ARTIFACTS RECOVERED OFF THE SOUTHWESTERN TURKISH COAST
BY INSTITUTE OF NAUTICAL ARCHAEOLOGY SHIPWRECK SURVEYS
IN 1973 AND 1980

A Thesis
by
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Major Subject: Anthropology
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August 1986
ABSTRACT

Artifacts Recovered off the Southwestern Turkish Coast by Institute of Nautical Archaeology Shipwreck Surveys in 1973 and 1980. (August 1986)

Margaret Mary Cowin, B.A., University of Michigan Chairman of Advisory Committee: Dr. George F. Bass

Each year the Institute of Nautical Archaeology (INA), in a continuing search for wrecks to excavate, conducts a survey of sites along the Turkish coast. The representative pieces which are retrieved in order to date each site are generating a study collection in the Bodrum Museum of Underwater Archaeology that expands the known corpus of ancient and medieval wares. Of the fifty-nine miscellaneous artifacts studied which were recovered during the 1973 and 1980 surveys, the bulk of material is Hellenistic to Byzantine, but the entire collection extends from a twelfth-century B.C. skyphos to a fifteenth-century A.C. glazed Mamluk fragment, emphasizing the long history of sea trade in the area. There are examples of Rhodian amphoras of nearly the complete range of production. The proportional numbers of certain artifacts underline two well-known features of ancient commerce in the area: the general vigor of Hellenistic trade and the strength of Rhodes as a mercantile center.
To the memory of Freddy and Tom
and to Larry
Anne, Elizabeth, Tom and Jim
for support spanning three generations
ACKNOWLEDGEMENTS

This study appears between covers due to the ready assistance of a number of people, only a few of whom are mentioned here.

Warm appreciation goes to my committee for their firm support and careful guidance. I am particularly indebted to George F. Bass for arranging for me to carry out the various parts of the research and to Frederick H. van Doorninck, Jr., for his discerning observations as work progressed.

I wish to thank Oğuz Alpözen, Director of the Bodrum Museum of Underwater Archaeology, for his gracious cooperation in the project. Mehmet Özgenç cheerfully and effectively assisted with numerous details.

I am deeply grateful for the help of many scholars, including Judith P. Binder, who generously shared her expertise; Virginia R. Grace, who offered unique guidance not only in conversation but through her published works (the sections on amphorae in this thesis draw substantially from her research); and Barbara L. Johnson.

Margo Camp kindly facilitated the study of some finds from the Athenian Agora. Netia Piercy was a skilled and patient instructor in the art of artifact drawing. Donald A. Frey offered valuable suggestions on how to photograph artifacts. For printing of the photographs, I was fortunate in having access to the fine public darkroom.
maintained by the Maple Heights Branch of the Cuyahoga County (Ohio) Public Library under the charge of Jeffrey Weiner.

Many of the drawings are by Jo-Ann Sharp; the clarity of her work enhances the documentation. Special thanks go to Anne Cowin for the maps.

Manuela Lloyd, Jay Rosloff, Sema Pulak, Cemal Pulak, William Lamb, Beth Braznell and Karen O'Neal are among the many who provided important aid along the way.

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LIST OF JOURNAL ABBREVIATIONS

AJA American Journal of Archaeology
AntAfr Antiquités Africaines
ArchCl Archeologia Classica
AthMitt Mitteilungen des deutschen Archäologischen Instituts, Athenische Abteilung
BCH Bulletin de correspondance hellénique
BSA British School at Athens, Annual
IEJ Israel Exploration Journal
IJNA International Journal of Nautical Archaeology and Underwater Exploration
JFA Journal of Field Archaeology
JHS Journal of Hellenic Studies
NatGeoSocRR National Geographic Society Research Reports
OpusArch Opuscula Archaeologica
PEFA Palestine Exploration Fund Annual
QDAP Quarterly of the Department of Antiquities in Palestine
TAPS Transactions of the American Philosophical Society
TürkArkDerg Türk Arkeoloji Dergisi
INTRODUCTION

The Institute of Nautical Archaeology (INA) for some years has conducted underwater surveys off the southwestern Turkish coast (ill. 1). The immediate aims have been to tabulate wreck sites located in the region and to evaluate them with a view toward possible excavation. The ultimate aim is to further INA's long-term goal of documenting the evolution of ships and the patterns of ancient trade in the eastern Mediterranean.

