

EARLY HELLADIC CLAY SEALINGS FROM THE HOUSE OF THE TILES AT LERNA¹

(PLATES 19-29)

IN the course of the excavations by the American School of Classical Studies at Athens conducted at Lerna in 1954² a large group of clay sealings was found in the burnt debris of Room XI in the House of the Tiles.³ The number and variety of seal types represented and the circumstances of finding, in a closed deposit, make it appear useful to present an account of this material in advance of the general publication of the site. Several related pieces found elsewhere in the excavations receive notice here; a second considerable group of clay sealings found in 1955 in Room DM, near the House of the Tiles, will be fully published after further study.

The sealings are lumps of clay which were pressed when moist upon various boxes and jars, as the marks on the undersides of the lumps indicate, then stamped each with one or two seals upon the exposed surface, and allowed to dry. One hundred and forty-three fragments, representing perhaps one hundred and twenty-four different sealings and bearing impressions of seventy different seals, were found in this one room. The diameters of the seals range from 0.015 m. to 0.051 m., but the average is about 0.026 m., and approximately a third of the seals fall close to this figure in diameter. Color and type of joins between fragments indicate that the sealings were broken, possibly in the course of looting, before the fire took place which destroyed the House and preserved the sealings by baking them. The sealings with the objects which they sealed may possibly have been stored originally in the space immediately above Room XI and have fallen as the upper story collapsed, since the fragments were found not only on the floor, but throughout the debris. Room XI opens only on the outside of the House and seems therefore to be poorly adapted as a storeroom.

¹ This paper is part of a dissertation presented for the degree of Doctor of Philosophy in Yale University. It was completed in its present form in January, 1957.

² I should like to express my thanks to the director of the excavations, John L. Caskey, for permitting me to study the Lerna seal impressions and for his constant help and advice in the preparation of this catalogue. I should also like to thank Ann Perkins, Edith Porada, and N. Platon for their assistance and suggestions, and Dr. and Mrs. Styl. Yamalakis and Agnes Sakelariou for the opportunity to examine the Yamalakis collection of seals. The drawings of the seal designs, Plates 20-22, are by Piet de Jong, who has accurately clarified the obscurity of many of the impressions; in a few instances, noted in the text, he has used his experienced judgment in recording what he believes to have been the seal cutter's intentions. The photographs were taken by John L. Caskey, and the developing and printing were done by the photographic department of the Agora Excavations, under the supervision of Alison Frantz. The drawings of the sealings, Plate 19, were done by Lloyd Cotsen, with the exception of the fifth, which was drawn by Davina Best.

³ *Hesperia*, XXIV, 1955, p. 41.

The pottery discovered in the same debris consists principally of fragments of saucers and sauceboats in plain and slightly glazed wares. Early Helladic patterned ware occurs only in levels later than that of the House of the Tiles.

In addition to these sealings, another (36)⁴, of a distinctive seal and sealing type, was found in 1953 in the debris of Room VI. In 1955, an additional impression (48) of the seal and sealing type of 44-47 (S25) was found in Square E7 among stones of a ruined wall of earlier date than the House of the Tiles. Since there was some disturbance in this area on the edge of the mound, the impression may have come down from the upper level. It is catalogued here because its seal and sealing type clearly belong to the group from Room XI. Another impression (Inv. L4.320)⁵, from a deposit of pottery in Square F7, in a stratum one or two phases earlier than the House of the Tiles, will not be catalogued here. Its seal type, an unusually simple loop design, and its sealing type, a variety showing the marks of regular basketry, are both unlike those of the Room XI group.

One more impression should be mentioned in connection with this major group of sealings. A rectangular object of terracotta, perhaps a loomweight (Inv. L4.204, L. 0.057, W. 0.044, Th. 0.032), pierced lengthwise by two holes, was found in Room CA in Square F7, at the level 4.70 m. A.T., about that of sealing Inv. L4.320. On its sides are three very indistinct impressions made by a seal 0.017 m. in diameter. The design may possibly have been tripartite like that of Type S3.

No seals of the type or period represented by these impressions have been found at Lerna. Analogy with circular Cretan seals of similar size suggests that the seals which made the impressions were of ivory, or perhaps of wood; if so, the fire would account for their absence. It is also possible that the seals were of stone. Two seals of terracotta, crudely designed, were found in 1954 in later Early Helladic strata, associated with sherds of patterned ware; they are chiefly remarkable for their lack of resemblance to the impressions. One (Inv. L4.67) was found in the debris of the House of the Tiles or just above it in late Early Helladic context. It is a rough cone, bearing on its flat circular face (D. 0.027) an incised design consisting of two concentric circles, an irregular wavy line running between them, and a pellet in the center. The other seal (Inv. L4.218), from a bothros later than the House of the Tiles and over its central portion, has a ring handle, broken, and a rectangular face (L. 0.031) showing in high relief a double design of lines and rectangles.

Two further seals discovered in 1955 are dated to the late phase of the Early Helladic period or possibly to the earliest Middle Helladic. One (Inv. L5.378) of stone or very hard clay shaped like a pestle shows a very simple design of lines on its oval face; it was found in Square F7, in a street of later date than the House of the

⁴ *Hesperia*, XXIII, 1954, p. 24, pl. 10, c.

⁵ *Hesperia*, XXIV, 1955, p. 45.

Tiles. The other (Inv. L5.390) was found over the northeastern part of the House of the Tiles and is roughly conical, made of terracotta covered with a black glaze or slip. The design on its circular face is a simple and irregular version of the hatched quadrant.

The deposit of seal impressions found in Room DM during the season of 1955 is dated one or two phases earlier than the House of the Tiles.⁶ I have not yet been able to study this material, and it will not be catalogued here. A preliminary investigation has distinguished five different designs, including two with spirals (one bipartite, one tripartite), one with a rosette, one simple hatched quadrant (an oval seal), and one with three-leafed elements and a trefoil. (The three-leafed element is distinguished from the trefoil by the fact that its three leaves extend, like fingers, in the same direction). As a group these seal types are somewhat simpler in design than those of the main collection. One further seal impression, on an E. H. jar handle, has been found at Lerna; it is circular and of hatched quadrant design.⁷ The finding place is probably contemporary with the House of the Tiles, but the pot and the seal appear to be earlier.

The following catalogue is divided into two parts. The first describes the fragments of clay themselves under six headings (Sealing Types A, B, C, D, E, and Unclassified) according to the type of object to which the sealing was attached. Each sealing type is described in detail at the beginning of its section. As will be seen, the first two types include by far the largest number of fragments, but it is doubtful whether one may conclude that boxes and chests were more common than jars in the storerooms of the House of the Tiles. Considering the size of the poles of which they were constructed, one must assume that some of the boxes were large and perhaps carried more than one sealing (Type A). The number of containers is therefore uncertain, although the total number of sealings can be estimated. In any case it is unlikely that all of the containers represented by the sealings could have been stored in the small space above Room XI, and few fragments of jars were recovered in the debris. If they were kept in near-by storerooms, it is hard to explain the presence of the broken sealings in one place. The contents are unknown, having been completely burned; wine or oil may have been kept in the jars, and possibly grain or manufactured goods in the boxes.

The second part of the catalogue describes the seal types. From an analysis of the relative incidence of seal types and sealing types it seems clear that there was no connection between the seal design and the object which it marked. Fragments of Sealing Type A, for example, show impressions of fourteen different seals; design S3 occurs on fragments of Type A and of Type B. The table below illustrates this

⁶ *Hesperia*, XXV, 1956, pp. 168-169, pl. 44, e and f.

⁷ *Hesperia*, XXV, 1956, p. 169, pl. 44, d.

incidence for the entire collection. Occasionally impressions of two different seals, but never more than two, are found on the same sealing; these are also included in the table.

TABLE OF INCIDENCE

Sealings on which two different seal types occur are underlined.

	TYPE A	TYPE B	TYPE C	TYPE D	TYPE E	TYPE U
S1	<u>1-6, 7,</u> <u>8</u>					
S2		<u>37</u>				
S3	35	<u>38, 39</u>				123, 124
S4						137
S5						125
S6			<u>73</u>			
S7	36					
S8						128
S9					98, 99	
S10						127
S11	10	40			100	
S12					<u>101, 102</u>	
S13		<u>71</u>				
S14			<u>74, 75</u>	<u>97</u>		
S15					115	
S16		41, 42				129
S17					103	
S18				89, 90		
S19					104, 117	
S20					105	
S21		43				
S22	11					
S23			<u>76</u>			
S24		<u>44</u>				
S25		<u>44, 45, 46,</u> <u>47, 48</u>				
S26	12-20					
S27					118	
S28				91		130
S29			<u>77</u>			
S30						131
S31			<u>87</u>			
S32		<u>49, 50</u> <u>67</u>				<u>138, 139</u>

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	TYPE A	TYPE B	TYPE C	TYPE D	TYPE E	TYPE U
S33		51				
S34					106	
S35				92		
S36						132
S37		72				
S38		52				
S39		<u>55</u> <u>53, 54</u>			<u>107, 108</u>	
S40		<u>55, 56</u> <u>53, 54</u>	78		<u>107, 108</u>	
S41		<u>49, 50</u>				<u>138</u>
S42				93		
S43					119	
S44					109	
S45					110	
S46	<u>21</u>					
S47		57				
S48						133
S49	<u>22, 23,</u> <u>24</u>					
S50					111, 112	134
S51	25, 26					
S52					113	
S53				94		
S54	<u>27</u>					
S55	<u>28, 29,</u> <u>21</u>	58-65				
S56	<u>30</u>					
S57	<u>7, 8, 9</u>	66				
S58			79			
S59			<u>74</u>	<u>97</u>		
S60			<u>86</u>			
S61	31-34					
S62						135
S63					116	
S64			80, 81			
S65			82			
S66					114	
S67					120	
S68						136
S69						140
S70						141

CATALOGUE OF SEALINGS

TYPE A

Sealings of this type were circular lumps of clay, about 0.11 m. in diameter when complete, with a maximum thickness of 0.04 m., irregularly convex on the side which bears the impressions of the seal (Pl. 23 shows a photograph and Pl. 19 a drawing of two fragments of **13**, the most nearly complete example, and a drawing of **12** appears on Pl. 19). The other side was marked by two wide parallel grooves, apparently left by two smooth wooden poles (average diameter 0.07 m.) laid side by side; it was also marked by the impression of one or two lengths of cord which ran across the poles, sometimes diagonally, and bound them together. Since the cord followed, more or less, a straight line tangent to the tops of the poles (sagging only slightly between them owing to the pressure of the clay) and did not curve around them at the edge of the sealing, it can be assumed that there was a series of these poles, and, in fact, that they probably formed a large chest. On some of the sealings are preserved extremely fine marks running along the length of the grooves, perhaps representing the grain of the wood, but in every case the surface is considerably smoother than on sealings of Type B. The cords averaged 0.004 m. to 0.005 m. in diameter and appear to have been coarse but evenly twisted. Sometimes the sealing preserves the impression of several cords knotted together.

Thirty-six of the sealings can be assigned to Type A, including three fragments too small for certainty; **36** appears to be a variant. Fourteen seal types are represented. If those fragments which probably belonged to the same sealing are counted as one, the number of sealings is reduced to twenty-six or possibly less.

In the following catalogue of fragments only the largest dimension of each fragment is given. Length is measured on a line parallel with the grooves, and width is measured across them. The diameters of the poles are given only in cases in which they could be estimated with reasonable accuracy. The approximate fraction of the original sealing represented by the fragment is also given. Wherever long fine parallel marks could be seen along the grooves, their presence is recorded.

The clay is nearly always red and fairly fine, with some small stones and other particles, and is burnt quite hard. Only the exceptions to this general description and mottling of the clay in burning are recorded. At the end of each description the catalogue number of the seal type occurring on the fragment is given, as well as the number of complete or incomplete impressions, and their state of preservation.

1 (L4.401). Pl. 25.

L. pres. 0.062. D. of pole *ca.* 0.06. One-third preserved.

Partly gray. Impression of one cord. Fine parallel marks along the grooves. The sealing when complete was longer than it was wide.

The fragments **1** to **6** represent probably four, or perhaps as few as two, sealings.

Seal S1. One impression complete, two incomplete; clear.

2 (L4.402).

L. pres. 0.068. D. of poles *ca.* 0.07 and *ca.* 0.06. One-third preserved.

Partly gray. Impressions of two cords. Fine parallel marks along grooves. See **1**.

Seal S1. One impression complete, three incomplete; fairly clear.

3 (L4.403).

W. pres. 0.05. One-quarter preserved.

Dark gray. Impression of one cord and of the frayed end of another. The back of the sealing is worn, and only one groove is visible. This fragment and **4** probably belonged originally to the same sealing; see **1**.

Seal S1. One impression nearly complete, one incomplete; fairly clear.

4 (L4.404).

L. pres. 0.053. One-fifth preserved.

Dark gray. Impression of one cord. One groove shows slight parallel marks. This fragment and **3** probably belonged originally to the same sealing; see **1**.

Seal S1. One impression nearly complete, one incomplete; clear.

5 (L4.405).

L. pres. 0.053. Small fragment.

Dark gray. Impressions of one, perhaps two, cords. The sealing is very thin and shows only one groove. It probably belonged originally to the same sealing as **6**; see also **1**.

Seal S1. Three impressions incomplete; clear.

6 (L4.406).

W. pres. 0.048. Small fragment.

Two fragments; both dark gray. Impressions of two cords. Part of only one groove pre-

served. This fragment and **5** probably belonged originally to the same sealing; see also **1**.

Seal S1. One impression nearly complete, one incomplete; clear.

7 (L4.360). Pl. 25.

W. pres. 0.052. Small fragment.

Mostly gray. Impressions of two cords and some straws, which are probably the frayed ends of the cords. This fragment, **8**, and **9**, probably belonged originally to one sealing.

Seal S1. One impression incomplete; clear.

Seal S57. One impression nearly complete; clear.

8 (L4.358). Pl. 23.

W. pres. 0.062. One-half preserved.

Dark brown. Impressions of two cords. Fine parallel marks along grooves. See **7**.

Seal S1. One impression incomplete; clear. Identified by analogy with **7**.

Seal S57. One impression nearly complete, one incomplete; fairly clear.

9 (L4.359).

W. pres. 0.033. Small fragment.

Partly gray. Impression of two cords. Part of only one groove preserved. See **7**.

Seal S57. One impression incomplete; clear.

10 (L4.413). Pl. 25.

W. pres. 0.073. One-third preserved.

Dark gray. Impressions of two cords.

Seal S11. One impression complete, two nearly complete, two incomplete; fairly clear.

11 (L4.416). Pl. 26.

W. pres. 0.07. Two-thirds preserved.

Gray. Impressions of two cords knotted in the center of the sealing and another at right angles to them. The grooved side is worn. Part of the seal-impressed surface was flattened down while wet so that it obliterated any seal impressions in that part and distorted the adjoining impressions.

Seal S22. One impression complete, one incomplete; clear but distorted.

12 (L4.345). Pls. 19, 23, 26.

L. pres. 0.092. D. of the pole *ca.* 0.075. Intact, except for chipped edges.

Mostly gray. Impressions of two cords which crossed each other several times in a knot. A very little of the second groove is preserved at one edge.

Seal S26. Eight impressions complete, two nearly so; clear.

Hesperia, XXIV, 1955, pl. 22, e and f.

13 (L4.347). Pls. 19, 23, 26.

W. pres. 0.108. D. of poles *ca.* 0.06 and 0.07. Nearly complete.

Reconstructed from three fragments, of which (a) is partly gray, (b) slightly, and (c) nearly entirely. Impressions of two cords which were knotted at the center of the sealing and then ran out at one edge in two separate places.

Seal S26. Seven impressions complete, two nearly complete, one incomplete; clear.

Hesperia, XXIV, 1955, pl. 22, d, showing fragment (a) only.

14 (L4.362).

L. pres. 0.056. D. of pole *ca.* 0.08. One-third preserved.

Gray spot. Impression of one cord. Fine parallel marks along grooves. Fragments **14** to **20** derive probably from three sealings.

Seal S26. One impression complete, one nearly complete, three incomplete; clear.

15 (L4.363).

L. pres. 0.086. D. of pole *ca.* 0.08. Three-quarters preserved.

Two fragments, of which (a) is grayish and (b) pink. Impressions of two or more cords knotted in the center of the sealing. Fine parallel marks along grooves. See **14**.

Seal S26. Three impressions complete, two nearly complete, three incomplete; clear.

16 (L4.364).

L. pres. 0.071. D. of pole *ca.* 0.08. One-quarter preserved.

Slightly gray on surface. Impressions of three cords, one of which ran nearly at right angles to the others and crossed them in the center of the sealing. One groove is represented only by a small section; the other shows fine parallel marks. See **14**.

Seal S26. Three impressions nearly complete, three incomplete; clear.

17 (L4.365).

L. pres. 0.059. D. of pole *ca.* 0.07. One-third preserved.

Mostly gray. Impressions of two cords. Fine parallel marks along grooves. See **14**.

Seal S26. Three impressions nearly complete, two incomplete; fairly clear.

18 (L4.366).

W. pres. 0.073. One-third preserved.

Impressions of two cords, one at right angles to the other, and knotted in the center of the sealing. Little of the grooves is preserved; fine parallel marks are visible on one. See **14**.

