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Of the raw materials that Greece in the Late Bronze Age imported from Western Asia and Egypt (Fig. 2) most have received only passing attention. Gold, silver, iron; copper in the distinctive ox-hide ingots; wine and ivory; the cypress wood that facilitated the conflagration at Knossos; all these are well known, even when we are ignorant whence precisely they came. Nor do we know for precisely what they came in exchange; there are few hints. The depictions of inlaid vessels in Egyptian tomb frescoes and the plethora of small stirrup jars found throughout the countries of the East Mediterranean remind us how valued were the Aegean perfumers and chasers in precious metals and stones.

One class of objects, however, seems not to travel often from one land to another, at least in final form. Jewelry throughout its history generally appears restricted to the civilization that produces it; probably because it is so intensely personal, it seems to label an alien that wears it eccentric. So, in the Late Bronze Age, we find few scarabs or Mesopotamian cylinder seals<sup>1</sup> in Greece (Fig. 1), and less than fifteen Aegean sealstones in Egypt and the Levant.<sup>2</sup> This class of jewelry may therefore seem unenlightening for our Symposium, but while it may not be the final form that sailed the East Mediterranean, some of the raw materials from which the Aegeans engraved their gems did.

Roughly half of the 4,000 sealstones extant for the Greek Late Bronze Age are made from soft, local Aegean stones and the engraving on them is predictably uninspired; serpentine and schist for the early years in Crete (ca. 1550-1400 B.C.), and steatite for the later years on the Mainland (1350-1275 B.C.) were both carved with stock animal designs in perfunctory styles, and were probably therefore the prized possessions of the humble.

The remaining seals are engraved from more splendid stones, some actually semi-precious, and the styles are usually more monumental. Some of these stones too are local: rock crystal from Crete; lapis lacedaemonius (a kind of basalt unique to a ridge south of Sparta); limestone and marble from the islands; a dark green marble, the *verde antico*, from near Larissa in Thessaly; and a brick red stone

commonly called jasper but actually the *rosso antico*, a red marble from Cape Tenairon.<sup>3</sup>

More usual are a pale blue-gray chalcedony and its cousin, a translucent café au lait agate. Of these latter stones I have found samples here and there in Greece in the form of pebbles, though when raw few so fine as the finished product.

Other stones were also used for making seals, but these were used always with care and often capped with gold mounts; amethyst,<sup>4</sup> lapis lazuli, carnelian and its sard cousins, and three other varieties of agate—one black and white banded, one caramel colored with light brown bands, and another clear with occasional spars of a clear red color.<sup>5</sup>

The translucent, blood red carnelian was used mostly for the so-called talismanic amygdaloid that was produced principally from 1650-1500 B.C. in Crete. The main source for the stone is well known: ancient Meluhha, located in southeast Iran,<sup>6</sup> whence it, as well as the clear agate with the red spars, probably reached Sumeria by way of the trading island of modern Bahrain, ancient Telmun. From

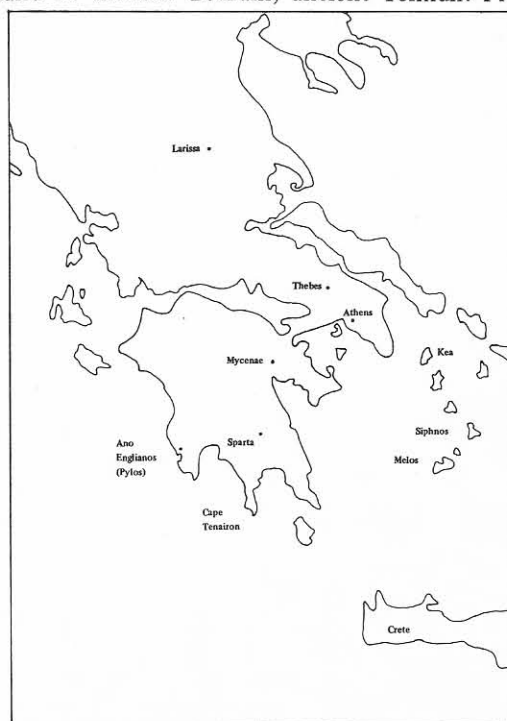


Fig. 1. Map of Greece.

