tions of the Mausoleum (12), deposits of sherds of coarse pottery were found at the bottom of the gallery. Sherds (both of coarse local manufacture and of Attic black-glazed stamped ware) were also discovered in a vertical cutting in one of the lowest steps of the s staircase (11). The latter strata, ca. 1 cm. deep, can be traced N under the s wall of the built gallery, where they formed a sealed deposit. This is of considerable chronological interest, since no stratigraphical observations were reported by Newton.

A great many marble fragments of architecture and sculpture were also found, of which the following are particularly worth mentioning:

1. Ca. 200 fragments of the three well-known sculptured frizes of the Mausoleum, mostly from the Amazon frize.

2. Ca. 250 fragments of sculptures in the round.

3. Ca. 1,200 fragments of architectural ornament, cut separately for insertion into ledges at the top of the principal architectural members. This material will no doubt settle the question of whether the ceiling coffers were composed of three or four courses of blocks.

4. Ca. 250 fragments of dark (bluish) limestone, among them a number of ashlars tooled in "courses" on the back, like the blocks of the Amazon frize and the ashlars of white marble that were used to revet the podium of the Mausoleum. To this group also belong many fragments of a molded stringcourse bearing on its top cuttings for the plinths of sculptures in the round, which were presumably arranged around the foot of the podium. We also identified several fragments of quadrangular plinths for the column bases, overlooked by Newton, possibly because he took it for granted that these members, like the rest of the columns, must have been made of white marble instead of dark stone.

5. Fragments of the member, hitherto missing, between the dentils and the cornice.

6. Ca. 30 almost intact column drums.

7. Fragments of a course which seems to have crowned the Amazon frize and to have formed the base for the stylobate of the pteron.

8. Ca. 600 architectural fragments not yet identified.

9. Several pyramidal steps, one of them bearing a cutting for the plinth of a sculpture (lion figure?) like the block published in Paradeigmata 25, fig. 13 A.

Among important discoveries in Bodrum must also be mentioned a complete architrave beam that was reused in the Castle of St. Peter as a lintel above the principal entrance (pl. 64, fig. 3). Anyone passing beneath it would assume that it was broken, but upon examination both ends were found to be intact. It must have originally been placed on top of the cella of the Mausoleum. When combined with the crossbeams on which it abutted (cf. Newton, pl. xxvii, 1-4) it allows us to calculate the interaxial spacing of the pteron columns: it was almost precisely 300 cm., i.e. ca. 15 cm. shorter than the spacing on which Fritz Kriehen based his theoretical reconstruction of the Mausoleum.

Geoffrey B. Waywell, University of London, is preparing a full catalogue of fragments of sculptures in the round in the British Museum, and he will also publish the material recently found in Bodrum. The architectural fragments in the British Museum will be studied by the Danish expedition in connection with the publication of finds from Bodrum.

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THE VAPHEIO GEMS:
A RECONSIDERATION OF THE FIND-SPOITS*

Several years ago a small controversy began over the Vapheio gems. The discussion mainly concerned the stylistic grouping of the seals and their attribution to Minoan or Mycenaean masters. The argument also touched upon the number and placement of the seals found in both chamber and cist, but these latter problems were not resolved; perhaps this short note will help to clarify them.

John Betts believed that Agnes Sakellariou had correctly determined that there were thirty seals and an engraved bronze ring from the cist (CMS I, 252). Dr. V. E. G. Kenna, however, seemed to believe that only twenty-three or twenty-four seals came from the cist.

Tsountas reported the finds from the Vapheio tholos extremely well. His description of proveniences is almost always clear and concise; only when he discussed the cist is his information not as complete as we might wish.

The excavator described the find-spots of the seals from the chamber in a clockwise direction, beginning just inside and to the left of the stonion. The seals were found in three major groups and were described as follows: (col. 143) inside and to the left of the entrance came four seals (Tsountas pl. 101:4 = CMS I 229, 243, 250, 259) and a piece of a fifth. Near the western wall (col. 144), the wall across from the stonion, were found three seals (Tsountas pl. 105:8 = CMS I 228, 233, 248) and a fourth (very much destroyed, possibly by fire, and not included in his plate) and a scarab without engraving (unfortunately still un-

* I wish to express my gratitude to Agnes Xenaki-Sakellariou, who was kind enough to read this paper and concur with its findings.

published); two meters to the right of these seals was found another seal (Tsountas pl. 10:12 = CMS I 226). From the area between the northwest corner of the cist and the chamber wall came one more (Tsountas pl. 10:11 = CMS I 239); a little to the east were found two other seals (Tsountas pl. 10:9 and 10 = CMS I 240 and 241) and two rings, one engraved (Tsountas pl. 7:9 and pl. 10:39 = CMS I 219). This catalogue totals twelve seals, one fragment, and one engraved ring, of which Tsountas illustrated all but the one damaged seal and the fragment.