Seal S26. Four impressions nearly complete, one incomplete; fairly clear.

19 (L4.367).

L. pres. 0.075. D. of poles *ca.* 0.06 and *ca.* 0.05. Two-thirds preserved.

Partly gray. Impressions of two cords. Fine parallel marks along grooves. See **14**.

Seal S26. One impression complete, two nearly complete, one incomplete; clear.

20 (L4.368).

W. pres. 0.046. Small fragment.

Partly gray. Impressions of two cords at right angles to each other and knotted in the

center of the sealing. Very little of the grooves preserved. See **14**.

Seal S26. One impression complete, one incomplete; fairly clear.

21 (L4.346). Pl. 28.

L. pres. 0.065. W. pres. 0.075. D. of poles *ca.* 0.06 and *ca.* 0.07. Two-thirds preserved.

Dark gray. Impressions of two cords which cross in a knot. Very fine parallel marks along grooves.

Seal S46. Two impressions complete, two nearly complete; clear.

Seal S55. Two impressions complete, two incomplete; clear.

Hesperia, XXIV, 1955, pl. 22, h.

22 (L4.389).

W. pres. 0.069. D. of pole *ca.* 0.075. One-third preserved.

Dark gray. Impressions of two or more fine cords knotted together. Fine parallel marks along grooves. This fragment and **23** probably belonged to one sealing; **24** may possibly have been part of it also.

Seal S49. One impression complete, five incomplete; fairly clear.

23 (L4.390). Pl. 28.

W. pres. 0.046. Small fragment.

Dark gray, one lighter spot. Impressions of three fine cords, one crossing the others at right angles. Part of one groove preserved, with fine parallel marks. See **22**.

Seal S49. One impression nearly complete; clear.

24 (L4.391).

W. pres. 0.06. One-third preserved.

Light gray, not burnt very hard. Underside worn, but grooves visible, and impression of one fine cord. See **22**.

Seal S49. Three impressions incomplete; clear.

25 (L4.384). Pl. 28.

L. pres. 0.04. Small fragment.

Dark gray, fairly hard. Impression of one cord. Part of one groove preserved. This fragment and **26** probably belonged originally to one sealing.

Seal S51. One impression incomplete; clear.

26 (L4.385).

L. pres. 0.051. One-quarter preserved.

Dark gray, fairly hard. Impression of one cord, parts of both grooves. See **25**.

Seal S51. Two impressions incomplete; one clear, one worn.

27 (L4.386). Pl. 28.

W. pres. 0.061. One-third preserved.

Partly gray. Impressions of two cords.

Seal S54. One impression complete, one nearly complete, one incomplete; fairly clear.

28 (L4.370).

W. pres. 0.046. Small fragment.

Partly gray. Impressions of two cords. Part of one groove preserved. This fragment and **29** may have belonged originally to one sealing.

Seal S55. Two impressions incomplete; indistinct.

29 (L4.371).

L. pres. 0.044. One-sixth preserved.

Dark gray. Impressions of two cords at right angles to each other. See **28**.

Seal S55. One impression nearly complete, three incomplete; indistinct.

30 (L4.387). Pls. 23, 28.

L. pres. 0.074. Complete except for a few chips.

Two fragments, of which (b) is gray and (a) partly gray. Impressions of two cords with frayed edges, knotted in the center of the sealing.

Seal S56. Four impressions nearly complete, two incomplete; fairly clear.

31 (L4.445).

W. pres. 0.069. D. of each pole *ca.* 0.07. One-third preserved.

Partly gray. Impressions of two or more cords knotted together. Fine parallel marks along grooves. This fragment and **32** may have belonged originally to one sealing.

Seal S61. Two impressions complete, two incomplete; clear.

32 (L4.446). Pl. 29.

L. pres. 0.076. D. of poles *ca.* 0.07 and *ca.* 0.08. One-half preserved.

Partly gray. Impression of two cords. Fine parallel marks along grooves. See **31**.

Seal S61. One impression complete, one nearly complete, two fragmentary; clear.

33 (L4.447).

L. pres. 0.076. D. of pole *ca.* 0.075. One-third preserved.

Partly gray. Impressions of two thick cords, one crossing the other diagonally. Faint fine parallel marks along the better preserved groove. This fragment and **34** may have belonged originally to one sealing.

Seal S61. Two impressions complete, two nearly complete, one incomplete; clear.

34 (L4.448)

L. pres. 0.057. One-quarter preserved.

Dark gray. Impressions of two cords at right angles. Part of one groove preserved. See **33**.

Seal S61. One impression nearly complete; clear.

35 (L4.410). Pl. 25.

W. pres. 0.065. One-third preserved.

Gray. Underside much worn, no clear evidence of cords. Attribution to Type A not certain, but likely.

Seal S3. Three impressions incomplete; clear.

36 (L3.10). Pls. 23, 25.

L. pres. 0.08. Three-quarters preserved.

Light red. Impression of one cord which encircled only one of the poles, over the covering. The back of the sealing shows the two parallel grooves usual in Type A, but these grooves are marked lengthwise with long noticeable ridges crossed by slighter ones. The marks suggest that the poles were covered with a heavy woven cloth before sealing.

Seal S7. One impression complete, five incomplete; clear.

Hesperia, XXIII, 1954, pl. 10, c. Found in the debris of the House of the Tiles, Room VI.

TYPE B

We have no complete specimens of this type. From the numerous fragments it is apparent that the average sealing was a conical lump of clay with a maximum height of 0.05 m. and a maximum diameter of 0.085 m. This clay rested on a flat surface and encircled a peg which projected at right angles from the surface and was bound round with a cord at its lower end (Pl. 19). The seal impressions covered the entire exposed surface of the sealing. Both the flat surface and the peg have left in the clay the marks of fine parallel lines resembling the grain of wood. The peg itself seems to have been slightly broader at its attached, or lower, end. (The best preserved example, **43**, Pl. 19, shows an upper diameter of 0.027 m., somewhat larger than average, and a lower diameter of *ca.* 0.035 m. It is clear from this example and from several others that the sealing did not cover the end of the peg, and that therefore

we do not know how the peg terminated). The marks of cords, similar to those on examples of Type A, represent one cord wound usually two or three times around the lower end of the peg and then running through the sealing to the outside. In some cases the impression of the frayed end of the cord is visible in the flat side of the sealing (**43**). The peg seems to have provided a fastening place for the cord which secured a wooden box. The simple type of clay sealing wrapped around a cord was not in use, and a sealing merely pressed against the box, over a cord, might have been removed and replaced unbroken. (It is possible that sealings such as **129** may represent the latter type, but all examples are fragmentary).

In our collection are thirty-six fragmentary sealings of Type B including five uncertain examples; they may represent thirty or fewer sealings if one takes into account the fact that some fragments may come from the same sealing. Eighteen seal types are represented.

In the following catalogue, any dimensions which can be considered complete are given; otherwise only the maximum dimension is recorded. Height is measured on a line perpendicular to the flat surface, and width is measured along that surface. The approximate fraction of a complete sealing represented by each fragment is recorded, and also, where measurable, the upper and lower diameters of the peg as preserved at a certain height above the base. The color and preservation of the clay are given only as they vary from the usual hard red state.

37 (L4.419). Pl. 25.

W. pres. 0.055. Upper D. of peg *ca.* 0.024. One-sixth preserved.

Mostly dark gray. Impressions of three lengths of thick cord which overlapped each other and cut deeply into the clay. None of the flat surface preserved. Clay did not cover top of peg.

Seal S2. Five impressions incomplete; clear.

38 (L4.409).

W. pres. 0.066. Upper D. of peg *ca.* 0.023, at *ca.* 0.035 above base. One-quarter preserved.

One gray spot. Impressions of two lengths of cord which encircled the peg just above its base; one end of the cord ran towards and through the outer surface of the sealing. A few parallel marks on the flat surface. This fragment and **39** may have belonged originally to one sealing.

Seal S3. Two impressions nearly complete, four incomplete; clear.

39 (L4.411).

W. pres. 0.041. Upper D. of peg *ca.* 0.023. Small fragment.

Dark gray. Bottom part including flat surface missing. Impression of one cord. Parallel marks along the peg impression. Clay did not cover top of peg. See **38**.

Seal S3. One impression nearly complete, two incomplete; clear.

40 (L4.414).

W. pres. 0.032. Small fragment.

Partly gray. Impressions of two lengths of cord at a short distance above the base of the peg. Parallel marks on the flat surface.

Seal S11. One impression nearly complete, two incomplete; fairly clear.

41 (L4.398).

W. pres. 0.032. Small fragment.

Partly gray. Impressions of two lengths of cord. Base of fragment missing. This fragment and **42** may have belonged originally to one sealing.

Seal S16. Two impressions incomplete; fairly clear.

42 (L4.400).

W. pres. 0.049. Small fragment.

Partly gray. Inside worn, no peg impression, one cord impression. Parallel marks on flat surface. See **41**.

Seal S16. Two impressions incomplete; clear.

43 (L4.444). Pls. 19, 23, 26.

W. pres. (sealing D.) 0.082. Complete height 0.052. Upper D. of peg 0.027, at 0.05 above base, lower D. *ca.* 0.035. Two-thirds preserved.

Two fragments, of which (a) is gray with a buff streak, and (b) dark gray. Impressions of three lengths of cord beginning on a diagonal at the base of the peg. The impression of the frayed end of the cord is visible in the flat surface of the sealing; the other end runs through to the outside of the sealing at 0.015 from base. Parallel marks on flat surface. Clay did not cover top of peg.

Seal S21. Four impressions nearly complete, four incomplete; all but one clear.

44 (L4.437). Pls. 23, 26.

H. pres. 0.042. Upper D. of peg *ca.* 0.02 at 0.035 above base. One-eighth preserved.

Partly gray. Impressions of four lengths of cord which encircled the peg at the base; the lowest part of the cord ran towards and through the outer surface of the sealing. Parallel lines on flat surface.

Seal S24. One impression nearly complete, two incomplete; clear.

Seal S25. One impression nearly complete, two incomplete; clear.

45 (L4.434). Pls. 19, 23.

W. pres. (sealing D.) 0.083. H. pres., nearly complete, 0.049. Upper D. of peg 0.02, at 0.047 above base, lower D. with cords *ca.* 0.05. One-half preserved.

Two fragments, of which (a) is dark gray, and (b) red. Impressions of three lengths of cord, one of which crossed another diagonally; they encircled the peg a short distance above its base. Clay did not cover top of peg. This fragment and **46** probably belonged originally to the same sealing; **47** was possibly a part as well.

Seal S25. Six impressions nearly complete, eight incomplete; fairly clear.

46 (L4.435).

H. pres. 0.034. Small fragment.

Partly gray. Impressions of two lengths of cord which encircled the peg at its base; the lower length ran through to the outer surface of the sealing. See **45**.

Seal S25. One impression nearly complete, two incomplete; clear.

47 (L4.436).

W. pres. 0.057. One-quarter preserved.

Very brittle. Impression of two lengths of cord. Base not preserved below cord mark. See **45**.

Seal S25. One impression complete, one nearly complete, three incomplete; clear.

48 (L5.1). Pl. 26.

H. pres. 0.043. One-eighth preserved.

Clay partly buff, surface dark gray. Impressions of five lengths of cord. Fine marks on the flat surface and faintly on the peg impression.

Seal S25. One impression complete, four incomplete; clear.

49 (L4.456). Pl. 27.

H. pres., nearly complete, 0.051. One-fifth preserved.

Dark gray. Impressions of two lengths of cord at a short distance above the base of the peg. Parallel marks on flat surface and on peg impression. Clay did not cover top of peg. This fragment and **50** probably belonged originally to one sealing, of which **67** may possibly also have been a part.

Seal S32. Two impressions incomplete; clear.

Seal S41. One impression complete; indistinct but identified by analogy with **50**.

50 (L4.457). Pl. 27.

W. pres. 0.041. One-eighth preserved.

Dark gray. Impressions of two lengths of cord at a short distance above the base of the peg. Flat surface worn. See **49**.

Seal S32. One impression incomplete; fairly clear.

Seal S41. One impression nearly complete; fairly clear.

51 (L4.442). Pl. 27.

W. pres. 0.036. Upper D. of peg *ca.* 0.025 at 0.02 above base. Small fragment.

Dark gray. Impressions of three lengths of cord which encircled the peg immediately above its base. Parallel marks on the flat surface.

Seal S33. One impression nearly complete; clear.

52 (L4.430). Pl. 27.

H. pres. 0.055. Upper D. of peg *ca.* 0.02 at *ca.* 0.05 above base. One-fifth preserved.

Dark gray. Impressions of two lengths of cord which encircled the peg a short distance above its base. Clay did not cover top of peg.

Seal S38. One impression nearly complete, four incomplete; clear.

53 (L4.352). Pl. 27.

W. pres. 0.074. One-third preserved.

Partly gray. Impressions of four lengths of cord which begin directly at the base of the peg. Parallel marks on the flat surface. None of peg impression preserved.

Seal S39. One impression nearly complete, one incomplete; clear.

Seal S40. One impression nearly complete, one incomplete; worn.

54 (L4.354).

H. pres. 0.039. Small fragment.

Dark gray. Impressions of three lengths of cord. Base not preserved.

Seal S39. One impression incomplete; clear.

Seal S40. One impression incomplete; clear.

55 (L4.355).

H. pres. 0.042. Upper D. of peg *ca.* 0.024. Small fragment.

Impressions of two lengths of cord, one of which runs through the sealing to the outer surface. Base missing. Clay did not cover top of peg. This fragment and **56** may have belonged originally to one sealing.

Seal S39. Two impressions incomplete, clear.

Seal S40. One impression nearly complete; clear.

56 (L4.356).

W. pres. 0.056. Upper D. of peg *ca.* 0.022 at 0.037 above base. One-fifth preserved.

Two fragments, both partly gray. Impressions of two lengths of cord which encircled the peg a short distance above its base. Parallel marks on flat surface and on peg groove. See **55**.

Seal S40. One impression nearly complete, two incomplete; indistinct.

57 (L4.439). Pl. 28.

W. pres. 0.064. One-quarter preserved.

Dark gray. Impressions of four lengths of cord at different depths in the clay; the cord encircled the peg at a point 0.018 above its base. Clay did not cover top of peg.

Seal S47. Two impressions nearly complete, two incomplete; fairly clear.

58 (L4.369). Pl. 28.

W. pres. 0.061. H. pres., nearly complete, 0.047. Upper D. of peg *ca.* 0.02 at 0.045 above base, lower D. 0.026. One-quarter preserved.

Dark gray. Impressions of two lengths of cord which encircled the peg a short distance above its base. The lower end of the cord ran through to the outside surface of the sealing, and an impression of the other end, cut off, is visible in the flat surface. Parallel marks on flat surface and peg impression. Clay did not cover top of peg. Fragments **58** to **65** were probably parts originally of a very few sealings, probably four, perhaps as few as two.

Seal S55. One impression complete, two nearly complete, one incomplete; fairly clear.

59 (L4.372).

W. pres. 0.051. Lower D. of peg *ca.* 0.03. One-fifth preserved.

Impressions of two lengths of cord crossing each other at a short distance above the base of the peg. Slight parallel marks on flat surface. See **58**.

Seal S55. One impression nearly complete, one incomplete; fairly clear.

60 (L4.373).

W. pres. 0.06. Lower D. of peg *ca.* 0.03. One-fifth preserved.

Mostly gray. Impressions of two lengths of cord which encircled the peg at a short distance above its base. Slight parallel marks on flat surface. See **58**.

Seal S55. Two impressions nearly complete, two incomplete; fairly clear.

61 (L4.374).

W. pres. 0.048. One-fifth preserved.

Dark brown. Impressions of two lengths of cord which encircled the peg at a short distance above its base. Slight parallel marks on flat surface. See **58**.

Seal S55. One impression nearly complete, two incomplete; indistinct.

62 (L4.375).

W. pres. 0.056. One-quarter preserved.

Dark gray. Impressions of five lengths of cord which began immediately at the base of the peg. Parallel marks on flat surface. See **58**.

Seal S55. One impression complete, one nearly complete, two incomplete; fairly clear.

63 (L4.376).

W. pres. 0.063. One-quarter preserved.

Dark gray. Impressions of three lengths of cord which encircled the peg shortly above its base. Parallel marks on flat surface. See **58**.

Seal S55. Four impressions incomplete; indistinct.

64 (L4.377).

H. pres. 0.044. Upper D. of peg *ca.* 0.02, at 0.044 above base, lower D. *ca.* 0.024. One-fifth preserved.

Mostly gray. Impressions of two lengths of cord which encircled the peg a short distance above its base. Parallel marks on flat surface and on peg impression. Clay did not cover top of peg. See **58**.

Seal S55. Two impressions nearly complete, three incomplete; clear.

65 (L4.378).

W. pres. 0.037. Small fragment.

Mostly dark gray. Back too worn to show impression of peg, but some evidence for two cords, one which ran out the edge of the sealing just above the base of the peg. See **58**.

Seal S55. One impression nearly complete, one incomplete; clear.

66 (L4.348). Pls. 23, 28.

W. pres. (D. of sealing) 0.091. One-half preserved.

Two fragments, both dark gray. Impressions of four lengths of cord which began immediately at the base of the peg. Parallel marks on flat surface.

Seal S57. Two impressions complete, two nearly complete, seven incomplete; fairly clear.