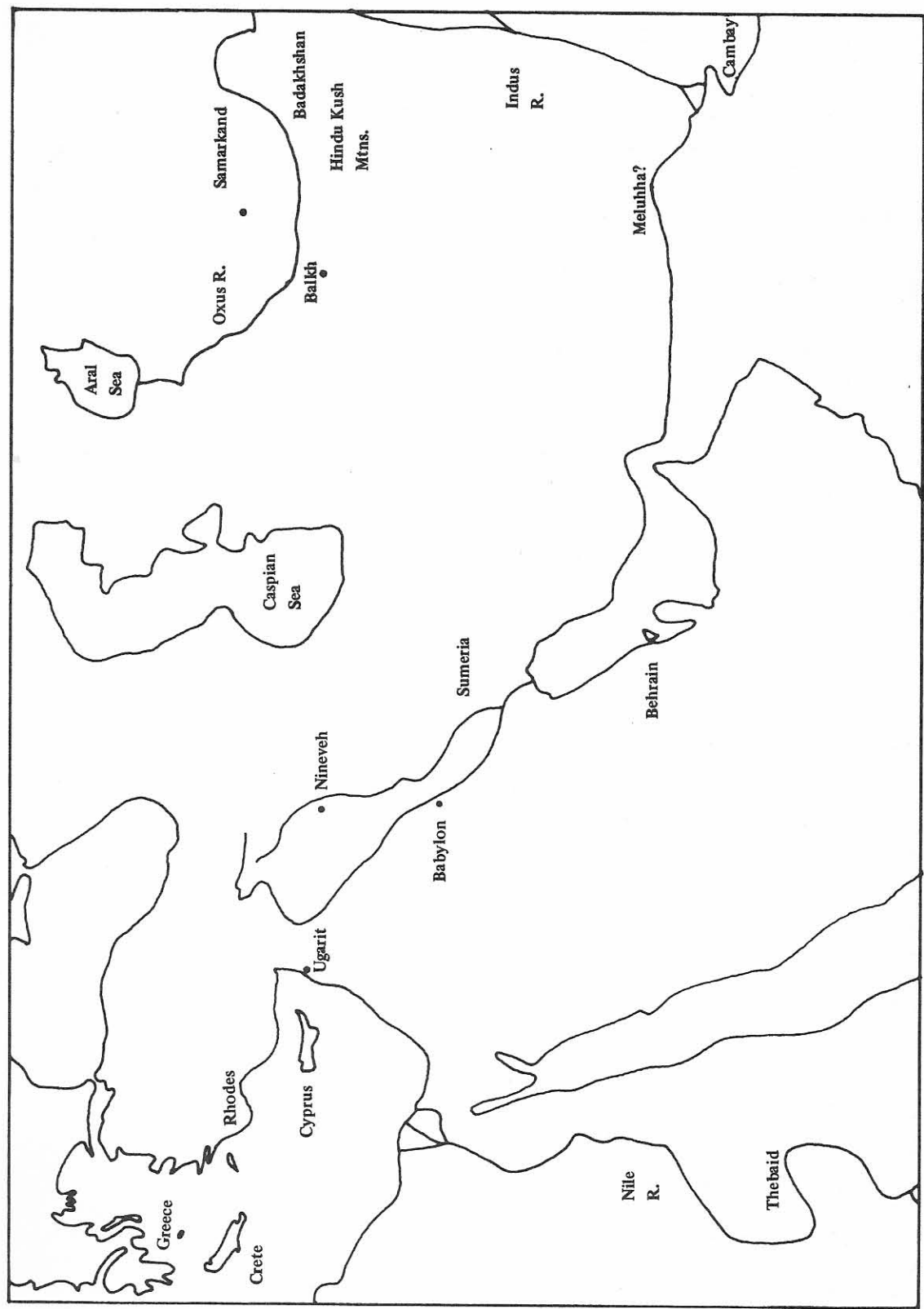


Fig. 2. Map of the eastern Mediterranean and Asia.

