Analysis and Provenience of Minoan and Mycenaean Amber, IV. Mycenae

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HOMER might have called Mycenae πολυήλεκτρος as well as πολύχρυσος: when Schliemann dug the shaft graves within the citadel (now Grave Circle A), he saw in some of them "enormous quantities of amber beads";[1] Wace found amber in several of the chamber tombs, especially those dating to L.H. I/II;[2] most recently, the discovery of Grave Circle B has yielded a large number of amber beads and some spacers in Grave Omicron.[3] The provenience of the amber of Mycenae has been an issue among archaeologists and chemists for almost a century.

Schliemann early took a view which was at once cautiously conservative and highly sophisticated, a rare combination at any time. He wrote of the amber in Grave Circle A: "These beads have grown dark-brown, probably owing to their great antiquity, so that we at first mistook them for resin, but the analysis of Professor Landerer has shown that they consist of the purest amber. It will, of course, forever remain a secret to us whether this amber is derived from the coast of the Baltic or from Italy, where it is found in several places, but particularly on the east coast of Sicily; but it is highly probable that it was brought to Greece by the Phoenicians . . ."[4]

It was sophisticated of Schliemann to recognize that the dark color of his amber finds was due to their age. Even today some archaeologists, knowing that freshly dug Baltic amber is usually of a light yellow color while southern amber is often brown or red, conclude too hastily that a dark color in archaeological amber artifacts indicates southern origin.

It was equally sophisticated to refer the decision between 'resin' and

[1] H. Schliemann, *Mycenae* (New York 1878) 203; German ed. (Leipzig 1878) 235.
[2] A. J. B. Wace, "Chamber Tombs at Mycenae," *Archaeologia* 82 (1932).
[3] J. Papademitriou, *Praktika* (1952) 427–72.
[4] Schliemann, *op.cit.* (*supra* n.1).

'amber' to a chemist at a time when that species of scientist had as yet shown little interest in archaeology and made few contributions to it. He turned to Xaver Landerer (1809–1885), a German chemist and pharmacist, who was then Professor of Chemistry at the University and at the Polytechnicum in Athens as well as personal apothecary to King George I, and who had earlier analyzed metals, glass and pigments of ancient Greece.[5]

We do not know what chemical tests convinced Landerer that the finds from the shaft graves consisted "of the purest amber," but Schliemann cautiously leaves open the question whether the amber is of Baltic or of Italian origin: either place fits Homer's clear indication that it was the Phoenicians who conveyed amber to Greece.[6] Schliemann was probably aware of Capellini's hypothesis that amber found in Mediterranean archaeological contexts might be of southern rather than of Baltic provenience, but when he wrote *Mycenae* he cannot yet have known of Helm's claims[7] to be able to distinguish between the two.

The chemist Landerer seems to have been less cautious. At the *VIII^e Congrès International d'Anthropologie et d'Archéologie Prehistoriques* in Budapest in 1876 he announced that the amber of Mycenae was of Sicilian origin. We have not found this statement in the *comptes rendus* of that congress, which reproduces the lectures but not the discussions, but in his account of the Budapest meeting Chierici reports that "il Landerer, come risultato di sue analisi, ci dà per ambra della Sicilia la gialla raccolta dalle richissime tombe di Micene."[8] This is corroborated by Brizio, who describes "una quantità di pallottole di ambra gialla della specie più pura e proveniente, secondo l'analisi chimica del Prof. Landerer, dalle coste della Sicilia,"[9] though without reference to the congress at Budapest.

Again we do not know what chemical evidence led Landerer to his conclusion; Schliemann was either unaware of it or did not accept it, and the same appears to be true of Helm, who refers to "Canderer's" (*sic*) identification of the finds from Mycenae as "purest amber," but

[5] J. C. Poggendorff, *Biographisch-Literarisches Handwörterbuch* III (Leipzig 1898) 770.

[6] *Od.* 15.460.

[7] O. Helm, "Notizen über die chemische und physikalische Beschaffenheit des Bernsteins," *ArchPharm* 211 (1877) 229–46.

[8] G. Chierici, *BPI* 4 (1878) 175.

[9] E. Brizio, *Nuova Antologia* 1 (1879) 86.

not to his determination of its provenience.[10] A detailed and critical account of all previous work, including Helm's analyses which led him to pronounce the amber of Mycenae as Baltic and which Schliemann did accept,[11] has been given in the first article of this series.[12]

We therefore repeat here only that Helm's findings only increase the *a priori* probability that amber objects of such size and in such numbers as Schliemann found in the shaft graves of Circle A are of Baltic origin. Below we report our own spectroscopic analyses of the amber found at Mycenae to which we had access in the National Museum in Athens in the summer of 1965. For the sake of completeness we also bring together all other amber finds from Mycenae which we have found in the literature.

Grave Circle A

Shaft Grave I

This is Schliemann's 'second sepulchre'. In his description of the finds from it Schliemann lists no amber but mentions "a few white glass beads and some small ornaments of a glass paste."[13]

Karo, however, recognized two amber beads among the latter and described them: "diameter *ca.* 2 [cm]. One nearly spherical, the other lentoid"[14] under the Athens National Museum inv. no.208. The present condition of these two beads leaves no doubt that they have had a thorough scrubbing followed by some conservation treatment. The first-mentioned bead, no.208A, is light brown in color. It has a maximum diameter of 0.021m and a maximum thickness of 0.014m. Its shape most nearly conforms to that of Beck's[15] class B.1.a oblate. The second bead, no.208B, is slightly smaller (maximum diameter 0.020m) and much thinner (maximum thickness 0.009m) but still fits into the same class.

A word about the shapes of Mycenaean amber beads is in place here. Some beads are of highly characteristic forms, *e.g.* the curious 'bone-shaped' beads exemplified by the gold-and-amber ornaments of the

[10] O. Helm, *Schriften der naturforschenden Gesellschaft zu Danzig*, N.F. 6 no.2 (1885) 237.
[11] O. Helm in H. Schliemann, *Tiryns* (New York 1885) 369–72.
[12] C. W. Beck, *GRBS* 7 (1966) 192–94.
[13] Schliemann, *op.cit.* (*supra* n.1) 158.
[14] G. Karo, *Die Schachtgräber von Mykenai* (Munich 1930–1933) 69 and pl. CL.
[15] H. C. Beck, *Archaeologia* 77 (1927) 1–74.

Tiryns treasure.[16] Close attention to the shapes of all Mycenaean amber beads may well repay the trouble by pointing to connections with contemporary amber finds elsewhere. But one stricture must be made at once: amber more than any other material used for beads is subject to weathering which, depending on time and conditions, will form a friable layer which is easily lost by accidental or deliberate removal. Experience has shown that this layer is often of a remarkably uniform thickness,[17] so that the shape of the original bead may be preserved even after vigorous cleaning. Sharp edges and corners, however, may be entirely lost, and it will not be wise to put too fine a point on distinctions between, say, an oblate short bead (Beck's class B.1.a) and a bicone short bead (Beck's class B.2.e), not to mention intermediate forms like short convex bicone (B.1.e) or short truncated bicone (B.2.f). But had they existed, fortune might have preserved some of these more angular shapes among the more than a thousand beads from Grave Circle A. It is, then, simply the lack of any evidence to the contrary that justifies our choice of the term oblate.

The results of our spectroscopic analysis of the two amber beads from Shaft Grave I are shown in Table I and fig.1. The meaning of the extraneous absorptions resulting from conservation treatment has been discussed in a previous article in this series.[18] In spite of the

TABLE 1. AMBER BEADS FROM SHAFT GRAVE I: INVENTORY NO.208

Designation	*Maximum Dimensions (mm)*		*Spectrum Number*	*Extraneous Absorption (μ)*	*Computer Classification*
	Diameter	*Thickness*			
A	21	14	961	7.25 and 7.8	walchowite?
B	20	9	962	7.25 and 7.8	Baltic

contamination indicated by these absorptions, computer classification of the spectra assigned a Baltic origin to bead 208B. Bead 208A was not recognized as Baltic only because the slope of the spectrum between 8.4 and 8.6μ failed to exceed —0.050. The computer identifies this feature with walchowite, a fossil resin indigenous to Bohemia, but it is not a positive identification of that resin because a shallow slope in

[16] C. W. Beck, G. C. Southard and A. B. Adams, *GRBS* 9 (1968) 5–19.

