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THE LATE MINOAN I
DESTRUCTION OF CRETE

Metal Groups and Stratigraphic Considerations

Hara Georgiou

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MONOGRAPH IX

Institute of Archaeology

University of California, Los Angeles

THE LATE MINOAN I DESTRUCTION OF CRETE:
METAL GROUPS AND STRATIGRAPHIC CONSIDERATIONS

Hara Georgiou

Institute of Archaeology
Director of Publications: Dr. Ernestine S. Elster

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LIST OF ABBREVIATIONS

Lower case letters will indicate the following categories:

- a. bronze vessels
- b. bronze tools (including ceremonial double axes)
- c. bronze weapons
- d. ingots (bronze and copper)
- e. miscellaneous associated material including precious metals and bronze objects which do not fall into the categories listed above.

Numbers will indicate the objects from a given group listed under a given location. The Heraklion Museum (HM) catalogue numbers are listed in parentheses where known. All dimensions are metric (=m.); d.= diameter; l.= length; w.= width.

- AA: Archäologischer Anzeiger, Jahrbuch des deutschen archäologischen Instituts
- AJA: American Journal of Archaeology
- Arch Eph: Archaiologike Ephemereis
- BCH: Bulletin de Correspondance Hellenique
- BSA: Annual of the British School at Athens
- EM: Early Minoan
- EtCre: Etudes Crétoises, ed. P. Geuthner, Paris.
- Gournia: See Hawes and others in Bibliography
- HM: Heraklion Museum
- Kr Chr: Kritika Chronika
- LM: Late Minoan
- MM: Middle Minoan
- Mon Piot: Monuments Piot
- PM: Palace of Minos, see A. J. Evans in Bibliography

Praktika: Praktika tis en Athenais Archaeologikis Etairias

PZ: Prähistorische Zeitschrift

SIMA: Studies in Mediterranean Archaeology. Lund.

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INTRODUCTION

This study concerns several groups of metal finds from Crete found primarily in areas of habitation. Some are dated as early as Middle Minoan III but most belong to the Late Minoan I period. The greatest quantity of fine Minoan bronzes from Cretan sites belongs to the destruction levels of the period, variously labelled Late Minoan Ia or Ib. Earlier groups of bronze finds which include only tools are very rare and not later than Middle Minoan II (Branigan 1969:1-11). The find conditions of the Late Bronze Age groups combined with the types of vessels and objects within them are not duplicated at any other time either in settlements or in tombs. Therefore, this unique situation deserves closer investigation. The primary focus of this study will be to attempt to determine the nature of the finds and the meaning of the find conditions in order to arrive at a reconstruction of the events which led to the close of the LM I period, a time coinciding with the eruption of the Santorini volcano, the destruction of Akrotiri on Thera, and the abandonment of the majority of Minoan settlements on Crete.

The artistic merit of the bronzes is a secondary consideration here as the main focus rests on the archaeological facts pertinent to the contexts in which they were found. The most problematic feature of these groups from the archaeological point of view is that Evans and others subsequent to him have considered them to be hoards. This evaluation suggests that they were deliberately hidden, implying a behavior pattern on the part of the Minoan population which anticipates some sort of threat to local security. It is therefore important to examine the archaeological evidence in detail in order to determine whether Evans' assumptions are correct.

Evans considered the end of the Late Minoan I phase as a period during which many of the centers of Minoan culture experienced a severe collapse. Stratigraphical

indications from all the major sites attest to a destruction at the end of LM I. Many sites were abandoned, some were rebuilt on a restricted scale, others were partially reoccupied. One fact is clear, however: the character of Minoan culture changes after this destruction.

One of the major difficulties in the study of Minoan archaeology is the customary use of ceramic classifications to define stratigraphy and architectural complexes as well as destruction levels. Therefore, it is important to determine from the reports of early excavations whether the destruction level in question corresponds to the ceramic style of LM Ia, LM Ib or both. The situation is further complicated by the fact that the pottery within a stratum may predate the destruction of that stratum by a considerable period of time. The confusion may be due to the possibility that the ceramic styles of LM Ia and LM Ib are synchronous regional styles not necessarily represented in the same quantity at all sites. This problem will be fully investigated and some solutions will be proposed in the Conclusions.

For the purpose of this study, a group is defined by the occurrence of two or more metal artifacts in one locus, whether a room, storage area or other. These groups contain primarily objects of bronze and some of copper or precious metals. Many of the groups are characterized by the presence of bronze vessels. These are often of exceptional quality, matched only by grave goods in Crete and the metal vessels from the shaft graves of Mycenae. Other metal items such as ingots, ceremonial and functional weapons and tools also occur.

The contents of the individual groups of bronze or metal finds vary from site to site and within each site. Some groups include combinations of weapons, tools and ingots while others consist of practical cooking vessels or ceremonial basins. Some groups include tools and vessels combined. The locations of the find groups vary as much as the contents in each individual case. The only constant factor is the chronology. In each case, the objects can be dated to a period spanning MM III to LM Ia-b, and most are found in destruction levels associated with LM Ia-b ceramics.

Although the majority of the groups described here are from settlements, an exceptional find from a sacred cave is included and grave goods are used for supplementary illustration. Groups which are incompletely published and therefore unprofitable for study are not included.

The Catalogue and Discussion of each group are combined. Each catalogue entry lists the metal objects and associated material found in each of the deposits. The location of each assemblage within each site and the chronology, stratigraphy, context and general nature of each find group as given by the excavators is included. The information in the catalogue entries relies on reports published by the excavators. Since much of the material was excavated and published in the earlier part of this century when Minoan archaeology was still in a formative stage, the evaluations of the excavators regarding chronology had to be closely examined and in some cases reinterpreted in the light of more recent evidence. Each catalogue entry is followed by a discussion of the composition of each group, its location, context and associated material in order to determine the nature of the find.

A comparative analysis of the material will be made, followed by a summary of the evidence and some conclusions. The main object is, first, to determine whether these metal groups can be classified as hidden hoards, storage groups or some other type of find, by scrutiny of their contents and location, and second, to attempt an explanation of their existence in such quantity in the destruction levels of the Late Minoan I period.

CATALOGUE AND DISCUSSION

Arkalochori Cave (Marinatos 1934:252-254; 1935:249-253; Evans PM IV:fig. 68).

Rock shelter 10 meters deep. Finds are from an area measuring two to three square meters. Votive items were found in the far north corner. A small altar was found inside the cave covered with objects made of precious metal.

Tools:

- b. 1. chisel
2. several hundred bronze double axes (Marinatos 1935:251); some are heavy, cast work tools, others are votive items of thin sheet metal. The longest is 0.65 m., width 0.70 m. The small ones are almost all decorated with linear patterns. One has a motif of spirals and curves (Marinatos 1935:252; Zervos 1956:figs. 430-432).

Weapons:

- c. 3. blades of swords and knives
4. two types of swords:
 - 1) no tangs, flat, thin metal, not for practical use.
 - 2) short tangs, centrally ribbed, no means of attaching blade to hilt (placed in situ without hilts). Average blade is over one meter long, the longest is 1.055 m.

Misc.:

- e. 5. lump of gold on altar (Marinatos 1935:250).
6. raw material of bronze: bun-shaped ingots
7. 26 gold double axes on gold shafts, also some broken pieces (Zervos 1956:fig. 623; Marinatos 1966:fig. 110).

8. "dozens" of small gold sword blades.

9. 6 silver double axes.

Chronology:

Associated sherds belong to the last phase of the MM period (Marinatos 1934:251). The metal finds belong to MM III-LM Ia. The leaf pattern on one of the gold double axes could be LM II (Marinatos 1934). The cave holds nothing later than LM I (Marinatos 1935:253).

Nature of find:

Votive offering assemblage consisting primarily of bronze, silver and gold double axes, swords and daggers of various sizes. The group does not include metal vessels.

Discussion

The finds from Arkalochori (Marinatos 1934, 1935) are included in this discussion although they are not from a settlement area but from a sacred cave. The site, although exceptional in terms of location, is important due to the presence of a great quantity of metal objects from the chronological period under consideration.

The group has not been published in detail. It differs from the other find groups in that it was intentionally deposited as a permanent votive offering in the cave.

Contents:

The finds from Arkalochori are ingots, tools and weapons, including swords, daggers and double axes. Some of these are of bronze, others are of precious metals. Some are clearly meant for ceremonial or votive use as evidenced by their small size and thinness. Others are sturdier and possibly made for practical use. The double axes from this site are all of the "ceremonial" type and are not tools although they are bronze. None of the swords or daggers had hilts preserved. Some of the sturdier swords were equipped with tangs and might be considered functional although they bore no traces of wear. The excavator concludes that the objects were placed in the cave without having been used as functional items (Marinatos 1935:249-253). No specific reference to the quantity of objects in the cave is supplied, but they fall into the category of "hundreds" (*ibid.*:251).

Location:

There are two distinct groups within the cave (Marinatos 1935:250). The first group of votive offerings covered a small altar in the interior. There were silver and gold double axes, miniature gold swords and one lump of gold which the excavator calls a symbolic mountain but which might be an ingot. The area around the altar which was covered by the finds measured two square meters (*ibid.*). The second group was located

in the outer north corner of the cave and contained bronze objects massed together (Marinatos 1935:250-251). These were double axes, some of which were miniatures, swords and knives (or daggers) and bun-shaped ingots. Other finds were scattered about the cave.

The contents of the cave represent a homogeneous group. The major portion of the finds are votive tools and weapons. There are no metal vessels included here. The miscellaneous material included a lump of unworked gold, some bronze ingots and potsherds in areas distinct from the metal groups. These were dated by the excavator to the last phase of the Middle Minoan period (Marinatos 1935:251). The pottery is not significant in quantity or quality.

The cave contains no finds between the EM (represented by monochrome ware) and the late MM period (Marinatos 1935:251). The excavator dates all the metal finds to the MM III-LM Ia periods. His conclusions on chronology are based on ceramic and typological considerations (*ibid.*). There are no metal finds in the cave of an earlier or later period.

Marinatos believes that the abandonment of the metal within the cave during LM Ia reflects the catastrophe which seems to affect all the Minoan sites contemporaneously (Marinatos 1935:254). Since the objects can be divided into two distinct groups, the nature of each group might be different. The group around the altar might be strictly a votive assemblage. The bronze weapons, miniature and other double axes massed together in the north corner are also most likely a votive group deposited in the cave for safe-keeping. Therefore, all the objects from the Arkalochori cave will be considered as votive offerings which were never removed or looted after LM Ia.

Gournia

House Fd, room 18; in northern part of town (Gournia 1908:23; plate IV; plan of site).

Tools:

- b. 1. double axe; short, socketed, with grooves on one side. l.=0.117 m.; d of socket, 0.018 m. (Gournia 1908: pl. IV, 22; Zervos 1956:fig. 611).
2. saw; in two pieces, point broken, fine teeth, three rivet holes for attaching handle. l.=0.45 m.; thickness 0.002 m. (Gournia 1908:pl. IV, 1).
3. chisel with flaring edge, bevelled on both sides. l.=0.31 m. (*ibid.*: pl. IV, 9).
4. chisel; same as above, l.=0.26 m. (*ibid.*: pl. IV, 10).

5. chisel; same as above l.= 0.27 m. (ibid.: pl. IV, 11).
6. chisel, narrow with square section tapering to slightly flared edge. l.=0.27 m. (ibid.: pl. IV, 12).
7. chisel; same as above, l.=0.20 m. (ibid.: pl. IV, 15).
8. chisel; same as above, l.=0.15 m. (ibid.: pl. IV, 16).

Misc.:

- a. 9. bronze balance pan with slight rim and 4 small suspension holes (like Gournia: pl. IV, 63; Zervos 1956:fig. 614). No dimensions given.
10. bronze hook (like Gournia: pl. IV, 43).
11. three small bars of bronze. No dimensions or illustrations given.
12. bronze razor, broken (like ibid.: pl. IV, 35).
13. bronze tweezers, partially preserved; no dimensions (like ibid.: pl. IV, 32).

Chronology:

House Fd belongs to the "Town Period" at Gournia. It was destroyed in LM I (ibid.:21). A distinction between LM Ia and LM Ib is not made by the excavators.

Nature of find:

The bronzes were found in a corner outside of the west door of room 18 of House Fd (ibid.: 22). There are indications (unspecified) that the group was hidden under the floor of the corridor (ibid.:23). The excavator interprets it as a hoard (ibid.).

Discussion

Contents:

A large group of bronze objects was discovered at Gournia in House Fd. This structure was located in the northern part of the town. The main portion of the bronze objects seems to be a kit of carpenter's tools (Gournia 1908:22). These include six chisels, a saw and a double axe. The other bronzes are a balance pan, three small bars and some small tools. It is unclear why these miscellaneous objects are connected with the tools. There is no pottery directly associated with this find group.

Location:

The bronzes were located just outside of room 18, House Fd. Room 18 might have been a workshop or a storage area. Finds from within the room seem to indicate this. On the south wall of the room, a black streak was uncovered in the earth at 0.35 m above the floor level. The excavator considers this to represent a wooden shelf which either rotted away or was burned during the destruction of the building (Gournia 1908:22). Fourteen loom-weights had been placed on the shelf; one was of stone and the remainder of clay (ibid.). The group of bronzes was located in the corner outside of the west door to room 18 (Gournia 1908:23). The excavator asks: "Was it deliberately hidden under the corridor floor as appears to be the case?" (ibid.). In the opinion of Hawes these bronzes are a hidden hoard. This interpretation is quite plausible although it is not backed by precise information on the nature of the find group. It would, however, be unusual to store a group of thirteen useful objects under the floor of a corridor. Since there are indications (unspecified) that the group was placed under the floor, it follows that it was hidden there intentionally.