The Corpus definitely attributed only the illustrated seals (eleven) and ring to the chamber (p. 252), thus implying that the remainder illustrated in CMS I, numbering thirty seals and one ring, are from the cist.

After listing the finds from the chamber, Tsountas next described the locations of seals from the cist, but unfortunately did not say which figures in his pl. 10 corresponded to which seals; nor does an analysis of the National Museum inventory numbers help in identification since Tsountas inventoried the gems by the shape of the stone and not by provenience.7

The proveniences of the seals from the cist are as follows: (col. 146) at the place where the throat and chest of the deceased would have been (i.e., toward the western end) were discovered two seals associated with a double-strand necklace of about eighty amethyst beads. Near the presumed right hand came a mound of seals and (col. 147) near the left another mound. Between the two mounds were discovered “two or three” seals; a damaged iron ring, a gold ring (Tsountas pl. 7:8), and a bronze ring with an engraved steatite bezel (Tsountas pl. 10:40 = CMS I 253) probably came from the area of the left hand. Finally, after the cleaning of the cist one seal was found in the earth. Tsountas stated (col. 148) that the seals in the two mounds totaled twenty-four, if the last seal found was included, and originally formed two bracelets.

The seals from the cist, therefore, total twenty-eight or twenty-nine plus the one engraved bronze ring. Kenna8 appears to have misread Tsountas when he described only the twenty-four seals from the mounds as coming from the cist. More disturbing, however, is the fact that CMS I derived thirty seals from the cist.

Of the twenty-eight or twenty-nine seals from the cist Tsountas illustrated twenty-six (pl. 10:13-38). Presumably he did not illustrate the other two or three because, like the one seal and fragment from the chamber, they were too poorly preserved to yield a cast that could be photographed. CMS I illustrated four seals for the first time, but it included all four (not just two or three) with the seals from the cist; they are, coincidentally, poorly preserved: CMS I 247, a small fragment of a lentoid with gold fasteners; 249, a large fragment of a lentoid (about two-thirds preserved) with gold fasteners; and 255 and 256, both intact but very worn lentoids. All four seals from their shape or their gold fasteners would have been easily recognized by Tsountas, and it is therefore unlikely that he overlooked them in his report. To find proveniences for them is not difficult. CMS I 247 is probably the fragment found with the first group described from the chamber. It is possible that CMS I 249 is the one badly damaged seal also from the chamber, although this identification cannot be proved; CMS I 255 and 256 then may rightly belong to the cist.

If this hypothesis is correct then CMS I actually illustrates thirteen seals from the chamber (as Tsountas records) and twenty-eight from the cist; only CMS I’s distribution is wrong.

There remains the problem of Tsountas’ twentieth seal from the cist, the third of the “two or three” seals from the area between the hands. It is possible that Tsountas decided that the earth in which his last-mentioned seal was found actually came from the area between the two mounds. Ultimately he may have attributed the seal to one of the mounds, bringing their total up from twenty-three to the more convenient number of twenty-four. Thus he could write in The Mycenaean Age (p. 145), “at either hand lay a group of twelve engraved gems—the two heaps forming a pair of bracelets.” Another possibility, of course, is that a third seal did exist, but if so, it may have disappeared soon after its discovery thus causing Tsountas to doubt how many he had actually found; in any case it certainly disappeared before the seals were catalogued for the National Museum.

It seems likely therefore that there are extant only twenty-eight seals from the Vaphio cist, however many there were originally. From the entire tomb, then, there are forty-one seals and two engraved rings.

If all the above hypotheses are correct the distribution is as follows: thirteen seals (CMS I 226, 228, 229, 233, 239-241, 243, 247(†), 248, 249(†), 250, 259) and one engraved ring (CMS I 219) were found on the chamber floor. From the cist come twenty-eight seals (CMS I 220-225, 227, 230-232, 234-238, 242, 244-246, 251, 252, 254, 255(†), 256(†), 257, 258, 260, 261) and one engraved ring (CMS I 253).