Behrain the carnelian also reach Egypt, which also produced a cloudy and dull variety, quarried in Thebaid. This Egyptian carnelian, in like manner, was only occasionally used in Crete.<sup>7</sup> Sumerian jewelers, however, generally shaped the brighter Iranian carnelian into flanged beads, like the amygdaloid, and therefore probably introduced the stone along with the shape to Greece.

Lapis lazuli is the most exotic of the imported stones. There are only two certified places where this deep blue silicate is found: near Lake Baikal in eastern Siberia, and in Badakhshan, a province of northeastern Afghanistan.<sup>8</sup> The latter site is the more likely source for our lapis, though even so our imagination must stretch to envision the four ancient mines in the remote Hindu Kush at altitudes ranging 6,000 to 17,000 feet, very far from convenient trade routes, producing this stone of which only a few pieces eventually found their 2,500 mile way to the Aegean, presumably *via* Wazirabad (ancient Balkh) south of Samarkand, through northern Iran, Iraq, and Syria, to Ras Shamra (ancient Ugarit), and thence through Cyprus.

No wonder there are only about ten Aegean seals unmistakably of lapis lazuli,<sup>9</sup> of which two are in the Near Eastern cylinder form, one is a recut scarab, and another actually comes from a tomb at Enkomi in Cyprus. These seals must have been highly prized, for of the ten, six are fitted with gold mounts and/or caps. This protection, plus the unusual preponderance of Near Eastern shapes, suggest that the Aegean seal-engravers were dependent on a sporadic supply of beads, some already precut.

There is, however, one hoard of lapis lazuli, amounting to well over seventy-five finished and unfinished beads and inlays. This hoard was found in a partially excavated workshop that belongs to the New Palace at Thebes,<sup>10</sup> destroyed by fire at the end of Late Helladic III B:1 (ca. 1250 B.C.); it may form part of the so-called Treasure, excavated nearby, that consisted of thirty-six Near Eastern Cylinder seals, dated stylistically no later than 1300 B.C.: perhaps both the lapis and the cylinders were a single gift from a Near Eastern prince.<sup>11</sup> Also in the Treasure were four Aegean sealstones of agate, to be dated stylistically no later than the Fall of Knossos (ca. 1375 B.C.).

I shall return to these Aegean seals in a moment, but first I should like to make a small digression. In that same New Palace Workshop at Thebes was also

found one tear-drop pendant of a translucent caramel agate with darker brown veins. This type of agate is fairly rare, but when it occurs as a seal, it almost always takes the form of a lumpy sort of cushion seal. Here are some examples:

*CMS* XIII 35, and I 199 from Asine—apparently by the same Master (ca. 1300 B.C.)—note the floppy feet, for example.

*CMS* XII 263, and V 297 from the Maleme Tholos in Crete (Late Minoan III B context) form a pair also close in style; they belong to the earlier Spectacle Eye Group (ca. 1400 B.C.) some of whose members impressed sealings found at Knossos (destroyed ca. 1375 B.C.).

The odd shape and distinctive caramel color of these seals find their closest parallels in beads from Cambay in West India, beads ancient as well as modern.<sup>12</sup>

The single example of Cambay agate from the New Palace Workshop at Thebes<sup>13</sup> is not, however, in the usual Indian shape. But its small size (L. 1.6 cm.) undoubtedly means it has been reworked from a larger bead.

Of the four Aegean seals from this Theban Workshop, three, however, retain their imported form: *CMS* V 672, 674, and 675.<sup>14</sup> On the other hand, their material is different, an opaque, light and dark banded agate. As far as I know, these Theban seals are the only ones in this stone, yet even so its source is not hard to imagine. The same lumpy shape should point in the same direction as the Cambay beads, and not surprisingly both stones occur on one Harappan necklace,<sup>15</sup> which should date no later than roughly contemporary with the beginning of the Aegean Late Bronze Age, ca. 1600 B.C.