67 (L4.460).

W. pres. 0.039. Upper D. of peg *ca.* 0.02, at 0.034 above base. One-fifth preserved.

Dark gray. Impressions of two lengths of cord which began immediately above the base of the peg. The lower end of the cord ran through to the outside surface of the sealing. Parallel marks on the peg impression and the flat surface. This fragment may possibly have belonged originally to the same sealing as **49** and **50**.

Seal probably S32. One impression very incomplete; fairly clear.

68 (L4.478).

W. pres. 0.04. Lower D. of peg *ca.* 0.025. One-eighth preserved.

Dark gray. Impressions of two lengths of cord which encircled the peg diagonally, beginning a short distance above its base. Flat surface worn; a few parallel marks here and on the peg impression.

No seal impression.

69 (L4.479).

W. pres. 0.037. One-eighth preserved.

Dark gray. Inside worn; faint impressions of

two cords beginning immediately above base. A few parallel marks visible on flat surface.

No seal impression.

70 (L4.480).

H. pres. 0.034. Small fragment.

Gray. Impressions of four lengths of cord which began immediately above the base of the peg. Little of flat surface, none of peg impression, preserved.

No seal impression.

71 (L4.433). Pl. 25.

W. pres. 0.038. Fragment.

Partly gray. Part of flat surface preserved, marked with parallel lines, and impression of one cord. Attribution to Type B probable.

Seal S13. One impression nearly complete, three incomplete; clear.

72 (L4.429). Pl. 27.

W. pres. 0.044. Fragment.

Dark gray. Impression of two lengths of cord, one of which headed to outer edge of sealing. Small section of peg impression. Attribution to Type B probable.

Seal S37. Two impressions nearly complete, one incomplete; clear.

TYPE C

In this type of sealing the clay was used to encircle the neck of a jar, and consequently bears, in the best preserved examples, the imprint of the profile of the pot from the rim to a point on the shoulder. This point varies but sometimes reaches nearly 0.04 m. from the base of the neck. The profiles are by no means uniform. **74** (Pls. 19, 23), the best preserved specimen, bears the impression of the neck of a jar measuring 0.04 m. in height, while **76** (Pls. 19, 23, 26) shows only a slight neck 0.012 m. high. Some necks were nearly cylindrical and others had a considerable flare. The diameters, however, measured at the narrowest point of the neck, do not vary so widely; they average about 0.10 m., and indicate that the vessels were of moderate size, about that of an ordinary E. H. water jar (e. g. *Tiryms*, IV, figs. 16 and 17; *Hesperia*, XXV, 1956, pl. 46, j). The purpose of the sealing is doubtful. There is no evidence of cords, nor of cloth or any other material which might have bound

the open mouth of the jar and overlapped the rim. As the sealing tapers off at the edge of the rim, any connection with a sealing over the jar mouth would be tenuous. However, unless one of these methods of securing the jar was used, the clay around the neck would have been a mere collar with no value as a sealing. The scarcity of examples is a handicap in the solution of this problem. There are sixteen fragments of sealings of this type (including three whose attribution to the type is uncertain), which probably represent fourteen original sealings. Eleven seal types appear.

The maximum dimension is recorded in each case; the height is measured vertically in relation to the jar, and the width horizontally. The diameter of the neck and its height are given in those cases in which they could be measured. The color and texture of the clay are recorded when they vary from the usual state.

73 (L4.422). Pl. 25.

W. pres. 0.04. D. of neck *ca.* 0.10. Small fragment.

Light to dark gray. Jar neck nearly cylindrical, slightly flaring, like **78** or **80**.

Seal S6. One impression nearly complete, one incomplete; fairly clear.

74 (L4.463). Pls. 19, 23.

W. pres. (D. of sealing) 0.161. D. of neck 0.097. Jar neck height 0.04. One-half preserved.

Three fragments, of which (a) and (c) are dark gray. Jar neck flaring. The sealing seems not to have covered the open mouth of the jar. **75** is probably another fragment of this sealing.

Seal S14. One impression complete, three incomplete; indistinct.

Seal S59. One impression complete and very indistinct, two incomplete and fairly clear.

75 (L4.461). Pl. 26.

W. pres. 0.075. One-eighth preserved.

Partly light gray. Jar neck flaring. This fragment probably belongs to the sealing represented by **74**.

Seal S14. Two impressions incomplete; indistinct.

76 (L4.438). Pls. 19, 23, 26.

W. pres. 0.052. D. of neck *ca.* 0.12. H. of neck 0.012. One-eighth preserved.

Gray spot. Jar neck was short and straight.

Seal S23. One impression nearly complete, one incomplete; fairly clear but worn.

77 (L4.428). Pl. 27.

H. pres. 0.04. Small fragment.

Partly dark gray, mostly light. Jar neck flaring, as **79**.

Seal S29. One impression incomplete; clear.

78 (L4.357). Pls. 19, 23, 27.

W. pres. 0.063. D. of neck *ca.* 0.12. One-fifth preserved.

Powdery clay with a hard surface, white to buff. Jar neck fairly cylindrical.

Seal S40. One impression nearly complete, two incomplete; fairly clear.

79 (L4.451). Pls. 19, 28.

W. pres. 0.061. D. of neck *ca.* 0.10. Jar neck height 0.031. One-sixth preserved.

Partly dark gray. Jar neck flaring.

Seal S58. One impression nearly complete and very indistinct, four incomplete and clear.

80 (L4.468). Pls. 19, 29.

H. pres. 0.048. One-sixth preserved.

Buff-red. Jar neck cylindrical, somewhat

straighter than 78. This fragment and 81 probably belonged originally to the same sealing.

Seal S64. One impression incomplete; fairly clear.

81 (L4.469). Pl. 29.

H. pres. 0.036. Small fragment.

Partly gray. Jar neck cylindrical. This piece preserves impression of rim. See 80.

Seal S64. One impression very incomplete; fairly clear.

82 (L4.465). Pl. 29.

W. pres. 0.059. One-eighth preserved.

Dark gray. Jar neck slightly flaring, as 79.

Seal S65. One impression very incomplete; fairly clear.

83 (L4.483). Pl. 24.

W. pres. 0.064. D. of neck 0.09, height *ca.* 0.045. One-eighth preserved.

Two fragments, both partly gray. Jar neck flares slightly at top, as 78.

No seal impression.

84 (L4.484).

W. pres. 0.05. D. of neck *ca.* 0.10. H. of neck *ca.* 0.038. Small fragment preserved.

Soft clay, gray to buff. Jar neck flaring, as 79.

Seal impression very much damaged; one incomplete.

85 (L4.485).

W. pres. 0.044. D. of neck *ca.* 0.08. Small fragment preserved.

Dark gray. Jar neck flaring, as 79.

No seal impression.

86 (L4.427). Pls. 19, 24, 29.

W. pres. 0.073. D. of neck *ca.* 0.10. One-fifth preserved.

Two fragments, both soft and dark gray. This fragment is a variant. The neck appears to have turned inward, and the rim was narrow and flat, at right angles to the pot. The curved bit of clay intruding in one place on the space which should have been occupied by the rim may possibly be the impression of a handle, or of a break in the rim. The whole sealing fragment looks rather as if it had been used on a cup instead of a jar, but it is possible that the wet clay may have become distorted at the time when it was being applied to the pot.

Seal S60. Three impressions nearly complete, one incomplete; fairly clear.

87 (L4.441). Pl. 26.

W. pres. 0.047. Small fragment.

Gray. The fragment is small and distorted, and preserves only a small piece of the impression of a straight rim.

Seal S31. One impression nearly complete, four incomplete; fairly clear.

88 (L4.482).

W. pres. 0.052. Uncertain fraction preserved.

Dark gray. Very little of the sealing is preserved, and the impression on the back is probably of the join between the neck and shoulder of a jar.

Seal impressions indistinct; two incomplete.

TYPE D

These sealings were clearly used to cover the mouths of jars. On their under surfaces they bear the circular impressions of rims whose diameters measure from 0.10 m. to 0.15 m., in other words, of jars of approximately the same size as those sealed with Type C sealings. Whether the two types could have occurred contiguously on the same pot is uncertain, since very little clay, and sometimes none at all, overlaps the rim in the preserved examples. There is some evidence for the closing of the jar

neck before sealing with clay; in the case of **92** (Pl. 24), a nearly perfect specimen, a firm square plug seems to have been inserted, while **93** and **94** (Pls. 19, 24) bear impressions of single cords which ran across the neck. There are only nine sealings and fragmentary sealings of Type D, and two of these are so worn that their ascription is not entirely certain. Seven seal types can be identified on pieces of Type D.

89 (L4.392). Pls. 24, 26.

L. pres. 0.065. D. of rim *ca.* 0.15. One-fifth preserved.

Powdery texture, partly buff, partly gray. Some smooth object, shape uncertain, seems to have been inserted in the open mouth before sealing. This fragment and **90** may have belonged originally to the same sealing.

Seal S18. Four impressions incomplete; fairly clear.

90 (L4.393).

L. pres. 0.05. Small fragment.

Pink. Underside smooth and fairly level, edges worn; by the analogy of the seal type, the fragment can be identified as belonging to Type D. It may have belonged originally to the same sealing as **89**.

Seal S18. Two impressions incomplete; fairly clear.

91 (L4.396).

L. pres. 0.05. *Ca.* one-sixth preserved.

Soft, yellow-buff. Small piece of rim impression preserved. Some straight-edged object was inserted into the neck of the jar.

Seal S28. Three impressions incomplete; indistinct.

92 (L4.423). Pls. 24, 27.

D. of sealing 0.109. Rim D. 0.102. Intact except for chipped edges.

Two fragments, both dark gray. The neck of the jar was filled with a solid square plug before sealing.

Seal S35. Two impressions complete, seven nearly complete, six incomplete; fairly clear.

93 (L4.452). Pls. 24, 27.

L. pres. 0.084. One-quarter preserved

Two fragments, buff to dark gray, brittle. On the back, the curving line of the rim impression stops abruptly at a straight edge. A cord seems to have crossed the open mouth of the vessel.

Seal S42. Four impressions nearly complete, two incomplete; indistinct.

94 (L4.379). Pls. 19, 24, 28.

L. pres. 0.081. D. of rim *ca.* 0.15. One-fifth preserved.

Gray in spots. Transverse impression, probably of a cord running across the mouth of the vessel.

Seal S53. Two impressions nearly complete, three incomplete; fairly clear.

95 (L4.474). Pls. 19, 24.

L. pres. 0.092. D. of rim *ca.* 0.12. One-third preserved.

Buff to dark gray. Underside quite smooth. No seal impression.

96 (L4.475).

L. pres. 0.114. D. of rim *ca.* 0.14. One-third preserved.

Mostly dark gray.

Seal impression totally obscure; one complete, two incomplete.

97 (L4.462). Pl. 26.

L. pres. 0.078. One-third preserved.

Buff to dark gray. The back shows the impression of something smooth, but no rim impression is preserved. The fragment is probably to be attributed to Type D.

Seal S14. Two impressions incomplete; indistinct.

Seal S59. Four impressions incomplete; fairly clear.

TYPE E

This is a large and not very homogeneous group of sealings, most of which bear on one side the irregular impressions of reeds laid side by side. The reeds are occasionally broad and flat or form a level surface, but generally they are narrow and cut deeply into the clay at intervals. Usually the sealing is round and small, reaching a maximum width of 0.065 m., and it often shows the imprint of one or more cords which crossed at right angles to the reeds. Occasionally the cords passed through the clay at such a distance from the reeds that the one could not have bound the other directly. This and the fact that some sealings show impressions of reeds on two adjoining faces indicate that the object sealed was not flat but bent in some way. One specimen only shows reed impressions on one face and a straight rim profile on the second face, perpendicular to the first (**112**, Pl. 19); in this case the reeds may have been used as a covering for a box or other container. A few sealings rested on crudely-woven matting, while only one bears impressions of fairly regular and well-constructed basketry (**121**).

The total number of sealings in this group is twenty-five, including two or three worn specimens; this number probably represents twenty-four, or perhaps somewhat fewer, original whole sealings. There are nineteen seal types.

Only the maximum dimension is given. On incomplete circular sealings, length is measured on the chord of the circle.

98 (L4.420). Pl. 25.

L. pres. 0.053. Uncertain fraction preserved.

Partly gray. No impressions preserved on back. This fragment and **99** may have belonged originally to the same sealing.

Seal S9. One impression nearly complete, two incomplete; clear.

99 (L4.421).

L. pres. 0.048. One-sixth preserved.

Gray. Deep parallel impressions of reeds; possible impression of one cord, at a depth of 0.01 in the clay. See **98**.

Seal S9. One impression complete; worn.

100 (L4.415).

L. pres. 0.042. Small fragment.

Gray, dark gray patch. Impressions of two

cords at right angles to deep impressions of reeds; the two sets of impressions appear not to be in the same plane but at an angle to each other. This indicates that the sealed object was bent.

Seal S11. Two impressions incomplete; fairly clear.

101 (L4.431). Pl. 25.

L. pres. 0.065. One-third preserved.

Light to dark gray. Impressions of two cords crossed diagonally by another. Deep parallel impressions of reeds which were bound by the cords. This fragment and **102** probably belonged originally to the same sealing.

Seal S12. One impression complete, two incomplete; clear.

102 (L4.432).

L. pres. 0.049. One-quarter preserved.

Two fragments, both dark gray. Deep impressions of reeds and of one cord which crossed them diagonally. See **101**.

Seal S12. One impression nearly complete, one incomplete; clear.

103 (L4.399). Pl. 26.

L. pres. 0.041. Small fragment.

Dark gray. Impressions of reeds and of two cords which crossed them.

Seal S17. One impression incomplete; clear.

104 (L4.424). Pl. 26.

L. pres. 0.047. One-third preserved.

Dark gray. Deep impressions of reeds, at a depth of *ca.* 0.01 in the clay, and of one cord which crossed them. **104** and **117** may have belonged originally to the same sealing.

Seal S19. One impression nearly complete, three incomplete; clear.

105 (L4.470). Pl. 26.

L. pres. 0.035. One-quarter preserved.

Dark gray. Impressions of reeds and of two cords which crossed them.

Seal S20. One impression incomplete; clear.

106 (L4.443). Pl. 27.

L. pres. 0.048. One-quarter preserved.

Partly gray. Impressions of reeds, faint indications of cords which crossed them.

Seal S34. One impression incomplete; fairly clear.

107 (L4.349). Pls. 24, 27.

L. 0.061 (taken as resting on cords). W. 0.049. Nearly complete; one edge broken.

Partly gray. Impressions of four cords in the underside of the sealing. At right angles and more or less perpendicular to these impressions, on the edge of the sealing, are deep grooves left by reeds which continue on the

under edge of the sealing in roughly the same plane as the cord impressions.

Seal S39. One impression nearly complete, one incomplete; clear.

Seal S40. Two impressions nearly complete, two incomplete; clear.

Hesperia, XXIV, 1955, pl. 22, i.

108 (L4.353). Pl. 27.

L. pres. (nearly complete D.) 0.051. One-half preserved.

Gray in spots. Sealing was apparently cylindrical. Impressions of reeds on the underside and of three cords in the thickness of the fragment. The reeds continued upwards at an angle for a short distance into the thickness of the clay, and the lowest cord crossed directly above them. The large seal was impressed on the top of the sealing, and the small seal several times around the curved part.

Seal S39. One impression incomplete; clear.

Seal S40. Two impressions complete; clear.

109 (L4.453). Pl. 27.

L. pres. 0.04. One-half preserved.

Dark gray. Impressions of reeds on the underside and of two cords which crossed them. Very small sealing.

Seal S44. One impression incomplete; clear.

110 (L4.394). Pls. 24, 28.

W. pres. 0.045. One-third preserved.

Partly gray. Impressions of reeds, most parallel, a few at an angle. Top surface damaged.

Seal S45. One impression incomplete; clear.

111 (L4.382).

L. pres. 0.046. Small fragment.

Dark gray. Impressions of reeds. Seal impressed when surface of clay was very wet.

Seal S50. Two impressions incomplete; fairly clear.

112 (L4.383). Pls. 19, 24.

W. pres. 0.048. One-half preserved.

Partly gray. The fragment is triangular in section and preserves on one face the seal impressions, on another the marks of reeds, and on the third the impression of a straight smooth rim or edge, perhaps of a box. Seal impressed when surface of clay was very wet.

Seal S50. One impression nearly complete, two incomplete; indistinct.

113 (L4.380). Pls. 24, 28.

L. pres. 0.067. One-quarter preserved, if sealing was circular.

Gray in spots. Impressions of broad flat reeds more or less parallel to each other.

Seal S52. Three impressions incomplete; clear.

114 (L4.471). Pl. 29.

L. pres. 0.033. One-quarter preserved.

Buff. Impressions of straw-like reeds and of two cords which crossed them.

Seal S66. One small fragment of an impression; clear.

115 (L4.464). Pl. 26.

L. and W. pres. 0.042. Small fragment.

White to gray. A few faint impressions of reeds.

Seal S15. Two impressions incomplete; fairly clear.

116 (L4.449). Pl. 29.

L. pres. 0.051. Small fragment.

Partly gray. On the underside, only the impressions of two cords are preserved, but these and the size of the fragment make its attribution to Type E likely.

Seal S63. One impression nearly complete, two incomplete; clear.