House Fd belongs to the "Town Period" at Gournia. All the structures of this period were destroyed in LM I (Gournia 1908:21).

There are other bronze finds from Gournia, mostly tools and weapons from other houses of the same period. Houses Ea and Cg contain several objects each (Gournia 1908:24-26, pl. IV). The excavator does not discuss these groups in as much detail as that of House Fd and the exact provenance of the objects is not given. They may have been found in groups or separately in various rooms of each house. They are important because they supplement the case of the bronze hoard from House Fd. The excavator believes that the abandonment of such a large quantity of bronze throughout the town indicates sudden desertion of the site by the inhabitants and subsequent destruction (Gournia 1908:23).

Haghia Triada

Little Palace (Buchholz 1959:1-40; Parise 1968:117; Paribeni 1904:317 ff.; Pernier and Banti 1947).

Ingots:

	HM inv.	l. = cm.	w. = cm.	marks
d.	1. 721			
	2. 722	37	35	
	3. 723	44	37	
	4. 724	37	35	

5. 725		
6. 726 α		
7. 726 β		
8. 726 γ		
9. 726 δ	42.5	38
10. 726 ϵ	41	38
11. 726 ζ	47	38
12. 726 η	49	46
13. 726 θ	46	34.5
14. 726 ι	40	34
15. 726 κ	44.5	36
16. 726 λ	37	33
17. 726 μ	34	
18. not listed		
19. not listed		



↑ sign on attached
piece of metal



(for the preceding listing see Buchholz 1959:34; for illustrations: Buchholz 1959: pl. 3, 8-10; pl. 4, 1-6; Parise 1968: pl. V, figs. 5a, 5b.)

Description of ingots:

The weights vary from 5.35 to 32 kg. (Buchholz 1959:7). The ingots are all of the type which Buchholz classifies as Type I (*ibid.*:4, 34). They are slightly damaged, the upper surface is uneven and corroded. Eight of the ingots are marked by incision, the others may have been, but such marks are no longer clearly discernible. For metal analysis see Buchholz, p. 11. They are mostly copper with some bronze.

Chronology:

Type I ingots occur in MM III-LM I-II (Buchholz 1959:4). The building is dated by Pendlebury to the LM I-II period (1939:212).

Pernier and Banti (1947:29) state that the Little Palace was destroyed in LM II. This period marks the end of Minoan habitation at the site (*ibid.*).

Nature of Find:

According to Paribeni (1904:334) the ingots were stored in a basement chamber which was one of four. The chamber containing the ingots did not communicate with the others. It was blocked by a wall covering the doorway and was accessible only to the rooms by a temporary stairway. The chamber containing the ingots was further reinforced by a second wall blocking the doorway at a later date than the first wall. The ingots stood on the packed earth floor in columns divided into five groups: one of five pieces, three of four, and one of two. Five of these were stamped with signs (*ibid.*).

Discussion

Contents:

The nineteen bronze and copper ingots from the Little Palace at Haghia Triada were found stored together. No associated material is mentioned with them. This is an example of a group of one category of objects placed in storage together in a mansion. The ingots were stored in five groups, one consisting of five pieces, three of four, and one of two (Paribeni 1904:334). It seems that some were shelved higher than others but this aspect of their storage is only documented by a photograph (Pernier and Banti 1947:45).

Location:

The location of the group is peculiar. It was stored in a basement room which at one time was connected with adjoining storage areas by a door. The door was blocked off and securely sealed by a wall at a later period, some time before the destruction of the building (Paribeni 1904:334). Therefore, after the building of the wall the room was only accessible to the areas immediately above it by a wooden ladder or staircase (*ibid.*).

We may conclude that the ingots as raw material represented considerable wealth. They were therefore stored more securely towards the end of Minoan habitation at Haghia Triada. An increase in external danger might have caused such measures to have been taken.

According to Pernier and Banti, the Little Palace was destroyed by fire at the end of LM II (1947:13). The material from Haghia Triada remains to be fully published and new excavations were begun in 1977. The evidence supporting the LM II date is not given. Excavations at Phaestos have not fully clarified this problem either (1964:3, 4, 14). Levi indicates a disruption at Phaestos during the first and possibly the second part of the Late Minoan period, circa 1550 (1964:4). Pernier and Banti consider LM II as the last period of strictly Minoan habitation at both sites

prior to their "Mycenaean" (or LM III) occupation (1947:7, 29). The date for the destruction at both sites could be LM I in accordance with other Minoan sites, or it could be LM II. The evidence is incomplete. It is clear that a destruction level separates the LM I period from the LM III or "Mycenaean" (Pernier and Banti 1947: 7, 13; Levi 1964: 14). For the purposes of this study the LM I date will be used to define the material found in the destroyed Little Palace because there is little or no evidence for LM II pottery at Hagia Triada (Popham 1967:343).

Knossos: Private Houses

Northwest Treasure House located immediately south of the "theatral area" and north of the West Court. (Evans, PM II, 2:637-647, figs. 402-405, 407-411; Evans, 1903:121 ff.).

Vessels:

- a. 1. (1082 HM) Bronze one-handled basin, d.=0.39 m. (PM II: figs. 403-405, 407d; Zervos 1956:296, fig. 423). Exterior margin of slightly projecting rim bears a stylized leaf pattern; the rim slightly inside of this has a beaded ornament in relief. The handle bears the same design (PM II: fig. 404) and is fastened to the body of the basin by four rivets.
2. Smaller basin (PM II: fig. 402; 407a), no measurements given; no ornament (PM II: fig 407b shows profile of rim and side of vessel). The handle and the rim are made of one piece and are welded onto the body of the vessel.
3. Basin, d.=0.33 m. (PM II: fig. 408). The rim and handle are of one piece of metal and are attached to the body of the vessel by welding as in basin 2. The rim and handle bear a relief of "sacral ivy"; these parts of the vessel are worn and oxidized.
4. (844 HM) Basin, d.= 0.32 m. (PM II: fig. 407c, 409a, 507). Rim and handle are separate pieces welded onto the body of vessel. They are decorated in relief with "waz-lilies" at an oblique angle. The inner part of the rim is beaded. The handle repeats the lily design on either side of central beading.
5. (843 HM) Ewer, h.=0.34 m, d.=0.27 m. (PM II: figs. 402, 410, 411; Pendlebury 1939: pl. xxxvi, fig. 2; Zervos 1956; 349, fig. 594). Badly damaged by crushing. The ewer is made of three sheets of metal, one forming the base and riveted to the central part. The high, prominent collar is attached to the central part, or belly at its narrowest point. A handle is fastened to the uppermost rim of the collar and the widest part of the central section by riveting. Alternating loops in relief decorate

the upper part of the belly. The interior of the upper part of these loops is ribbed horizontally in relief. The lower part of the loops terminates in a long drop or knob.

Chronology:

The house was restored in MM IIIb, habitation continued until LM Ia (Evans, PM II, 2:616). No specific ceramic evidence or stratigraphy other than that mentioned below is supplied by Evans.

Nature of find:

One meter beneath the surface (one meter higher than the usual LM floor level of the building) within one of a group of small walled spaces approximately 2 x 1-1/2 m. altogether. Find located in basement cell C (Evans, PM II, 2:616, 387). Bronze vessels were found with traces of carbonized wood (chest inside of walled cavity). Evans considered this area a reserve depot for a sanctuary (PM II, 2:637, fig. 387).

Discussion

Contents:

The group of bronze vessels from the Northwest Treasure House at Knossos is a homogeneous assemblage which includes five vessels. No ceramic or other associated material is listed by Evans (PM II, 2:637-647; figs. 402-405, 407-411). The vessels are of two types. There are four one-handled basins and one ewer.

The four one-handled basins were found stacked upright. They vary in diameter by a few centimeters and are all of the same general type. They are round, flat-based, and shallow, and provided with an attached wide loop handle. Both the handle and the rim bear designs in relief.

Number 1, the largest basin, was well preserved. Its rim and handle were decorated with a stylized leaf pattern and a bead ornament. Number 2 was undecorated and also well preserved. The ivy decorated rim and handle of the third basin were badly worn and oxidized. The fourth basin, decorated with a lily design, was again well preserved. The differential wear on these vessels would seem to point to wear before storage and does not reflect damage which might have been caused during the destruction of the building (Evans, PM II 2:642). The fifth vessel in this group was an intricately ornamented but badly crushed ewer.

The five bronze vessels in this group were found with traces of carbonized wood (Evans, PM II 2:637). This wood could have belonged to a box which contained them as Evans believed, or it could be the remains of an other unspecified wooden item.

Location:

The Northwest Treasure House is situated immediately to the south of the "theatral area" at Knossos and north of the West Court. It is a separate building but closely associated with the Palace complex.

The architectural remains of the Northwest Treasure House are basement areas. There are no indications of door openings or remnants of staircases in the excavated remains (Evans, PM II, 2:617). Area C (ibid.: fig. 387) in which the vessels were found is almost centrally located in the plan of the building. It measures 2 x 1-1/2 m. (ibid.:637). Like the other basement compartments of the Northwest Treasure House, it may have been accessible from an upper story by a wooden ladder, staircase or rope ladder.

The stratigraphical problem in the case of the Northwest Treasure House requires careful analysis. Evans states that the finds were located at a level which was one meter beneath the surface (ibid.). He also remarks that this level is one meter higher than the usual LM floor level of the building. "They were contained in one of a group of small walled spaces, itself not more than 2 meters by 1-1/2 in dimensions. Here some loose earth fell away in the course of the excavation and disclosed what at first sight appeared to be a set of bronze cups on their sides, ranged one above the other. On further clearing, however, it turned out that the supposed cups were the handles of a pile of four large bronze basins while in an upright position beside them, stood a fine single-handled ewer..." (ibid.).

Evans does not offer an explanation of the stratification. The difference of one meter in the height of this stratum could be an indication of a collapsed upper story. In the case of such a collapse one would expect to find traces of ceiling beams and possibly plaster or stucco from the walls of the collapsed room. The earth would be firmly packed due to the weight of the fallen structural elements. Nothing of this sort is noted by Evans.

The vessels could have been in the debris of destruction or they could have fallen from upstairs or from a shelf or an upper partition of the room. The basins were found on their sides, handles up, and the ewer stood beside them. They could have been stored in a box, as Evans believes, which held them together during such a fall (ibid.). Only the ewer showed signs of crushing. The damage to this vessel might have been done during the collapse of the building. Its sides bear the most concentrated signs of crushing. Therefore, a horizontal pressure was exerted on it and not a vertical pressure such as a blow from directly above. If it was crushed during the destruction of the building it must have fallen on its side or have been crushed by something exerting pressure against it, such as the other vessels. If the vessels were contained in a box it is possible that the ewer might have been dented by the basins.

A box containing the vessels must have measured a minimum of 0.66 m. on one side (the combined diameters of the largest basin and the ewer). A box of this size could have fallen into the cell from above, either from an upper story (in which case the stratification would have shown a floor level below the box and another--the

floor of the cell--about one meter down) or from a shelf or other support. In the latter case, the floor level of the cell would have existed about one meter below the level of the debris. The level is mentioned by Evans as showing a discrepancy of one meter (see above) but again, the stratification is not discussed in detail.

Another possibility is that the vessels were placed in the storage area at a date considerably later than the beginning of LM, or some time after a destruction or collapse of that area of the building resulted in one meter of debris filling in the cell. In such event, one could expect to find cuttings in the debris which would have been made when the vessels were placed in the soil for concealment. Evans mentions that the soil around the vessels was loose. If there had been a deliberate attempt at concealment, we would logically assume that the soil would have been firmly packed around the objects and that traces of cuttings into the debris would have survived. Evans makes no note of such cuttings.

None of the explanations is entirely satisfactory. The discrepancy in the stratigraphy of basement cell C could have been caused by the collapse of the upper story or the fall of a shelf or other platform within the room. There are no indications that this stratigraphical problem is common to the other basement areas of the Northwest Treasure House.

Knossos: Private Houses

Northwest House located between the West Court and the "Royal Road" on the north border of the palace (Evans, PM II, 2:627-629, fig. 329).

Vessels:

- a. 1. cauldron with expanding lip, three horizontally projecting handles, slightly rounded bottom resting on struts ending in three legs.
h.=0.38 m., upper d.=0.38 m.

Tools:

- b. 2. double axe, l.=approximately 0.11 m.
3. double axe, l.=approximately 0.12 m.
4. double axe, l.=approximately 0.12 m.
5. perforated double edge adze, l.= approximately 0.30 m.
6. perforated double edge adze, l.= approximately 0.30 m.
7. perforated double edge adze, l.= approximately 0.32 m.
8. perforated double edge adze, l.= approximately 0.36 m.

Weapons:

- c. 9. dagger blade with triple rivets, l. = approximately 0.17 m.
10. dagger blade with triple rivets, l. = approximately 0.25 m.
11. dagger blade with triple rivets, l. = approximately 0.27 m.
12. dagger blade with triple rivets, l. = approximately 0.26 m.
13. sword, section of the upper part, l. = approximately 0.27 m. (Evans classifies this sword as a type common to LM II, PM II, 2:629).