[17] P. Dahms, "Verwitterungsvorgänge am Bernstein," *Schriften der naturforschenden Gesellschaft zu Danzig*, N.F. 13 nos.3–4 (1914) 175–238.

[18] Beck *et al.*, *op.cit.* (*supra* n.16).

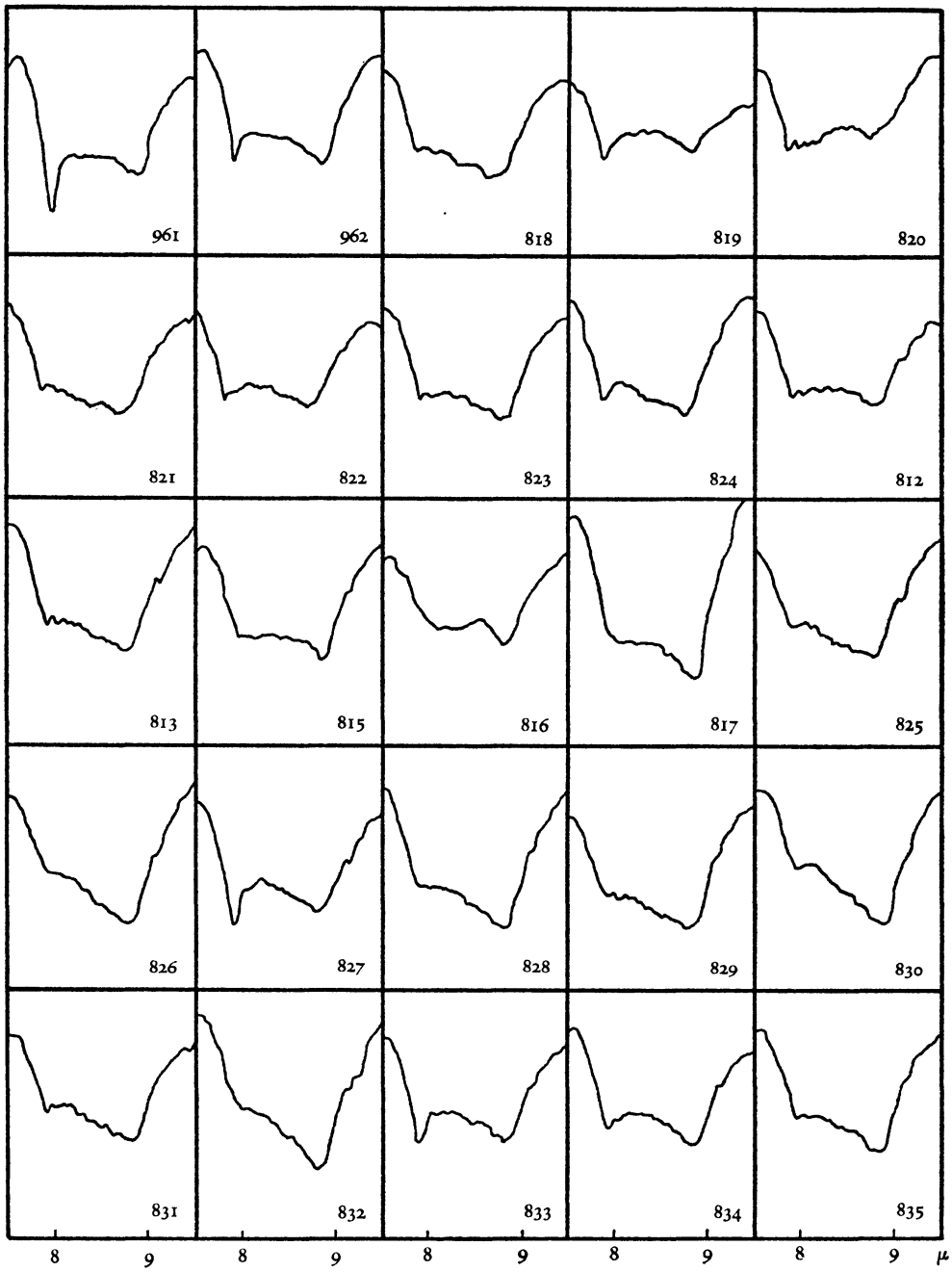

Figure 1. PARTIAL INFRARED SPECTRA OF AMBER, SHAFT GRAVES I and III, GRAVE CIRCLE A, MYCENAE

this region is also found quite commonly in very badly weathered Baltic amber. It would be rash to say more than that the computer cannot recognize bead 208A as Baltic.

SHAFT GRAVE II

This is Schliemann's 'fifth sepulchre' and has yielded no amber.

SHAFT GRAVE III

This is Schliemann's 'third sepulchre' and in it he found the "enormous quantity of amber beads" which prompted his comments quoted in the introductory section above. Schliemann did not describe or illustrate the amber from Grave III, nor did Schuchhardt[19] (however, *vide infra*) nor Tsountas and Manatt.[20] These authors, incidentally, cite and accept Helm's conclusion that the amber is of Baltic origin as "probably"[21] or "most probably"[22] correct, and modern archaeologists have been inclined to consider its Baltic provenience as a simple fact.[23]

In his section on Grave III Karo[24] describes under Athens National Museum inv. nos.100 and 101 "24 whole amber beads and fragments of 6–8 others. The largest ones (diameter 3.1–3.5 [cm]) spherical or lentoid, the medium-sized and small ones (0.8–1 [cm]) mostly flat, in part almost annular or tubular. Badly corroded surface." Karo refers these beads to Schuchhardt p.237 and fig. 197 and adds parenthetically "according to Schliemann, p. 282, these beads come from Grave IV." The latter statement is in error and would seem to be due to a transposition of plates in the books of Schliemann and Schuchhardt. Schliemann reported about 800 beads from Grave IV and illustrated a few of them[25] in their actual size. The largest has a diameter of 0.042m. In Schuchhardt's work the same plate has been used to illustrate the amber from Grave III.[26]

[19] C. Schuchhardt, *Schliemann's Excavations*, transl. E. Sellers (London and New York 1891) 191–210.

[20] C. Tsountas and J. I. Manatt, *The Mycenaean Age* (Boston and New York 1897) 88.

[21] Schuchhardt, *op.cit.* (*supra* n.19) 196.

[22] Tsountas and Manatt, *op.cit.* (*supra* n.20) 180.

[23] W. Taylour, *The Mycenaeans* (London 1964) 152, 154, 166.

[24] Karo, *op.cit.* (*supra* n.14) 57.

[25] Schliemann, *op.cit.* (*supra* n.1) fig.355 on p.245 of the English ed., corresponding to p.282 of the German ed.

[26] Schuchhardt, *op.cit.* (*supra* n.19) fig.174 on p.195 of the English ed.; we have not been able to see the German ed.

The change can have nothing to do with the renumbering of the graves from Schliemann's original 'sepulchres' to the now universally accepted numbers introduced by Stamatakis which Schuchhardt uses, since neither Grave III nor Grave IV has been affected by that change. It is a simple error, and the error must lie with Schuchhardt, not with Schliemann, for the largest bead from Grave III seen by Karo[27] or by us in the National Museum is considerably smaller than the largest bead of the ubiquitous illustration.

But our inspection of the amber now in the National Museum has added more problems than it has solved. Under inv. no.100 there are 27 strung beads. The lentoid centerpiece is the largest, with a maximum diameter of 0.036m and a maximum thickness of 0.022m. The sizes of the other beads diminish towards the ends of the 'necklace' where the smallest bead has a diameter of 0.010m and a thickness of 0.006m. Most of the beads are oblate (Beck's class B.1.a); a very few are better described as lentoid and may originally have been short bicones (Beck's class B.2.e).

The 27 beads of inv. no.100 are listed in Table 2 with their dimensions and the results of our spectroscopic analyses; partial spectra are shown in Figure 1. Computer classification assigns a Baltic origin to four of the seven beads which were analyzed. The other three samples (spectra 819, 820 and 821) were so badly deteriorated that the computer was unable to classify two of them. The computer assignment of walchowite for the third sample must be accepted with the same strictures we set forth above for spectrum 961 in Table 1: nothing in the spectrum excludes the possibility that the sample is in fact badly weathered Baltic amber.

Under inv. no.101 there is first a string of 20 beads, the largest of which near the center has a diameter of 0.024m and a thickness of 0.010m. The size of the other beads diminishes towards both ends of the 'necklace' to a minimum diameter of 0.003m and a minimum thickness of 0.004m. Inv. no.101 also includes a box of 11 fragments of beads, the largest of which originally measured 0.024m in diameter with a thickness of 0.015m.

