MITTEILUNGEN

ZUM DISKOS VON PHAISTOS

Für die Untersuchungen über die Herkunft des Diskos von Phaistos[1] scheint mir eine kleine Beobachtung nicht unwesentlich zu sein. Bei Vorarbeiten für die Publikation der Siegelabdrücke aus Phaistos in einem Teilband der Abteilung II des Corpus der Minoischen und Mykenischen Siegel fand ich im Archäologischen Museum von Iraklion auf dem Tonklumpen Inv. Nr. 992 ein Abdruckfragment mit einem Zeichen (Taf. I a, b), das Nr. 21 auf dem Diskos (Zählung nach A. Evans, Scripta Minoa I 276) sehr verwandt ist[2]. Die Abdruckkante ist auf der einen Langseite erhalten, auf der anderen muß man sie höchstwahrscheinlich kurz außerhalb der Bruchkante annehmen. Der einzige Unterschied zwischen beiden Zeichen besteht darin, daß die kammartigen Motive auf dem Abdruck fünf Zinken, diejenigen auf dem Diskos dagegen nur vier aufweisen. Auf demselben Tonklumpen sind Reste von drei anderen Abdrücken vorhanden, darunter ein ursprünglich vermutlich runder Abdruck mit einer diametral angelegten S-Spirale und beiderseits lanzettförmigen Motiven sowie Fülldreiecken[3]. Da der Tonklumpen ebenfalls aus dem Palast von Phaistos stammt und zwar aus einem MM II Stratum dürfte das Abdruckfragment für die Frage nach der Herkunft des Diskos von Bedeutung sein.

INGO PINI

THE STAMP SEAL, BYBLOS 6593

Of the thirty thousand or more votive offerings that were associated with the Temple complex at Byblos, many are in a fragmentary condition. The flint implements, however, have suffered least, and, after

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[1] Zum Diskos zuletzt G. Neumann, Kadmos 7, 1968, 27ff. (mit Literaturverzeichnis)

[2] CMS II 5 Nr. 246. Maße des Abdruckfragmentes: Erhaltene L. 1,3; erhaltene B. 0,7. Der Abdruck ist nicht aufgeführt in der Erstpublikation des Materials von D. Levi, ASAtene 35—36, 157/58, 61ff. Eine flüchtige, leicht von der unsrigen abweichende Skizze gibt Enrica Fiandra, A che cosa servivano le cretule di Festos, in Πεπραγμένα τοῦ Β' Διεθνοῦς Κρητολογικοῦ Συνεδρίου Α' 1968, Taf. ΡΟϛ'.

[3] Zwei dieser Fragmente sind in Skizzen abgebildet bei Fiandra a. O. Taf. ΡΟϛ', von dem vierten ist nur ein winziges Stück erhalten.

them, the seals, many of which are in excellent condition. Their size and shape, and the material of which they were made, contrived to protect them from destruction due either to natural causes or to rebuilding operations: but what archaeology has gained from these protective considerations it has lost through the ease with which these objects were moved about.

They were disturbed first of all during the cleaning out of accumulated offerings and their subsequent storage in new places, as for example in the case of the contents of the Montet jar: then more devastatingly by rebuilding: and lastly by that geological process whereby small objects often work their way upwards or downwards in the earth. The result was taht provenance often bore no relation to stratigraphy, and very ancient objects were found near or on the surface, sometimes also in consequence of private investigation. In the Fouilles de Byblos II Part I, p. 93 seq., Dr. M. Dunand mentions the extrusion of objects from lower levels during the long history of the site; scarabs, cylinder seals and fragments of ancient Egyptian stone vessels. „Le beau couteau de silex No. 6948 parait être le doyen de ces intrus remontés du fond des âges, comme le fragment de vase d'albâtre au nom du pharaon Khasekhemwi."

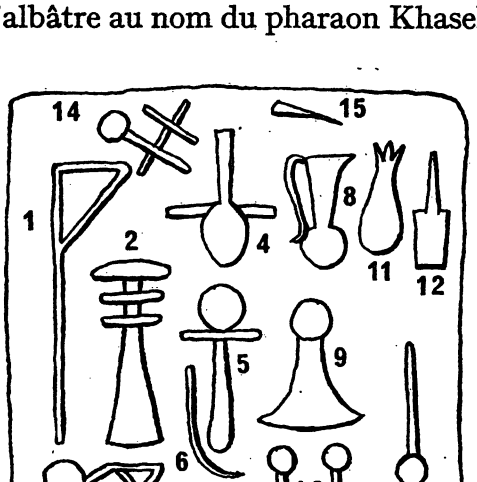

Fig. 1

No. 6593 is no exception to this chronological confusion of votive offerings, since despite its evident antiquity it was found near the surface. A stamp seal of steatite ("cachet en stéatite du type anatolien"), its field is about 35 mm. square, and its back presents a variant of the gable shape. It may be of great interest to scholars of early scripts, and especially to those concerned with the overlapping or joint use of two contemporary systems. Although on considerations of provenance as well

as of motif it may be judged to have been of votive significance rather than of semantic use, the latter possibility cannot be entirely ruled out.