Another kind of agate is also very distinctive, an opaque dark brown or rich black and white banded onyx.<sup>16</sup> During a rather casual perusal of the *CMS*, I count well over 100 seals in this stone.<sup>17</sup> The masters who used it, I am convinced, worked on the Mainland mostly in the XVth century B.C. and their products turn up mainly in the great Mycenaean and Boeotian cemeteries.

Though we have some evidence for a workshop at Mycenae that employed this stone,<sup>18</sup> the workshop of the earlier, first palace at Thebes, the so-called Kadmeion (burnt ca. 1350 B.C., a century before the New Palace), provides much more evidence.<sup>19</sup> This workshop contained over 100 pieces of this onyx, finished and unfinished, some

pieces very large; with them come several large pieces of rock crystal, and some smaller pieces of obsidian and bronze that apparently are the fragments of engraving tools.

This onyx was obviously available in large quantities, as well as in large blocks, since three pairs of sealstones<sup>20</sup> can be demonstrated by their vein patterns to have been cut from a single chunk.

In my previous presentations of the other types of stones, the foreign shape of the finished seal added weight to the supposition that their material was imported. If so, then the converse might be true; almost all these onyx seals are lentoid in shape, a shape that is exclusively Aegean.<sup>21</sup> It would seem probable, therefore, that this onyx is also local to the Aegean. The presence of rock crystal in the same Kadmeion Workshop might be significant; perhaps the onyx is also a Cretan stone,<sup>22</sup> though the fact that most of the finished seals in this material come from the Mainland suggests the stone comes from somewhere in Southern Greece, perhaps near Thebes.

This distinctive kind of onyx is rarely found outside the Aegean. The Sumerians used it for jewelry in Dynasty III times<sup>23</sup> (roughly corresponding to the period just after the destruction of the Early Helladic II proto-civilization on the Mainland of Greece), and at least one piece of it occurs in a girdle from Egypt dated ca. 1485 B.C.<sup>24</sup> We may add this stone to our rather distressingly short list of Mycenaean exports, but if so, it was only sporadically exported.

In summary, it would seem, then, that some agates and lapis lazuli found their way to Greece, and some Greek (?) onyx to the Near East, but none of them in enough quantity to suggest anything more than gift-trade or trickle-trade. Only Iranian carnelian may have been brought from the Levant, presumably Ugarit, into the Aegean, especially Crete (ca. 1650-1450 B.C.), in sufficient amounts to warrant the term import. But for what it came in exchange is, as with other exported goods, unknown.

## NOTES

\*Much information about stones and their sources has been gleaned from A. Lucus and J. R. Harris, *Ancient Egyptian Materials and Industries*, London, 1962. Apart from the usual abbreviations, CMS stands for *Corpus der minoischen und mykenischen Siegel*.

1. Scarabs: J.D.S. Pendlebury, *Aegyptiaca and Archaeology of Crete*, passim. Add N. Boufidis, *Athens Annals of Archaeology* III (1970), pp. 273-274 on the scarab from Mycenae, Grave Circle B, Grave Rho; and one from Phylakopi (soon to be published). Cylinders: CMS VIII 151; one from Platanos Tholos B (S. Xanthoudides, *Vaulted Tombs of the Messara*, Liverpool, 1924, pp. 116-117); the hoard of thirty-six cylinders from the New Palace Workshop, Thebes (E. Porada, *American Journal of Archaeology*, LXIX, 1965, p. 173 and LXX, 1966, p. 194.) The Mitannian cylinders (A. Wace and E. Porada, *Annals of the British School* LII, 1957, pp. 197-204) form a distinct and popular class which either had some influence on the master of CMS V 173 and 197 or some are actually works of this artist.

2. Aegean sealstones come from: Cyprus - CMS VII 48, 126, 168, 173, and IX 162; near Antioch - IX 156; Egypt - V. Kenna, *Cretan Seals*; Oxford, 1960, nos. 330 ("found in Egypt") and 39P ("purchased in Egypt"); from Tocra - M. Gill, *Kadmos*, V (1966), pp. 11-12, fig. 5. A doubtfully Aegean piece comes from Tell Brak in Northern Mesopotamia - R. Amiran, *Iraq* XVIII (1956), pp. 57-59. An Aegean cylinder from Israel now resides in Jerusalem.