117 (L4.425).

L. pres. 0.051. One-quarter preserved, if sealing was circular.

Mostly dark gray. Impression of rather ir-

regular matting, and faint impression of one cord which crossed above it, at *ca.* 0.007 in the clay. See **104**.

Seal S19. Three impressions incomplete; fairly clear.

118 (L4.440). Pls. 24, 26.

L. pres. (nearly complete D.) 0.049. One-third preserved.

Two fragments, both dark gray. Impression of fairly regular matting crossed by one or two cords knotted in the center of the sealing.

Seal S27. Two impressions nearly complete, two incomplete; clear.

119 (L4.351). Pls. 24, 27.

L. pres. 0.138. Nearly intact; edges chipped.

Buff top, underside gray and soft. The underside is worn but it seems to have been pressed on a fairly flat piece of matting which had apparently a small opening in it.

Seal S43. Two impressions complete, two nearly complete, five incomplete; clear.

120 (L4.473). Pl. 29.

W. pres. 0.038. Small fragment preserved.

Dark gray. Impressions of irregular matting on two faces of the fragment, one perpendicular to the other. A single cord impression crossed the reeds on one face.

Seal S67. One small fragment of impression; clear.

121 (L4.487). Pl. 24.

L. pres. 0.055. One-third preserved.

Dark gray. Sealing lay on regular basketry which left in the clay rather broad parallel grooves crossed with fine reed marks.

No seal impression.

122 (L4.488). Pl. 24.

L. pres. 0.047. One-quarter preserved.

Partly gray. Impression of rather irregular matting, crossed by at least one cord at a depth of *ca.* 0.007 in the clay.

No seal impression.

UNCLASSIFIED TYPES

There remains to be mentioned a group of twenty-one sealings, exhibiting seventeen seal types, which do not fit into the previous categories. Most are too worn on the under side to be identified; some of these are fragments of circular sealings which either rested on some flat surface, occasionally crossed by cords, or sealed the mouths of jars. A few sealings show smooth hollows made perhaps by a hand, and one small piece (**126**, Pl. 24), with no seal, was pinched around something which seems to have been a twig. One sealing shows a flat surface ending in a straight edge and crossed by cords, evidently the edge of a box (**127**, Pl. 24).

123 (L4.408).

L. pres. 0.116. Nearly complete; edges chipped.

White to dark gray. Two smooth hollows in the thick part of the underside perhaps made by a hand; the rest of the underside is rough and worn and fairly level.

Seal S3. Two impressions complete, two nearly complete, five incomplete; clear.

124 (L4.412). Pl. 25.

W. pres. 0.087. One-half preserved.

Partly gray. Fragment is triangular in section. One face bears the seal impressions, the second is slightly curved and shows fingerprints, and the third is broken.

Seal S3. Five impressions nearly complete; one incomplete; clear.

125 (L4.417). Pl. 25.

L. pres. 0.038. Small fragment.

Dark gray. Underside worn so that only a small slightly curved smooth patch remains.

Seal S5. One impression nearly complete, one incomplete; clear.

126 (L4.477). Pl. 24.

L. and W. pres. 0.031. Probably complete.

Buff. One side is slightly rough, and the other was pinched around a reed or a twig. The thick end was cut off straight and smooth.

Perhaps this is only a bit of excess clay.

No seal impression.

127 (L4.418). Pls. 24, 25.

L. pres. 0.056. One-quarter preserved.

Dark gray. Underside shows the impression of something flat, marked slightly with parallel lines, and ending in a straight edge. This object, which may have been the end of a wooden box, was crossed by two narrow cords. The impression of the frayed end of another is visible in the smooth surface.

Seal S10. One impression nearly complete and very indistinct; one incomplete and clear.

128 (L4.407). Pl. 25.

L. pres. 0.064. One-half preserved.

Partly gray. Part of a rather flat circular sealing, no marks preserved on underside.

Seal S8. One impression nearly complete; clear.

129 (L4.397). Pl. 26.

L. pres. 0.078. One-half preserved.

Partly gray section of a flat circular sealing; flat side crossed by impressions of two cords.

Seal S16. Two impressions complete, one clear and one worn; two incomplete, clear.

130 (L4.395). Pls. 24, 26.

L. pres. 0.055. One-fifth preserved.

Partly gray. Fine parallel marks on flat surface, and a deeper groove across them which may have been left by a cord.

Seal S28. One impression complete, one incomplete; clear.

131 (L4.467). Pl. 26.

L. pres. 0.035. One-quarter preserved.

Dark gray. Part of a flat circular sealing. It rested on a flat smooth surface which was crossed by a narrow cord.

Seal S30. One impression incomplete; fairly clear.

132 (L4.426). Pl. 27.

L. pres. 0.049. One-third preserved.

Dark gray. Part of a flat circular sealing which rested on something level. The fragment preserves the impression of one straight edge.

Seal S36. One impression nearly complete, one incomplete; fairly clear.

133 (L4.454). Pl. 28.

D. pres. 0.093. One-half preserved.

Repaired from many fragments and backed with plaster. Surface gray, core buff and friable. The sealing was circular and rather thick; it was probably used in the mouth of a jar, although no impressions are preserved on the under side except for one faint impression of a cord near the edge.

Seal S48. Three impressions complete, two nearly so, two incomplete; clear.

134 (L4.381). Pl. 28.

L. pres. 0.07. Apparently nearly complete.

Dark gray. The underside is soft and worn, but it appears that the sealing covered some knotted cords.

Seal S50. Three impressions nearly complete, four incomplete; fairly clear.

135 (L4.450). Pl. 29.

W. pres. 0.046. One-third preserved.

Buff to dark gray. Part of a circular sealing which rested on a flat object crossed, apparently, by two cords.

Seal S62. Two impressions nearly complete, one incomplete; fairly clear to worn.

136 (L4.466). Pl. 29.

L. pres. 0.037. One-half preserved.

Gray. Part of a small circular sealing. Parallel marks on the flat underside which indicate that perhaps the sealing rested on wood.

Seal S68. One impression incomplete; indistinct.

137 (L4.350). Pl. 25.

L. pres. 0.059. Uncertain fraction preserved.

Powdery, white, surface hard. Underside badly worn.

Seal S4. One impression complete, four incomplete; clear.

Hesperia, XXIV, 1955, pl. 22, g.

138 (L4.458). Pl. 27.

W. pres. 0.054. Uncertain fraction preserved.

Partly gray. Underside worn. This fragment and **139** may possibly have belonged originally to the same sealing.

Seal S32. One impression incomplete; indistinct.

Seal S41. One impression nearly complete; fairly clear.

139 (L4.459).

L. pres. 0.068. Uncertain fraction preserved.

Gray. Underside worn. See **138**.

Seal S32. One impression incomplete; fairly clear.

140 (L4.455). Pl. 29.

L. pres. 0.037. Small fragment.

Light gray. Indistinct impressions on the underside.

Seal S69. One impression incomplete; fairly clear.

141 (L4.472). Pl. 29.

L. pres. 0.03. Small fragment.

Partly gray. Fragment of a thick sealing; underside preserves only a small section of a smooth surface.

Seal S70. One impression incomplete; fairly clear but distorted.

142 (L4.476). Pl. 24.

L. pres. 0.03. Uncertain fraction preserved.

The fragment is triangular in section. The rough face would have borne the seal impressions, the second was pinched smooth, and the third face, which is narrow and smooth, shows a groove. Perhaps this fragment was only a bit of excess clay.

No seal impression.

143 (L4.481). Pl. 24.

W. pres. 0.061. Uncertain fraction preserved.

Mostly dark gray. Fragment roughly triangular in section; one face with seal impressions, one smooth, and one covered with shallow diagonal reed marks and a bit of a cord impression.

Seal type impossible to determine; three impressions incomplete.

CATALOGUE OF SEAL TYPES

S1. Pls. 20, 25.

D. 0.033.

Deep cut. Tripartite. Three ellipses, tangent to form a triangular space in the center of the seal. Each ellipse is open toward the border of the seal and is filled by a two-branched element growing out of the border.

Examples: Type A: **1, 2, 3, 4, 5, 6, 7, 8.**

Compare Xanthoudides, *The Vaulted Tombs of Mesara*, pl. XIII (Platanos A, C1029).

S2. Pls. 20, 25.

D. 0.022.

Tripartite. Design as S1. The ellipse is bean-shaped, and the ends of the lines curve to form more of an S. The central triangle is smaller. The ends of the ellipses are tangent to the border.

Example: Type B: **37.**

S3. Pls. 20, 25.

D. 0.027.

Tripartite. Double loop design. The outer line of the double loop is continuously tangent to the edge of the seal. Each double loop is connected to the next by a curved line, and thus the design forms one continuous line. In the central triangular space is a counter-clockwise swastika.

Examples: Type A: **35**; Type B: **38, 39**; Type U: **123, 124.**

S4. Pls. 20, 25.

D. 0.022.

Tripartite. Double loop design, as S3. In the central triangular space is a shallow-cut spider reduced to a simple set of lines which represent only its legs (five pairs) and small pointed abdomen. The space is filled well, and a distinctly spider-like effect is produced with the most geometric and formalized means.

Example: Type U: **137.**

S5. Pls. 20, 25.

D. 0.028.

Tripartite. Double loop design as S3. In the central triangular space is a formalized spider whose round ridged body fills one corner of the triangle, and whose two angular legs and head occupy the center. Above the spider's head is a long elliptical object with pointed ends; it may represent a grain of wheat.

Example: Type U: **125.**

S6. Pls. 20, 25.

D. 0.026.

Tripartite. Double loop design, as S3. In each space between two double loops is a three-leaved element. In the central triangular space is an obscure object (the impression is worn), probably a spider with front legs filling the apex of the triangle and two back legs and round body occupying the base.

Example: Type C: **73.**

S7. Pls. 20, 25.

D. 0.026.

Tripartite. Double loop design, as S3, using a double instead of a single line. In the central triangular space is a trefoil, each leaf occupying an angle.

Example: Type A: **36**.

Hesperia, XXIII, 1954, pl. 10, c. (Fragment found in the debris of the House of the Tiles, Room VI).

S8. Pls. 20, 25.

D. 0.032.

Tripartite. Double loop design with double line, as S7. Parts of the lines are doubled, owing to faulty cutting or to a slip of the seal during the application. The object in the central triangular space appears again to be a trefoil, but with straight leaves, each touching a side of the triangle.

Example: Type U: **128**.

S9. Pls. 20, 25.

D. 0.03.

Tripartite. Double loop design, as S3. In each space between two double loops is a three-leaved element, as in S6. The central triangular space is occupied by a trefoil, each of whose leaves fills an angle.

Examples: Type E: **98, 99**.

S10. Pls. 20, 25.

D. 0.033.

Tripartite. The design is restorable with certainty from a fragment. Double loop design, as S3. The loops are long and narrow. There is more space than usual between the loops, and this space is occupied in each case by a trefoil consisting of three nearly round dots. The center triangular space is occupied by a trefoil, each of whose leaves fills an angle. A plain line forms a border.

Example: Type U: **127**.

S11. Pls. 20, 25.

D. 0.025.

Rather shallow cut. Tripartite. The design is a variety of the double loop. The outer line of each double loop is tangent to the border, but the lines which in S3 return to the outer line to form the loops head straight as if to meet each other at a slight angle. They stop just short of meeting and are joined each to the adjoining loop by a short straight line. In the small central triangle thus formed is a trefoil, with each leaf occupying an angle. Each double loop is filled with fine parallel lines running across its width. A plain line forms a border around the seal.

Examples: Type A: **10**; Type B: **40**; Type E: **100**.

S12. Pls. 20, 25.

D. 0.034.

Quadripartite. Double loop design, constructed as in S3, except that the lines joining each double loop to the next are bent at nearly right angles towards the center of the seal. The central part of the design thus forms a regular cross. The small central space is occupied by a quatrefoil with pellet-like leaves and no stems.

Examples: Type E: **101, 102**.

S13. Pls. 20, 25.

D. 0.026.

Quadripartite. Double loop design, constructed as in S3. In the central quadrangular space is a quatrefoil of isolated tear-shaped leaves, each with its round end facing the center and its pointed end filling an angle.

Example: Type B: **71**.

S14. Pls. 20, 26.

D. 0.03.

Quadripartite. The design is restorable with fair certainty from a number of indistinct impressions. Double loop design, constructed as in S13. The lines connecting the double loops

are less deeply curved, and in the larger central quadrangular space thus produced is an outline circle containing (probably) a clockwise swastika. A plain line forms a border around the seal.

Examples: Type C: **74, 75**; Type D: **97**.

S15. Pl. 26.

D. *ca.* 0.022.

Quadripartite. Not completely restorable. Double loop design, probably constructed as in S7 and S8. As in those seals, it uses a double instead of a single line. The central filling motif is not preserved.

Example: Type E: **115**.

S16. Pls. 20, 26.

D. 0.026.

Bipartite. Isolated double loop design with asymmetrical stem. The outside of the double loop is tangent to the edge of the seal. The two loops are formed in the usual way, but the line then continues to form a third loop which runs like a stem to the right of center and thus appears to interlock with the other half of the seal.

Examples: Type B: **41, 42**; Type U: **129**.

S17. Pls. 20, 26.

D. 0.025.

Bipartite. Restorable with certainty from an incomplete impression. Isolated double loop design with asymmetrical stem, as S16, except that the stem loops run to the left of center.

Example: Type E: **103**.

S18. Pls. 20, 26.

D. 0.022.

Shallow-cut. Bipartite. Restorable with near certainty from incomplete impressions. Double loop and single loop design, resembling a swastika. The two double loops face the center of the seal instead of the border, and their longer right loops lie parallel to each other on either side of the midpoint of the seal. In the space

remaining is a single loop. The line is continuous, from the base of one loop to the next. The loops are filled with a single line each; these lines grow directly out of the plain border of the seal. Only the connection between the filling line of the single loop and the border is not preserved in the impressions.

Examples: Type D: **89, 90**.

S19. Pls. 20, 26.

D. 0.026.

Tripartite. The design consists of pairs of loops. Each pair is directly connected to the next, and in each of the three broad triangular spaces thus formed along the edge of the seal is a trefoil with one leaf at the apex of the triangle. The design itself is primarily a trefoil, but a double one.

Examples: Type E: **104, 117**.

S20. Pls. 20, 26.

D. 0.032.

Tripartite. Restorable with fair certainty from an incomplete impression. The design consists of continuous triple and single loops. The outer line of each triple loop is parallel to the border; at its center, the line swings in sharply towards the center of the seal to form a third loop not quite at right angles to the other two. A single loop to the right of each triple loop runs almost to the center of the seal. A single line forms a border around the seal.

Example: Type E: **105**.

S21. Pls. 20, 26.

D. 0.027.

Quadripartite. The design consists of continuous triple and single loops, as S20, except that the third (middle) loop in each case is exactly at right angles to the other two, and there is no border.

Example: Type B: **43**.

S22. Pls. 20, 26.

D. 0.03.

Tripartite. Continuous single loop design. The three loops run counter-clockwise and parallel to the edge of the seal. The inner line of each loop forms a sharply pointed projection, or tail, below the loop and parallel to it and swings back to the border in a second loop. From another point of view the design consists of three asymmetrical paired loops. The effect is that of a triskelion; the construction is similar to that of S20.

Example: Type A: **11**.

S23. Pls. 21, 26.

D. 0.029.

Quadripartite. Continuous double and single loop design. The design resembles S12 except for the addition of the single loop on the arm of the cross, the absence of the filling motif, and the rarity of sharp angles.

Example: Type C: **76**.

S24. Pls. 21, 26.

D. 0.015.

Shallow cut. Quadripartite. Continuous double and single loop design. The double loop is roughly heart-shaped and faces the edge of the seal. The line swings out at the left from the base of the double loop to the edge of the seal to form the single loop. This is the smallest of the Lerna seal designs.

Example: Type B: **44**.

S25. Pls. 21, 26.

D. 0.023.

Quadripartite. Continuous single loop design forming a swastika. The loops run clockwise around the edge of the seal, but straight rather than parallel to the edge. The outer line of each loop makes an abrupt right angle as soon as it reaches the edge of the seal and continues inward until it joins the next loop in

a curve. In the central space is an L-shaped object.

Examples: Type B: **44, 45, 46, 47, 48**.

S26. Pls. 21, 26.

D. 0.025.

Quadripartite. Continuous single loop design. The loops run counter-clockwise in pairs around the edge of the seal. Each loop joins the next in another loop which faces the center of the seal. Acute angles are frequent. In the center of the seal is a plain small outline circle with a dot in the middle.

Examples: Type A: **12, 13, 14, 15, 16, 17, 18, 19, 20**.

S27. Pls. 21, 26.

D. 0.021.

Quadripartite. Single loop design resembling a swastika. The loops run clockwise around the edge of the seal and parallel to it; the head of each loop is rectangular rather than curved. Each loop grows out of one arm of a simple cross which divides the seal into four segments. The inner line of the loop is parallel to the arm of the cross, but stops short before running into the line of the next arm. In the space left between the loop and the arm is a short line sprouting at right angles from the next arm.

Example: Type E: **118**.

S28. Pls. 21, 26.