The problem of the proveniences of the Vaphio gems is of more than pedantic interest to the archaeologist. If the fragments CMS I 247 and 249 can be relegated to the chamber then all the seals from the Vaphio cist were interred in intact condition, the normal burial practice. The two worn seals, CMS I 255 and 256, are the only ones to exhibit more than casual wear, and their similar motifs, a dog scratching himself, may indicate additional affinities. We may imagine further that they may have been buried in some significant position, perhaps as the two necklace stones, or the two seals found between the mounds.

The result of this paper, however, is more germane to a consideration of glyptic style in the Late Bronze Age. As many archaeologists and art historians have described three more seals from the cist than he illustrated, it is impossible to state with any degree of confidence which seals were found where.

7 The seals from the cist illustrated in his pl. 10 are not given in the order of their inventory numbers. Since Tsountas for the most part illustrated the seals from the chamber in the order he described them, it is just possible that he followed the same general system for the cist. But because he

8 AJA 71 (1967) 410.
realized, any discussion of this art form must take into account the deposit in the Vapheio cist. Since this material may be dated securely to LH II A and the chamber deposits may be later, it is of primary importance to determine which seals came from where. It is hoped that this paper has resolved this problem.

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Conversion Charts for Equivalents of Length Between the English-American and Metric Systems

These charts provide a pragmatic aid for quick conversion from the metric system of length measurement to the equivalent in the traditional English and American terminology of feet and inches and their customary subdivisions, and vice versa. Scholars working in areas of ancient art, especially architecture and sculpture, are often faced with the need for such equivalents. Precise conversion can be achieved by a process of multiplication (cp. "formulas" in charts below)—but this is often complex and cumbersome, and always ends up with decimal portions of feet and inches, which are unconventional and of little use. As an aid in interpreting calculations arrived at by the multiplication formulae, the tables here given include specification of what decimal part of a foot any inch is, or any standard subdivision of an inch (1/16, 1/8, 3/4, etc.).

These factors however are built into the direct-conversion tables here given—and this is their main advantage. By these tables, one can quickly estimate, at least in close approximation, the equivalent length in either direction: into or out of the metric system.

If the starting unit is one of the lead-items given in the tables, its equivalent is instantly clear from the charts and the multiplication labor is unnecessary. In other cases, one can arrive at the equivalent of a measure which is not itself listed in the charts, by addition only, without complicated multiplication and subsequent interpretation of the decimal results. Thus, to get the foot/inch value of 58.675 mt, one adds the listed equivalent of 50 mt = 8 mt = 60 cm = 7 cm + .05 cm (= 192' 6.16", approximately). Alternatively, if one has used the multiplication formula for mt into ft, the decimal portion of the resulting feet can be interpreted by means of the listed decimal value of the given number of inches and sixteenths. Examples:

1. Multiplication, by formula:

\[
\begin{align*}
58.675 \text{ mt} & \times 3.281 \quad \text{(formula)} \\
& \downarrow \\
58.675 & \quad \downarrow \\
46.940 & \quad \downarrow \\
117.350 & \quad \downarrow \\
176.025 & \\
\hline
192.512675 & \text{ ft}
\end{align*}
\]

Thus 192'512675 = 192'6.2/16+" (exact)

2. Meters to feet/inches by addition, from charts:

\[
\begin{align*}
58.675 \text{ mt} & : 50 \text{ mt} = 164'0.8/16" \\
& : 8 \text{ mt} = 26'3" \\
& : 60 \text{ cm} = 23.10/16" \\
& : 7 \text{ cm} = 2.16/16" \\
& : .05 \text{ cm} = 3/16" \\
\hline
190'28.33/16" & (33/16" = 2'1/16") \\
= 190'30.11/16" & (30" = 2'6") \\
= 192'6.16" & \text{ (approx.)}
\end{align*}
\]

[This 1/16" difference between results of the two procedures is negligible: it equals 1 less 16th in a total of 33,729 16ths]

3. Feet/inches to meters by addition, from charts:

\[
\begin{align*}
192'6.16": & \quad 100' = 30.480 \text{ mt} \\
& \quad 90' = 27.432 \text{ mt} \\
& \quad 2' = 0.6096 \text{ mt} \\
= & \quad 58.5216 \text{ mt} \\
+ & \quad 6" \quad = .1524 \text{ mt} \\
+ & \quad 1/16" \quad = .0015 \text{ mt} \\
= & \quad 58.6755 \text{ mt}
\end{align*}
\]