Misc.:

- e. 14. whetstone, approximate l. = 0.12 m.
15. rough painted ceramic pot with three (or four?) lug handles. Decorated with large discs and spirals on buff ground. Height approximately 0.50 m., width at belly, approximately 0.38 m.
16. amphora with two handles connecting lip to body. Approximate h. = 0.40 m., approximate w. = 0.25m.

Chronology:

House built in MM III (Evans PM II, 2:415) dated from MM IIIb ceramics on basement floors (ibid.:623). Ceramics dated to the MM period. The chronological context of the find is LM I on the basis of the rough ceramic ware (ibid.:415) or late MM III (ibid.:627).

Nature of find:

Stored in "closet-like recess" in basement (ibid.). (No detailed illustration or plans of house published).

Discussion

The Northwest House at Knossos is located between the West Court and the "Royal Road." It is on the periphery of the northern border of the palace and is distinctly separate from the palace.

Contents:

A complex group of bronze objects was unearthed in this house (Evans PM II 2:627-629; fig. 392). The objects are of a practical nature. They include a cauldron, three functional double axes (tools), four perforated double-edge adzes, four daggers with triple rivets and a section of a sword. As in the case of the tools

from the South House, these objects were certainly in use some time before their storage. The ceramic ware associated with this group consisted of a rough painted pot decorated with large discs and spirals on a buff ground, and a two-handled amphora, also of rough ware. Another miscellaneous item listed here is a peculiarly shaped whetstone (ibid.).

This group is clearly a composite group. As in the case of other composite groups under consideration, the bronze vessels which are found in association with the tools are not of a particularly artistic variety but are rather practical cooking vessels.

It is unclear why these various objects were stored together. The important factor might be that they are all bronze. The associated ceramic material does not offer an interpretation of the function of the group. Evans does not mention the pots as containing organic material or anything else. However, the rough ceramic ware is comparable in its category to the practical nature of the bronze objects.

Location:

The group of bronze objects from the Northwest House was found in a "built closet-like recess" of the basement area (Evans PM II 2:627). This basement recess might be something like a storage bin of a type common in Minoan buildings. Any discussion is purely conjectural as no further information is supplied by the excavator.

The rough ceramic ware found with the group dates it to LM I at the latest (Evans PM II 2:415). The house was built at the end of the MM III period and was inhabited until LM Ia (ibid.). Evans contradicts this statement later by dating the rough ceramic ware to the early MM period (PM II 2:627). One of the pots (PM II 2:392, 2) was decorated with a disc ornament which also appears in MM II (ibid.). Evans goes on to state that the house was originally considered to be LM Ia. His dating of the rough ceramic ware upsets this hypothesis. Evans believes that the bronzes must date to the end of MM IIIb (PM II 2:629). He remarks that the bronze types compare stylistically with bronzes from other groups of the MM III-LM Ia period (ibid.).

In general, rough ware is extremely difficult to date. The spiraliform or disc design on the pot in question is not distinctive and appears frequently in the Minoan repertoire in all three main phases of the culture. (Furumark 1941: in EM III-MM I, pp. 117-118; in MM I, p. 119; in MM II, p. 123; in MM III, non-pictorial decoration is the same as MM II, p. 131; LM Ia at Knossos, appearance of monochrome dark-on-light, p. 152). There is no reason to believe that Minoan craftsmen could not have made such a pot in the LM I a period, or that it could not have survived with the bronze group in the basement area of the house from an earlier period.

Knossos: Private Houses

South House, located at the southwest entrance to the palace, cut into the foundation of the "Stepped Portico" which is in disuse at this time (silver vessels: Evans, PM II, 1:373, 386, fig. 221, p. 387; bronze tools: PM II, 2:629, fig. 393; 630).

Tools:

- b. 1. saw (i), l. = approximately 0.52 m.
2. saw (d), l. = approximately 0.45 m.
3. saw (j), l. = approximately 0.40 m.
4. casing for wooden handle of saw, l. = approximately 0.10 m., d. = approximately 0.04 m.
5. same as 4.
6. perforated adze, l. = approximately 0.12 m.
7. double axe head (e), l. = approximately 0.19 m.
8. double axe head (f), l. = approximately 0.15 m.
9. two-edged knife with hilt (h), l. = approximately 0.23 m.
10. two-edged knife (g), l. = approximately 0.12 m.

Misc.; Silver vessels, series 403 HM (Evans PM II, 1:fig. 221, p. 387; Zervos 1956:398, fig. 591).

- e. 11. bowl, decorated with repoussé design of spirals; shallow, slight foot (no dimensions given).
12. plain bowl, rounded bottom (no dimensions given).
13. small cup with upright curving handle attached to overlapping rim, slight foot; repoussé spiraliform design; h. = 0.53 m.
14. small jug with upright handles, spouted beak, wide belly; h. = 0.11 m.

Misc. with tools:

- e. 15. pithos, ceramic. Decorated with "stamped bands in relief showing a reticulated design with small knobs in the interstices" (Evans PM II, 1:381, N. 1). No further information given.

Chronology:

The House was built in MM IIIb (Evans PM II, 1), and not inhabited after LM Ia (ibid.). The dates are based on ceramic evidence from within the building. Popham dates the destruction of the South House to LM Ib (Popham 1967:341, N. 14).

Nature of bronze tool find:

In an inner basement room off of a pillar basement (Evans PM II, 1: fig. 214; 380-381). The pithos was in a separate bin between the two chambers.

Nature of silver find:

Found at 0.75 m. above the pavement of the pillar crypt (presumably fallen from the floor above). Evans believes that the vessels were contained in a wooden box which kept them together during the fall because they were found "closely nested" (Evans PM II, 1:387). There is no physical evidence for such a box.

(Longitudinal section of South House: Evans PM II, 1, fig. 210, p. 377; overall plan; fig. 208, p. 375).

Discussion

The South House at Knossos is located at the southwest entrance to the palace. It is cut into the foundation of the "Stepped Portico." Since this structure was no longer in use at the time of the building of the house (Evans PM II 1:161), the South House will be considered as a building separate from the palace complex.

Contents:

In the case of the South House there are two distinct assemblages. First, a group of tools from the basement area of the house (Evans PM II 2:629, fig. 393) and then a group of silver vessels from the area of the "pillar crypt" which is on a higher level than the basement and in a different part of the house (Evans PM II 1: 629, fig. 221).

This group of tools from the basement consisted of ten bronze objects which were practical and used at a period prior to their storage. Three long saws and two casings for their wooden handles were found along with a perforated adze, two double axe heads (of the functional, not ceremonial, variety) and two double-edged knives, one with a hilt.

An unusual pithos is mentioned in connection with these tools (Evans PM II 1: 381). It was decorated with bands stamped in relief "showing a reticulated design with small knobs in the interstices" (Evans PM II 1:381, n. 1). No further dimensions or descriptions of this vessel are supplied by Evans and it could not be identified in the Heraklion Museum or the Knossos Stratigraphic Museum.

The group of silver vessels from the pillar crypt includes two small bowls, one of which was decorated with a spiraliform relief design. A small silver cup with a curving handle and a small silver jug with a spouted beak were the only other items in the group. In the case of this group, there were no traces of carbonized wood although Evans believes that the objects were stored in a box (Evans PM 1:387). No

other material is mentioned in connection with the silver service. This is the only find group consisting solely of silver vessels.

Location:

The two groups of metal objects in the South House provide an example of two different find categories within the same structure.

Tools:

The tools were found in an inner basement room located off of a pillar basement (Evans PM II 1:214, pp. 380-381). The pithos was placed in a small bin between the two chambers.

Silver:

The silver vessels were found in the living quarters of the house at 0.75 m. above the pavement of the "pillar crypt" (Evans PM II 1:387).

The "pillar crypt" of the South House is located on a different level from the basement area containing the tools (Evans PM II 1:210). It is therefore likely that this area was not regularly used for storage as a basement bin might have been, but that the room served other purposes. On the basis of the objects found within it, Evans suggests that the "pillar crypt" was closely connected with a ritual (Evans PM II 1:386). However, these vessels might have been a special domestic service.

The vessels were found "nested together" at a stratum significantly higher than the pavement of the room. Evans concludes that they fell from the room above. As in the case of the Northwest Treasure House vessels, he concludes that the silver vessels were contained in a wooden box which kept them together during their fall. He does not however mention any traces of carbonized wood in connection with this group (Evans PM II, 1:387). It is possible that the silver vessels might have fallen from an upper room during the collapse of the building. They might also have fallen from a high shelf. In either case, since they were "nested together" something must have kept them together during their fall. These vessels are not out of context within a room which may have been meant primarily for ritual use if we are to follow Evans' suggestion, but they may have functioned in some other way within this room.

Since the vessels were not found in a basement storage area but were uncovered in a part of the house probably more frequented, they cannot be considered either a storage group or a deliberately hidden hoard. It is more likely that they were in constant use up to the time of the destruction of the building in LM Ia (Evans PM II 1:380). This date is based on ceramic evidence. MM IIIb sherds were found in the interstices of the walls of the "lustral area" which was later filled in. LM Ia sherds appear in this fill. Other LM Ia sherds appear outside the building at the southern angle. LM Ia ware was found on the gypsum pavement of the "megaron" (ibid.:fig. 213, a-b, p. 380). It should be noted that Popham considers this house to have been destroyed in LM Ib, basing his conclusions on a re-examination of the pottery (Popham 1967:341, N. 14).

The tools in the basement may have been stored and not deliberately hidden. The silver vessels either fall accidentally into the "pillar crypt" or had some function there. Neither of these groups from the South House constitutes a hoard which was deliberately hidden. They both fall into the category of objects not recovered after a destruction.

Knossos: Private Houses

House Southeast of South House (Evans PM II, 2: 629-632, fig. 394, p. 630).

Vessels:

- a. 1. cauldron with two horizontally projecting handles supported on three struts ending in three legs. h. = 0.60 m., d. = 0.61 m. (Evans PM II, 2:fig. 394, 2).
2. cauldron, same as above, h. = 0.52 m., d. = 0.40 m. (Evans PM II, 2: fig. 394, 3; Zervos 1956:402, fig. 606).
3. two-handled pan with projecting lip, h. = 0.22 m., d. = 0.45 m. (Evans PM II, 2:fig. 394, 4).
4. ewer (2079 HM) handle connecting lip and body. Second ring handle below the first near base. (Evans PM II, 2:fig. 394, 1).

Tools:

- b. 5. bronze saw, l. = 1.63 m. (Evans PM II, 2: fig. 394, 5).

Chronology:

Habitation ceased in early LM (Evans PM II, 2: 629-630).

Nature of find:

In basement chamber of house, closely massed together. (Evans PM, 2:630). No further information supplied.

Discussion

Another deposit of bronzes comes from a house situated slightly to the south-east of the South House at Knossos.

Contents:

The finds include two large cauldrons each on three legs with horizontally projecting handles (Evans PM II, 2:629-632; fig. 394). A plain two-handled pan is also

included. The fourth bronze vessel is a large two-handled ewer. One handle connects the lip to the belly and the other is located below the first near the base of the vessel. It was probably placed there to facilitate lifting. The vessels in this group were large, unadorned household items. Although valuable because they are made of bronze, they are not in the same category as the one-handled basins of the Northwest Treasure House. The value of the vessels in this case is attested to by the fact that similar ewers appear in the Tomb of the Tripod Hearth (Evans PM II, 2:635; fig. 396) and in the Chieftain's Grave (Evans PM II, 2:636; fig. 400) in the Zafer Papoura cemetery. These ewers are dated by Evans to MM III-LM Ia (ibid.).

The vessels were found with a long saw measuring 1.63 m. There was no associated ceramic material mentioned.

Location:

The bronze vessels and the saw were discovered within a basement chamber. The objects are described as having been closely grouped together (Evans PM II, 2:630). No further information is supplied. It is clear that the group was stored, but there are no indications that it was deliberately hidden.

The house was no longer inhabited after LM Ia (Evans PM II, 2:629-630). Therefore, the group of vessels and the sword must have been stored in the basement some time prior to the date of the destruction (LM Ia) of the building.

Knossos: Private Houses

Deposit connected with two wall stumps, located 20 m. southwest of angle of South House and north of the remains of the east-west section of the "Stepped Portico" and south of the West Court in Palace area with indications of later house construction (Evans PM II, 2:632, 633; fig. 395, p. 631).

Vessels:

- a. 1. shallow basin with single upright handle (diameter varies from 0.25 to 0.28 m.).
2. shallow basin with single upright handle.
3. shallow basin with single upright handle.
4. shallow basin with single upright handle.
5. shallow basin with single upright handle.
6. broad pan with two upright handles (d. = 0.28-0.30 m.).

7. broad pan with two upright handles
8. broad pan with two upright handles
9. broad pan with two upright handles
10. broad pan with two upright handles
11. spouted jug (2074 HM) with small handle and horizontal spout, h. = 0.32 m. (Evans PM II 2: fig. 395, M).
12. one handled bowl (2075 HM) d. = 0.16m. at rim, h. = 0.7 m. (Evans PM II, 2: fig. 395 N; 396, N).

Misc.:

- e. 13. stone lamp, h. = approximately 0.10 m. (Evans PM II, 2:395 p).
14. "bird's nest" cup, h. = approximately 0.8 m.
15. red carnelian bead seal, "flattened cylinder type" with representation of goddess "wreathed with snakes" and holding weapons (Evans PM II, 2:793, fig. 517; Demargne 1964: fig. 244).
16. painted ceramic ewer, h. = approximately 0.26 m. with spouted beak, linear and spiraliform designs. (Evans PM II, 2: fig. 395, E).
17. 2 small stone vessels.