D. 0.027.

Bipartite. Double loop design. The outer line of the double loop is tangent to the edge of the seal, and the inner line of each loop is cut short. In the center of the seal is an elongated diamond tangent to the loops. A filling line within the loops grows directly out of the diamond. A quatrefoil occupies the space within the diamond; each leaf fills an angle. There is no space left between any of the lines; the only empty space is within the diamond.

Examples: Type D: **91**; Type U: **130**.

S29. Pls. 21, 27.

D. 0.026.

Tripartite. Not completely restorable. Interlocking T design (a geometric figure in which the space between two parallel lines is filled with interlocking T's which grow out of each line in alternation). This type of design is adapted to a circle and used on a number of the Lerna seals. In S29 the basic design alone is present, distinguished only by the bent head of the inner T which resembles a two-leafed element. The central ring (inner parallel line) has not been perfectly preserved but is probably correctly restored.

Example: Type C: **77**.

S30. Pls. 21, 26.

D. 0.026.

Quadripartite. Partially restorable from an incomplete impression. Interlocking T design, as in S29. The outer (border) line is omitted. The ends of the T's are sharp. The central ring is larger than in S29 and contains some filling motif, most of which has not been preserved.

Example: Type U: **131**.

S31. Pls. 21, 26.

D. 0.024.

Quadripartite. Interlocking T design. Unlike S29, a square is substituted for the central ring. The heads of the T's which face inwards bend sharply to accommodate themselves to the corners of the square, and their ends are rounded, so that they resemble two-leafed elements. Within the square is a quatrefoil with a large round center and small pellet-like leaves, each leaf occupying an angle.

Example: Type C: **87**.

S32. Pls. 21, 27.

D. 0.051.

Deep cut. Quinquupartite. Restorable with certainty from incomplete impressions. Interlocking T design. The inner line and inner T's

are omitted. An isolated line in the form of a trapezoid frames the T. Between one trapezoid and the next a second line grows out of the outer line, and branches into a three-leafed element near the center of the seal. The small central space is filled by a diamond, and between each three-leafed element and the next is a triangle. The ends and angles of the lines are slightly knobbed as if worked with the drill. This seal is by far the largest of the Lerna examples.

Examples: Type B: **49, 50, 67**; Type U: **138, 139**.

S33. Pls. 21, 27.

D. 0.026.

Deep cut. Quadripartite. Interlocking T design. There is no central circle; the inner T's grow out of a central cross. The outer T's have become three-leafed elements.

Example: Type B: **51**.

Hesperia, XXIV, 1955, pl. 22, a.

S34. Pls. 21, 27.

D. 0.03.

Quadripartite. Continuous triple loop design with three-leafed elements. Four three-leafed elements on long stems, with their leaves set at right angles, face each other in the center. Each stem joins the angular triple loop on either side. In each triple loop (see S20 for the type) the head of the center loop is tangent to the edge of the seal, and the other two loops face the inner part of the seal.

Example: Type E: **106**.

S35. Pls. 21, 27.

D. 0.024.

Tripartite. Three-leafed elements, with short stems and long side leaves, grow out of the plain border and approach the midpoint of the seal. Each part of the design is outlined only by a narrow groove, and the intermediate space is left raised as well except for a small diamond

in the center of each space between two three-leafed elements.

Example: Type D: **92**.

S36. Pls. 21, 27.

D. 0.026.

Tripartite. Continuous design of three-leafed elements. The three-leafed elements are done in outline with short stems, long side leaves, and rectangular center leaves which approach the midpoint of the seal. Each stem is joined to the next by a continuation of the line; this line serves as a border.

Example: Type U: **132**.

S37. Pls. 21, 27.

D. 0.02.

Tripartite. Trefoil design. The solid trefoil, outlined with a single line, divides the seal into three parts. In each space thus left is a stemless three-leafed element which faces outward.

Example: Type B: **72**.

S38. Pls. 21, 27.

D. 0.025.

Tripartite. Trefoil design. The solid trefoil divides the seal into three parts. In each space thus left is a triskelion whose two outer legs are longer and less sharply bent than the inner. A single line forms a border around the seal.

Example: Type B: **52**.

S39. Pls. 21, 27.

D. 0.033.

Quadripartite. Design of two- and three-leafed elements, in outline. The elements alternate, facing outwards, around the edge of the seal. In the central space is a swastika, also done in outline.

Examples: Type B: **53, 54, 55**; Type E: **107, 108**.

S40. Pls. 21, 27.

D. 0.021.

Deep cut. Tripartite. Design of two- and

three-leafed elements. The elements alternate, facing outwards, around the edge of the seal. In the central space is a trefoil with a pellet in its center and three slightly elongated pellet-like leaves.

Examples: Type B: **53, 54, 55, 56**; Type

C: **78**; Type E: **107, 108**.

S41. Pls. 21, 27.

D. 0.022.

Quinquepartite. Design of three-leafed elements. Five of these elements face outwards around the edge of the seal. In the central space is a swastika.

Examples: Type B: **49, 50**; Type U: **138**.

S42. Pls. 21, 27.

D. 0.026.

Quadripartite. Design of three-leafed elements and swastikas. The three-leafed elements and the swastikas alternate around the edge of the seal. The three-leafed elements face outwards. In the central space is another swastika, on an axis with the three-leafed elements (in the drawing it appears as if on an axis with the other swastikas).

Example: Type D: **93**.

S43. Pls. 21, 27.

D. 0.035.

Bipartite. Design of three-leafed elements. In either half of the seal, two stemless three-leafed elements face inwards, side by side, and another, stemmed, fills the space between them and faces outwards. At the middle of the central axis of the seal are two pellets. Only a narrow groove outlines each part of the design, so that the whole background is raised, as well as the design. The groove around one of the pellets is prolonged along the axis to meet the edge of the seal with a slight curve, and the groove around the other pellet forms with the background a single clockwise spiral at the

edge of the seal. There are a few slight irregularities in the cutting of the background.

Example: Type E: **119**.

S44. Pls. 22, 27.

D. 0.032.

Bipartite. Partially restorable from an incomplete impression. Design of two- and three-leafed elements. From the preserved fragment of the impression, it appears that the elements alternate around the edge of the seal. The two-leafed element is deeply cut and faces outwards; the other is done in outline with a filling line in each leaf and faces inwards. Between each element and the next are some lines which may be, and have been restored as, a curvilinear continuation of the outer line of the three-leafed element. The exact form of the object in the central space is uncertain.

Example: Type E: **109**.

S45. Pls. 22, 28.

D. 0.03.

Bipartite. Restored as symmetrical from an incomplete impression. Spiral design. A single raised line with a slight swelling at the mid-point marks the central axis of the seal. At each end, the line sprouts two opposing spirals. A solid curvilinear T with a flared base faces inward at right angles to the axis on either side. Every available space is filled. Between the axis and the top of each T is a crescent, and between each T and spiral are two more crescents, the one nearer the T slightly angular. Below each side of the T crossbar is a tear-shaped object, and at the head of each pair of spirals is a curvilinear triangle.

Example: Type E: **110**.

S46. Pls. 22, 28.

D. 0.02.

Shallow cut. Quadripartite. Spiral design. The main design consists of continuously interlocking spirals, four running clockwise in a square, and a fifth counter-clockwise in the

center. Around the outside of the seal, in the spaces between the spirals, are four small S-spirals.

Example: Type A: **21**.

S47. Pls. 22, 28.

D. 0.018.

Quadripartite. Spiral design. The continuous clockwise spirals are extremely simple, consisting each of half a coil. The space at the edge of the seal, between each spiral and the next, is filled by a curvilinear triangle with its apex inwards, and in the center of the seal is a diamond with curvilinear sides.

Example: Type B: **57**.

S48. Pls. 22, 28.

D. 0.021.

Quinquepartite. Hook spiral design. The clockwise spirals grow on broad-based stems out of the wide border, and face inwards. Each spiral consists of five joints. In the center of the seal is a small ring.

Example: Type U: **133**.

Hesperia, XXIV, 1955, pl. 22, b.

S49. Pls. 22, 28.

D. 0.018.

Bipartite. Spiral design. Two closely wound opposing spirals with a common stem occupy nearly one half of the seal. The stem divides into three lines which form a T. Another line outlines the stem and the underside of the crossbars, and tapers to a point at its ends. Beneath each crossbar is a tiny single spiral or quirk facing outwards. The curvilinear triangular space above the main spirals is also raised. In the greater part of the seal, only a narrow groove separates one element from the next.

Examples: Type A: **22, 23, 24**.

S50. Pls. 22, 28.

D. 0.023.

Trefoil design. One trefoil is in the center;

six others are placed around it in the same orientation. The impressions on **111** and **112** were made when the surface of the clay was very wet and soft.

Examples: Type E: **111, 112**; Type U: **134**.

S51. Pls. 22, 28.

D. 0.0315.

Deep cut. Trefoil design. Five large trefoils are placed in order around the seal. One leaf of each faces the midpoint of the seal.

Examples: Type A: **25, 26**.

S52. Pls. 22, 28.

D. 0.029.

Trefoil design. Five trefoils are placed in order around the seal. One leaf of each faces approximately the midpoint of the seal; the central space is larger than in S51. A single line forms a border around the seal.

Example: Type E: **113**.

S53. Pls. 22, 28.

D. 0.023.

Trefoil design. One trefoil is in the center; six others are placed around it in the same orientation. Single dots are visible in some of the spaces left around the edge of the seal, and perhaps filled all these spaces. A single line forms a border around the seal.

Example: Type D: **94**.

S54. Pls. 22, 28.

D. 0.027.

Trefoil design. One trefoil is in the center; six others are placed around it in the same orientation. Some smaller trefoils, irregularly placed around the edge of the seal, can be made out. Some of these curve up the edge of the impression and must have been carved on the very edge of the seal itself. All of the trefoils have round deep-cut ends, probably worked with the drill, and narrow shallow stems.

Example: Type A: **27**.

S55. Pls. 22, 28.

D. 0.025.

Quadripartite. Jug and trefoil design. The elements alternate around the seal; the bodies of the jugs and one leaf of each trefoil face the midpoint of the seal. The jug has a round body without a base, a high neck and a long spout slightly tilted upward, and a long vertical handle. It resembles the round-bodied and beaked Anatolian type (e. g. *Troy*, I, Part 2, pl. 130, B20).

Examples: Type A: **21, 28, 29**; Type B: **58, 59, 60, 61, 62, 63, 64, 65**.

S56. Pls. 22, 28.

D. 0.026.

Bipartite. Triskelion and T design. The stems of the T's divide the seal into four equal parts. The T's have bases, narrower than the crossbars; the crossbars of the smaller T's face inwards and are set at a slight angle to the stems. In two opposite quadrants are curvilinear triskelia with sharp points. In the other two quadrants are two trapezoidal objects, slightly curvilinear; each of these objects is outlined by a single line and crossed by four or five horizontal grooves in its upper part.

Example: Type A: **30**.

S57. Pls. 22, 28.

D. 0.027.

Shallow cut. Bipartite. Woven design. The design appears to be one continuous line, or two overlapping squares; it is actually two lines which are perfectly interwoven. Each separate line is double and forms a square with slightly concave sides. The two sides of the square which lie within the area of the other square cross and continue in a reverse curve until they join.

Examples: Type A: **7, 8, 9**; Type B: **66**.

Hesperia, XXIV, 1955, pl. 22, c. Compare Evans, *Cretan Pictographs*, fig. 84 (Hagios Onuphrios, C6).

S58. Pls. 22, 28.

D. 0.028.

Shallow cut. Quadripartite. Restorable with near certainty from incomplete impressions. Cross design (hatched quadrant). Two pairs of parallel lines set wide apart intersect. In the central square is inscribed a second square crossed with two lines. Each arm of the main cross contains three parallel chevrons, apices inward; the outer chevron had a short thick stem like the shaft of an arrow. In each of the small triangles left between the arms of the cross are two more chevrons, the outer one, although not clear, probably stemmed.

Example: Type C: **79**.

S59. Pls. 22, 26.

D. 0.019.

Fairly shallow cut. Tripartite. Triangular design. To the eye, each third of the seal appears to contain two approximately right-angled triangles with apices toward the center. An equilateral triangle is in the center, and a border surrounds the design. Actually the whole field, except for the spaces within the triangles and in the center, is filled with three broad continuous lines, each one of which follows the same angular course around two-thirds of the circumference of the seal.

Examples: Type C: **74**; Type D: **97**.

S60. Pls. 22, 29.

D. 0.0215.

Tripartite. Continuous triangular design. The general effect of this seal is similar to that of S59, but it is produced in a different manner. The whole design, except one small pellet in the center, is one continuous line, which forms four triangles asymmetrically placed in each third of the surface. All the lines are more or less curved, and nearly all the angles are sharp.

Example: Type C: **86**.

S61. Pls. 22, 29.

D. 0.022.

Spider design with cog border. The center

of the seal is occupied by a spider with a round abdomen, and head and thorax represented by two small balls. The spider has three pairs of slender bent legs attached to the thorax, and one thick lower pair barely attached to the top of the abdomen. A line bent into seven rectangular projections like the cogs of a wheel forms a border. The cutter misjudged the distance and enlarged one cog to fill a space a little too small for two; the restored drawing shows the seal with eight cogs evenly spaced. The spider's legs were set perpendicularly to its body rather than obliquely.

Examples: Type A: **31, 32, 33, 34**.

Compare Frödin and Persson, *Asine*, fig. 172, 5.

S62. Pls. 22, 29.

D. 0.021.

Shallow cut. Restorable with moderate certainty from incomplete or worn impressions. Design of scallops and filling motifs. The impressions are not perfectly clear, but it seems certain that the seal is outlined by a single line border, within which is a border of scallops. Within this is another, but incomplete, border of scallops. In the center are two rings side by side, an X, and another object which has been restored in the shape of a wishbone. These central objects are not placed symmetrically.

Example: Type U: **135**.

S63. Pls. 22, 29.

D. 0.024.

Rather shallow cut. Ring design. From the midpoint of the seal project eleven lines like the spokes of a wheel, and at the end of each line is a ring. The spokes on one side are shorter than those on the other, and the rings vary slightly in size, owing to an oversight on the part of the artist. The restored drawing shows ten symmetrical spokes and rings.

Example: Type E: **116**.

S64. Pl. 29.

D. *ca.* 0.03.

Incomplete. Preserved: part of an interlocking T pattern or of another double loop design.

Examples: Type C: **80, 81.**

S65. Pl. 29.

D. *ca.* 0.025.

Incomplete. Preserved: one quatrefoil (?), some dots, and part of a single line border.

Example: Type C: **82.**

S66. Pl. 29.

D. *ca.* 0.03.

Incomplete. Preserved: parts of a single line border and loop.

Example: Type E: **114.**

S67. Pl. 29.

D. uncertain.

Incomplete. Preserved: parts of three loops,

and the end of another object, unidentified. No border.

Example: Type E: **120.**

S68. Pl. 29.

D. *ca.* 0.022.

Incomplete. Preserved: a jug (?), and parts of two other objects, unidentified. No border.

Example: Type U: **136.**

S69. Pls. 22, 29.

D. uncertain.

Incomplete. Rather shallow cut. Preserved: triple lines, close set with only a slight groove between them, forming part of a swastika (?).

Example: Type U: **140.**

S70. Pl. 29.

D. uncertain.

Incomplete. Preserved: part of a single (?) loop, formed of two parallel lines; a pellet, perhaps in the center of the seal; another line forming a triangle attached to the pellet.

Example: Type U: **141.**

CONCLUSIONS

Most of the seal types of this group are remarkable for their consistent symmetry and ingenious and careful use of a few simple geometric forms. The technical skill of the cutters was very great. From the variety of design and technical method employed one may suppose that a number of different cutters produced the seals, although certain groups may have been the work of the same man. The loop designs S1-S26, for example, with the exception of S18, may have come from the same hand. S41 and S42 are remarkably similar to each other, and the trefoil designs S50-S54, particularly S50, are closely related to the jug and trefoil seal S55. In the absence of the seals themselves and, in many cases, of sufficiently clear impressions, it does not seem possible to draw any definite conclusions about the number of seal cutters and the stylistic range of each one. In the following stylistic summary the individual designs are considered in the order of the catalogue, and an attempt is made to point out the most striking features of each group.

The first twenty-six types may be classed roughly as varieties of the loop pattern, of which the most popular is the double loop, tripartite or quadripartite. This design

is repeated over and over again with a business-like accuracy which suggests a good deal of skill combined with some unknown practical consideration—perhaps a form of bookkeeping—which apparently did not exclude, and may have required, such similarity. The differences in the group S3-S10 are slight but would be quickly recognized by a practised eye. S7, for example, is to be distinguished from S8 by the smaller size and by the placement of the trefoil, while S9 is unlike S10 in its three-leafed elements and in the absence of a border. But the seal cutters did not lack originality on occasion. Besides the quadripartite variation, which in this group for some reason is less popular than the tripartite, a simplification of the type appears in S11, with good if slightly monotonous effect. There are small details, even in this group, which point to the liveliness of the glyptic tradition. The trefoil, or quatrefoil, for example, while usually drawn like an airplane propeller with the curved ends of its blades outward, can be reduced to pellets (S10) or straight lines (S8), or the blades may be reversed so that the pointed ends turn outwards (S13). Again, the spider, which aside from the jug is the only naturalistic motif used in the Lerna designs, is by no means a stereotyped figure (S4-S6, S61); the artist has no arbitrary notions about the number of its legs or the shape and divisions of its body, and yet he conveys in each case the quality of a spider without sacrificing the proportions of his design.