All the groups of beads and fragments under inv. nos.100 and 101 are labelled as having been found by Schliemann in Shaft Grave III. We find thus in the Athens Museum more beads from this grave than

[27] Karo's illustration of 20 amber beads with inv. no.101 on his pl.xxv cannot serve to identify them, but the largest bead shown there has a maximum diameter of 0.032m.

TABLE 2. AMBER BEADS FROM SHAFT GRAVE III: INVENTORY NO.100

Designation	*Maximum Dimensions (mm)*		*Spectrum Number*	*Extraneous Absorption (μ)*	*Computer Classification*
	Diameter	*Thickness*			
1	11	6			
2	10	6			
3	12	8	818	none	Baltic
4	13	7			
5	15	9			
6	14	7			not
7	17	11	819	7.25; 7.8	identifiable
8	17	13			
9	19	11			not
10	20	13	820	7.25; 7.8	identifiable
11	22	14			
12	26	15			wal-
13	29	18	821	7.8	chowite?
14	36	22			
15	31	18			
16	28	12			
17	23	15	822	7.25; 7.8	Baltic
18	22	12			
19	18	13			
20	19	11	824	7.25; 7.8	Baltic
21	18	9			
22	15	8			
23	15	8			
24	14	7			
25	12	7	823	7.25; 7.8	Baltic
26	11	5			
27	10	6			

Karo lists, but far short of the "enormous quantities" which Schliemann reported. The fragments agree well with Karo's entry "fragments of 6–8 others," and these, at least, seem certain to belong to Shaft Grave III.

The 20 strung beads are listed with their dimensions in Table 3. The fragments are listed in Table 4; those designated A to H are complete enough to ascertain their original dimensions, which are given; those designated a to d are too small to allow any useful measurements.

TABLE 3. AMBER BEADS FROM SHAFT GRAVE III: INVENTORY NO.101

Designation	*Maximum Dimensions (mm)*		*Spectrum Number*	*Extraneous Absorption (μ)*	*Computer Classification*
	Diameter	*Thickness*			
1	9	5			
2	13	7			
3	10	6			
4	12	6	812	7.25; 7.8	Baltic
5	11	7			
6	14	8			
7	16	8			
8	15	10	813	7.8	Baltic
9	22	13			
10	24	10	815	none	Baltic
11	19	10			
12	15	13			
13	15	12			
14	14	9	816	none	wal-
15	15	8			chowite?
16	14	8	817	none	Baltic
17	11	4			
18	11	6			
19	10	5			
20	10	4			

Samples of five whole beads and of eleven fragments were analyzed. Partial spectra of these samples are shown in Figure 1; results are summarized in Tables 3 and 4. Computer classification assigned a Baltic origin to 15 of these 16 samples, including all of the eleven samples of fragments which are most certain to have come from Grave III. For bead 14, which the computer addressed as walchowite (spectrum 816), the same limitations apply as were set forth above for spectrum 961.

SHAFT GRAVE IV

Schliemann wrote: "At the left side of the head of the middle body of the three which lay with the heads turned to the east, I found a heap of more than 400 large and small beads of amber, of which I represent eight (fig. 355). About the same number of similar beads were found with one of the bodies the head of which lay to the north.

TABLE 4. FRAGMENTS OF AMBER BEADS FROM SHAFT GRAVE III: INVENTORY NO.101

Designation	*Maximum Dimensions (mm)*		*Spectrum Number*	*Extraneous Absorption (μ)*	*Computer Classification*
	Diameter	*Thickness*			
A	24	15	825	none	Baltic
B	17	10	826	none	Baltic
C	15	8	827	7.25; 7.8	Baltic
D	15	5	828	none	Baltic
E	16	9	829	none	Baltic
F	18	8	830	7.8	Baltic
G	14	8	831	7.8	Baltic
H	13	9			
a			832	none	Baltic
b			833	7.25; 7.8	Baltic
c			835	7.25; 7.8	Baltic
d			834	7.25; 7.8	Baltic

All these amber beads had, no doubt, been strung on thread in the form of necklaces, and their presence in the tombs among such large treasures of golden ornaments seems to prove that amber was very precious . . ."[28]

The illustration which accompanies these words shows seven, not eight, amber beads in actual size; their diameters range from 0.006 to 0.042m. It is this plate which Schuchhardt (wrongly, we believe) reproduced to illustrate amber from Grave III (*vide supra*). In his section on Grave IV, Schuchhardt mentions only that "the countless amber beads found in this grave were certainly worn by women."[29]

Tsountas and Manatt seem to use Schliemann's numbers when they report "800 amber beads varying from the size of a pea to the size of a silver dollar";[30] a U.S. silver dollar measures 1.5 U.S. inches or 0.039m.

Karo lists under National Museum inv. no.513 "a vast quantity of round [amber] beads of very different sizes, according to the inventory [there are] 1290. Most common are very small beads ([diameter] 0.5–1[cm]) and small ones ([diameter] 1.1–2[cm]), almost all of them discshaped with rounded surfaces, very rarely spherical, with small threading holes. Much less common are larger beads ([diameter]

[28] Schliemann, *op.cit.* (*supra* n.1) 245. The German ed. (p.283) has "sieben".

[29] Schuchhardt, *op.cit.* (*supra* n.19) 219; but *cf. infra* n.33.

[30] Tsountas and Manatt, *op.cit.* (*supra* n.20) 90.