Chronology:

Evans dates the ceramic ewer to LM Ia (Evans PM II, 2:632).

Nature of find:

Evans states that this site yielded a double deposit (Evans PM II, 1:390) but he discusses the vessels as a single group. The wall stumps are located near the last foundation pier of the east-west section of the "Stepped Portico" (Evans PM II, 1:161) which was destroyed in MM IIIb (ibid.). Evans considers the wall stumps to be part of a house (Evans PM II, 1:390).

Discussion

The last group from Knossos to be discussed here was found in connection with two wall stumps. These were located 20 meters southwest of the South House and to the north of the east-west section of the "Stepped Portico" near its last foundation

pler (Evans PM II, 1:161). According to Evans, this site yielded a double deposit (PM II, 1:390) but he discusses the vessels as a single group.

Contents:

Among the bronze objects in this group were five shallow basins with upright handles (Evans PM II, 2:632-633; fig. 395). These are of the type referred to as one-handled basins which also appeared in the Northwest Treasure House. In this case they are smaller. The rim and handles are not distinguished by elaborate decoration. The handles are defined by five parallel areas separated by incised grooves. Other bronze vessels in this group were five undecorated broad pans with two upright handles, a spouted jug with a small handle and horizontal spout and a one-handled bowl.

The associated material included a stone lamp, a stone "birds' nest" cup, two other small stone vessels, and a red carnelian bead seal. A ceramic ewer with a spouted beak and decorated with linear and spiraliform designs was also associated with this group. Evans dates it to LM Ia (PM II 2:632).

Location:

Evans does not give any more specific reference to the arrangement of the individual objects included in this group or how closely they were placed together. They will, however, be considered as a group here.

The architectural remains in the case of this deposit pose a problem. The general area of the southwest angle of the palace includes seven separate structures which Evans considers to be private dwellings (Evans PM II, 1:390). The wall stumps associated with this group of bronze vessels are considered by Evans as being part of a house. Even if the wall stumps in this case do not belong to a distinct house, it is reasonable to assume that they might have at one time. It can also be assumed that the remains under consideration here were those of a basement area since the walls are not extensive and the excavators do not indicate the presence of any material beneath them. The other houses in the southwest area of the palace are also preserved at the basement level only except in cases where they lie against a slope as in the case of the South House.

An alternate view is that the wall stumps could be considered part of the palace. This is unlikely since the "Stepped Portico" was no longer in use at this time. It was destroyed in MM IIIb (Evans PM II, 1:161). The wall stumps abut on the portico and the portico is on the extreme edge of the palace complex. The buildings in the immediate proximity of this deposit are separate houses and this would also point to the wall stumps representing the remains of a structure which is distinct from the palace. The group might have been a hidden hoard or a storage group. The latter is more probable.

Mallia: Houses, from section Δ

House Δβ (Demargne and de Santerre 1953:60, pl. XXIX)

Vessels:

- a. 1. large bronze basin with two handles riveted on sides, made of several sheets of bronze riveted together. d. = approximately 1 m., no measurements given (ibid.: pl. XXIX 1-3).

Tools:

- b. 2. (2254 HM) fragment of a flat blade, l. = 0.09 m.
3. (2261 HM) small chisel, square flattened ends, l. = 0.10 m.

Weapons:

- c. 4. (2254 HM) knife with three rivet holes, without point, l. = 0.245 m., w. = 0.005 m.
5. (2256 HM) fragment of a flat blade, l. = 0.09 m.

Misc.:

- e. 6. (2262 HM) bronze tweezers, l. = 0.063 m.
7. (2263 HM) bronze flat palette with squared ends.
8. (2257 HM) two bronze nails, l. = 0.09m., 0.07 m.
9. (2260 HM) bronze hook with rounded end, l. = 0.12 m.
10. (2258 HM) long bent bronze needle, l. = 0.17 m.
11. bronze ring
12. instrument
13. fragments of a needle and tweezers.

Chronology:

Dated from ceramic evidence. House Δβ constructed during MM I (Demargne and de Santerre 1953:42), inhabited until MM III - LM I. The bronze objects are of the latter period (ibid.: 42, 51, 52).

Nature of find:

The bronze tools, weapons and miscellaneous objects come from rooms 5, 6 and 7. The exact provenance is not given (*ibid.*:49). The rooms show traces of carbon and fallen ceiling beams. They contain few finds and practically no ceramic material (*ibid.*). The large bronze basin (a. 1, above) was found in room 8 which was a small cell and contained nothing else (*ibid.*:50). The excavators believe that this is a storage area.

Discussion

Contents:

The group from House $\Delta\beta$, section Δ (Demargne and de Santerre 1953: pl. LXVII) is composite and consists of a large bronze basin, a fragment of a blade, a chisel and eight small miscellaneous items of bronze such as tweezers, needles, hooks and other things which are either toilet articles or small tools (Catalogue, misc. 6-13). A bronze ring is also included (Cat. 11). No ceramic material is mentioned in association with this group of bronzes. Its chronology is derived from ceramic evidence in other areas of the house.

Location:

The exact provenance of all the bronzes in this group is not listed in the Mallia reports. They were found in rooms 5, 6 and 7 of $\Delta\beta$. There were almost no ceramic sherds in this area (Demargne and de Santerre 1953:49). The excavators mention that these rooms were characterized by distinct traces of carbon, by fallen ceiling beams and general indications of a conflagration and the collapse of the ceiling (*ibid.*:50). Room 8 was a small cell which was almost filled by a large bronze basin (*ibid.*: pl. XXIX, 1-3). The excavators believe that the general area of the finds was a storage area. None of the rooms mentioned was connected with the others (*ibid.*:50). Each room must have been accessible from above.

House $\Delta\beta$ seems to have been built in MM I (*ibid.*:52) and was inhabited until MM III - LM I without interruption (*ibid.*:51-52). The house itself is dated by other finds, particularly ceramic ware.

The following information supplies the basis for the dating of the general area and more specifically House $\Delta\beta$. A group of bronze finds was excavated at the east-west road on the level of House $\Delta\beta$ (*ibid.*:42). These objects are very small and include such pieces as tweezers and a needle. They are distinct from the small objects found in House $\Delta\beta$. They could have been scraps of metal which were discarded in the street. Sherds found at the crossing of the two roads which originated from the palace area to the north of section Δ were: a) MM I sherds decorated with grooves on a dark ground; these could be as late as MM III - LM Ia-b; b) dark-on-light ware dated to MM I; c) white polychrome ware. The sherds indicate that

Quarter Δ dates back to the MM I period and continues to be inhabited until MM IIIb - LM I. Sherds from the later period are also numerous (*ibid.*:pl. LIII). There seems to be no interruption in habitation from MM I to LM I (*ibid.*:42).

Mallia: Houses, from section Δ

House $\Delta\alpha$ (Demargne and de Santerre 1953:59, pl. XXIX).

Tools:

- b. 1. (2232 HM) bronze double axe, l. = 0.20 m. central shaft hole. (Demargne and de Santerre 1953: pl. XXIX).

Misc.:

- e. 2. (2238 HM) fragment of a leaf of bronze, l. = 0.08 m.

Chronology:

The date of $\Delta\alpha$ is certain (*ibid.*:47). Ceramic evidence dates it to MM III - LM I.

Nature of find:

The double axe was located in the west part of the house--in rooms 8, 9 (*ibid.*: LXVI, p. 46). A trough was found in the same general location in the angle against the door of the house. The provenance of the fragment of bronze is unknown. This is not strictly a "group" since the double axe was found alone in one place, the fragment in another.

Discussion

From House $\Delta\alpha$, also located in Quarter Δ , came a large bronze double axe. A small fragment of bronze was also found in this house but it was not from the same room as the double axe. Since there were no further bronze objects here, the finds cannot be considered as a group. The evidence for dating from this house is important and further elucidates the general dating of quarter Δ and specifically House $\Delta\beta$.

House $\Delta\alpha$ and the finds within it are dated by ceramic evidence. Vases of the MM III--LM I period were found in the exterior east wall of room 10 (*ibid.*:47; pl. XX, 3). The sherds from the house are all MM III - LM I and all the associated material is of the same period (*ibid.*:47).

Whereas House $\Delta\beta$ showed no traces of interruption in occupation and preserved its original plan, House $\Delta\alpha$ was remodelled at some point before or during MM III according to a different plan (*ibid.*:52; 101-102).

Mallia: Palace

Northwest Sector, Quarter III near Bastion III 3 (Chapouthier 1938:pl. IX, X: BCH 1924:496).

Weapons:

- c. 1. sword, blade l. = 0.72 m., reconstructed with bone pommel, gold ring guard with acrobat done in repoussé (Chapouthier 1938:pl. X; Zervos 1956:figs. 427-429 (3)).
2. sword, l. = 0.81 m., blade l. = 0.77 m., ribbed (Chapouthier 1938:pl. IX; Zervos 1956:427-429 (1)).

Chronology:

The swords are within the limits of the "first palace" (see Chapouthier 1938:11, n.1 for problems in Mallia chronology). The second palace begins with MM IIIb. The swords date to before the catastrophe which ruined the earlier structures, possibly MM IIIa (ibid.: 31-32).

Nature of find:

(Chapouthier 1938:pl. I; plan). The swords were found four meters north of the "lustral area" of Quarter III at 0.80 m. under the pavement immediately above. A trench dug in the area revealed: 1) a stratum of paving in blue limestone supported by large rough blocks; 2) multiple layers of stucco from the walls of the collapsed room; 3) the swords, under the last layer of stucco (Chapouthier 1938:15-16). Traces of bone and wood were found with the shorter sword (ibid.: 16). The second blade was 0.50 m. north of the first in an approximately parallel position (ibid.).

The room had stuccoed walls lined with benches. Channels or trenches were dug in front of these and clay vases were placed in the ground to receive the liquids drained off from the channels (ibid.: pl. III, 2; IV, 1-2; p. 13). These vases are not discussed. Sherds found in the proximity date to "the first half of MM" (ibid.:13, fig. 2).

Discussion

Contents:

Two "ceremonial" swords were found within the palace complex at Mallia in Quarter III near Bastion III 3 along the western facade.

Of the two swords, the shorter was reconstructed with a bone pommel and a gold ring guard decorated with an acrobat done in repoussé technique. Traces of bone and wood were found with the shorter hilt, the pommel and the ring guard. Since there is no reference specifying the nature of the bone, it must have belonged to the hilt of this sword. The bone was poorly preserved and disintegrated during excavation. The decomposed wood was located around the ring guard and other parts of the hilt of the other sword (Chapouthier 1938:16).

Location:

The two swords were located within one of a group of rooms which were stuccoed and lined with benches (ibid.:13). There were trenches or channels in front of the benches. Pottery vessels placed in the soil received liquids which drained from these channels (ibid.:pl. III, 2; IV, 1-2; p. 13). These vases are not illustrated or described. The sherds from the area date to the early Middle Minoan period (ibid.:13). The swords were found four meters north of the "lustral area" of Quarter III at 0.80 m. under the pavement which belongs to the "vestibule" of the "lustral area" (ibid.:15).

A trench sunk in this area revealed some details in the stratification. The highest stratum was the blue limestone pavement of the "vestibule" supported by large rough blocks. Beneath the rocks were multiple layers of stucco interpreted as wall debris of the first palace period (ibid.:15). The swords were found under the lowest layer of fallen stucco (ibid.:16). The two blades were placed approximately parallel and at a distance of 0.50 m. from each other. The blade associated with the gold ring guard was broken, while the other was better preserved (ibid.).

It is clear that the swords were found stratified under the stone pavement of the later palace (ibid.:15). According to the excavators, the swords fall within the limit of the first palace at Mallia which dates to the Middle Minoan period (ibid.:32). Their date ante quem is MM IIIb which marks the construction of the later palace.

The group is homogeneous in that it contains two bronze objects of a similar type. It is located on the ground floor of the palace within a room which might have been used for storage. Since the swords were found at a distance of half a meter from each other, they cannot be considered as a group stored closely together as are many of the objects at other sites. The room itself seems to compare with the later magazines at Mallia which also have channels and catch basins (Chapouthier and Demargne 1942:pl. I). It is likely that the swords were either used in this room and left there or stored there.

The swords are sealed in under the stucco from the collapsed walls of the first palace and the later pavement. This can be interpreted to mean that the weapons were in place before that pavement was laid. The swords must date to the end of the first palace period at Mallia on the basis of the stratigraphical evidence.

The swords represent yet another group of precious objects which for some reason were not recovered after the destruction of the room which contained them.

Mallia: Palace

Section VI 2, located northwest of central court (Chapouthier and Charbonneaux 1928:19-22, 44; Charbonneaux 1925-26:pls. I, II, figs., 1, 2, 3, 4; BCH 1924: 496; Evans PM II, 1:272-273).

Weapons:

- c. 1. dagger, l. = 0.21 m., maximum width, 0.045 m. (Chapouthier and Charbonneaux 1928:pl. XXXI, 3; Evans PM III, 1:fig. 161).
2. sword with crystal pommel and traces of gold leaf on hilt; l. of blade: 0.080 m., width of blade at base: 0.095 m., l. of hilt: 0.125 m., l. of pommel: 0.088 m. Total length of sword: 0.91 m. (Chapouthier and Charbonneaux 1928: pl. I; Zervos 1956:figs. 427-429 (3); Evans PM II, 1:figs. 162-163).