The first two types in the double loop series (S1 and S2) present another problem. They appear to be the reverse of the usual tripartite design in that the double loops face the center of the seal, but it may be preferable to regard them as a variant or simplification in which the outer loops are lost and the inner lines have become curved. S1 retains more of the space left by the outer loops, and shows better than S2 its connection with the familiar C-spiral design,⁸ with which the whole group is closely related. It is worth noticing that no example of this complete C-spiral design occurs among the impressions from the House of the Tiles although one clear example has turned up among the sealings from Room DM. This circumstance favors the suggestion that the double loop designs were derived from the C-spiral in the course of a period of stylistic development on the mainland.

The next pair of seal types (S16 and S17) illustrates plainly the habit of distinguishing one design from another in the simplest possible manner. These two are identical but reversed. The design element is asymmetrical, but for all its simplicity it is not drawn in a careless manner, and it is strictly and symmetrically paired with its double. The type can be compared with a single and slightly asymmetrical loop element which forms the design on an ivory cone seal from Platanos.⁹

The remaining loop designs testify to the seal cutters' skill in combining asymmetrical elements into a symmetrical whole, and emphasize their mastery of con-

⁸ E. g. Evans, *Scripta Minoa I*, p. 141, fig. 89.

⁹ Xanthoudides, *The Vaulted Tombs of Mesara*, pl. XIII (Platanos B, C1052, Matz K101).

tinuous line. Presumably some mechanical method was used at least in laying out the most complex of the designs, as for example the related types S20 and S21. It is possible to trace a simple scheme behind many of these virtuoso variations—the S3 double loop type in S20, S21, and particularly S23, the swastika in S18, S25, and S26, and the triskelion in S22—but to the eye the controlled richness of a design using only a few loops and angles is the most remarkable thing.

Nearly half of the designs belong to the type of the continuous line. An entirely different effect is produced when the line is abruptly broken (S27, a swastika type), or when the space between lines is reduced to simple grooves (S28). The interlocking T design is the most popular of the broken line type; it forms the basis for five dissimilar seal types, and may be connected with the use of the convenient T filling on a number of other seals (S1, S2, S45, S56). S29 may exemplify the basic system, whereas S30 has lost its outer line and acquired a filling motif in the center, and S31 shows a central square around which the lines have become ridges separated by grooves. Here we see the emergence of the leafed element from the T. The three-leafed element is prominent in the next two types. The first (S32) is large and rather crudely cut; the cutter has omitted the central ring and T's completely in favor of extra lines and extra T's which become the three-leafed elements. Yet the interlocking principle is still strong, and no space is wasted. S33 is a simpler specimen, in which only the central ring is omitted. In S34-S36 only the three-leafed element is retained; S36 is built on the groove principle, but S34 incorporates a system of complex loops which resembles the classical maeander.

The next seal types S37-S42 show, instead of the continuous and the broken line, only isolated elements: trefoil, leafed elements, swastika, triskelion. This feature gives them a marked similarity, but does not produce confusion, partly because the seals are of widely different sizes. S39 and S40, alike in design but distinguished by size and by various details, occur together on a number of sealings. This is the only case in which there is such similarity between two different impressions on one sealing, and it suggests a certain practical significance in the variations of the design. It is remarkable that, with the exception of S41, the seal cutters seem to have been strongly conscious of the divisions of the design, to the extent of using tripartite figures to fill out a tripartite design (S37-S38, S40), and quadripartite to fill out a quadripartite (S39, S42). The same is often true of the double loop designs. Further examples of the pattern of isolated elements are found in the group S50-S56. The repetition of trefoils is extraordinary; again, the distinction between seals is arbitrary, achieved by arrangement (parallel or radial), or by the addition of a border or border figures. Another variation alternates small jugs with the trefoils (S55). The last seal in this group (S56) shows a rectangular rather than a circular design, but the constant curves of its elements successfully deceive the eye. It is a tour de force of composition with asymmetrical parts. The trapezoidal object has not been identified. Pos-

sibly it was invented for the occasion; in any case it adds a suggestion of weight, and the parallel lines crossing it serve most successfully to balance the motion of the curves.

The leafed element is the prominent feature of S43 and S44. The former, bipartite like S45, constructs its design with grooves instead of lines, and shows a number of irregularities, noticeably the single spiral, which distinguish it from the majority of the seals. The design is careful and well balanced. It is not really possible to judge the total effect of S44, but it seems to have been similar to that of S39. The tendrils, if accurately reconstructed in our drawing, have no parallel at Lerna.

S45-S49 are the types on which spirals occur. The opposing, or C, spirals of S45 form the backbone of the design, but the greater part of the field seems to have been cut up into curved and angular filling-shapes. If the reconstruction, which is based on a small fragment, is correct, we have here a system of design unique among the seals from the House of the Tiles. The next two types (S46 and S47) show a familiar combination of four running spirals. The first is done with great delicacy; it has a central spiral, and the spaces along the border are filled with S spirals. The second is much simpler and shows raised portions of the ground as filling. S48 is also simple, but quite differently constructed, with five abbreviated and angular spirals projecting from the border. The last of this dissimilar group of seals (S49) is a groove design incorporating a pair of spirals with loops, and quirks as filling.

The remaining seal types are difficult to classify stylistically. S57 is a handsomely composed and constructed pair of interwoven lines. S58 is an elaborate version of the "hatched quadrant" type of seal, a type which is not particularly well adapted to the circle, but which is here designed with considerable originality. Neither one has any parallel among the other seals here catalogued. S59 and S60 are laid out in a tripartite scheme in which each division contains two triangles, but whereas S60 is done with a continuous line, S59 is built, as the diagram beneath the drawing indicates, of three interlocking ridges separated by grooves. The accuracy with which this deceptively simple little seal was constructed cannot be too highly commended.

The last three complete seals, S61-S63, are the only ones which show any major flaw in symmetry. The "cogs" of S61's border should have been eight, but the cutter visibly miscalculated (Pl. 29) and was obliged to enlarge the seventh cog. S62 is neatly cut but not sufficiently well preserved for one to examine the entire course of the inner scallop border and the mysterious and ill-assorted objects in the center. S63 is also well cut, although the cutter missed the midpoint of the seal and crowded an extra circle and spoke into the design. The remaining seal types, S64-S70, are too fragmentary for comment, with the exception of S69 which appears to have been a complex meander or swastika in the style of S18 or S59.

The related material which can be brought to bear on the problem of these seal impressions is various but often insufficient. It will be briefly summarized here. From

the mainland of Greece we have only the Lerna evidence not catalogued here, including the group of impressions from Room DM, and the seals and impressions from Asine and Zygouries. Room DM¹⁰ furnishes two simpler versions of the hatched quadrant (cf. S58), two forms of the spiral which provide parallels for S45 and S1-S2, and (probably) a variety of the design embodying an isolated three-leafed element, exemplified by S40. Among the pieces from Asine,¹¹ neither the three clay impressions, found in Early Helladic III context, nor the impressions on the shoulder of an Early Helladic III jar offer close parallels to any of the group from the House of the Tiles, but as a whole they resemble the Lerna impressions in symmetry and in choice of geometric forms. The loop swastika¹² bears a resemblance to S25 and S26. The triskelia recall a number of designs, particularly S22. The large spider surrounded by a border of loops is certainly closer to S61 than to a Minoan design of the sort found on an ivory cylinder from Platanos.¹³ The seals recovered at Asine,¹⁴ however, as at Lerna, are unlike the impressions. Two of the three stone seals, all of which are dated Early Helladic III, show extremely simple asymmetrical linear designs; the third has none at all. One further seal dating to the earliest Middle Helladic phase is of terracotta and shows a very crude design. From Zygouries¹⁵ comes a design consisting of a concentric circle, impressed on the side of a bowl, and an elaborate but asymmetrical linear design on a terracotta button seal.

There is a fairly large body of glyptic of the late Early Minoan and early Middle Minoan periods, much of which has been studied by F. Matz.¹⁶ Stratigraphical indications for these seals are in most cases inadequate, but stylistically the designs offer many interesting comparisons, which will be summarized here approximately in the order of the catalogue. For the favorite loop designs, there are, oddly enough, few parallels. An ivory seal from Platanos¹⁷ is almost the only close parallel for the types S3-S15, but later examples,¹⁸ clearly connected with the C-spiral, are fairly common. The true loop used in a closed symmetrical design is not popular in Crete;

¹⁰ *Hesperia*, XXV, 1956, pl. 44, e and f.

¹¹ Frödin and Persson, *Asine*, figs. 160, 1 and 2; 172, 5-7. Also one impression on a bowl, Blegen, *Zygouries*, fig. 91, 1.

¹² Weinberg (*Relative Chronologies in Old World Archeology*, ed. Ehrich, p. 90, following Matz, *Gnomon*, XVI, 1940, p. 152) connects this with an Egyptian type which does not last beyond the XIth Dynasty.

¹³ Xanthoudides, *The Vaulted Tombs of Mesara*, pl. XIII (Platanos B, C1039, Matz K49).

¹⁴ Frödin and Persson, *Asine*, fig. 172, 1, 3, 4, 9.

¹⁵ Blegen, *Zygouries*, fig. 91, 1, pl. XXI, 4. Also, from Hagia Marina, a steatite cone seal from an E. H. level, showing a design of four lines, *R.E.G.*, XXV, 1912, p. 276.

¹⁶ F. Matz, *Die Frühkretischen Siegel*, Berlin, 1928.

¹⁷ Xanthoudides, *The Vaulted Tombs of Mesara*, pl. XIII (Platanos B, C1029, Matz K60).

¹⁸ Evans, *Scripta Minoa I*, p. 141, fig. 89 (Matz, K212), Hogarth, *J.H.S.*, XXII, 1902, pl. X, no. 134. Evans, *Palace of Minos, II*, p. 201. Karo, *Schachtgräber von Mykenai*, pl. VI (stele).

the "rapport" or endless pattern and the entirely asymmetrical design¹⁹ are the most common versions. The swastika²⁰ occurs as the major element in a design, not as filling motif, while the triskelion²¹ is used either alone or as the central figure, except in one striking design from Mochlos, restored as six triskelia arranged about a seventh,²² which recalls the Lerna multiple trefoil seals. Three-leafed and two-leafed elements are known in Crete,²³ generally stemless and arranged as symmetrical subordinate motifs, but also on occasion as a rapport design. No single example closely resembles the Lerna types S39-S44,²⁴ with the possible exception of the designs on two seals from the Hagia Triada tholos.²⁵ The second of these may show a central trefoil surrounded by two-leafed elements; if so, a parallel is provided for S37 and S38. Trefoils are not popular on the Cretan seals, but quatrefoils²⁶ do occur, singly, in rapport, or as filling.

There are of course many parallels available in various fields for the Lerna spiral designs,²⁷ from Crete and the Cyclades as well as elsewhere. The Lerna material offers fresh evidence in this question; it does not, however, provide the only known examples of Early Helladic spirals, since these have been previously observed as decoration in relief on pithoi.²⁸

A number of other Lerna motifs find parallels on Cretan seals: ring (or ball) and spoke,²⁹ spider,³⁰ jug,³¹ interwoven lines,³² hatched quadrant pattern.³³ The spider

¹⁹ *Annuario*, XIII-XIV, 1930/1, fig. 66, p. 199; fig. 102, p. 209 (Matz, K147, K70).

²⁰ *Annuario*, XIII-XIV, 1930/1, fig. 72, p. 201. Xanthoudides, *The Vaulted Tombs of Mesara*, pl. VIII (Porti, C648, Matz K242).

²¹ Xanthoudides, *The Vaulted Tombs of Mesara*, pl. VIII (Kalathiana, C817; Matz, pl. VI, 19), pl. XIII (Platanos B, C1104, Matz K54).

²² Matz, K35, fig. 39, p. 133.

²³ Palaikastro, *B.S.A.*, VIII, 1901/2, p. 296, fig. 13 (Matz, K131). Xanthoudides, *The Vaulted Tombs of Mesara*, pl. XIII (Platanos B, C1087, Matz K59).

²⁴ Possibly seal 3332 of the Yamalakis collection, a bipartite design with loops, may be brought into connection with S43 and S44.

²⁵ *Annuario*, XIII-XIV, 1930/1, fig. 112 c, p. 212; fig. 89, p. 205.

²⁶ *Δελτίον*, 1918, pl. V (Matz, K157). *Annuario*, XIII-XIV, 1930/1, fig. 92, p. 207 (Matz, K72); fig. 91, p. 206.

²⁷ E. g. Xanthoudides, *The Vaulted Tombs of Mesara*, pl. XIII (Platanos B, C1104, Matz K54); pl. IV (Koumasa B, C516, Matz K1). *Annuario*, XIII-XIV, 1930/1, fig. 86, p. 205. Karo, *Schachtgräber von Mykenai*, pl. VI. From Palestine, an impression, Marquet-Krause, *Les Fouilles d' Ay*, pl. LXVIII, 63.

²⁸ E. g. *Hesperia*, XXV, 1956, p. 169, pl. 44, b.

²⁹ *J.H.S.*, XVII, 1897, pl. X, 13 b (Matz, pl. XXI, 5 b). *B.C.H.*, LXX, 1946, p. 80, fig. 2, c.

³⁰ Single spider: *J.H.S.*, XVII, 1897, pl. IX, 1 c, pl. X, 15 a; a number in the Yamalakis collection (some published by Agnes Xenaki, in *Κρητικά Χρονικά*, 1949, nos. 25, 32, and 47). Several spiders: Xanthoudides, *The Vaulted Tombs of Mesara*, pl. XIII (Platanos ζ, C1039, Matz K49).

³¹ Evans, *Palace of Minos*, I, fig. 145 (Matz K161). *Ἐφ. Ἀρχ.*, 1907, pl. VI, 16 (Matz K82).

³² Evans, *Cretan Pictographs*, fig. 84 (Matz K64). Levi, *Bollettino d'Arte*, 1956, no. III, fig. 46, a.

³³ Evans, *Cretan Pictographs*, fig. 87 (Matz K66). *Annuario*, XIII-XIV, 1930/1, fig. 75, p. 201.

occurs singly on seals of steatite, and in a group on an ivory seal; it does not appear as a central filling motif as at Lerna. Similarly, the jug occurs, not as at Lerna as a major part of a symmetrical design, but as one of a group, usually subordinate to other figures, but sometimes alone.

In the present state of our knowledge parallels with oriental seals are to be used with hesitation, but it is worth noting that both spider and jug are known to many cylinder seals of Jemdet Nasr style.³⁴ The design of interwoven lines (S57), not matched in quality by any of the Cretan examples, except possibly by certain of the impressions discovered at Phaestos,³⁵ is remarkably Celtic in appearance; it has a parallel in the snake coil on seals of the Early Dynastic and Akkadian periods.³⁶ The swastika is known in Iran,³⁷ and the opposing spiral on a stamp seal from Tell Brak.³⁸ Finally, we have many examples of the hatched quadrant, from sites in Anatolia, Egypt, and Iran.³⁹ The principle of the design is admittedly a simple one, and may easily have been invented independently at many sites; none of the parallels approaches the complex development of the Lerna design.

This list of possible Eastern connections (spider, jug, interwoven lines, swastika, opposing spiral, hatched quadrant) is not long. The cylinder seal has its own tradition apart from the stamp seal,⁴⁰ and those areas in which the stamp seal prevails have not yet produced much applicable material. With a better knowledge of the seals of the First Intermediate Period in Egypt, it might well be possible to define connections between that area and the Aegean. The hatched quadrant has already been mentioned; the interlocking spiral occurs,⁴¹ and there are certain bipartite seal designs which can be compared with the type of S49.⁴²

This brief survey of the comparative material suggests problems instead of

³⁴ E. g. Frankfort, *Stratified Cylinder Seals from the Diyala Region*, pl. 75, 817, and pl. 3, 2.

³⁵ Levi, *Bollettino d'Arte*, 1956, no. III, fig. 46, a.

³⁶ E. g. Frankfort, *Stratified Cylinder Seals from the Diyala Region*, pl. 24, 244. Also an unusual example from Egypt, Petrie, *Buttons and Design Scarabs*, pl. VII, 9.

³⁷ Contenau and Ghirshman, *Fouilles du Tepe-Giyan 1931-1932*, pl. 38, no. 31. Also on pottery; e. g., Langsdorff and McCown, *Tall-i-Bakun A*, pl. 74, 1.

³⁸ Mallowan, *Iraq*, IX, 1947, pl. XIX, 15.

³⁹ E. g. Von der Osten, *The Alishar Hüyük*, I, 1928/29, fig. 269. Goldman, *Tarsus*, II, pl. 392, no. 7. Petrie, *Buttons*, pl. IV, 221 and 223. Ghirshman, *Fouilles de Sialk*, I, pl. LXXXVI, S417, S85. Langsdorff and McCown, *Tall-i-Bakun A*, pl. 82, 3.

⁴⁰ Miss Porada has brought to my attention the impression of a circular stamp seal, from Uruk (Jordan, *Ausgrabungen in Uruk 1930/1*, pl. 19, a; Moortgat, *Die Entstehung der Sumerischen Hochkultur*, pl. 18, b) which shows considerable symmetry, and unique curved forms. She suggests that the original seal may have been of wood.