The peculiar interest of the inscription lies in its votive use of Egyptian and Cretan signs and in its glyptic reduction of the form of some of these signs, perhaps for technical reasons. Except in two cases, however, No. 14, for which no equivalent in either hieroglyphic system appears to exist, and No. 13, which appears equivocal, all the other forms appear related to the conventional Egyptian hieroglyphic systems[1], or to the Cretan sphragistic use of hieroglyphs in the Middle Minoan Age. The list is as follows:

	EGYPT	CRETE (Scripta Minoa I)
1.	*ntr*	
2.	*ḏd* (reed-pillar)	
3.	*ḥpš*	109/77?
4.	*nfr*	
5.	*ʿnḫ* (*mr*?)	
6.	*ḥw*	
7.		26
8.	*ḫnm*	Vase (Talismanic Type)
9.		18
10.	*kȝ*	
11.	*bnr*	60
12.		24
13.	*sn* (?)	26?
14.	?	?
15.	*ʿb*	

With regard to No. 1, there appears to be no Cretan hieroglyphic equivalent, but it may be a form of the Egyptian *ntr* (God). With regard to No. 8, no sign either from the Egyptian or Cretan systems exactly corresponds, but it is a direct copy of the prochous seen on many talismanic stones of Crete in the Second Transitional phase and LM I period. This observation affords a valuable chronological pointer both to the date of manufacture of the object and — since the stone is comparatively unworn — to the date of its deposition at Byblos, in all probability LM I, about 1500—1450 B. C. This inclusion of a talismanic prochous suggests that the legend was indeed votive — as is the piece itself — and of a

[1] For help in recognising the Egyptian equivalents of the Byblos signs, thanks are due to Dr. M. Dunand, and to Dr. E. A. E. Reymond.

character more symbolic than semantic. Thus a nice compromise was effected, between Egypt and Crete and between forms old and new; with a final exotic touch, a polite gesture towards Anatolia, in the choice of shape.

VICTOR E. G. KENNA

AKROTIRI: THE THIRD CAMPAIGN OF EXCAVATIONS ON THERA[1]

Under the directorship of Professor S. Marinatos the excavations at Akrotiri on Thera started in 1969 in the middle of June and lasted, with some minor works, till the end of November. With the assistance of the skilled foreman Mr. Yannis Karamitros, the investigations were concentrated in the two main sectors of the previous years, that is, Arvanitis 1 and Bronos 2. In the first sector some clearing of the previous year's excavation preceded the dig proper. More pottery has been removed from the Pithoi Store Room, and the tunnel west of this has been extended[2]. A small strainer and a kymbe[3], both decorated with lily flowers, are among the fine pottery found in the Pithoi Store Room. A large number of pithoi were also removed from the same room, and in some of them the remains of barley flour as well as carbonized grains have been observed. A small rectangular schist slab, found last year in this store room along with a whet-stone, has been identified by Professor Marinatos as a kind of tablet, possibly for an apprentice (Plate Ib); the outline of a lily flower (inset) is still discernible thereon, while the marks are well preserved of the object (most probably the whet-stone) which was used to erase former designs and possibly script signs in order to re-use the tablet[4]. The building attached to the west wall of the Pithoi Store Room — hereafter referred to as Building A — has not been investigated except for its southern room (Room A 1) and some other spots which were examined during the course of restoration work. A handsome rhyton in the form of a bull was found in the deposits of Room A 2, while Room A 1 has proved on investigation to be a mill-house. A good number of mill-stones and grinders, a large bath-tub and a basket made of wicker switches are among the finds from this room. An arrangement for drainage, which joined the drainage system of the street outside the house, was also uncovered in this room.

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[1] For the first two campaigns see: S. Marinatos, Excavations at Thera I, Athens 1968 (Thera I); Excavations at Thera II, Athens 1969 (Thera II).