Misc.:

- e. 3. bracelet, twisted bronze; d. = 0.85 m., thickness 0.01 m. (Chapouthier and Charbonneaux 1928:59, fig. 19).
4. schist axe-head representing the fore part of a leaping leopard decorated with incised spirals l. = 0.15m., w. = 0.05 m. (Charbonneaux 1925-26:pl. II, figs. 3-4, 6; Chapouthier and Charbonneaux 1928: pl. XXXII, 1-3).
5. ceramic vase; two-handled, high, undecorated. No dimensions given.

Chronology:

- EM III: BCH, 1924:496; on the basis of the stratification (see below).
- MM I: Evans PM II, 1:272-273; dated by ceramics (ascribes vase to MM I, p. 271) and stylistic analysis of sword.
- MM III: Charbonneaux 1925-26:1, 5, 10; date based on ceramic base, stratigraphy and stylistic analysis of axe-head and weapons.
- MM IIIa: Chapouthier 1938:31-32; on the basis of comparison with other swords from Mallia.

Nature of find:

Plan of Section VI, Mallia: Chapouthier and Charbonneaux 1928:fig. 3. Only three walls of room VI 2 are preserved. The finds were made in

the north part of the room which had collapsed (ibid.:21; Charbonneaux 1925-26:1). The fall of the upper story had caused the fragments of the blades to be pushed under the level of the "second palace" into a MM fill (ibid.:1-2). They are associated with an EM III sherd and a sherd of Kamares ware (ibid.:2). The ceramic vase contained the bracelet and the axe-head (Chapouthier and Charbonneaux 1928:21). This vase is considered MM III (Charbonneaux 1925-26:1, note 2) or MM Ia (Evans PM II, 1:271). The dagger and the sword were found in the same stratum (ibid.:). More specific information is not supplied.

Discussion

Contents:

Another find of weapons was made within Section VI to the northwest of the central court of the palace of Mallia. They were in room VI 2 (Chapouthier and Charbonneaux 1928:fig. 3). A twisted bronze bracelet and a schist axe-head in the form of a leaping leopard were contained in a large ceramic vase (ibid.:21). The vase was undecorated and equipped with two handles (Charbonneaux 1925-26:1, note 2). A dagger and a long sword with a crystal pommel were discovered in the same stratum as the finds in the vase (Chapouthier and Charbonneaux:1928: 21; Charbonneaux 1925-26: 1, pls, I, II).

Location:

The stratification of room VI 2 is problematical. The floor of the room had partially collapsed due to the fall of an upper story (Charbonneaux 1925-26:1). The finds were located against the north wall of the room where the floor had collapsed. According to the excavator, the fragments of the sword were pushed under the level of the second palace (MM II - LM I) into a fill which was deposited at the beginning of the MM period during the reconstruction of the building (ibid.:2). No sections were drawn and published by the excavators, therefore the information supplied on the stratification of the finds is not very useful for the purposes of this study. It is not clear whether the finds belong to the MM I-II period or to MM III - LM I. They were found with an EM III sherd and a sherd of Kamares ware. The excavator, Charbonneaux, believes that the finds belong to the second palace or MM II-LM I and are not earlier than MM III (ibid.). He dates the vase to MM III (ibid.: n.2), and the axe head to the end of MM III at the latest by stylistic details (ibid.:10). Evans considers the find to be MM Ia on the basis of the ceramic vase mentioned above and by stylistic comparison (Evans PM II, 1:271-273).

The only clear information concerning this find is that there are older structures underlying the level of the group (Chapouthier and Charbonneaux 1928:22) and more recent structures above it (ibid.:fig. 3). The finds do occur in a destruction level since all the sources described the area as "collapsed." This level is possibly LM I and the weapons might be older than the destruction level (Charbonneaux 1925-26:2-3). If we accept Evans' evaluation of the ceramic vase, the find is MM Ia. If we accept

Charbonneaux's date, it must be at least MM III. The evaluation of the excavator is probably more reliable.

The finds are located in a room of the palace. The function of this room is not clear. It is not a regular storage area or magazine. The dagger and especially the sword are unusual pieces, comparable only to a limited number of swords found in habitation areas at Mallia and elsewhere. The bronze twisted bracelet from this find group and the ring from House $\Delta\beta$ are the only examples of personal ornament occurring in any of the groups under consideration. The axe-head is also a unique find not duplicated at any other site.

The group consists of admittedly unique and exceptional artifacts. It is unclear why they were left in the room. This is not a storage group of the usual type. If it is a storage group then it probably had some function within the room and was left there at the time of destruction as in the case of the silver vessels from the South House at Knossos. It could also have been buried as a hoard. The weapons were located in a different area of the room than the vase containing the other two objects. Although the floor could have been disturbed by the insertion of the objects, the stratigraphy cannot be used to substantiate the idea that this group is a hidden hoard.

Mallia: Palace

Room XXV 2 (Chapouthier and Joly 1936: plan, pl. XXXV; pl. XXII: pp. 41-42, 23, 28).

Tools:

- b. 1. (2100 HM) chisel; l.=0.265 m. (Chapouthier and Joly 1936: pl. XXII, g.).
2. (2101 HM) chisel; l. = 0.21 m. (*ibid.*:XXII, e).
3. (2102 HM) chisel; l.=0.048 m. (*ibid.*:XXII, f).
4. (2103 HM) awl; l. = 0.265 m.; w.=0.01 m. (*ibid.*:pl. XXII, h).
5. (2104 HM) awl, 0.13 m.; w. = 0.01 m. (*ibid.*:pl. XXII, d).
6. (2105 HM) needle; l. = 0.13 m.; w. = 0.003 m.
7. (2096 HM) pivot casing; h. = 0.05 m., d. = 0.16 m., thickness at base, 0.008 m. Cavity is almost cylindrical; walls are thinner at top; five holes pierce the wall at 0.01 m. from the top--they are placed pentagonally. The bottom is flat and polished by rubbing (*ibid.*:fig. 12).

Weapons:

- c. 8. (2097 HM) dagger blade; l. = 0.15 m.; max. w. = 0.01 m.; three rivets attaching blade to hilt--width is uniform to extremity (*ibid.*: pl. XXII, a).
9. (2098 HM) dagger blade; l. = 0.014 m.; max. w. 0.006 m.; thinner than blade 1., ends in a long thin point. (*ibid.*: XXII, b).
10. (2099 HM) dagger blade; l.= 0.11 m.; max. w. = 0.005 m.; two rivets, point is rounded and thin (*ibid.*: pl. XXII, c).
11. two fragments of dagger blades; a: three rivets. b: two rivets.

Misc.:

- e. 12. ceramic cup; h. = 0.035 m.; d. at base = 0.025 m.; d. at rim = 0.04 m.; one handle; white decoration on red ground, four parallel bands. MM I (*ibid.*:fig. 7, p. 28).
13. ceramic pithos; h. = 0.40 m.; not illustrated.

Chronology:

The abundant ceramic material found in this room is not fully listed. One cup (e. 12 above) is dated MM I (*ibid.*:28). The bronzes are considered to be contemporary with the last period of the palace (presumably the second palace period) i. e. MM IIIb-LM Ia (*ibid.*:41).

Nature of find:

The bronze objects were found in room XXV 2 at 0.70 m. above the older floor level. The excavators believe that they fell off a shelf or from an upper story. This room is considered to be either a workshop or a storage area (*ibid.*:22).

Discussion

Contents:

Room XXV 2 is located in the northeast sector of the Palace of Mallia. The group of bronze objects from this room included three whole dagger blades and fragments of two others; three chisels, two awls, a needle and a pivot casing. A great amount of pottery was also found in different areas of the room.

Location:

A semi-circular wall in the northwest angle of room XXV 2 separated a small compartment from the rest of the room. In this compartment the digging went below the level of the neighboring room without reaching a floor level. It contained many pottery vessels of different sizes and shapes (Chapouthier and Joly 1936:28, fig. 7); none of these vessels is discussed in detail nor are they dated. It is not clear whether the MM I cup came from the compartment or from the room itself. Judging from the brief listing by the excavators and the lack of illustrations, much of this material must be rough ware. On the threshold of this partition was a stone block with two round cavities in it.

In the portion of the room distinct from this compartment, a rough bench covered the length of the south wall. It was 0.30 m. wide. Several storage jars were placed along the east wall. Within this group, a small jar, 0.40 m. high, contained a small oenochoe (*ibid.*:23) and carbonized grains.

The various weapons and tools of bronze were located at 0.70 meters over the floor of the room. There are no illustrations of this group during excavation and no information is provided on the placement of the objects. They are presumed to be located within or over a pile of debris. The excavators believe that they fell from a shelf or an upper story.

The bronze objects belong to the later palace period which begins in MM IIIb and ends in LM Ia (*ibid.*:41). Although the ceramic material from XXV 2 is not fully documented, the pottery from the surrounding rooms is from this later period (*ibid.*:27).

The excavators considered this room to be either a workshop or a storage area. It is unclear whether the tools belong to this room or whether they fell from another room. Most likely they fell from a shelf or a partition within the room itself. They might be a group of objects which were used and stored in the room and were buried in the debris of destruction never to be recovered.

Mallia

Chance find: discovered in the digging of a modern well, 1 km. west of modern town, 5 km. from Palace (Marinatos 1929:365-381).

Vessels:

- a. 1. (2193 HM) one-handed basin. Rim and handle decorated with connecting spiral relief. Double line of wave pattern on exterior borders. Interior of borders beaded. Handle fastened to body by 3 rivets; d. = 0.39 m.; h. = 0.09 m. (Marinatos 1929:pl. XXIII).

2. one-handed basin, smaller and lighter; badly damaged, partially preserved. Rim and handle decorated with S-form design. Three rivets remain on handle (*ibid.*: fig. 5, 1).
3. ewer with two handles, one lower than the other; made of four riveted, hammered sections. Repaired in five places by piecing; h. = 0.40 m.; d. = at opening, 0.105 m. (*ibid.*: fig. 4).
4. (2192 HM) jug; wide mouth, horizontal spout; made of a single sheet of bronze; small loop handle fixed by 3 rivets, h. = 0.18 m.; d. at opening = 0.135 m. (*ibid.*: figs. 5, 2; Zervos 1956: fig. 592).
5. (2194 HM) shallow bowl with two upright curved handles, each fixed by two rivets; made of one thick sheet of bronze; h. = 0.05 m.; d. = 0.22 m. (Marinatos 1929: figs. 5, 3).
6. (2195 HM) shallow bowl, same as 5; same dimensions, handles are smaller and higher. (*ibid.*: figs. 5, 4).
7. (2196 HM) shallow bowl, same as 5 and 6 but smaller and thinner; h. = 0.037 m.; d. = 0.163 m. (*ibid.*: figs. 5, 6).
8. cauldron on three attached feet; poorly preserved. Two curved, horizontal handles placed on exterior rim and a small handle for suspension; patched; h. = 0.17 m.; d. = approximately 0.30 m. (*ibid.*: figs. 5, 6).

Chronology:

Vessels found with MM sherds (not further specified). None from LM. MM III terminus post quem for bronzes; possibly interred in LM (*ibid.*:366).

Nature of find:

Discovered during the digging of a well 5 km. distant from the Palace. The stratum containing the vessels was less than 1 m. deep. A horizontal stratum of small stones 2 m. long, possibly longer, was uncovered at 0.50 to 0.60 m. under the surface. Associated sherds were of rough domestic ware (*ibid.*:366). The ceramic vases were all in fragments (*ibid.*: fig. 1). The bronzes were found at a slightly higher level than the stones. They were poorly preserved; much

damage occurred during excavation (*ibid.*:367). Associated with the bronzes were a small whetstone, animal bones, and three small shells: one *cytherea*, one *murex trunculus*, one *dolium trito*. No details given on the original placement of the objects (*ibid.*:368). Marinatos does not consider the group to belong to a burial (*ibid.*:367). He believes that it must have been from a house (*ibid.*:366).

Discussion

The last group of bronze objects from Mallia was discovered by chance during the digging of a modern well in a field one kilometer west of the modern village (Demargne and de Santerre 1953:ix) and five kilometers from the palace (Marinatos 1929:366).

Contents:

The group includes 8 bronze vessels. Many of these were damaged during excavation (Marinatos 1929:367). Many show signs of repairs indicating that they were used over an extended period of time (Marinatos 1929:366).

The material associated with the vessels included the potsherds discussed below, a small whetstone, animal bones and three shells.

The most important vessel of the group is a large single-handled basin. The rim and handle are both decorated with a pattern of connecting spirals on the interior and a double line of wave-patterned scallops on the exterior edge (*ibid.*:pl. XXIII). Another similar basin survived only in fragments (*ibid.*: figs. 5, 1). Vessels of other types were a two-handled ewer, one handle placed lower than the other (*ibid.*: fig. 4); a wide-mouthed jug with a horizontal spout (*ibid.*: figs. 5, 2); three simple two-handled basins (*ibid.*:fig. 5, 3-5) and a large poorly preserved cauldron on three feet.

Location:

The stratum from which this group was taken was less than one meter below the surface (*ibid.*:366). A horizontal stratum of small stones extending for two meters and possibly longer was located between 0.50 and 0.60 meters from the surface (*ibid.*: 366, fig. 1). The sherds are Middle Minoan, possibly as late as the end of MM III. Although the excavator does not date any to the Late Minoan period, the conservative nature of undecorated pottery does not exclude the possibility.