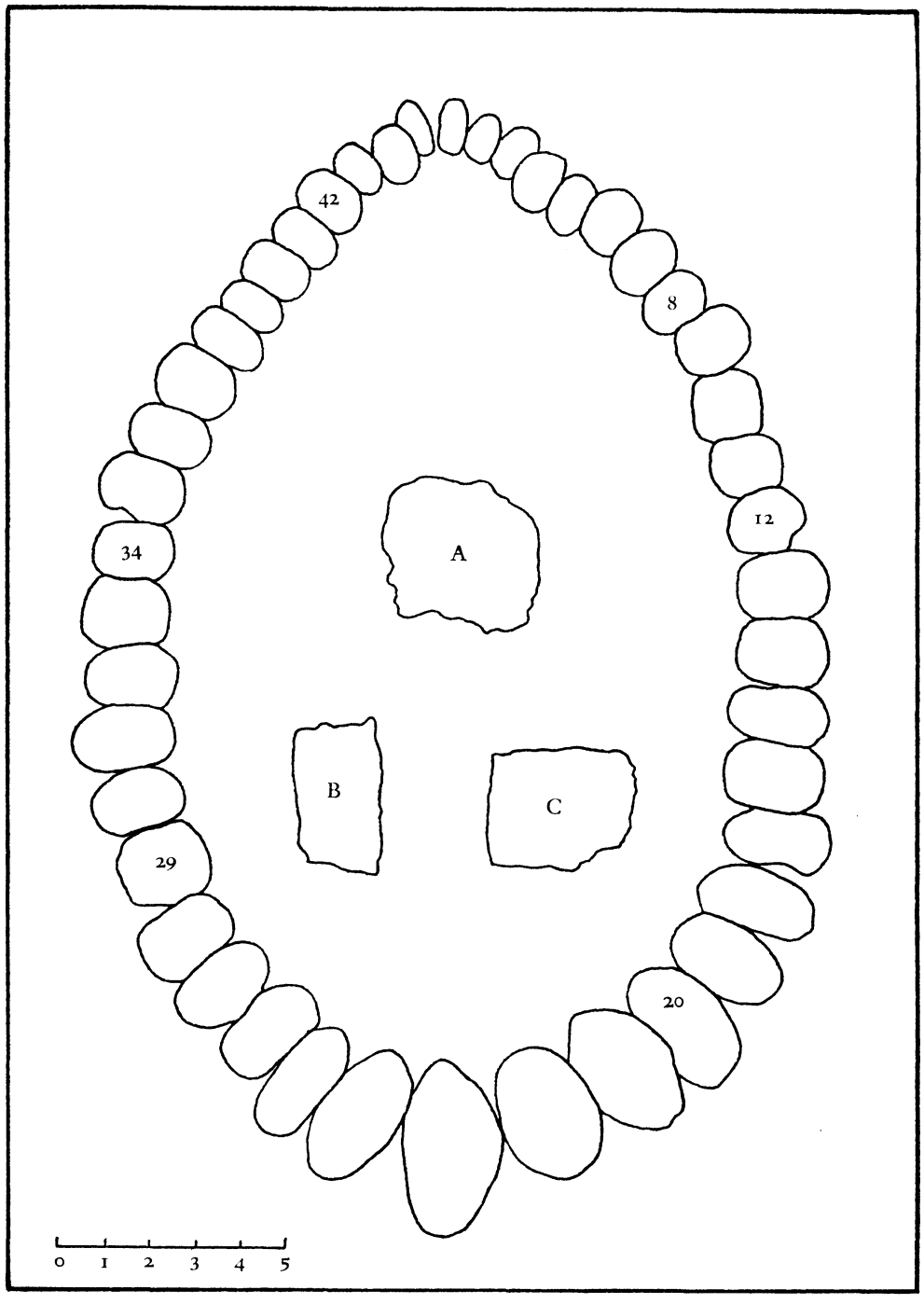

Figure 2. Amber Beads and Spacers from Shaft Grave IV, Grave Circle A, Mycenae

2.1–3[cm]), and of the largest there is only about a dozen ([diameter] 3.1–3.5[cm]): the very largest ([diameter]4[cm]) and one somewhat smaller have a biconvex form with a rather sharp edge. Further [there are] remains of 4–5 flat, rectangular plates of amber (length about 4[cm]; width 2.8[cm]; thickness 0.65–0.75[cm]), with 5 threading holes through their entire length, evidently to hold together five strands of small beads."[31]

Some of the amber finds from Shaft Grave IV are on exhibition in the Mycenaean Room in the National Museum of Athens. Mounted on one board are 45 strung beads and three spacers (Fig. 2). These beads are numbered in Table 5 from 1 to 45 clockwise as mounted and their dimensions are given; the center bead (no.23) is without doubt the "very largest" bead of Karo with a maximum diameter of 0.040m and of sharply edged lentoid form. The three fragmentary spacers are listed in Table 5 as A, B and C; their dimensions agree only vaguely with those given by Karo.

Mounted on a second board are 179 smaller beads ranging in size from a diameter of 0.005m with a thickness of 0.002m to a diameter of 0.014m with a thickness of 0.008m. No samples were taken from these small beads and they are not listed in Table 5.

TABLE 5. AMBER BEADS, SPACERS AND FRAGMENTS FROM SHAFT GRAVE IV INVENTORY NOS.513 AND 513A

Designation	*Maximum Dimensions (mm)*		*Spectrum Number*	*Extraneous Absorption (μ)*	*Computer Classification*
	Diameter	*Thickness*			
1	12	8			
2	12	8			
3	13	8			
4	16	9			
5	15	8			
6	16	11			
7	17	12			
8	17	11	870	none	Baltic
9	18	15			
10	16	15			
11	18	15			
12	19	14	871	none	Baltic
13	21	15			

[31] Karo, *op.cit.* (*supra* n.14) 110 and pl. LVII.

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The printers very much regret having made an unfortunate error in identification which has resulted in printing the wrong diagrams on pages 369, 372, 376 and 381 of the article by Professor Beck and his associates. These errors have now been corrected, and your replacement copy is enclosed herewith. Please destroy your original copy.

TABLE 5—*continued*

Designation	*Maximum Dimensions (mm)*			*Spectrum Number*	*Extraneous Absorption (μ)*	*Computer Classification*
	Diameter		*Thickness*			
14	21		16			
15	23		13			
16	24		15			
17	24		15			
18	28		13			
19	27		15			
20	31		16	872	none	Baltic
21	32		20			
22	31		21			
23	40		21			
24	32		15			
25	30		13			
26	25		15			
27	25		13			
28	23		15			
29	21		17	873	none	Baltic
30	21		13			
31	23		15			
32	20		14			
33	20		17			
34	19		13	874	none	Baltic
35	20		15			
36	18		13			
37	19		15			
38	19		10			
39	16		9			
40	16		11			
41	16		10			
42	16		11	875	7.25; 7.8	Baltic
43	13		9			
44	14		10			
45	14		7			
	Length	*Width*	*Thickness*			
A	36	36	8	901	7.25; 7.8	wal-chowite?
B	36	20	7	902	7.25; 7.8	Baltic
C	28	34	7	903	7.25; 7.8	schraufite?
CRUMBS				878	none	Baltic

In the storerooms of the National Museum there are two boxes with inventory numbers 513 and 513A containing by a rough count about 830 whole beads and a large number of recognizable fragments of beads and spacers as well as many unidentifiable crumbs. An average sample of the latter was taken and is listed at the end of Table 5.

Of the ten samples from Grave IV, eight gave spectra which the computer classified as those of Baltic amber; partial spectra are shown in Figure 3. The two exceptions are the samples from spacer fragments

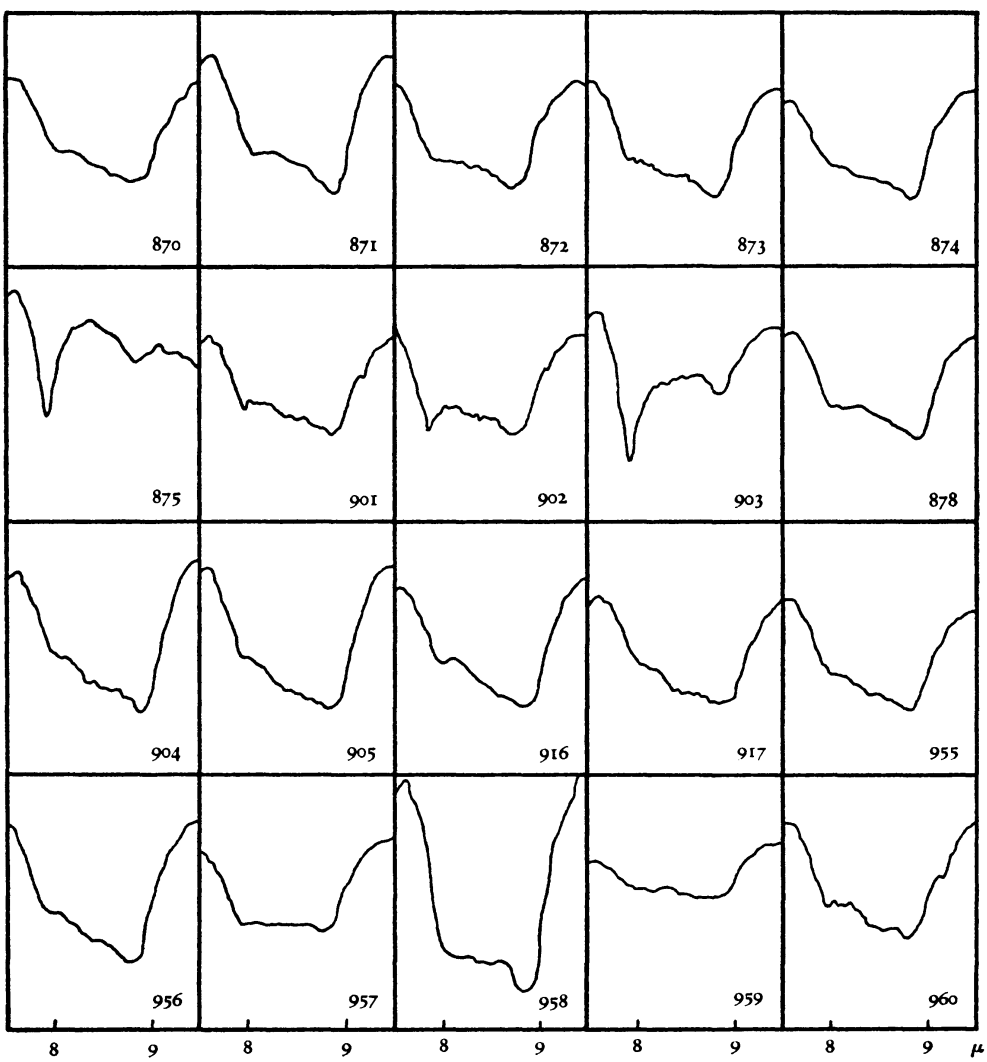

Figure 3. PARTIAL INFRARED SPECTRA OF AMBER, MYCENAE, SHAFT GRAVE IV, GRAVE CIRCLE A, AND CHAMBER TOMB 79

A and C which have received extensive conservation treatment and which show correspondingly strong extraneous absorption bands. The computer classification walchowite for spacer A (spectrum 901) and schraufite (a resin native to Austria) for spacer C (spectrum 903) may therefore well be the result of contamination and deterioration and should not be taken at face value.