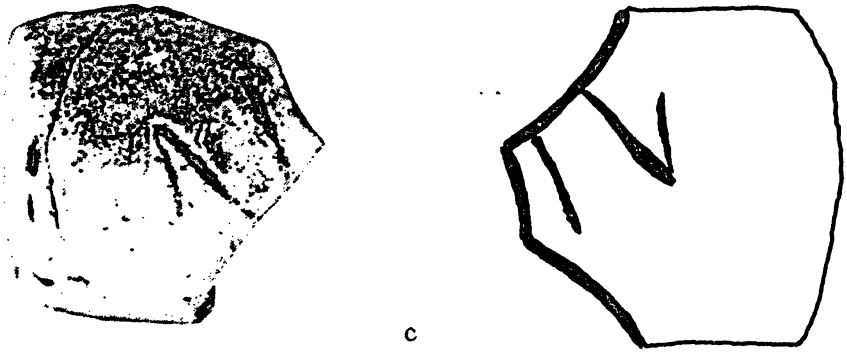
[2] Thera I 16—34; Thera II 15—33

[3] Cf. Thera II Pls. C: 7—8, and 17: 2

[4] Thera II 47, Pl. 37: 2

a

b



c

Plate I — Thera 1969

The tunnel through which the entrance to Building A came to light has this year been more systematically extended[5]. Following the western wall of Building A, a paved street with a drainage system ran from north to south. At either side of the street, parts of some walls have been uncovered, belonging to at least three different buildings. From the street in the tunnel the following layers have been removed:

a) pumice: more than one metre,

b) debris: about 25 cm.,

c) pumice: about 50 cm.,

d) debris: 30—50 cm.

Above the roof of the tunnel the layers are volcanic ash ('tephra') and alluvial deposits. From this stratigraphy, one may conclude that the sequence of geological events during the last days of the Minoan settlement at Akrotiri was as follows:

i. The destruction of the buildings (Layer d), obviously due to earthquakes which preceded the eruption of the volcano.

ii. The eruption of the volcano and ejection of pumice which covered the ruins with a layer about 50 cm. thick (Layer c). It seems that some walls were still projecting above the layer of pumice.

iii. The destruction of these projecting walls, probably as a consequence of the falls of rain that followed the eruption. Thus Layer b was formed.

iv. A new eruption which produced huge masses of pumice and tephra (Layer a). The alluvial deposits above the volcanic layers seem to have been formed gradually in the course of the succeeding millennia.

Almost the same stratigraphy has been recorded in the main sector of this year's campaign, that is Bronos 2. A street which is located immediately west of the room with the paved floor[6] and runs from north to south separates two architectural units, the eastern or Building B (Beta), and the western one or Building Γ (Gamma, Plate Ia). Only two rooms have been investigated in Building B (Rooms B 5 and B 8), without any important finds. In the same sector work has continued on the removal of the wall paintings from the room where the blue monkey fresco was found last year[7]. At least two swallows and five more monkeys have been recognized so far.

At one point in Building Γ strong evidence has appeared of the existence of a second floor. There is proof of a probably short period of reoccupation after the earthquakes, but before the eruption, particularly

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[5] Thera II 31, Pl. 32

[6] Thera II, Plan III, Pls. 7—9

[7] Thera II 12, Pl. B 1

in the southern Rooms Γ 1 and Γ 2, where large numbers of hammer-stones and anvils have been found. It is, therefore, believed that a work-shop was established there, at least during the period of re-occupation by members of the settlement who continued to live in the area. The street between the two buildings leads to an open space at the north end of these buildings.

Another important find from Building Γ, made late in this year's campaign, is a sherd of coarse ware inscribed with incised signs (Pl. I c). It is the lowest part of a narrow-bottomed pot, found at the NE corner of the Building. Its preserved height is 0.042 m.

Trial trenches between the sectors Arvanitis 1 and Bronos 2 have exposed some walls of very careful construction with finely dressed rectangular blocks. Masonry of this kind does not seem to belong to private houses.

CHRISTOS DOUMAS

THE INTERNATIONAL SCIENTIFIC CONGRESS ON THE VOLCANO OF THERA 15th—23rd SEPTEMBER 1969

That there took place during the Bronze Age a great eruption of the volcanic island of Thera in the Aegean has been known now for over a century. Remains of Bronze Age settlements were discovered on Thera in the 1860s when the pumice from the eruption, under which they were buried, was being quarried for incorporation in a water-resisting cement, which was used in the construction of harbour works at Port Said in connection with the building of the Suez Canal[1].