The bronze vessels were located slightly above the level of the stone stratum and the MM sherds (*ibid.*:366). The *terminus post quem* for the bronzes is considered to be MM III according to the excavator's evaluation of the ceramic evidence. However, Marinatos concludes that the bronze vessels were interred in the later part of LM I (*ibid.*: 366).

Marinatos believes that the finds come from a house and not from a burial (*ibid.*:367). Aside from the layer of small stones uncovered in the trench, there is no mention of other structural components. The site might be a house, the pebbles may represent a floor on which the objects were placed or fell. Since the site has not been fully excavated this cannot be substantiated. Marinatos believes that the objects do come from a house (*ibid.*:366). It is impossible to determine whether this was a hoard or a storage group since the original placement of the vessels is unknown (*ibid.*:367).

The bronze vessels in this group represent a great amount of wealth. It is clear that they were not recovered irrespective of whether they were hidden or stored. Marinatos adds that events following the deposit of the group prevented the inhabitants from recovering the objects (*ibid.*:378).

Mochlos

Houses above Blocks A, B, C: 2 groups of bronze finds (Seager, 1909:273-303).

Vessels:

- a. 1. (1578 HM) basin, one handled, design of spiral coils, (Seager 1909:287, fig. 11, p. 288, fig. 11 a ; Evans *PM II*, 2:644, fig. 409 B).
2. basin, same as 1.
3. basin
4. (1581 HM) curved shallow basin with two upright handles, each attached with two rivets. (Seager 1909:287, fig. 10).
5. basin, same as 4.
6. (from house across the roadway) basin, decorated rim and handle, band of spiral coils moulded in high rim and handle, band of spiral coils moulded in high relief. (No measurements supplied by the excavator.)

Chronology:

LM I, traces of fire (Seager 1909:277, 288). All LM I houses show traces of "violent conflagration."

Nature of find:

Vessels 1-5 were found in the corner of a "much destroyed" basement room in a shallow hole which was empty except for the bronze

basins. Four basins were stacked and one stood beside them (Seager 1909:286). Seager notes that the "shallow hole was scooped out in the floor and securely built in with small stones showing that the inhabitants had time to conceal some of their valuables before the attack." No ceramic vessels and few potsherds were found with the bronzes. Vessel 6 came from a house of the same period (LM I) on the other side of the roadway. It was discovered "under similar conditions" (*ibid.*).

Discussion

Contents:

At Mochlos, the excavator found two groups of bronze vessels above an area described as blocks of houses (Seager 1909:286-288). The finds were located above blocks A, B, and C.

The first group was found in a basement room of a house (Seager 1909:286). It consisted of three bronze one-handled basins. One was decorated on the rim and handle with a design of spiral coils and beading (*ibid.*:287, fig. 11). Two two-handled basins were also included.

The sixth vessel listed above in the catalogue constitutes the second "group." It is described as having been found under "similar conditions" on the opposite side of the road (*ibid.*:286). No other material is associated with either find group.

Location:

The conditions of the first find group are described in detail by Seager. The five vessels were discovered in a corner of a basement room which was "much destroyed" (*ibid.*:286). Seager considers this a deliberate attempt to conceal the vessels (*ibid.*). Four of the vessels were stacked one inside the other, and the fifth stood beside them. This arrangement is similar to the grouping of the vessels from the Northwest Treasure House at Knossos (Evans PM II, 2:637).

The chronological period of the blocks of houses and the vessels are considered by Seager to be LM I (Seager 1909:277-288). All houses of this period at Mochlos show signs of destruction by "a violent conflagration" (*ibid.*).

The bronze vessels in this group and the single vessel from the neighbouring house fall into the category of finds from a basement room. The groups consisted entirely of bronze vessels (4 of the one-handled type) and included no associated material. There are indications that the first group, consisting of five vessels, was deliberately concealed. It can therefore be considered as a hoard rather than a group of vessels in storage. The same conclusion applies to the single vessel from the house across the road since the excavator states that the find circumstances were similar.

Nirou Chani

From the House, room 7 near the north wall of the room (Xanthoudides 1922:1-25; Pendlebury 1939:190-191; Evans PM II, 1:281-285, fig. 167 and PM I, fig. 313).

Tools:

- b. 1. double axe blade, l. = 1.175 m.; 0.63 m. at shaft hole; vertical width at ends: 0.24 m. (Evans PM I:436, fig. 313).
2. double axe blade, l. = 0.93 m.; 0.19 at shaft hole; 0.53 width at ends.
3. double axe blade, same measurements as 2.
4. double axe blade, damaged, l. = 1.0 m.; 0.60 m. at ends; 0.20 m. at shaft hole.

Weapons:

- c. 5. (2667 HM) single-bladed knife, l. = 0.22 m.

Misc.:

- e. 6. pointed tool or pin of bronze.

Chronology:

Pendlebury (1939:191) dates the building to MM III - LM Ia. Evans, (PM II, 1:281, n. 4) dates the house to MM IIIb - LM Ia on the basis of the type of paving used in the house. Pottery on and above floors was LM Ia (Xanthoudides 1922:17, figs. 14-16, 19, 20). One example of LM Ib marine style was found (Xanthoudides 1922:20, fig. 17). Some of the storage pithoi in the "magazines" are MM III (*ibid.*:35).

Nature of find:

Set in room 7 inside the House, possibly for storage. (Plan of House: Evans PM II, 1:fig. 167).

Discussion

Contents:

The finds from Nirou Chani include four large bronze ceremonial double axes which were provided with central shaft holes. The largest measured 1.175 m. in width. Other bronze items in this group were a single-bladed knife and a small tool or pin.

No other material is mentioned in connection with this group.

Location:

The group of bronze double axes was set inside the main house at Nirou Chani near the north wall of room 7 (Evans PM I:fig. 313).

The building along with the contents from other rooms is dated to MM III - LM Ia. Pottery from the house floors or above them was exclusively LM Ia (Xanthoudides 1922:17, fig. 14-16, 19, 20). Above the floor level there appeared one example of a cylindrical vessel with marine decoration dated to LM Ib (ibid.:20, fig. 17). Some of the large storage pithoi from the area of the magazines were MM III (ibid.:35).

Room 7 at Nirou Chani is distinct from the magazines in the northern section of the house. These contain the usual large storage pithoi (see plan, Evans PM II, 1: fig. 167). Other rooms in the vicinity of room 7 also contained large quantities of single items. A large group (40-50 pieces) of tripod hearths or altars of painted clay was found in rooms 16, 17 and 18. Evans believes that these could have been for either cult or domestic purposes (PM II, 1:283-284).

The bronze group in question is most likely a storage group. The double axes are of the monumental "ceremonial" variety (Evans PM II, 1:283). Evans believes that these large implements were meant to be set up in the open air and not indoors (ibid.). Therefore, they must have been stored in the room, not actually used there. This interpretation is possible but not demonstrable. There is no other record at any other Minoan site of a group of such large double axes from an individual room.

The site of Nirou Chani is located on the sea. It is a Minoan port (Evans PM II, 1:280). The remains of harbor structures, traces of quarries and a large mole testify to this (ibid.:fig. 166). The remains of the settlement and the large house are included in the port complex. The smaller structures date to the MM period (ibid.:281). The exact function of the large building is unclear. It has been variously considered as a storehouse or a point from which "ceremonial" objects were distributed to other habitation centers (ibid.:284).

If the house functioned solely as a depot there would be no reason for the elaborate architectural layout which includes lighting by means of a light well, a distinct separation of the magazines from the rest of the house and traces of fresco decoration (ibid.:284). These are characteristics common to many Late Minoan habitation sites. The special arrangement of the "horns of consecration" and the plan of the courtyard would also indicate that activities took place in this building which were connected with a cult or a ritual. It is certain that the building was inhabited and not just a storage depot. Whether or not it was a cult center is difficult to assess but the two are not mutually exclusive.

Another interpretation of the function of the house is that it was a private dwelling. The tripod hearths might have been manufactured there and used as trade items. Although such implements appear in shrines and tombs (Evans PM II, 1:283),

they were also used for domestic purposes (ibid.). Since they are not stacked in the area of the magazines they were probably placed in rooms 16, 17 and 18 for a purpose other than dead storage. They might have been either decorated or manufactured in that area of the house.

The four exceptional bronze double axes could have had some connection with a ritual or cult at the site. There are no indications that they were manufactured at Nirou Chani and there is no material evidence which directly supports the theory that they were export items. Room 7 in which they were discovered does not seem to be a basement area although it might be a storage area distinct from the magazines. The double axes were placed there, not hidden.

Tylissos

Central House (Hazzidakis 1912, 1921, 1934).

Vessels:

- a. 1. cauldron with three upright handles, bronze riveting, made from seven sheets of metal, flat-headed rivets. d. = 1.40 m., depth 0.44 m., thickness of sides 0.003 m., weight 52.564 kg. (Hazzidakis 1912:figs. 29, 30; Evans PM II, 2: fig. 355).
2. cauldron, d. = 1.05 m., depth 0.38 m., weight 24.360 kg.
3. cauldron, d. = 0.84 m., depth 0.35 m., weight 15.3 kg.
4. cauldron, d. = 0.70 m. (Zervos 1956: fig. 595).

Ingots:

- d. 5. ingot l. = 0.345 m., width at center, 0.25 m., thickness 0.072 m., weight 26.500 kg. (Hazzidakis 1912:221, fig. 31).

Misc.:

- e. bronze objects and tools (Hazzidakis 1921:57; Hazzidakis 1934). Exact nature and area of find not given. Found near η .

Chronology:

The ingot was found in room η leaning against a wall. Context is not given by the excavator. Room η is dated to the early part of the Late Minoan Period on the basis of ceramic evidence which is associated with Hazzidakis' period β (Hazzidakis 1921: 10, note 1). The re-examination of Tylissos by Platon has not been published, but the date of the destruction of the main houses is no later than LM Ib.

Nature of find:

The ingot was found alone leaning against a wall in room η . The bronze tools were also in this general area. The cauldrons were an accidental find by a peasant (Hazzidakis 1912; 1921:54).

Discussion

The bronze objects from Tylissos from the LM I destruction level can be discussed as three groups.

Contents:

The first group includes four large cauldrons (Hazzidakis 1912:29, 30). Their diameters vary from 1.40 to 0.70 meters. Each cauldron is equipped with three upright handles and is made from seven sheets of metal riveted together. The cauldrons are a unique group. No other Minoan site has turned up so many in such excellent condition and of such monumental dimensions. There is no other material associated with this group.

A bronze ingot was found within room η (Hazzidakis 1912:31). A group of miscellaneous bronze tools came from the same area (Hazzidakis 1912: fig. 32). The tools will not be discussed with reference to individual pieces since the information supplied by the excavator is incomplete.

Location:

The four bronze cauldrons were a chance find made by a peasant. The general area of the find is unspecified. It is assumed by the excavator that they are from the general area of the houses. The dating of these cauldrons is problematical because they are out of context. Hazzidakis does not comment specifically on the chronology of these pieces, but assumes that they are Minoan since he discusses them under that heading. Evans dates them to MM III - LM I (Evans PM II, 2:569-570) and considers them contemporary with the bronzes from the Northwest Treasure House and the South House at Knossos (ibid.).

The cauldrons are important because of the quantity of bronze which they represent (the largest weights over 52 kg.). They were either cached, stored, or in use at the time of the destruction. If we concur with the excavator that the cauldrons came from the houses, we can conclude that for some reason they were abandoned there and not recovered. The nature of the find is unclear.

The ingot was found leaning against a wall of room η . There is no mention of associated ceramic material. The group of bronze tools and miscellaneous objects was found in the vicinity of the ingot. There is no specific information on the exact provenance of the tools. They can be considered as a group associated with the ingot. Since the placement or grouping is unknown, the tools and/or the ingot may be either

a storage group or a hoard--the former is more likely.

Room η is dated by Hazzidakis to period β at Tylissos. This corresponds to LM I at Knossos.

Kato Zakro

Finds from various rooms in the northwest area of the palace, off the central court (Platon, 1963a:270; Platon 1963b:160-188, plan, fig. 3, p. 171; Platon 1971).

Tools:

- b. 1. long saw, l. = 1.50 m. curved edge (Platon 1971:157).
2. long saw, l. = 1.70 m.
3. long saws (2)
4. double axes (4)
5. miscellaneous bronze tools (Platon 1971:121-122, 124).
6. ceremonial double axes (2) (Platon 1971:145).

Weapons:

- c. 6. long swords with gold studs (2), Room XII (Platon 1971: 120).
7. several daggers, dirks and knives.

Ingots:

- d. 8. bronze ingots (6), 29-30 kg. (Platon 1971:116-120, ill. 117).

Misc.:

- e. 9. (2609 HM) bronze rim of a vessel (probably of a large bronze cauldron or basin) decorated with double axes in relief and granulation along the inner rim. d. = approximately 0.45 m. (Platon 1971:145, 147).
10. same as 9
11. foot of a bronze tripod vessel.
12. sheets of bronze

13. silver goblet with handles and gold ornamentation.
14. over 900 pottery vases, LM Ia and b.
15. three elephant tusks.

Chronology:

The pottery associated with the above items includes many examples of the bichrome style dating to MM III - LM Ia (Platon 1963a:275) as well as LM Ia and b pieces (Platon 1971:121). Platon states that the areas in which these objects were found were simultaneously destroyed during LM Ia-b.

Nature of find:

The ingots and the elephant tusks came from an area between rooms XII and XI and had fallen from the room above (Platon 1971:116, 245). The bronze tools and saws are described as having been brought deliberately downstairs from an upstairs storeroom (Platon 1971:158). The swords were found *in situ* (Platon 1971:120). The tools had fallen from above (*ibid.*:121-122, ill: 124). The bronze rims and the two large double axes were stored in room XXV which Platon calls the "Treasury of the Shrine."