Shaft Grave V

This is Schliemann's 'first sepulchre' and in it he found "with the body at the southern end a large quantity of amber beads."[32] Schuchhardt notes that this is, like all the interments in Grave V, a man's burial and that hence both men and women wore amber,[33] but he gives no further information about the beads. In her Appendix II, Eugenie Sellers, Schuchhardt's translator, lists amber beads among the objects on exhibit at that time in Case A of the First Vase-Room at the British Museum which, according to her index entry, came from Grave V.[34] Tsountas and Manatt make no mention of amber from Grave V, but Karo lists under inv. nos.757–59: "Amber Beads. Spherical and flattened spherical forms, from very small (diameter 0.5–0.6[cm]) to small (diameter 1–2[cm]) and medium-sized (diameter 2–3 [cm]). About 100 whole or nearly whole beads; many fragments. Among them is a very defective rectangular spacer. Length 3.3[cm]; width 1.8[cm]; thickness 1[cm]."[35]

None of these is illustrated in Karo's work. They are exhibited in the Mycenaean Room of the National Museum in Athens under inv. nos.758 and 759, but we have not analyzed them.

Shaft Grave VI

No amber has been found in this grave.

The Tholoi

Being all too noticeable, the tholos tombs at Mycenae have attracted grave robbers since antiquity, so that few finds awaited the archaeologist. Wace's thorough re-investigations, however, have yielded three isolated finds.

[32] Schliemann, *op.cit.* (*supra* n.1) 308.
[33] Schuchhardt, *op.cit.* (*supra* n.19) 258.
[34] E. Sellers in Schuchhardt, *op.cit.* (*supra* n.19) 352–53.
[35] Karo, *op.cit.* (*supra* n.14) 137.

In the Epano Phournos tholos he found "in the front or southern portion of the doorway . . . a few small ornaments which probably belonged to the tomb . . . [among] these were . . . a flat and round amber bead (0.02m in diameter and 0.01m high)";[36] and again "Amber bead. [Athens] Mus. No.5577. D.0.038m. Found . . . in a pocket of earth filling a hollow on the under side of one of the fallen jamb stones."[37] The tomb of Aegisthus yielded "in the Mycenaean layer on the floor . . . in the western sector . . . an amber bead, shaped like a flattened cone on both sides, diameter 0.015m."[38]

Both tholoi belong to the oldest group, dated to 1510–1460 B.C.[39] and ought to be analyzed; unfortunately we have not yet been able to take samples.

Wace further inferred[40] the possible presence of amber from the gaps between the amethyst beads strung on copper or bronze wire which Mrs Schliemann had found in 1876 in the Tomb of Clytemnestra.[41]

The Chamber Tombs

Chamber Tomb 24

Tsountas reported "ten pebbles (ψῆφοι) of amber" in this tomb.[42] We have not seen them.

Chamber Tomb 79

From this tomb, excavated by Tsountas,[43] twelve biconical amber beads are exhibited in the Mycenaean Room of the National Museum. The largest has a diameter of *ca.* 0.035m. All appear to have received conservation treatment. In the storeroom there are eleven fragments of beads under inv. no.3097. Ten of them are listed in Table 6 with their preserved dimensions. Computer classification identified eight

[36] A. J. B. Wace, "Excavations at Mycenae. IX. The Tholos Tombs," *BSA* 25 (1921–1923) 294.

[37] A. J. B. Wace and M. S. F. Hood, *BSA* 48 (1953) 79.

[38] Wace, *op.cit.* (*supra* n.36) 304.

[39] A. J. B. Wace, *Mycenae* (Princeton 1949) 14.

[40] Wace, *op.cit.* (*supra* n.36) 363–64.

[41] Schliemann, *op.cit* (*supra* n.1) 120–21.

[42] C. Tsountas, *ArchEph* 1888, 143.

[43] C. Tsountas, *ArchEph* 1897, 97ff, describes swords and hilts from tombs 53 and up, but the amber beads are not mentioned in this or any other of Tsountas' papers which we have seen.

TABLE 6. AMBER FROM THE CHAMBER TOMBS

Tomb Number	*Inventory Number and Designation*	*Maximum Dimensions (mm)*		*Spectrum Number*	*Extraneous Absorption (μ)*	*Computer Classification*
		Diameter	*Thickness*			
79	3097 A	20	11	904	none	Baltic
	B	22	12	905	none	Baltic
	C	14	13	916	7.8	Baltic
	D	15	9	917	none	Baltic
	E	15	14	955	none	Baltic
	F	16	5	956	none	Baltic
	G	13	12	957	none	unidentifiable
	H	11	7	958	none	Baltic
	I	12	8	959	none	unidentifiable
	K	11	3	960	7.8	Baltic
86	3152	22		865	7.8	Baltic
518	6433 SEAL	(*Cf. infra* nn.50 and 51)		811	none	Baltic
	–3	12	8	836	7.8	Baltic
	–6	14	5	837	none	Baltic
	–17	16	6	838	7.8	Baltic
	–22	19	9	839	7.25: 7.8	Baltic
	–37	18	9	840	7.25; 7.8	Baltic
	–41	24	9	841	none	Baltic
	–45	31	9	842	none	Baltic
	–49	46	9	843	7.25; 7.8	Baltic
	–51	30	16	844	7.25; 7.8	Baltic
	–57	23	13	845	none	Baltic
	–69	19	9	846	none	Baltic
	–81	16	8	847	none	Baltic
	–85	16	5	848	none	Baltic
	–a			849	none	Baltic
	–b			850	none	Baltic
	–c			856	7.25; 7.8	Baltic
	–d			857	none	Baltic
	–e			858	none	Baltic
526	6494	13	11.5	861	7.25; 7.8	Baltic
529	6523–4	15	8	862	7.25; 7.8	Baltic
	–5	15	4.5	863	none	Baltic
	–6	15	7.5	864	none	Baltic

of these fragments as being of Baltic amber; two were unidentifiable, apparently because of extensive weathering. Partial spectra are shown in Figure 3.

CHAMBER TOMB 86

From Tsountas' excavation[44] of this tomb there is in the National Museum under inv. no.3152, along with a small hemispherical gold ornament, an unidentified lead object and some lead wire, a single biconical amber bead which was broken into two nearly equal parts

[44] C. Tsountas, *Praktika* (1895) 24–25, lists finds from these tombs but does not mention amber, which seems to be included among "*καὶ ἄλλα οὐχὶ ὀλίγα.*"

and has been glued together again. Its present maximum diameter is 0.022m.

The bead is listed in Table 6; a partial spectrum is shown in Figure 4, spectrum 865. It is of Baltic amber.