The Bronze Age eruption of Thera was evidently of the explosive type. The closest and best documented modern parallel for it would appear to be the eruption in 1883 of Krakatoa in the Sunda Strait between Java and Sumatra. An outbreak of this kind is apt to follow a long period of quiescence on the part of the volcano, and instead of molten lava enormous quantities of dry volcanic ash or pumice, known scientifically as tephra — the Greek word for ash — is ejected explosively, leaving a vast empty hollow space which collapses to form a huge crater or caldera as it is technically called. In the case of island volcanoes like Thera and Krakatoa, the sea rushing into the caldera thus formed may cause great so-called 'tidal waves', better termed by their Japanese name, tsunamis, which means "harbour waves".

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[1] J. V. Luce, The End of Atlantis: New Light on an Old Legend, London 1969, and A. G. Galanopoulos and E. Bacon, Atlantis: The Truth behind the Legend, London 1969, although preoccupied with the identification of Atlantis, give informative and very well illustrated accounts of Thera and the Bronze Age eruption.

The tsunamis that accompanied the formation of the caldera at the climax of the eruption of Krakatoa in August 1883 led to the death by drowning of more than 36,000 people along the coasts of Java and Sumatra. The Bronze Age eruption of Thera was on a larger scale than that of Krakatoa, to judge from the greater size of the sea-filled caldera which it has left. The tsunamis that are likely to have been caused by the formation of this caldera would have swamped coastal settlements throughout the Aegean, and especially those along the north coast of Crete which is less than 120 kilometres away from Thera across the deep open sea (Fig. 1, Inset).

It was not until the 1930s that any serious attention was paid to the question of the possible effects of the great Bronze Age eruption of Thera on surrounding areas like Crete, and then only as a result of the pioneer work of one man, Professor S. Marinatos, who had been Director of Antiquities in Crete and who had excavated at sites like Amnisos and Nirou Khani on the north coast of the island. In a series of papers and communications delivered in the decade before the Second World War, Marinatos emphasised what havoc the eruption, and more specifically the earthquakes and tsunamis that might have been connected with it, must have wrought in Crete. He ultimately published his ideas in a definitive form in the English periodical Antiquity in 1939[2].

In his Antiquity article Marinatos assigned the destruction of the villa with frescoes which he had recently excavated at Amnisos, a seaport of Knossos on the north coast of Crete, to tsunamis resulting from the eruption. But the destruction of which Marinatos had found evidence at Amnisos did not stand alone. During the first spate of excavations in Crete in the years from 1899 onwards, immediately after the liberation of the island from the Turks, it became clear that most of the important settlements along the north and east coasts had been destroyed at virtually the same time, about the middle of the second millennium B. C. (Fig. 1). Marinatos suggested that all of these settlements might have been destroyed as a result of the eruption of Thera, whether by earthquakes which preceeded or accompanied it, or by blast from the explosion, or by tsunamis.

There were difficulties, however, in the way of this view. A number of settlements, such as that on the island of Pseira, were abandoned after their destruction at this time, while others, like Gournia, were only reoccupied on a much reduced scale. This was curious in the light of the flourishing and populous state of Crete in the period immediately before the destructions, to which its numerous towns and palaces and its thriving art bore witness. Moreover, many of the settlements, and notably those along the north coast of the island, had been destroyed by

[2] S. Marinatos, The Volcanic Destruction of Minoan Crete, Antiquity 13, 1939, 425—439