⁴¹ Petrie, *Buttons*, pl. VII, 1 (IXth to Xth Dynasty). Compare an impression on a sherd of imported ware at Troy, dated Troy II b (Blegen *et al.*, *Troy I*, fig. 408).

⁴² Petrie, *Buttons*, pl. II, 118-123, pl. V, 359. Compare also such Cretan seals as Evans, *Scripta Minoa*, I, p. 136, fig. 78, e and g, which Evans (*J.H.S.*, XIV, 1894, p. 328) derives from XIIth Dynasty scarab designs.

solving them, but I believe that it makes plain certain general conclusions about the relation of the Lerna seals to the Cretan. For the establishment of chronology these relationships provide little solid ground; the best basis for dating the Lerna seals is the stratigraphy of the site itself. But stylistically the seals form a closed group with certain marked characteristics—circular form, symmetry, geometric designs—which find close parallels in only a few of the Cretan seals. As a whole, the group from the House of the Tiles may be taken as representative of an independent and perhaps local school of seal cutting, recognizable also in the impressions from Asine. It is certainly possible that the Lerna jars and boxes were imported from elsewhere (we know that Lerna had considerable trade connections in the Middle Helladic period, and probably earlier as well), but it seems unlikely that containers of such variety of shape and presumably of contents were imported from one and the same place. In any case, whether the containers held imports or goods locally manufactured, the clay which secured them was almost certainly applied and stamped at Lerna. In no other way can we account for the uniformity in seal designs and for the fact that the same seal was sometimes used to mark containers of more than one type.

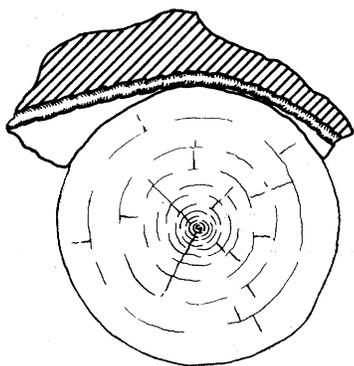
It may be possible by further study to demonstrate a close connection between one school, or workshop, of Cretan glyptic⁴⁸ and the school of mainland work represented by the Lerna impressions. The majority of the Cretan seals would fall outside of this school; they tend towards a freer, more naturalistic scheme of composition which occupies, very often, a form other than the circle. The whole field of early Cretan glyptic will require a strict stylistic analysis before this suggestion can be properly defined. The stamp seals throughout the wider areas of Egypt and the Near East also need study in order that the nature of the more distant relations between these classes and those of the Aegean may be determined as closely as possible.

⁴⁸ Sealings found at Monastiraki in Western Crete (Matz, *Forschungen auf Kreta* 1942, 43.1, 38.1, 38.3), dated M. M. I-II, show impressions of circular seals with geometric designs. I have not seen the impressions from Phaistos, which Levi dates M.M.I (*Bollettino d'Arte*, 1956, no. III, fig. 46, a, pp. 264-266). They include human, animal, and pictographic designs as well as geometric ones.

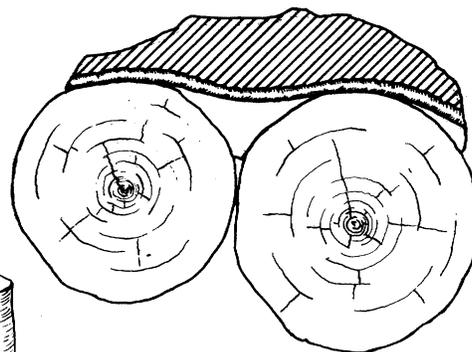
CONCORDANCE OF NUMBERS

<i>Inventory</i>	<i>Catalogue</i>	<i>Inventory</i>	<i>Catalogue</i>	<i>Inventory</i>	<i>Catalogue</i>
L3.10	36	L4.393	90	L4.442	51
L4.345	12	L4.394	110	L4.443	106
L4.346	21	L4.395	130	L4.444	43
L4.347	13	L4.396	91	L4.445	31
L4.348	66	L4.397	129	L4.446	32
L4.349	107	L4.398	41	L4.447	33
L4.350	137	L4.399	103	L4.448	34
L4.351	119	L4.400	42	L4.449	116
L4.352	53	L4.401	1	L4.450	135
L4.353	108	L4.402	2	L4.451	79
L4.354	54	L4.403	3	L4.452	93
L4.355	55	L4.404	4	L4.453	109
L4.356	56	L4.405	5	L4.454	133
L4.357	78	L4.406	6	L4.455	140
L4.358	8	L4.407	128	L4.456	49
L4.359	9	L4.408	123	L4.457	50
L4.360	7	L4.409	38	L4.458	138
L4.361	—	L4.410	35	L4.459	139
L4.362	14	L4.411	39	L4.460	67
L4.363	15	L4.412	124	L4.461	75
L4.364	16	L4.413	10	L4.462	97
L4.365	17	L4.414	40	L4.463	74
L4.366	18	L4.415	100	L4.464	115
L4.367	19	L4.416	11	L4.465	82
L4.368	20	L4.417	125	L4.466	136
L4.369	58	L4.418	127	L4.467	131
L4.370	28	L4.419	37	L4.468	80
L4.371	29	L4.420	98	L4.469	81
L4.372	59	L4.421	99	L4.470	105
L4.373	60	L4.422	73	L4.471	114
L4.374	61	L4.423	92	L4.472	141
L4.375	62	L4.424	104	L4.473	120
L4.376	63	L4.425	117	L4.474	95
L4.377	64	L4.426	132	L4.475	96
L4.378	65	L4.427	86	L4.476	142
L4.379	94	L4.428	77	L4.477	126
L4.380	113	L4.429	72	L4.478	68
L4.381	134	L4.430	52	L4.479	69
L4.382	111	L4.431	101	L4.480	70
L4.383	112	L4.432	102	L4.481	143
L4.384	25	L4.433	71	L4.482	88
L4.385	26	L4.434	45	L4.483	83
L4.386	27	L4.435	46	L4.484	84
L4.387	30	L4.436	47	L4.485	85
L4.388	—	L4.437	44	L4.486	—
L4.389	22	L4.438	76	L4.487	121
L4.390	23	L4.439	57	L4.488	122
L4.391	24	L4.440	118	L5.1	48
L4.392	89	L4.441	87		

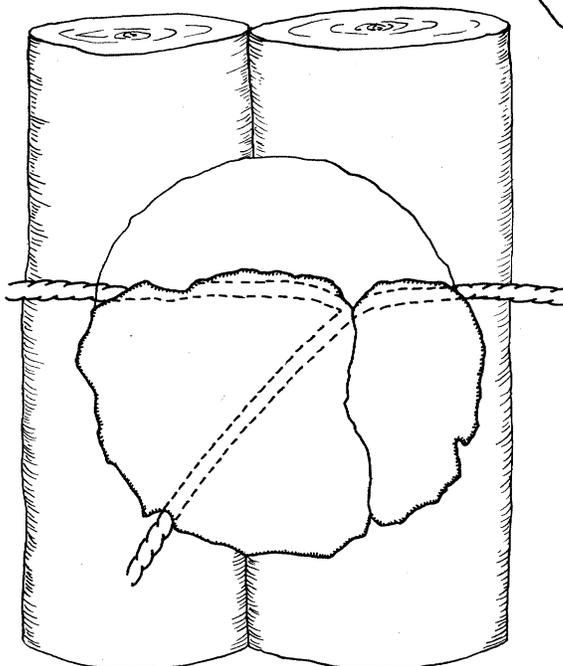
MARTHA C. HEATH



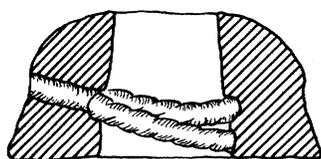
Type A. No. 12. Section, with pole restored



Type A. No. 13. Section, with poles restored



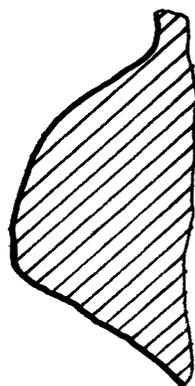
Type A. No. 13. Two Fragments, from above, restored



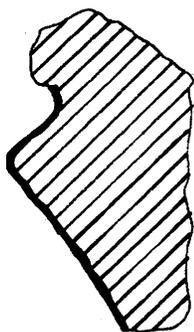
Type B. No. 43. Restored Section



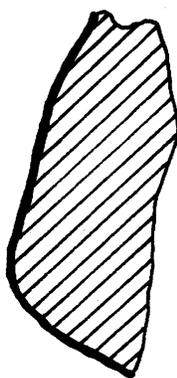
Type B. No. 45. Restored Section



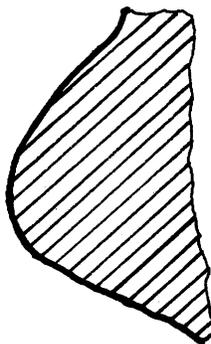
No. 74



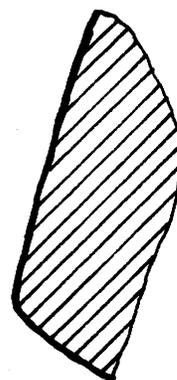
No. 76



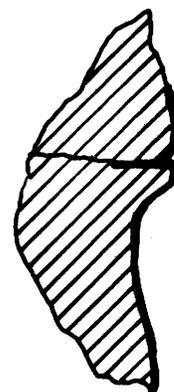
No. 78



No. 79

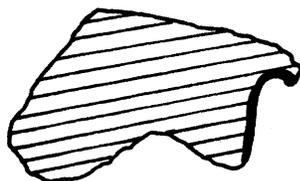


No. 80

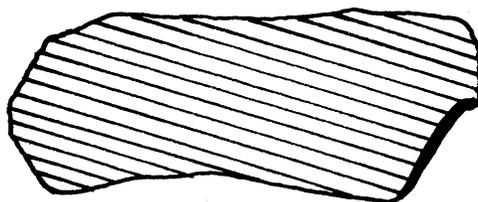


No. 86

Type C

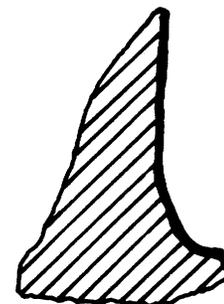


No. 94



No. 95

Type D



Type E. No. 112



No. S1



No. S2



No. S3



No. S4



No. S5



No. S6



No. S7



No. S8



No. S9



No. S10



No. S11



No. S12



No. S13



No. S14



No. S16



No. S17



No. S18



No. S19



No. S20



No. S21

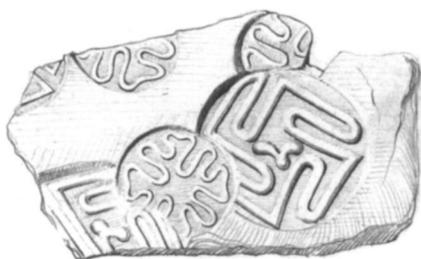


No. S22

Drawings by Piet de Jong



No. S23



No. 44. S24, S25



No. S25



No. S26



No. S27



No. S28



No. S29



No. S30



No. S31



No. S32



No. S33



No. S34



No. S35



No. S36



No. S37



No. S38



No. S40



No. S39



No. S41



No. S42



No. S43

Drawings by Piet de Jong



No. S44



No. S45



No. S46



No. S47



No. S48



No. S49



No. S50



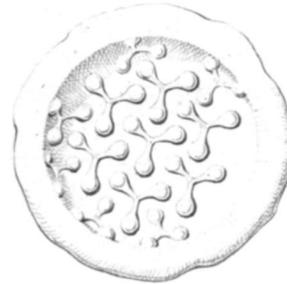
No. S51



No. S52



No. S53



No. S54



No. S55



No. S56



No. S57



No. S58



No. S59 (3:2)



(1:2)



No. S60



No. S61



No. S62

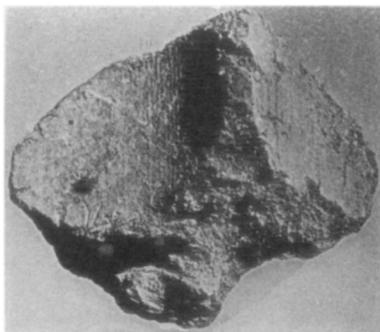


No. S63

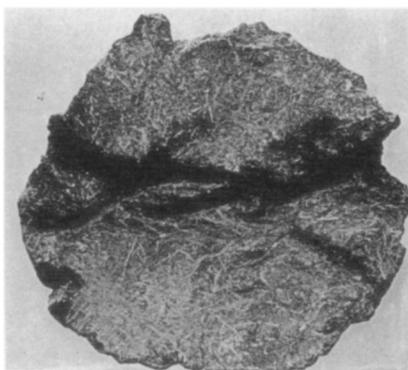


No. S69

Drawings by Piet de Jong



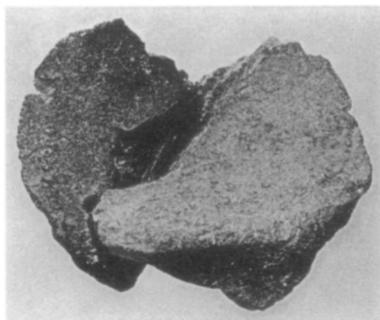
No. 8



No. 12



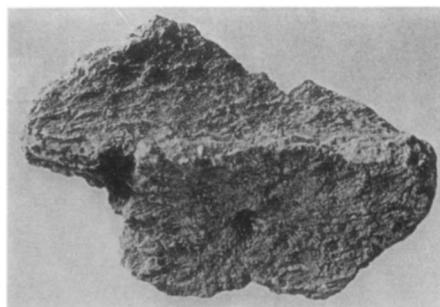
No. 13



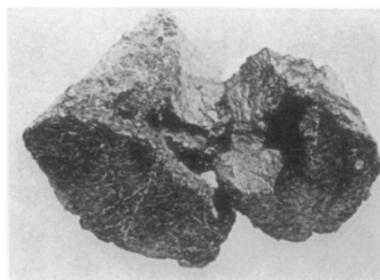
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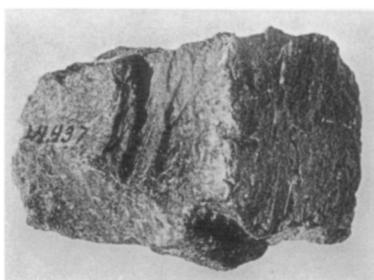
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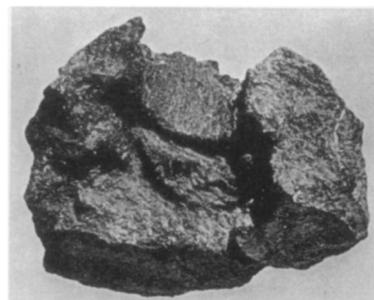
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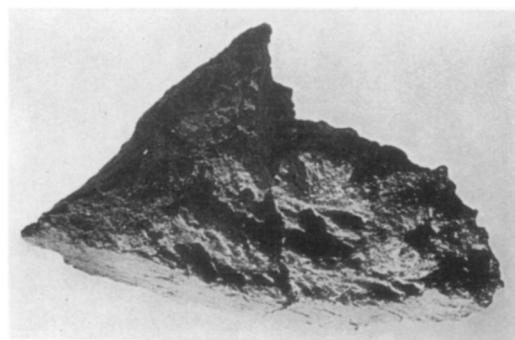
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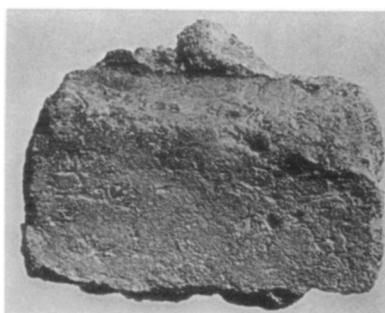
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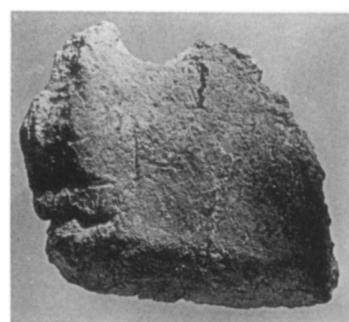
No. 45