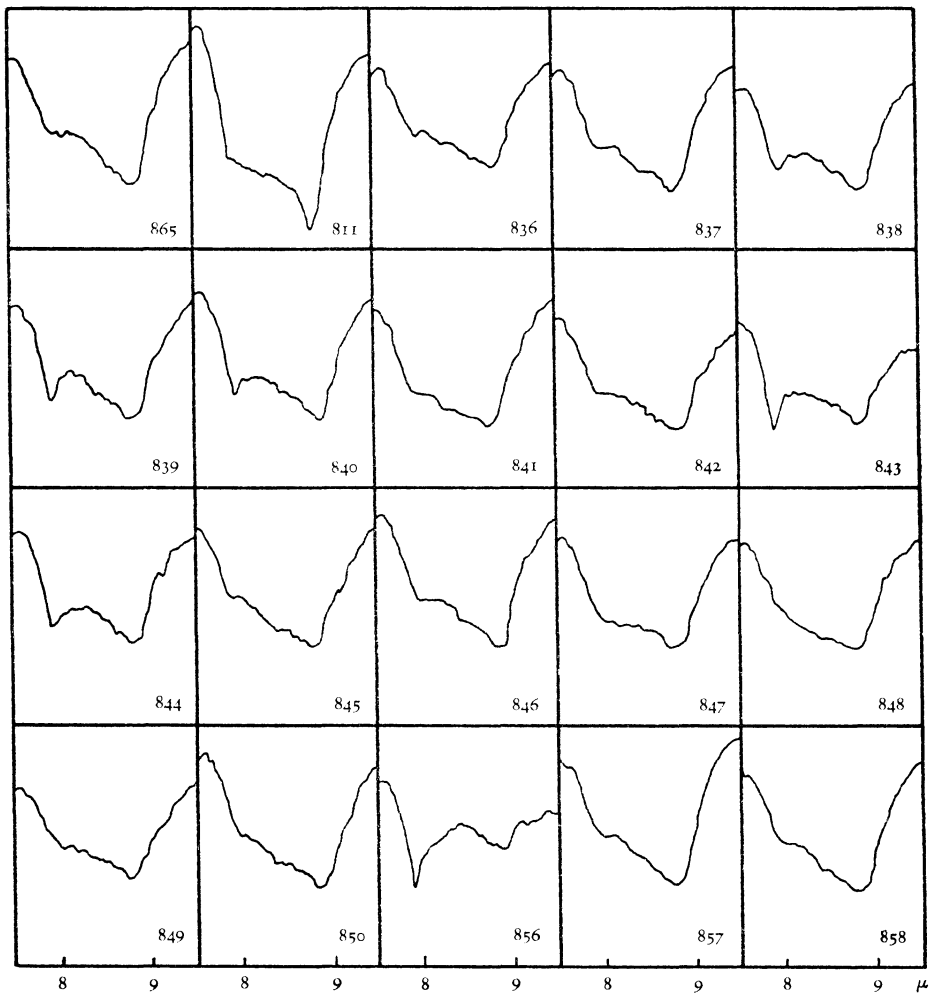

Figure 4. PARTIAL INFRARED SPECTRA OF AMBER, MYCENAE, CHAMBER TOMBS 86 AND 518

CHAMBER TOMB 515

Wace reported: "*From the Dromos.* Amber beads, twenty-two and several fragments, pl.XXIX: d.0.01m.–0.02m.; various shapes, conoid, discoid, spheroid, but none is particularly large. L.H. II."[45] "*From the Chamber.* Amber bead, spheroid: d.0.018m."[46] "*From the Pit in the Chamber.* Amber beads, two: d.0.02m.; damaged."[47]

[45] Wace, *op.cit.* (*supra* n.2) 58. [46] Wace, *op.cit.* (*supra* n.2) 61. [47] Wace, *op.cit.* (*supra* n.2) 62.

His Plate XXIX shows twelve badly corroded and broken beads. We have not seen any of the amber from this tomb.

CHAMBER TOMB 517

Wace reported: "*Found with skeleton no.* XI *in the Chamber* . . . Amber beads, irregular, three, and one fragment, pl.XXXVI: l.0.009m.–0.013m.; rather decayed."[48]

His Plate XXXVI clearly shows the extensive corrosion and refers the beads to L.H. III. We have not seen the beads themselves, but judging from the illustration their irregular shape is the original shape and hence intentional. They might be prototypes of the more elaborate irregular or bone-shaped beads which are characteristic of the Late Mycenaean amber finds.[49]

CHAMBER TOMB 518

Wace reported: "Amber beads; *a*, amygdaloid, one, fig. 33, l.0.03m., on obverse an intaglio design of a bull, on reverse horizontal markings imitating almond; *b*, spherical, one, d.0.011m., with ribs and fine incised lines; *c*, discoid and spheroid, about a hundred and twenty and several fragments, fig. 34, the sizes range from 0.045m. in diameter to less than 0.01m. *Chamber.* L.H. I–II."[50]

The amygdaloid amber seal is also described and illustrated in *CMS* I,[51] where its diameters are given as 0.016m and 0.022m. We were able to take an extremely small sample (0.5mg) of this almost unique object[52] (Athens Museum inv. no.6433) and found it to be of Baltic amber (Table 6 and Fig.4, spectrum 811).

A string of beads from Chamber Tomb 518 is mounted on a board exhibited in the Mycenaean Room of the Athens National Museum, Figure 5. These beads also carry the inv. no.6433. We have designated them by numbers in a clockwise direction as mounted and sampled 13 of them. These, with their numbers, dimensions and the results of the spectroscopic analyses, are listed in Table 6; partial spectra are shown in Figure 4.

[48] Wace, *op.cit.* (*supra* n.2) 74.

[49] Beck *et al.*, *op.cit.* (*supra* n.16) 15–16.

[50] Wace, *op.cit.* (*supra* n.2) 86.

[51] A. Sakellariou, *Corpus der Minoischen und Mykenischen Siegel*, ed. F. Matz and H. Biesantz I: *Athen* (Berlin 1964) 173, no.154.

[52] Wace, *op.cit* (*supra* n.2) 197, can cite only one parallel: the amber seal from Kalyvia-Pellanes (T. Karachalios, *ArchDelt* 10 [1926] §43); we know of no others.

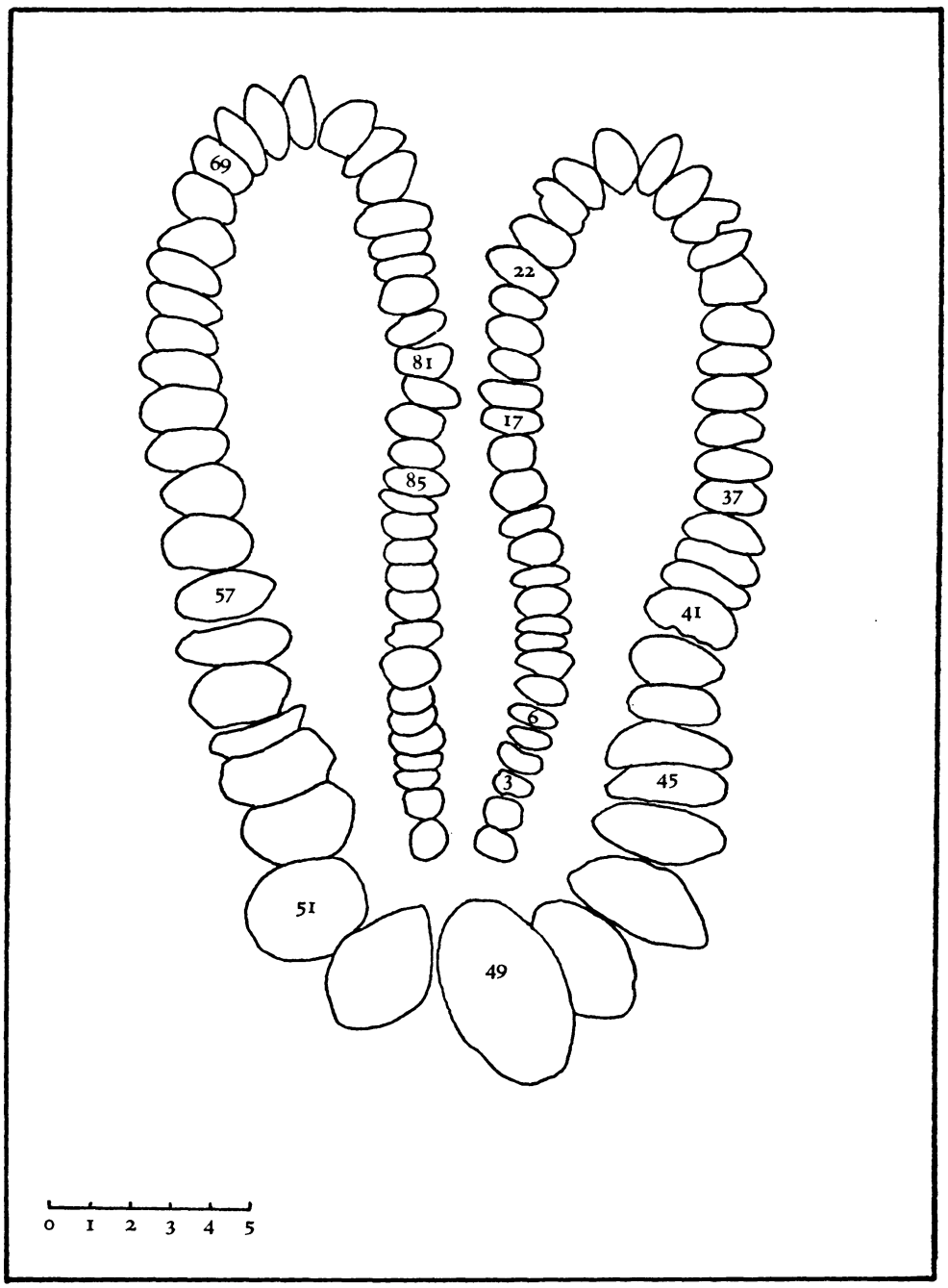

Figure 5. AMBER BEADS FROM CHAMBER TOMB 518, MYCENAE

Fragments of amber beads from this tomb, still under inv. no.6433, are kept in the Museum storerooms. We have taken five samples of these, designated a to e, which are also listed in Table 6; partial spectra are shown in Figure 4.