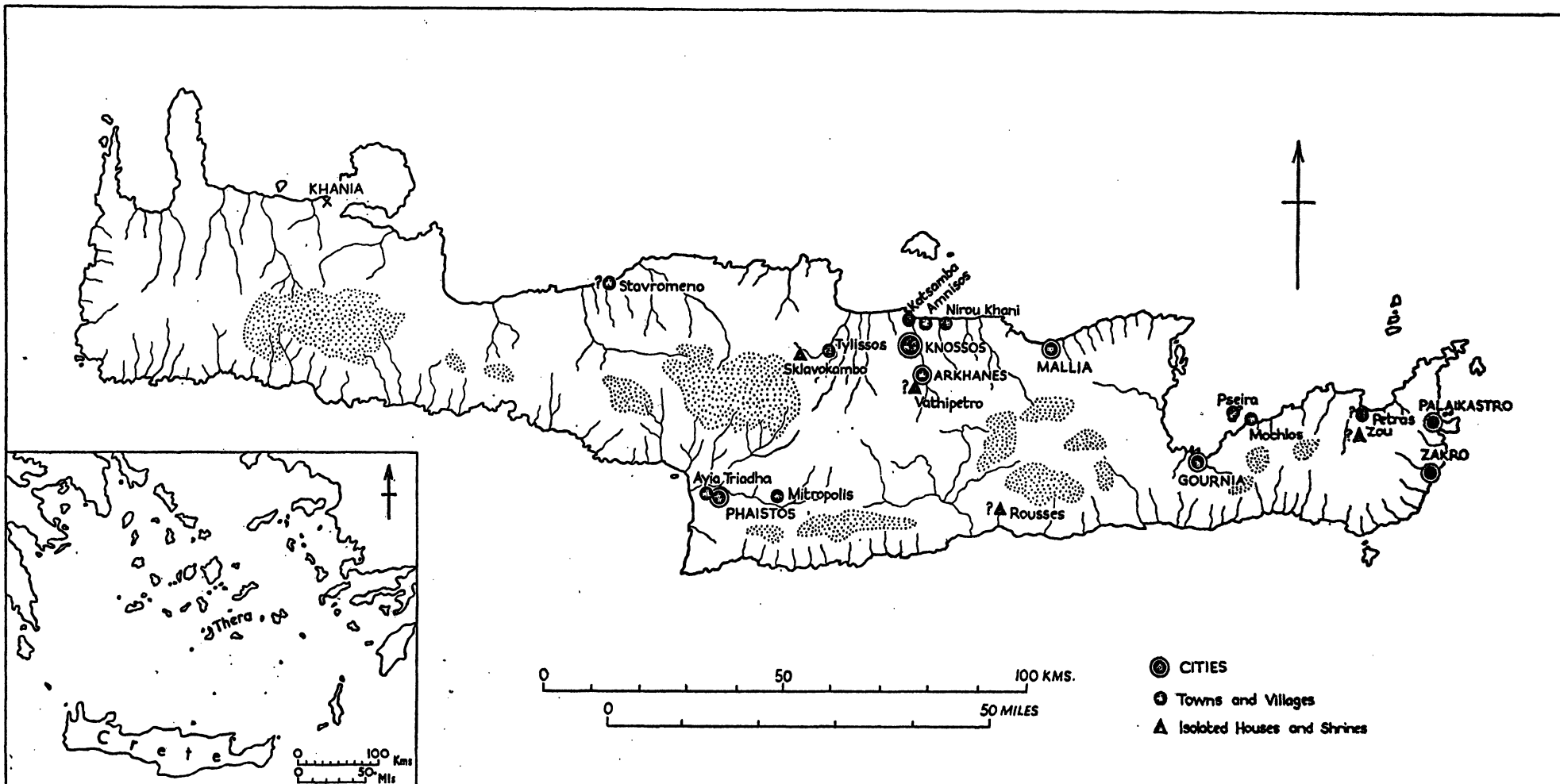

Fig. 1. Crete, showing sites with evidence of destruction in Late Minoan I B, c. 1450 B. C.

fire; which was not easy to reconcile with a belief that they had been overwhelmed by tsunamis. But, as Marinatos noted, there were cases where fires had broken out in settlements after they had been swamped by tsunamis at the time of the eruption of Krakatoa in 1883.

A more serious difficulty in the way of attributing this horizon of fire-destruction in Crete to the eruption of Thera only came to be appreciated after the end of the Second World War. For with new excavations in Crete it became increasingly clear that this horizon of destruction was in fact a good deal later in time than the destruction of the settlements on Thera. The settlements on Thera were evidently overwhelmed during the period known as Late Minoan I A, c. 1500 B. C., or shortly before then, while the horizon of destruction in Crete was assignable to stage B of Late Minoan I, some twenty-five to fifty years or more later.

Three successive stages of deposition can be distinguished in the vast accumulations of pumice ash or tephra from the Bronze Age eruption on Thera. A German expert on volcanoes, Reck, in a study published in 1936 of recent volcanic activity in the caldera of Thera, drew particular attention to evidence of deep weathering in the top of the earliest of these three stages of deposit[3]. This suggested the possibility that an appreciable gap of time had intervened between the deposition of the first layer of tephra and the later and, to judge from the much greater depth of the tephra, more cataclysmic stages of the eruption.