3. Rock crystal: S. Marinatos, *Archaeologike Ephemeris*, 1931, pp. 158-160; lapis lacedaemonius, J. Younger, *AJA*, LXXX (1976), p. 132, n. 31; *verde antico* and *rosso antico*: R. Gnoli, *Marmora Romana*, Rome, 1971, pp. 136-138 and 160-164.

4. E. Vermeule, *Greece in the Bronze Age*, Chicago, 1972, p. 89, mentions "Peloponnesian amethyst"; Pliny, *NH* XL 121-124, talks of Indian amethyst. The stone was rarely enough used in both prehistoric and classical antiquity to lend plausibility to Pliny's source.

5. Gnoli, *Marmora Romana*, pp. 189-190 and pl. 234, knows only one piece of this "alabastro marino," a column fragment, and suggests an Iranian-Pakistani provenience.

6. K. R. Maxwell-Hyslop, *Western Asiatic Jewellery*, London, 1971, p. lxiv.

7. E.g., the rectangular plate seal HM 169 from Kalyvia T. 7, *Monumenti Antichi*, XIV (1904), fig. 97 (LM III A:2 context).

8. G. Herrmann, "Lapis Lazuli: the Early Phases of its Trade," *Iraq*, XXX (1968), pp. 21-57. There may have been a Persian source in the Middle Ages, but this is hypothetical.

9. CMS I 255 from Vapheio (LH IIA context); V 312 from Delos, 424, the recut scarab from Lefkandi (LH III C context), 600 from Mycenae's House of the Idols (LH III B:2 context), 639 from Koukounara; VII 168 from Enkomi; Kenna, *Cretan Seals*, no. 235; Herakleion Museum 238, a cylinder, 839, and 1966, a cylinder from Knossos Royal Road (LM Ib context). The stone of CMS I 181 from Midea is said to be lapis lazuli, but it appears to be black steatite.

10. K. Symenoglou, *Kadmeia*, I (*Studies in Mediterranean Archaeology*, XXXV) pp. 63-71.

11. Suggested by J. Boardman, *Greek Gems and Finger Rings*, London 1970, p. 57.

12. A. Arkell, "Cambay and the Bead Trade," *Antiquity*, X (1936), pp. 292-305.

13. Symenoglou, *Kadmeia*, I, p. 69, fig. 272 right.

14. The material of the lentoid CMS V 672, a dark stone, seems ordinary, but must have been considered precious as it was outfitted with gold caps and granulated mounts; perhaps this stone was imported too.

15. F. Brunel, *Jewellery of India*, Bombay, 1972, pl. 3 (described s.n. pl. 4).

16. This could be the same agate as "alabastro nuvolato di Palombara" described by Gnoli, *Marmora Romana*, pp. 193-194, pl. 229, as probably coming from Asia Minor.

17. E.g., CMS I 142, 143, 149, 151, 159, 167, etc., etc.

18. Ch. Tsountas, "Metrai kai Xiphe ek Mykenon," *Archaiologike Ephemeris*, 1897, col. 121, n. 1. Could the unfinished pieces be Athens National Museum 2521?

19. A. Keramopoulos, "Ai Biomekhaniai kai to Emporion tou Kadmou," *Archaiologike Ephemeris*, 1930, pp. 29-58.

20. CMS I 123 and 130, 140 and 141, and VIII 141 and 148.

21. A few are peculiar: varieties of cylinder – CMS I 107, 205, 246, 389; a thin and elongated amygdaloid – CMS I 388; a wafer thin lentoid – CMS I 252.

22. A few finished and unfinished rock crystal beads, however, are also found in the later Theban Workshop.

23. Maxwell-Hyslop, *Western Asiatic Jewellery*, pl. 21 (Grave P.G. 1464 at Ur, Sargonic Period), pl. 45 a necklace belonging to Princess Abbashti (Ur, Dynasty III), and pl. 48 (Grave P.G. 1422 at Ur, Dynasty III early).

24. E.g., H. E. Winlock, *The Treasure of Three Egyptian Princesses*, New York, 1948, pl. XII.