the Benaki Museum. Impression; (f) CMS V 198. Face of bezel; (g) CMS V 198. Hoop and back of bezel





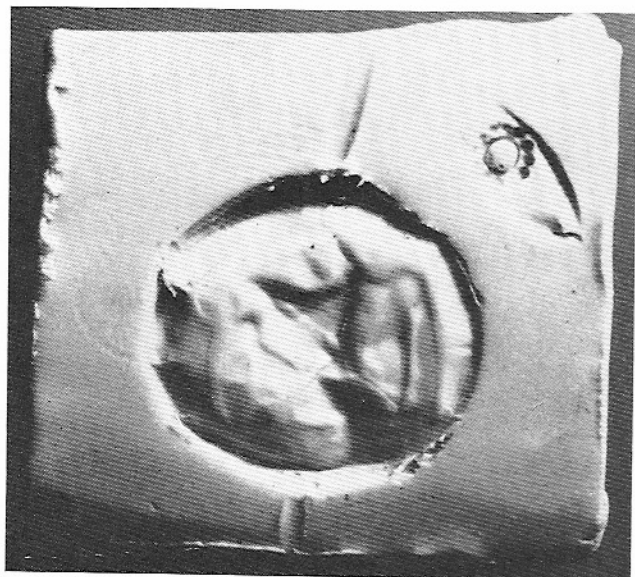
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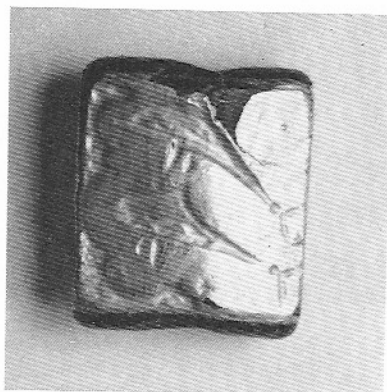
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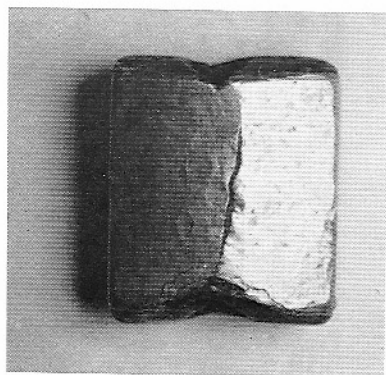
(c)



(d)



(e)



(f)



(g)

## THE LAPIDARY'S WORKSHOP AT KNOSSOS

(a) CMS V 200. Gold Lentoid in the Benaki Museum. Face; (b) same, detail of rim and gold mount; (c) CS k. 203. Gold-plated cushion seal. Detail of end, showing remains of bronze swivel pin; (d) same, impression; (e) CS k. 203. Obverse; (f) CS k. 203. Reverse; (g) CS k. 203. Impression