In the light of this it seemed not unreasonable to assume that the Bronze Age settlements on Thera were buried by tephra during a first stage of the eruption in Late Minoan I A, while the later and more cataclysmic stages, leading to the collapse of the volcano and the formation of the sea-filled caldera with consequent tsunamis, only followed after an interval of twenty-five to fifty years or more in Late Minoan I B, and were responsible for the horizon of destruction apparent throughout Crete at that time, c. 1450 B. C.

In 1965 two American oceanographers, Dr. D. Ninkovich and Professor B. C. Heezen, made an interesting and suggestive contribution to the problem[4]. They had come to be concerned with the Bronze Age eruption of Thera through detecting deposits of tephra therefrom in cores extracted from the sea-bed in the region between Thera, Crete and Cyprus. From the relative thickness of the tephra in these cores they estimated that the wind was blowing from the north-west at the time of the main phase of the eruption, and that a layer of tephra some ten centimetres or more in depth was then deposited over the whole of the eastern end

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[3] H. Reck, Santorin: Der Werdegang eines Inselvulkans und sein Ausbruch 1925—1928, 3 vols, Berlin 1936

[4] D. Ninkovich and B. C. Heezen, Santorini Tephra, Colston Papers 17, 1965, 413—453

of Crete. This deposit, by destroying vegetation and impeding agriculture, might have induced a mass exodus of population from the eastern part of the island, which would explain the abandonment of their settlements.

Then in 1967 Professor Marinatos began the systematic excavation of what appears to have been the chief Bronze Age settlement on Thera[5]. The approximate position of this foundation was known from small soundings made a century earlier in 1867 and 1870; it lay on the south coast of the island not far from the site of the modern village of Akrotiri. The new excavations have already proved most fruitful, and promise to reveal the plan and character of an important Bronze Age town, uniquely preserved after the manner of Pompeii, which was similarly buried by tephra from an eruption of nearby Vesuvius in A. D. 79.

These excavations by Professor Marinatos confirmed that the Bronze Age settlements on Thera were abandoned in Late Minoan I A, c. 1500 B. C. or somewhat earlier. Meanwhile Professor N. Platon had discovered and excavated at Zakro, in the eastern tip of Crete, an important palace which had been destroyed by fire and never afterwards rebuilt. The very rich and abundant finds from this site made it clear that the destruction of the palace took place in Late Minoan I B, a whole stage later than the abandonment of the settlements on Thera. Reports of what were thought to be lumps of volcanic debris (volcanic 'bombs') from the ruins of the palace at Zakro seemed in harmony with the idea that the horizon of destruction in Crete in Late Minoan I B was due to a final and cataclysmic episode in an eruption of Thera which had begun some twenty-five to fifty years or more earlier in Late Minoan I A[6].

But there were still difficulties. It seemed to scientists doubtful whether lumps of volcanic debris could have been flung by an eruption on Thera as far as Crete. There was also the old problem of how to reconcile the evidence of fire-destruction at sites on the coast like Zakro with the idea of havoc caused by tsunamis. Another inconsistency was apparent in regard to the city and palace at Knossos. For although Knossos lies on the north side of Crete not far from the sea and almost directly opposite Thera, the city and palace there appear to have suffered only partial damage in Late Minoan I B. In contrast to this, some inland sites, notably the villa at Sklavokambos[7], tucked away in an upland valley surrounded by protective hills, suffered at this time, along with many of the coastal settlements, total destruction by fire.

It was against this background that Professor Marinatos combined with Dr. Ninkovich to organise a conference of scientists and archaeolo-

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[5] S. Marinatos, Excavations at Thera: First Preliminary Report (1967 Season), and II (1968 Season), Athens 1968, 1969

[6] E. g. S. Alexiou, N. Platon and H. Guanella, Ancient Crete, London 1968, 167

[7] S. Marinatos, Arch. Eph. 1939/41, 69—96

gists with a view to threshing out the problems connected with the Bronze Age eruption of Thera. This conference was duly held, under ideal conditions of organisation and weather, at first in Athens and subsequently on ship-board, between the 15th and 23rd of September 1969. The conference spent two days on Thera, examining the new excavations and studying the evidence of the eruption. Amnisos on the north coast of Crete was also visited, together with Knossos and the Museum at Herakleion.