Discussion

The excavation of the Minoan palace at Kato Zakro has not yet been fully published and the information from the site is therefore incomplete. A great amount of bronze has been found in various rooms of the palace especially to the northwest of the central court. Much of the material was uncovered in the early campaigns when the extent of the building was as yet unknown and the central court had not yet been uncovered. The general area in which bronze objects were found was originally called Γ (Platon 1963a, 1963b).

Contents:

The metal objects from the northwest sector at Zakro include tools, weapons, ingots, parts of bronze vessels, a silver goblet and sheets of bronze. Over 900 ceramic vases and three large elephant tusks are associated with these finds. It is clear from the remains that the northwest side of the central court included rooms which were used for workshops and for storage. Other areas were undoubtedly used as living spaces also.

Location:

The provenance of individual objects is not described in detail in the excavation

reports. The ingots and the elephant tusks were found between rooms XI and XII. There are indications that they had fallen from the room above during the collapse of the building (Platon 1963a:275; 1971:116, 245). The tusks bear traces of burning.

The pottery associated with the general area is dated LM Ia and LM Ib by Platon (1971:121 *passim*). Some examples are of the bichrome style prevalent in MM III - LM Ia (Platon 1963a:275). The excavator dates the destruction of Zakro to LM Ia-b and attributes the cause to a fire associated with volcanic activity (Platon 1971:285-297). Platon believes that the destruction was connected with the eruption of Thera and occurs at Zakro during a period marked by both LM Ia and Ib ceramic styles (*ibid.*:286).

The palace of Zakro, like other Minoan sites, was abandoned after its destruction. LM Ia-b marks the end of Minoan habitation at this location but LM III pottery from buildings on the southwest hill indicates that the area was not abandoned (Platon 1971: ill. 75).

These collected bronze objects do not constitute a single find group. They were found in a large area covering several rooms and some had fallen from rooms above.

The ingots, some of the tools and miscellaneous pieces had fallen from above (Platon 1971:116, 295, 121-122). The two long swords were *in situ* (*ibid.*:120). The saws were probably in use at the time of the destruction (*ibid.*: 158). The double axes and the rims of vessels were in storage (*ibid.*:145).

These objects have in common that they all come from the northwest side of the palace of Zakro. Other bronze objects were found at the site but the concentration in this area is greater. There is no evidence of hoarding. On the contrary, the objects are either *in situ* or fallen from the upper story where they were either being used or stored. The associated ceramics suggest LM Ia-Ib as the date of the destruction.

COMPARATIVE ANALYSIS*

In the previous section, each individual bronze find group was described and analyzed in order to determine if it was a hidden hoard, a storage group, or if it belonged to a category distinct from these. The groups were found to belong to a common chronological period. In some cases, dates were given as MM III - LM I, in others, LM Ia and Ib. Two groups from Quarter III and room VI 2 from the Palace at Mallia may be MM III, but the rooms in which they were found may have been destroyed later, probably in MM IIIb or LM Ia. There are indications based on ceramic evidence that some sites continue to a slightly later period. The evaluations made by the excavators had to be re-examined in some cases in light of new evidence. With the exception of

*For documentation and references see Catalogue and Discussion.

the problematical palace deposits at Mallia, all the objects belong to the LM Ia-LM Ib destruction level although some may have been manufactured in MM III - LM Ia. The date of the destruction is stressed here, and not the date of manufacture which is purely a stylistic consideration.

In this Section, the find groups will be analyzed comparatively. Groups from different locations within a site and groups from different sites will be compared and put into categories on the basis of the location and the nature of the bronze objects from each find group. This will be done in order to determine whether a pattern can be established in cases where similarities exist. If patterns concerning location and contents of groups can be distinguished, it will be useful to explain the patterns themselves and the existence in those terms of such a large quantity of bronze objects from the LM I period. The nature of the find groups might provide some suggestion as to the conditions under which the buildings and their contents were abandoned. This information might have some bearing on the discontinuity in Minoan culture subsequent to this period.

1) Basement Groups from Houses

All the groups from the various sites which were located in basement storage areas came from houses or large buildings independent of a palace.

The contents of the groups vary. Haghia Triada, which is being considered as a large residence, not as a palace complex, yielded nineteen bronze ingots from a securely reinforced basement room. Basement groups from Knossos include the vessels from the Northwest Treasure House. These were found one meter above the usual LM floor level of the house. They might have fallen off a shelf into the debris at the time of destruction. Others are the tools from the South House, the vessels and saw from the House Southeast of South House and the cauldron, tools and weapons from the Northwest House. The wall stump deposit from Knossos which contained a variety of bronze vessels is problematical due to the architectural remains. The wall stumps themselves may or may not be the remains of a basement area. In any event, Evans does believe that they belong to a house and they will be so considered here. The chance find from Mallia will also be considered as a storage group from a house, possibly from a basement. In this case the vessels were located above a stratum of pebbles which was at 0.50 to 0.60 m. under the surface. The space between the pebble "floor" and the vessels might indicate that they fell from a shelf or some other partition placed off the floor.

The ingot and tools from Tylissos (the cauldrons from this site have no recorded stratigraphy) are of an uncertain nature. They may be from a basement area or a room within the building. Including Tylissos, there are eight find groups from basements of houses. Three of these groups contain one-handled basins. These are the Northwest Treasure House, the wall stump deposit and the chance find from Mallia.

From the evidence it seems that a) there are no basement groups found in palaces; b) basement finds from houses include a large quantity of vessels which are highly ornamental (the ewers and one-handled basins) and not meant for kitchen use; c) they contain

ingots, d) only one group (basement of South House) consists exclusively of tools; e) these are all groups which were placed in storage. Some were on shelves, others were on the floors of the basements.

2) Groups from Rooms in Houses

Aside from basement areas within houses, groups were also commonly found in habitation areas. Such rooms are distinct from basement storage areas in that they are possibly more frequented although they might also be used for storage. Assemblages from such rooms were found in the pillar crypt (room) of the South House at Knossos and in House $\Delta\beta$ at Mallia. A double axe was found alone in House $\Delta\alpha$ at Mallia. The finds from Tylissos might also fall into this category. Nirou Chani is problematical due to the unusually large bronze double axes. This group will be considered as a find from a room, perhaps a special storage area. Since the building is not a palace and there is no direct evidence that it is a depot, it will be considered as a dwelling.

It is noteworthy that apart from the service of silver vessels from the South House at Knossos and the Nirou Chani double axes, the find groups from rooms of houses include objects of a practical nature. They are mostly tools and rough weapons which might also have served as tools. The only bronze vessel in this category comes from House $\Delta\beta$ at Mallia. It is a large basin without feet, possibly a cooking cauldron. These groups of tools and practical objects represent a large quantity of metal.

The silver vessels from the South House are a unique find. They resemble on a smaller scale the bronze vessels from the Northwest Treasure House. Both groups include shallow bowls and a pouring vessel, a functional combination. The silver vessels seem to have fallen either from an upper room or a high shelf or partition within the pillar crypt itself. There is a recorded space of 0.75 m. between the vessels and the pavement below them. They could best be classified as a group which was kept or stored in the more frequented area of the house for use within those rooms.

The tools from House $\Delta\beta$ at Mallia and the double axe from $\Delta\alpha$ might also be objects which were kept in storage in areas of the house in which they were used. The rooms might have been workshops. The group of four bronze double axe-heads from Nirou Chani seems again to be a storage group.

A summation of bronze find groups within rooms of houses seems to point to a predominance of tools and practical objects. With the exception of the silver group from the South House, all the groups contain at least one tool while others have many more. The only object from this category which might be a weapon is the knife blade associated with the axes from Nirou Chani; it might also be considered a small tool. All the objects included in these groups from rooms of houses must have been in current use in the household at the time of the destruction.

3) Hoards

Of the 18 find groups listed in the Catalogue and the 17 groups listed in the Table

(excluding Mallia Δc) only two are proven hoards. Both are from East Crete.

The one-handed basins from Mochlos were buried in the basement of a house. These are actually two groups, one of five and one of a single basin but will be considered as a single group since the find condition of the latter vessel is not described in full. The basins were not associated with any other material.

The second hoard is from House Fd at Gournia. It contains carpenters' tools and a bronze balance pan. In contrast to the Mochlos hoard this one was found hidden under the floor outside of room 18 and not in a basement area. The two hoards are similar in their lack of miscellaneous material and in their homogeneity. The Mochlos hoard contains only basins, the Gournia hoard only practical utensils. Both hoards are from houses.

4) Groups from Rooms in Palaces

Groups from within palaces were found at Mallia and Kato Zakro. The palaces of Phaestos and Knossos have not yielded groups of bronze finds although incidental finds did occur. The Mallia and Zakro groups were found within rooms which are distinct from basements.

The two swords and the group of the sword, dagger, bracelet and leopard axe-head from Mallia have a slightly earlier date than the remainder of the groups in this discussion. They may have been made in MM III and buried in the MM IIIb destruction or they may have survived until the LM Ia-b destruction. The swords from Quarter III predate the MM III - LM I building and belong within the limit of the first palace. They are sealed in at 0.80 m. under a stone pavement. If we agree with the excavators rather than with Evans, the group from room VI 2 belongs to the second palace and is therefore LM I. The stratification of both groups is unclear. Both are exceptional find groups which contained weapons of very high quality. Such weapons are usually associated with burials of a later period (Evans 1906:119) yet they appear at Mallia (and at Zakro) within the confines of the LM I palaces.

There are several possible interpretations for the presence of these finds at Mallia: a) they could have been stored in these rooms, b) they could have been placed in the rooms for use, c) they could have been deliberately hidden. On the basis of the evidence it is impossible to prove that either of the weapon groups from Mallia is a hidden hoard. It is most likely that they were in current use or storage within the rooms.

Also from the palace at Mallia is the bronze assemblage found in room XXV 2. This group differs from the two already mentioned. It contains seven tools, three dagger or knife blades without hilts and fragments of two others. Both the stratification and the function of the room are unclear.

The small pit which was separated from the room by a semi-circular wall contained an unstratified mass of undated ceramic material. It is not clear whether the pieces are whole, sherds or both. The documentation of this room is incomplete. The function of the pit within the room is undetermined. The level of this pit extended

below that of the room proper (level not given). The bronze objects were located at 0.70 m. above the floor. The excavators believe that they fell from a height. They may have been shelved within the room. The bronzes will be considered as belonging to the end of the later palace period or at the latest, LM Ib in accordance with the opinion of the excavators.

The nature of the bronze find from room XXV 2 is indeterminate. The objects were probably in current use and stored on a shelf. The room itself may be a workshop or storage area. If either of these interpretations is correct, these objects might have been manufactured, stored or used within the room.

Of the three Mallia palace groups this is the only one containing tools. The dagger or knife blades do not belong in the same category as the long swords from the earlier period. The blades from room XXV 2 could also have been used as tools whereas the swords are definitely weapons.

The objects from the palace of Kato Zakro are varied and not fully published. They seem to derive from an area of the palace which was used for storage as well as other activities and will be considered as finds from rooms on the ground floor of the northwest side of the palace. The pavements of these rooms are on the same level as the central court. The exact provenance of all the objects is not given. The finds here include two long swords with gold studs and several smaller weapons or tools. Other objects are ingots and elephant tusks which had fallen from a height, a silver cup, two double axes, and a few other miscellaneous bronzes. All these items are spread out over the northwest side of the palace. The ingots are definitely a group; the bronze saws were found together, as were the double axes. None of these objects appears to have been hoarded.

The groups from the palaces of Mallia and Zakro contain the only significant weapons in any of the groups from habitation areas. Weapons of this caliber do not occur within groups from houses in either basement areas or rooms.

As in the case of objects from rooms of houses, these groups from rooms of palaces are either in storage or in current use within the rooms in which they were found.

5) Votives

The two groups from the Arkalochori Cave will be considered as votive assemblages. This site differs from the others in that the finds are not connected with a settlement or a building.

The Arkalochori Cave contains a great quantity of bronze, silver and gold votive objects. These include double axes of varying shapes, sizes, materials and degrees of ornamentation. There are also knife, sword and dagger blades, some of which are functional and others votive. Bun-shaped ingots of bronze and a small rounded ingot of gold are also included. The cave contains scant sherds from EM I and the late Middle Minoan period. The metal objects are dated to MM III - LM Ia. There is no material which is later than LM Ia. This indicates that the cave was no longer in use after LM Ia.

The people who placed the objects in the cave did not return to add any more or remove those already in place. Furthermore, it would seem that these people did not divulge the whereabouts of this shrine. Caves are traditional religious shrines. When they fall into disuse it can only be an indication of a break or a disruption in the religious practices of a population or an actual change in the population itself or in the settlement pattern.

CONCLUSIONS

The metal objects found in groups dated to the destruction levels of LM Ia and Ib are representative of Minoan metallurgy at that period and some were probably made in MM III. The objects range from the elaborate to the domestic and practical. Many bronzes of this period were found in graves, particularly in the cemeteries around Knossos. They complement finds from settlements. Objects placed in tombs differ from objects in storage or in use in houses. Grave goods are meant to remain within the tombs and are not in general circulation. In this respect they resemble votive objects. The increase in the quantity and value of bronze objects interred in the tombs of the Late Minoan I period coincides with a parallel occurrence in settlements.