In spite of contamination of some of them, all 18 samples of beads and fragments from Tomb 518 were found to be of Baltic amber.

Chamber Tomb 526

Wace reported: "Amber beads, three, pl.IX, two spherical: d. 0.014m.; one oval, l.0.0165m."[53]

We have found only one spherical amber bead from this tomb in the Athens Museum. It was strung together with three glass beads and a bead which Wace described as "lantern-shaped, hollow, blue faience,"[54] all under inv. no.6469. It is listed in Table 6; in spite of heavy contamination it was recognizable as having been made of Baltic amber. A partial spectrum is shown in Figure 7, spectrum 861.

Chamber Tomb 529

Wace reported: "Amber beads, thirty whole and about ten fragmentary, mostly discoid: d.0.013m. to 0.025m. L.H. I–II."[55]

On a board in the Mycenaean Room of the National Museum in Athens, 25 of these beads are strung together for exhibition under inv. no.6523 (Fig.6). Three of them (nos. 4, 5 and 6) were sampled. The results of the analyses are listed in Table 6; partial spectra are shown in Figure 7. The computer classified all three spectra as those of Baltic amber.

Chamber Tombs, Summary

As shown in Table 6, 32 of the 34 samples of amber from the chamber tombs of Mycenae have been identified as Baltic amber; two were unidentifiable because of extensive weathering. These samples span a considerable period of time. Wace notes that in the chamber tombs on the southern slope of Kalkani Hill amber beads "were common in L.H. I and II tombs like Tomb 515, Tomb 518, and Tomb 529, but they also occurred in small quantities in a few tombs of L.H. III date and these are tombs which seem on the whole to belong to the earlier

[53] Wace, *op.cit.* (*supra* n.2) 93.
[54] Wace, *op.cit.* (*supra* n.2) 94.
[55] Wace, *op.cit.* (*supra* n.2) 105.

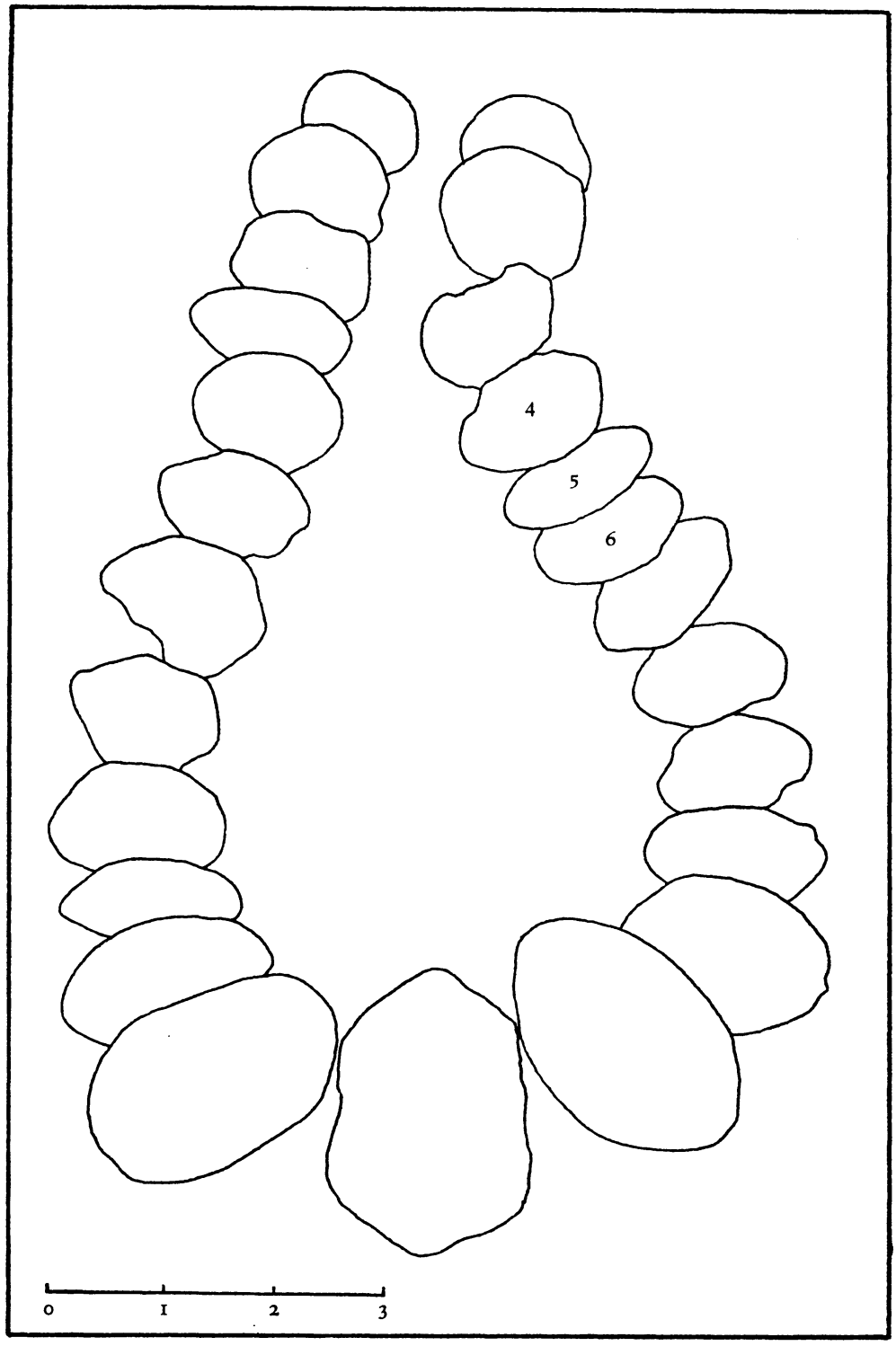

Figure 6. AMBER BEADS FROM CHAMBER TOMB 529, MYCENAE

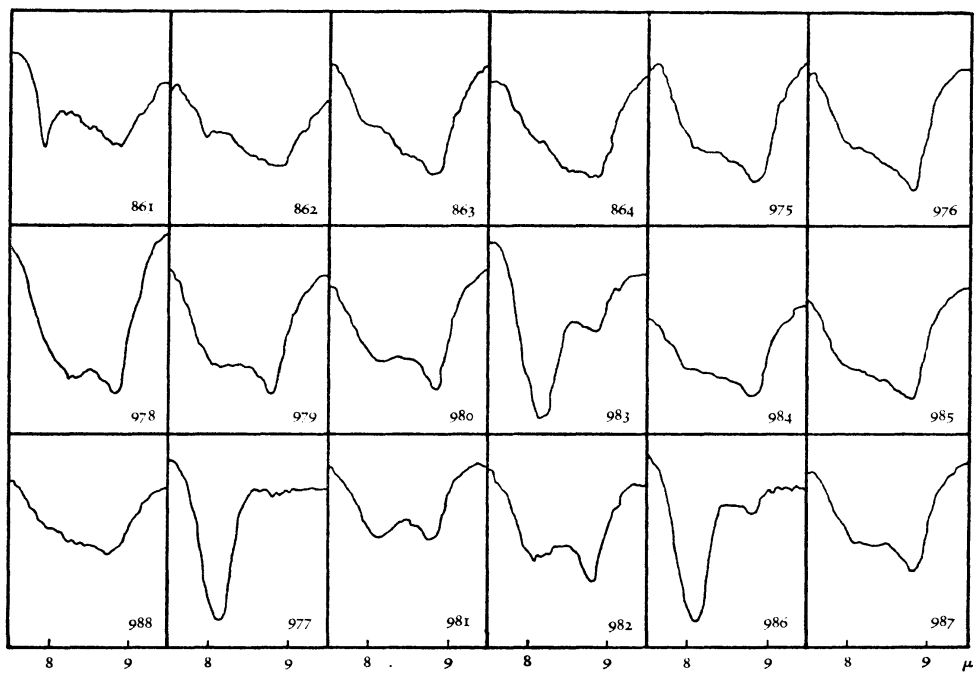

Figure 7. PARTIAL INFRARED SPECTRA OF AMBER, MYCENAE, CHAMBER TOMBS 526 AND 529 AND SHAFT GRAVE OMICRON, GRAVE CIRCLE B

stages of that period. To L.H. I or II can be assigned the following: Tomb 515 . . . in all twenty-five beads, Tomb 518 . . . about a hundred and twenty-two including the engraved amygdaloid bead . . ., Tomb 529 . . . about forty beads. To L.H. III belong three and a fragment from Tomb 517 . . . and three from Tomb 526."[56]

Grave Circle B

The last major discovery at Mycenae was that of a second grave circle which overlaps the Tomb of Clytemnestra[57] and which dates to the beginning of the sixteenth century B.C. The large necklace of amber beads and spacers with complex borings found in Grave Omicron of this circle is the oldest amber find at Mycenae.