The results of the conference are not yet published, but brief accounts of it have appeared in newspapers and reviews[8]. Perhaps the most interesting and unexpected development was that the experts on volcanoes (vulcanologists) drawn from every quarter of the world, from New Zealand and Japan to Iceland, after studying various sections of the vast deposits of tephra from the Bronze Age eruption on Thera, appeared to be of the opinion that this eruption, like that of Krakatoa in 1883, had been tremendous but short-lived. In the eruption of Krakatoa there were two main stages separated by an interval of some four months. The first stage of the eruption began in May of 1883, and the final and most explosive stage, accompanied by the collapse of the volcano to form the caldera and by destructive tsunamis, followed in August of the same year. Similarly, it would seem that all three stages of the Bronze Age eruption of Thera were completed within the span of a single year. The weathering visible in the surface of the earliest of the three successive deposits of tephra, it was felt by the vulcanologists, could, under the conditions of a great eruption such as this, have occurred within a matter of days or weeks.

If this opinion is confirmed, and it comes to be accepted that the Bronze Age eruption of Thera like that of Krakatoa began and ended within the space of a few months, how is the horizon of destruction in Crete in Late Minoan I B to be explained?

Were the settlements on Thera really destroyed, not in Late Minoan I A, but, like those in Crete, in Late Minoan I B? Is the Late Minoan I A character of the pottery from the Theran settlements, that is to say, simply due to provincialism and the retention of earlier fashions in a backward area? This appears to be quite out of the question. The settlement which Professor Marinatos is excavating near Akrotiri on Thera was clearly a town of considerable importance, with large buildings constructed of carefully squared masonry and adorned with frescoes in the Cretan manner. An inscription in a version of the Linear A script on a pot that is evidently of local fabric attests some use of writing in Thera at this time[9].

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[8] E. g. B. C. Heezen, A Time Clock for History, Saturday Review 6. 12. 1969, 87–90

[9] W. C. Brice, ILA II 24. Cf. the graffito reported by C. Doumas in this issue of Kadmos, supra p. 96

Most of the fine decorated pottery from the Akrotiri settlement is Cretan in style, and some of it was imported from Crete. But none of the pottery found there has decoration characteristic of Late Minoan I B[10]. In striking contrast to this is the situation at some other settlements in the islands, notably at Kastri on Kythera and at Ayia Irini on Keos, where numbers of vases with typical Late Minoan I B decoration have been recovered[11]. These two settlements, however, were evidently smaller and less metropolitan in character than the town which Professor Marinatos is excavating near Akrotiri on Thera. The Late Minoan I A character of the pottery found here, and in the other settlements buried by the eruption on Thera, cannot therefore be explained on the hypothesis that the people who inhabited them, being provincial and backward, had retained fashions which had long previously become outdated in Crete.

The settlements on Thera are thought to have been wrecked by earthquake before the eruption which buried them deep in tephra. Could there have been a gap of some twenty-five to fifty years or more between an earthquake which wrecked the settlements in Late Minoan I A, and an eruption which did not take place until Late Minoan I B and was responsible for the devastation visible in Crete at that time?

This is a reasonable suggestion on the face of it; but there are grounds for confirming that both the earthquake and the associated eruption took place in Late Minoan I A, at the time when the settlements on Thera were wrecked and abandoned. One of the scientists at the conference, Dr. H. Pichler, had already done some work on Thera, during the course of which he had observed cracks, apparently caused by a severe earthquake, in the original land surface as it was before the Bronze Age eruption. These cracks, he noted, were filled with tephra, indicating that they had been formed at the time of the eruption or shortly before it. For if there had been a long gap of time between this earthquake and the eruption the cracks would have become choked with silt before the tephra fell.

It could be argued, on the other hand, that the settlements were destroyed by an earlier earthquake than that which caused the cracks; but if there had been an interval of several years between an earthquake — which wrecked the settlements — and the eruption, the inhabitants of the settlements would surely have returned and rebuilt

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[10] N. Coldstream, The Thera Eruption: some thoughts on the survivors, London Inst. of Class. Studies, Mycenaean Seminar, 19. 2. 1969, notes the Late Minoan I B character of the stippled decoration on a cup, which appears to be a Cretan import, from the Akrotiri settlement (S. Marinatos, Excavations at Thera I, 1967, 46f., Figs. 70, 71). But vases with this type of stippling are also found in Late Minoan I A at Knossos.