Ingots represent stored raw material or wealth in terms of raw copper and bronze. "Ox-hide" shaped ingots occur in homogeneous groups at Haghia Triada and Zakro. Single finds of ingots occur elsewhere. At Tyliisos an ingot is associated with a group of tools; a fragment of an ingot was found by itself in the palace at Knossos. Several bun-shaped ingots were also included in the Arkalochori Cave group among votive offerings.

Among the domestic finds, groups consisting exclusively of bronze vessels can be considered as stored private wealth. These are finished objects which are not in everyday use (but perhaps used on special occasions) and therefore kept in storage. Groups of bronze vessels including one-handled basins all come from areas interpreted as basements of houses. The only other place where such one-handled basins occur is in tombs. The silver vessels from the South House were found in a room where they were either in use or stored. All of the groups of vessels are indications of the prosperity of their owners.

Tools were found both in rooms of houses and palaces and in basements of houses. Those from rooms were undoubtedly in regular use; finds from basements probably included tools used on special occasions and for specific purposes as in the case of vessels stored in basements. These tools and utensils do not represent stored wealth; they are practical utensils belonging to the household.

Groups which include swords and smaller weapons from palaces are personal equipment left behind at the time of the destruction and abandonment of the buildings. Such weapons were not found in private houses; evidently they were taken by the inhabitants. The swords, double axes and smaller weapons from the Arkalochori Cave are votive objects. Some are normal in size and could have been applied to

practical usage. Others were miniature and symbolic objects. All were deposited as votive offerings.

The large bronze double axes from Nirou Chani are also objects of religious importance as are the two ceremonial double axes from Zakro. The Nirou Chani examples are of extraordinary size, much larger than any of the votive double axes from the Arkalochori Cave. Their monumental size excludes the possibility of their use for domestic purposes. It is likely that they were meant to be set up on ritual occasions, possibly in the courtyard of the building. They were probably stored in the room between periods of usage in connection with a ritual.

The group of vessels from Mochlos and the tools from Gournia are both hoards. Each group is homogeneous, containing only one type of bronze object and no associated material. It is noteworthy that other metal objects were found at Gournia, but that none except those in house Fd were hoarded.

In defining a group of objects as a hoard it is important to determine whether they were deliberately hidden or stored and accidentally covered during the destruction of the building. Both the hoards at Gournia and Mochlos were defined by the excavators on the basis of clear archaeological indications. The Gournia group is not fully described but it appears to be a hoard. The Mochlos group is recorded in detail and there can be no doubt that it was deliberately hidden in a scooped out hole and covered with small stones.

Evans classifies some of the groups from Knossos as hoards but since the objects cannot be proven to have been deliberately hidden, they will be considered as other types of groups in this discussion. The problem of determining whether or not a group was deliberately hoarded becomes more complex when dealing with a basement area which has no visible means of connection with any other part of the building, such as the basements of the Northwest Treasure House, Haghia Triada, and others. Objects stored in a basement cell remain in place covered by rubble after the destruction of the building and may never be retrieved. This does not mean that they were hidden in the first place even though they might have been stored in these areas for maximum security. It does mean that the people who originally stored them did not recover them nor did any one else.

Groups of metal finds are exclusively characteristic of the LM I period. This may be because (a) metal became abundant only at this later period, or b) because earlier destructions were of a different nature, allowing the inhabitants to retrieve all their precious possessions from the debris. The first hypothesis would be difficult to prove because metal objects are constantly melted down and reused. They can also remain in circulation for a long period of time due to their durability.

If a habitation is destroyed by outside action or events and subsequently rebuilt by the same inhabitants, they can retrieve their belongings. If, however, there is some sort of discontinuity and the inhabitants leave the area or no longer control it, then they will not be in a position to recover such material. The causes of such an abandonment may be either a natural disaster, a political shift (human action) or a combination or succession of the two. All the find groups listed here are associated

with a destruction level and were not subsequently recovered.

The Minoans were accustomed to earthquakes. The continuation of habitation after the MM IIIb destruction is one instance of rebuilding and continued occupation. The sole occurrence of an earthquake or even a severe conflagration could not have caused the people to abandon their settlements, their homes and their possessions as they did after the LM I destruction. The evidence of the metal find groups contradicts the theory of a natural disaster being the sole factor. These objects would have been recovered from the ruins of the buildings during reconstruction.

The eruption of the Santorini volcano has been proposed as a compound natural cause of the LM I destruction (Marinatos 1939, 1966, 1968, 1969; Hood 1967, 1970, 1973; Doumas 1974; Popham 1975). It is conjectured that a tidal wave, earthquakes, conflagrations and general destruction resulted from the eruption (Marinatos 1968:3; Platon 1971:265-303). A major difficulty has been to correlate the eruption of the Santorini volcano and the destruction of the Akrotiri site with the LM I destructions on Crete. The most commonly suggested date for the destruction of Akrotiri is LM Ia based on ceramic evidence from the site (Marinatos 1968, 1969; Hood 1973; Page 1970; Doumas 1974; Popham 1975). The majority of Minoan sites are believed by most archaeologists to have been destroyed in LM Ib (Hood 1970:102; 1973:114; Popham 1967:343; Page 1970:3). This conclusion is based on the fact that LM Ib pottery is found at some of these sites and is the last major style to appear in Crete before the significantly different LM II style (Popham 1967:343; 1975:374). However, evidence from the study of the metal deposits indicates that the destructions are more frequently assigned to LM Ia (see Comparative Table). A question which is repeatedly addressed in all treatments of this complex subject is whether LM Ia and LM Ib can somehow be brought closer together and whether they might possibly be synchronous. Most scholars seem to be arguing towards this position which appears to be more plausible in the light of new evidence.

Although LM Ib pottery might not be in evidence at the site of Akrotiri, an object decorated in the LM Ib marine style has been found there, namely the tripod plaster table painted with marine style decoration (Marinatos 1972: Pl. C). Therefore, one can state that the marine style, or LM Ib was known at Akrotiri at the time of its destruction. Popham has suggested that there is a certain amount of overlap in the LM Ia and LM Ib styles in Crete (Popham 1967:339) and others have suggested that these styles are synchronous in Crete (Bolton 1976:17-18; Luce 1976:13). These suggestions are based on very concrete ceramic and stratigraphic evidence supplied by archaeological reports.

The alleged discrepancies in the dates of the abandonment of Cretan sites lead to arguments in favor of either LM Ia or LM Ib for the destruction. The differing points of view stem primarily from the idea that these two ceramic styles represent distinct habitation strata and therefore two periods of time which are consecutive. Evans assigned approximately 25 years to each period. But this was in the early stages of scholarly understanding of Minoan stratigraphy. At present there seems to be little reason for adhering so strictly to Evans' hypothesis when the evidence seems to point in another direction.

The equally vexing problem of the varied hypotheses for the destruction timetable of Akrotiri has been interlaced with the problem of Minoan ceramic chronology. Although Hood (1970:99-102) believes that the LM Ia destruction of Akrotiri preceded the destruction of the Cretan sites by a considerable period of time, Doumas suggests that the caldera of Santorini collapsed at the same time as the LM Ib destructions of Crete and that very little time elapsed between the destruction of the city of Akrotiri and the final collapse of the caldera (1974:110-114). Doumas is attempting to lessen the gap between these two events and Luce goes even further in suggesting a single phase hypothesis for the destruction of Akrotiri and the collapse of the caldera (Luce 1976:12-16).

From the accumulated data it appears reasonable to suggest that LM Ia and LM Ib are synchronous styles in Crete (Luce 1976:13; Popham 1967:339; Bolton 1976:17-18). Furthermore, LM Ib style may be represented at Akrotiri (Marinatos 1972: Pl. C) in a stratum largely characterized by LM Ia pottery. Therefore, the destruction of Akrotiri can be correlated with the destruction of the Minoan sites at the end of LM I if the hypothesis is accepted that the LM Ia and LM Ib styles are synchronous and that the Santorini volcano erupted in a single and violent phase with a very short lapse of time between the destruction of Akrotiri and the collapse of the caldera. The latter catastrophe would have been the major cause in the destruction of the Minoan sites (Doumas 1974:110-114).

One further hypothesis needs investigating: the suggestion by Hood that the metal hoards on Crete are evidence of sacking in LM Ib (Hood 1973:114). Since most of these "hoards" have been found to belong to LM Ia, it would appear that this hypothesis is problematical. However, the suggestion by both Hood (*ibid.*) and Popham (1975:374) that human action is involved with the end of the LM Ib period is quite plausible. This is the period when mainland influence, which is felt most strongly at Knossos in LM II and at other sites in LM III, begins infiltrating (Popham 1967:343; 1975:372-374). It is not unlikely that people from the mainland took advantage of the natural devastation of the Cretan sites to expand into this area and exert political control.

Burning, looting and destruction of sites which are not intended for use are activities associated with military conquests. Knossos provides a good example of this. The houses peripheral to the palace were completely destroyed in LM I whereas the palace itself was repaired and occupied in LM II. According to the evidence supplied by the metal groups, the LM II occupants of the palace did not systematically attempt to recover objects from other areas of the site; the inference is that they were ignorant of their existence. Even if we consider these later inhabitants as belonging to the Minoan cultural continuum and not as foreigners, they cannot be the same Minoans who inhabited Knossos until the end of LM I.

Phaestos, Haghia Triada, Nirou Chani, Tyliossos, Zakro and other sites seem to have been destroyed at the end of LM I. It is difficult to assign a precise date to this occurrence. In any event, these sites are not marked by the characteristics of LM II occupation at Knossos. The LM II occupation of Knossos indicates a partial change whereas the other sites experience total discontinuity. This sequence of events

is a good illustration of the lack of activity characteristic of a subjugated population or of a population no longer existent or productive. A natural cause, however cataclysmic, could not have prevented them from returning at least to recover their valuables. If the cataclysm was so great as to have eradicated the population, human remains would surely have been found in the debris. Therefore, the population must have survived and escaped.

The hoarding of objects in the eastern part of the island might be an indication that the inhabitants were concerned with an approaching danger such as an enemy force, but this is pure speculation. The two hoards do not supply a solid statistical base for such a conclusion and might be coincidences. Future excavations might bring other hoards to light in corroboration of this hypothesis.

The groups of bronzes were interred by the LM I destruction and were never recovered. Groups in basements were well concealed by debris. Looters would have overlooked these groups if they were not familiar with the plans of the houses. Groups from rooms of buildings were often in collapsed areas or, in cases where they were shelved, in a confused stratum. The houses containing groups of bronze objects and the palace of Mallia were never reoccupied. All the sites could have been destroyed by the same cause. But it is likely that this event was more complex than any previous natural destruction on Crete. It is likely that the effects of the Santorini eruption were combined with some sort of military action. Although natural disasters can cause conflagration, they do not account for preferential looting. Other recorded natural disasters in populated areas have left traces of the inhabitants themselves within the ruins.

The destruction of LM I marks a severe disruption and discontinuity in Minoan civilization which cannot be accounted for by natural causes alone.

COMPARATIVE TABLE

COMPARATIVE TABLE

SITE	LOCATION WITHIN STRUCTURE	DATE OF GROUP	VESSELS (bronze)	TOOLS (bronze)	WEAPONS	INGOTS	MISC. METAL OBJECTS
1. Arkalochori Cave	Altar no. Corner	LM Ia	-	double axes (miniature of gold and silver)	sword and knife blades (gold and bronze)	several bun-shaped	1 gold ingot
2. Gournia, House Fd	Corridor of Room 18	LM Ia-b	-	1 axe, 1 saw, 6 chisels	-	-	bronze balance pan, bars
3. Haghia Triada	Basement room	LM Ia	-	-	-	19 ox-hide shape	-
4. Knossos NW Treasure House	Basement Cell C	LM Ia	5	-	-	-	-
5. Knossos NW House	Basement	LM Ia	1	3 double axes, 4 adzes	4 dagger blades, 1 frag. sword	-	-
6. Knossos South House	"Pillar Crypt"	LM Ia-b	-	-	-	-	group of silver vessels
7. Knossos House SE of S House	Basement	LM Ia-b	-	misc. tools	-	-	-
8. Knossos Wall Stump Deposit	Basement	LM Ia	3	1 saw	-	-	-
9. Mallia Δβ	Rooms	LM Ia	1	Misc. tools	knife blade	-	bowl, spouted jug
10. Mallia Palace, Quarter III	Room	MM Ib ?	-	-	2 swords	-	-
11. Mallia Palace, Room VI 2	Room	LM I	-	-	1 dagger, 1 sword	-	-
12. Mallia Palace, Room XXV 2	Room	LM Ia	-	3 chisels, 2 awls, 1 hinge	3 dagger blades, 2 frag. dagger blades	-	1 pivot casing, 1 needle
13. Mallia Well deposit	Basement ?	LM Ia ?	7	-	-	-	spouted jug
14. Mochlos, houses	Basement, Basement ?	LM Ia ?, LM Ia ?	5, 1	-	-	-	-
15. Nirou Chani	Room	LM Ia-b	-	4 double axes ("ceremonial")	1 knife blade	-	tool
16. Tylissos	Room ?	LM Ib	4	misc. tools	-	1 ox-hide shape	-
17. Kato Zakro NW area of Palace	Rooms	LM Ia-b	-	4 double axes, 2 double axes ("ceremonial"), misc. tools, 4 saws	2 swords, daggers, dirks, knives	6 ox-hide shape	silver cup, bronze rims of vessels, bronze foot of vessel

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