No. 66



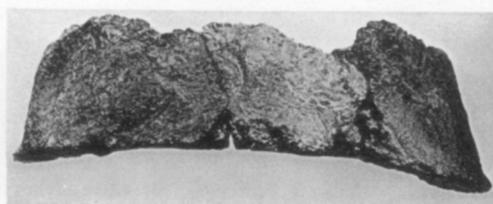
No. 76



No. 78



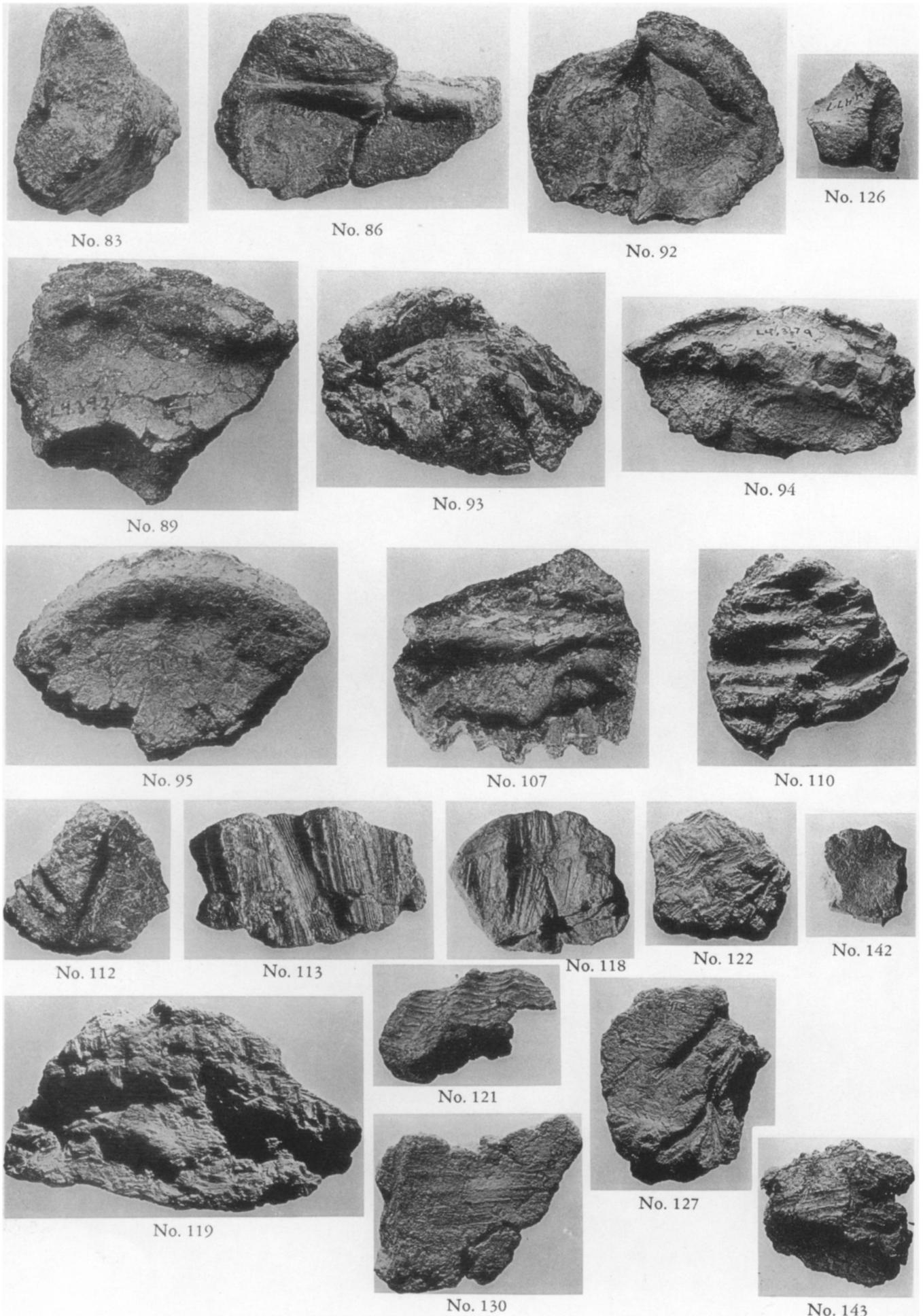
No. 74



No. 74

Backs of Sealings

MARTHA C. HEATH: EARLY HELLADIC CLAY SEALINGS FROM THE HOUSE OF THE TILES AT LERNA

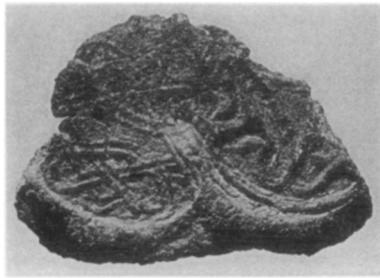


Backs of Sealings

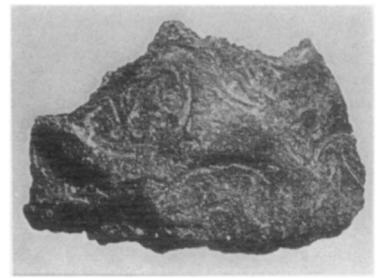
MARTHA C. HEATH: EARLY HELLADIC CLAY SEALINGS FROM THE HOUSE OF THE TILES AT LERNA



No. 1. S1



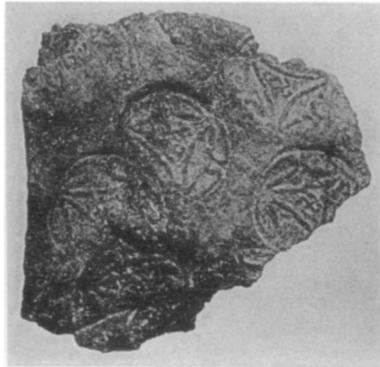
No. 7. S1, S57



No. 37. S2



No. 35. S3



No. 124. S3



No. 137. S4



No. 125. S5



No. 73. S6



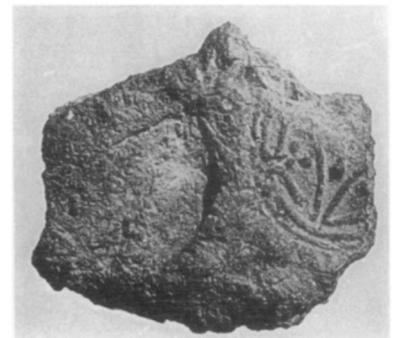
No. 36. S7



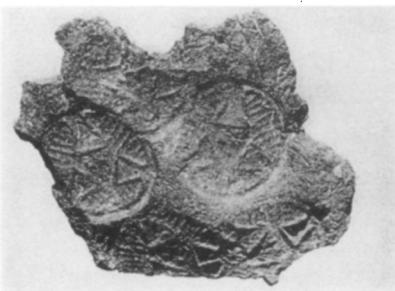
No. 128. S8



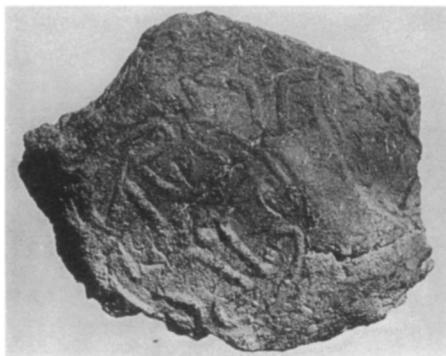
No. 98. S9



No. 127. S10



No. 10. S11

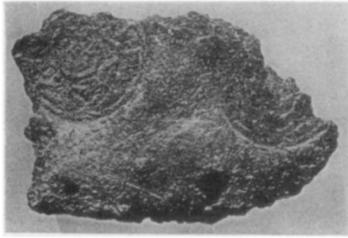


No. 101. S12

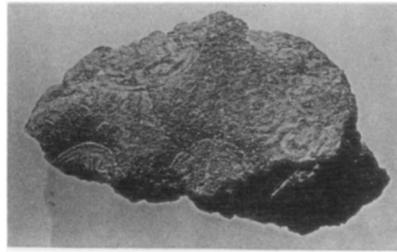


No. 71. S13

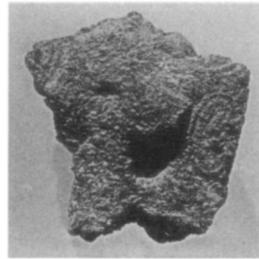
Fronts of Sealings



No. 75. S14



No. 97. S14, S59



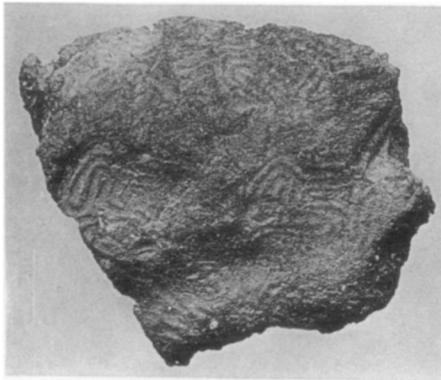
No. 115. S15



No. 103. S17



No. 129. S16



No. 89. S18



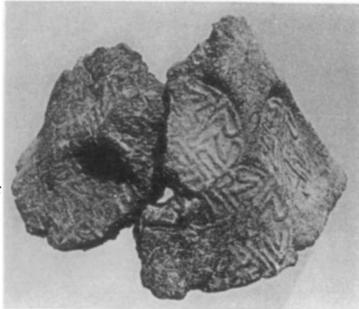
No. 104. S19



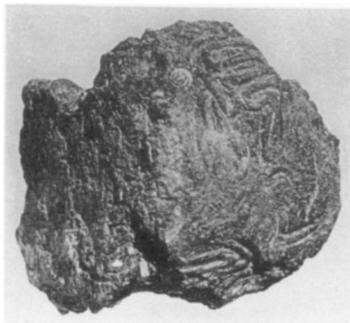
No. 131. S30



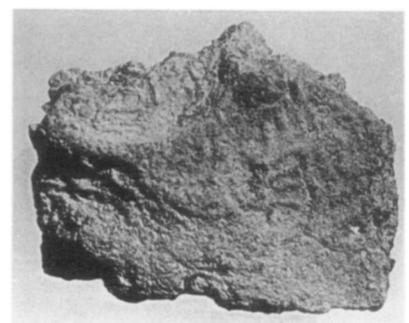
No. 105. S20



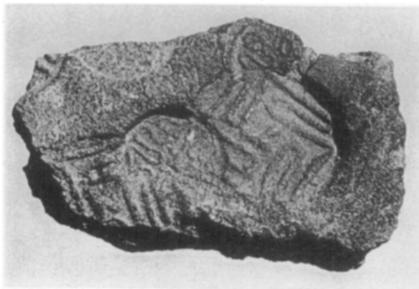
No. 43. S21



No. 11. S22



No. 76. S23



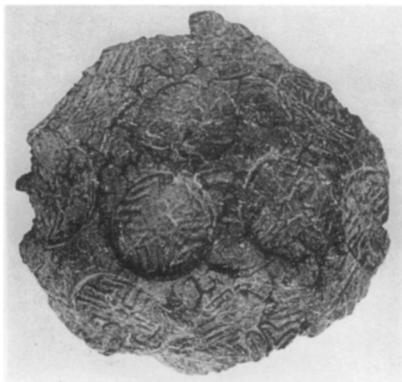
No. 44. S24, S25



No. 48. S25



No. 13. S26



No. 12. S26



No. 118. S27



No. 130. S28



No. 87. S31

Fronts of Sealings



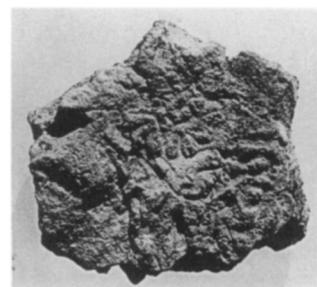
No. 77. S29



No. 49. S32, S41



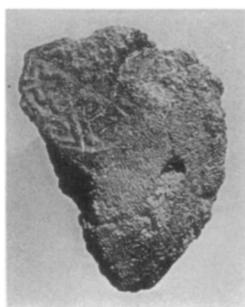
No. 50. S32, S41



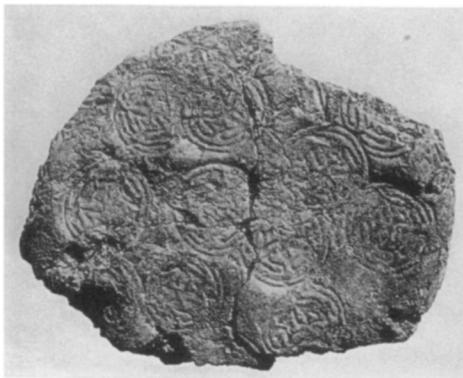
No. 138. S32, S41



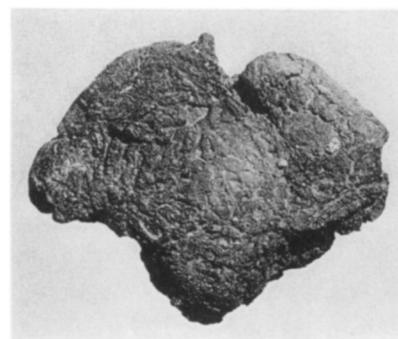
No. 51. S33



No. 106. S34



No. 92. S35



No. 132. S36



No. 72. S37



No. 52. S38



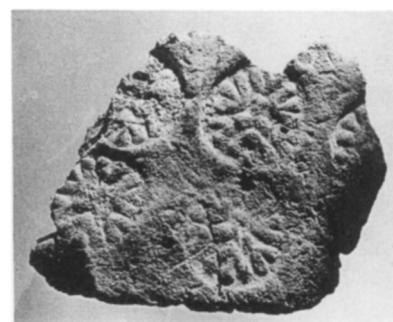
No. 107. S39, S40



No. 53. S39, S40



No. 108. S39, S40



No. 78. S40



No. 93. S42



No. 119. S43



No. 109. S44

Fronts of Sealings

PLATE 28



No. 110. S45



No. 21. S46, S55



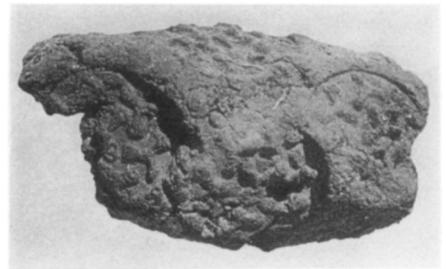
No. 57. S47



No. 133. S48



No. 23. S49



No. 134. S50



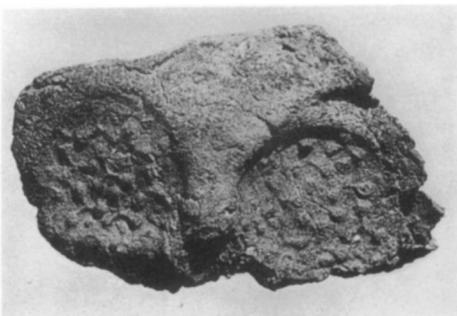
No. 25. S51



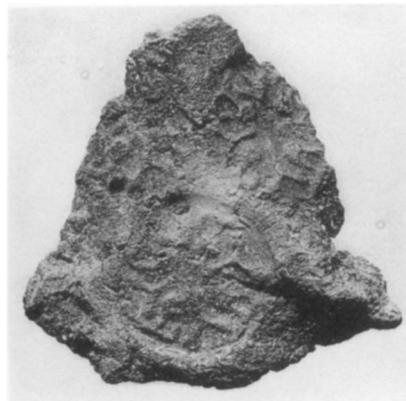
No. 113. S52



No. 94. S53



No. 27. S54



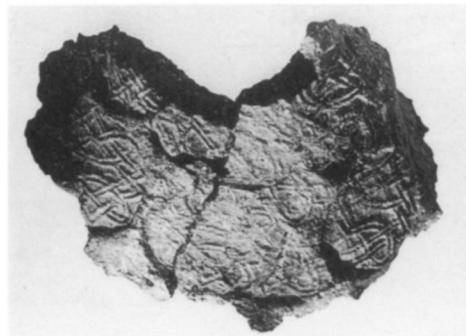
No. 58. S55



No. 30. S56 1 Fragment



No. 30. S56 2 Fragments



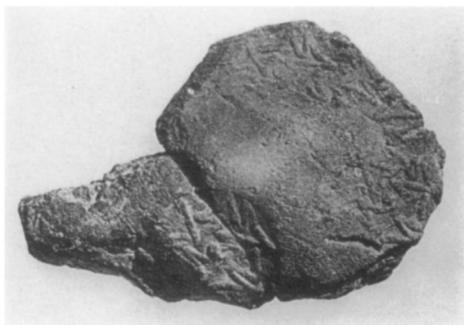
No. 66. S57



No. 79. S58

Fronts of Sealings

MARTHA C. HEATH: EARLY HELLADIC CLAY SEALINGS FROM THE HOUSE OF THE TILES AT LERNA



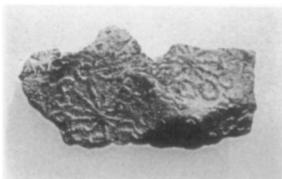
No. 86. S60



No. 32. S61



No. 135. S62



No. 116. S63



No. 80. S64



No. 81. S64



No. 82. S65



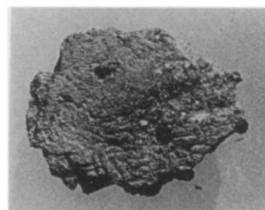
No. 114. S66



No. 120. S67



No. 136. S68



No. 140. S69



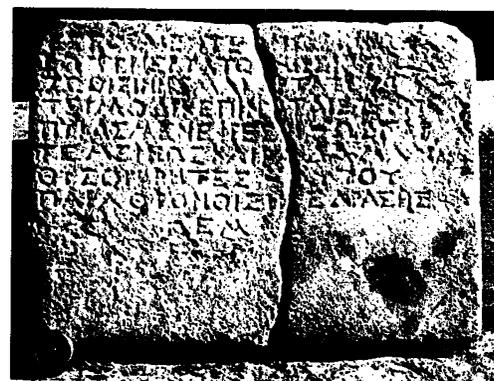
No. 141. S70

Fronts of Sealings

MARTHA C. HEATH: EARLY HELLADIC CLAY SEALINGS FROM THE HOUSE OF THE TILES AT LERNA



No. 1



No. 4

MICHAEL H. JAMESON: INSCRIPTIONS FROM KARPATOS