[11] E. g. BSA/HS Archaeological Reports for 1965—1966, 21 fig. 37, from Kastri on Kythera. Hesperia 33, 1964, pl. 52d, 53a, b; 35, 1966, pl. 85a, from Ayia Irini in Keos.

their houses! For it seems clear that most of the inhabitants had had time to escape from their settlements, taking with them their most precious belongings. What are thought to be indications of partial reoccupation which was undertaken after damage by earthquake, but before the beginning of the eruption, have indeed been detected in the recent excavations at the Akrotiri settlement. But these traces of possible reoccupation appear to be slight, as if small groups of people were temporarily camping in the ruins for a short space of time. The absence of pottery assignable to a period after Late Minoan I A constitutes in any case evidence against the idea of a long reoccupation of this or the other Bronze Age settlements on Thera.

The early excavators in Crete, notably the American Seager who uncovered several important settlements along the north coast on the islands of Mochlos and Pseira and elsewhere, had no doubt that the great horizon of fire-destruction revealed by their work was due to war and invasion. But at many sites, including Palaikastro in the eastern tip of Crete and Knossos, there was also clear evidence for a somewhat earlier destruction by earthquake or other natural causes. This earlier horizon of destruction is assignable to Late Minoan I A, and is thus more or less contemporary with the abandonment of the settlements on Thera. The Cretan settlements that suffered damage in Late Minoan I A were, unlike those on Thera, rebuilt and continued to be occupied. For this reason the Late Minoan I A horizon of destruction in Crete has not been so well studied as that of the succeeding period, Late Minoan I B, when so many settlements were destroyed in a dramatic way by fire and were afterwards abandoned for ever.

There seems no reason on the face of it why the Late Minoan I A destructions in Crete should not have been due to earthquakes, or in the case of coastal sites to tsunamis or other natural causes connected with the eruption of Thera. Some interesting votive deposits assignable to the Late Minoan I A period in Crete look as if they were inspired by attempts to placate the gods at a time of such disasters. Professor Platon, for instance, has suggested that a deposit of little cups containing lumps of pumice, which he found in a large house at Nirou Khani east of Knossos, below the threshold of a door by a room used as a shrine, might have been placed there as votives in relation to the eruption of Thera[12]. The house stood close to the sea-shore, and would certainly have been swamped by any tsunamis consequent upon the eruption. A tripod vase with lumps of pumice in it, recently found in a level assigned to the fourteenth century B. C. in the important Bronze Age town on the site of modern Khania in the west of Crete, may, it is thought, reflect a late survival of a cult which the eruption had inspired[13].

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[12] Kr. Khron. 1954, 449—450

[13] I. Tzedakis, Pumice from Khania, Athens Annals of Archaeology 1, 1968, 313–314

One of the largest and most spectacular votive deposits of the Bronze Age that have been found in Crete was recovered from a pair of pits on a hill above the town and palace at Zakro[14]. The pottery from these pits is assignable to Late Minoan I A, and is remarkably homogeneous in character, as if the pits had been filled on one single occasion rather than over a period of some years. Perhaps the filling of the pits reflects an attempt on a public scale to appease the gods with offerings at the time of the great eruption, the effects of which may have been unusually catastrophic in this eastern part of Crete where Zakro lies. For it was here that the tephra deposited by the eruption probably lay thickest, killing the vegetation and, it would seem, preventing cultivation of the ground, at least for a time[15].

A systematic programme of taking sample cores from the sea-bed round Crete might show with some degree of precision how deep, in different parts of the island, was the deposit of tephra from the eruption. It would clearly be most interesting to know this. But the most immediate task is to try to establish beyond doubt what horizons in Crete, that of Late Minoan I A, or that of Late Minoan I B, or both, are contemporary with the eruption. No traces of volcanic ash or tephra have yet been recognised in excavations in Crete, and the samples of what had been reported as lumps of volcanic debris from the ruins of the palace at Zakro were declared by the experts who examined them at the time of the conference in September last to be of non-volcanic origin.

It should, however, be possible to detect by scientific means the presence in Crete of tephra deposited from the eruption, even if it is invisible to the naked eye. Fragments of tephra might only be distinguishable under a petrographic microscope, but should be readily identifiable, if present, on the basis of index refraction and shape, in the same way that they are identifiable in deep-sea cores[16]. It is clearly most desirable that suitably chosen samples from deposits of the relevant periods should be collected from excavated sites and submitted for examination to determine whether traces of tephra are present in them or not. A scientist who was present at the conference, Dr. Dorothy B. Vitaliano, has generously offered to arrange for the examination of any such samples that may be sent to her[17].

SINCLAIR HOOD

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[14] BSA 7, 1900/01, 123—129. JHS 23, 1903, 248—254 for the pottery

[15] See Note 4 above

[16] Information from Dr. Dorothy B. Vitaliano

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