Mounted on a board in the Mycenaean Room of the National Museum in Athens are 119 beads and three spacers (see Fig.8), all under

TABLE 7. AMBER FROM SHAFT GRAVE OMICRON, GRAVE CIRCLE B, INVENTORY NO.8657

Designation	*Maximum Dimensions (mm)*		*Spectrum Number*	*Extraneous Absorption (μ)*	*Computer Classification*
BEADS	*Diameter*	*Thickness*			
33	13	7	975	none	Baltic
40	13	7.5	976	none	Baltic
46	14	8.5	978	7.8	simetite? schraufite?
47	14	7.5	979	none	Baltic
54	15	10	980	none	Baltic
63	22	11	983	7.8	schraufite?
65	18	11	984	none	Baltic
72	16	10	985	none	Baltic
97	11	5	988	none	Baltic
SPACERS	*Length*	*Width*	*Thickness*		
41	44	28	8	977	7.8	simetite?
62	48	29	10	981	7.25; 7.8	Baltic
62A				982	7.8	Baltic
83	49	27	9	986	7.8	simetite?
83A				987	none	Baltic

[56] Wace, *op.cit.* (*supra* n.2) 204.
[57] J. Papadimitriou, *Praktika* 1952, 427ff; *ibid.* 1953, 236.

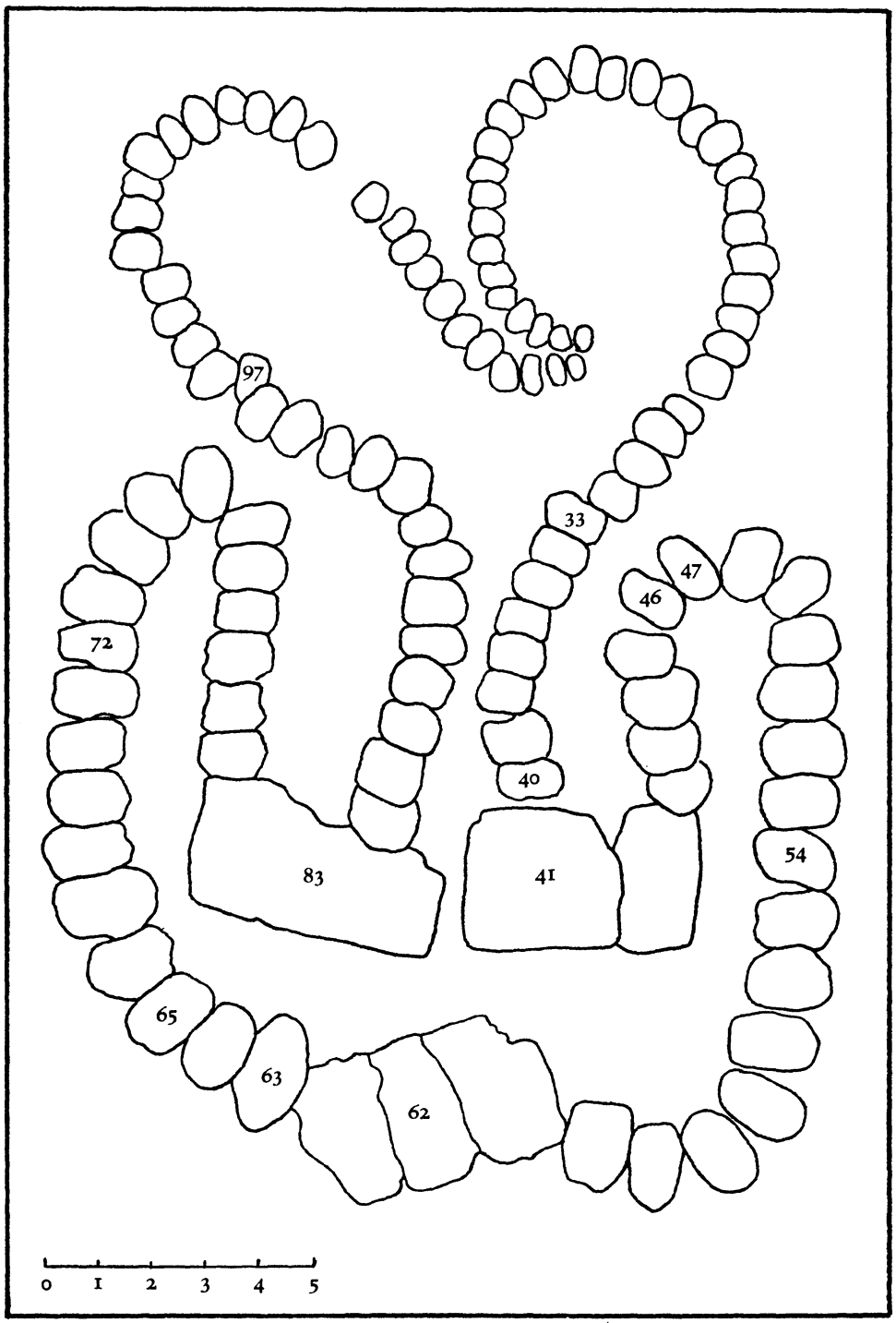

Figure 8. AMBER BEADS AND SPACERS FROM SHAFT GRAVE OMICRON, GRAVE CIRCLE B, MYCENAE

inv.no.8657. The beadsare spheroids with the exception of the largest, no.63, which is biconical. Two of the spacers have been mended, and all beads and spacers seem to have had conservation treatment. All but two pieces are covered with a thick layer of weathered amber; only beads no.40 and no.97 show a clean, firm surface.

The dimensions and analyses of nine beads and the three spacers are listed in Table 7; partial spectra are shown in Figure.7. Seven of the nine beads gave spectra which the computer classified as Baltic; the other two (bead no.46, spectrum 978, and bead no.63, spectrum 983) show evidence of contamination which is quite extreme in the latter case, so that the computer classification "simetite?" or "schraufite?" cannot be given much weight. The single sample of spacer no.41 was found by microscopic examination to be heavily contaminated, and its spectrum (977) confirms this. Two separate samples taken from spacer no.62 appeared to be clean; the spectra of both samples do show some contamination, but both samples were classified as Baltic. Of two separate samples taken from spacer no.83, the first is of the heavily contaminated weathering crust; this gave a poor spectrum (986) which the computer unreliably addressed as 'simetite'. The second sample, no.83A, of the uncontaminated interior accessible at a broken surface gave a nearly perfect spectrum of well-preserved Baltic amber.

TABLE 8. SUMMARY OF AMBER ANALYSES, MYCENAE

Inventory Number	*Findspot*	*Number of Samples*	*Baltic*	*Possibly Non-Baltic*
	Grave Circle A			
208	Shaft Grave I	2	1	1
100	Shaft Grave III	7	4	3
101	Shaft Grave III	16	15	1
513	Shaft Grave IV	10	8	2
	Chamber Tombs			
3097	Tomb 79	10	8	2
3152	Tomb 86	1	1	0
6433	Tomb 518	19	19	0
6494	Tomb 526	1	1	0
6523	Tomb 529	3	3	0
	Grave Circle B			
8657	Grave Omicron	14	10	4
Totals		83	70	13

Summary

Of 83 samples of amber from the shaft graves and chamber tombs of Mycenae, 70 have been shown to be of Baltic amber (Table 8). All of the 13 samples not recognizable as Baltic amber have suffered severe deterioration by weathering or extensive contamination by conservation treatment. None of them can be identified as non-Baltic amber varieties with any certainty.

This establishes the presence of Baltic amber at Mycenae for the periods L.H. I to L.H. IIIA2.

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