The surveys are designed to sample as many sites as possible and frequently only one dive is made at a specific location. The purpose is to assess the nature and condition of a site and to recover a few representative artifacts. On the basis of these pieces, an educated guess is made as to the date of the shipwreck and the possible origin of the ship and its cargo. The artifacts are stored in the Museum of Underwater Archaeology at Bodrum, Turkey.

Some of the survey sites have subsequently undergone additional investigation. Two of them have been the subject of complete excavation: a Bronze Age locus at Sheytan Deresi and an eleventh-century shipwreck at Serçe Limanı.⁴ Two other sites have been studied in depth: a Hellenistic wreck at Serçe Limanı, which has been partly

The style and format of this thesis are those followed by the American Journal of Archaeology.
Ill. 1. Location of Survey Area
ILL. 2. Location of 1973 and 1980 Survey Sites
dates of the artifacts span about 2500 years, from the twelfth century B.C. to the fifteenth century A.C.

The aims of the research were (1) to identify particular features that might be helpful in studying similar artifacts; (2) to determine when and where the artifacts were made; (3) to evaluate the individual wreck sites; and finally, (4) to formulate the overall conclusions that might be drawn from this collection of objects retrieved from a well-traveled corner of the Mediterranean.

The artifacts are documented with measurements, descriptions and photographs. Most of the artifacts were drawn, either by INA staff artists or by the author. In general, the following conventions were observed.

1. A solid center line indicates that at least one-quarter of the vessel's circumference is extant (ill. 34, p. 81).

2. A dotted center line indicates that less than one-quarter of the vessel's circumference is extant (ill. 35, p. 81).

3. A dotted straight line extending across the top of the drawing indicates that the profile shown is the mirror image of the preserved fragment (ills. 34 and 35, p. 81).

4. A profile wall shown in outline with a small portion blackened indicates that only the darkened
segment survives and that the outlined wall is duplicating the opposite, more complete side (ill. 15, p. 39).

Diameters of fragments were calculated with the aid of a series of graduated concentric circles. When at least one-quarter of a circumference is preserved, the measurement is labeled "estimated" and regarded as reasonably accurate. When less than one-quarter of a circumference is preserved, the diameter is labeled "best estimated" and is considered somewhat doubtful.

Colors were evaluated under bright sunlight by reference to the Munsell Soil Color Charts (Baltimore 1975). Different lighting conditions would give slightly different results.\(^6\)

Grit was examined through a 16-power hand lens. Grit size was judged by eye and thus is approximate, but it is described in terms of the Wentworth Scale in F.H. Lahee, Field Geology, 6th ed. (New York 1959) 39. The Wentworth designations include the following:

<table>
<thead>
<tr>
<th>Grain classifications</th>
<th>Limiting dimensions, mm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granules</td>
<td>2-4</td>
</tr>
<tr>
<td>Very coarse sand</td>
<td>1-2</td>
</tr>
<tr>
<td>Coarse sand</td>
<td>1/2-1</td>
</tr>
<tr>
<td>Medium sand</td>
<td>1/4-1/2</td>
</tr>
<tr>
<td>Fine sand</td>
<td>1/8-1/4</td>
</tr>
<tr>
<td>Very fine sand</td>
<td>1/16-1/8</td>
</tr>
</tbody>
</table>
Abbreviations used in the catalogue are as follows:

1. length
h. height
th. thickness
diam. diameter
pres. preserved
max. maximum
est. estimated

Measurements are given in meters, as 0.123.

For a summary of artifacts and dates by site, see Tables 1 and 2. In the following catalogue, sites are presented in their original survey sequence.⑦
<table>
<thead>
<tr>
<th>Site/Code</th>
<th>Artifact</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>KNİDOS I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73A-1..</td>
<td>oil lamp (BM #7111)</td>
<td>2nd-1st B.C.</td>
</tr>
<tr>
<td>73A-2..</td>
<td>oil lamp (BM #7112)</td>
<td>2nd-1st B.C.</td>
</tr>
<tr>
<td>İSKANDİL BURNU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73B-1..</td>
<td>tubular-toe jar</td>
<td>3rd-5th A.C.</td>
</tr>
<tr>
<td>73B-2..</td>
<td>jar /broad handles</td>
<td>4th quart. 1st-3rd A.C.</td>
</tr>
<tr>
<td>KIZILAĞAÇ ADASI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73C-1..</td>
<td>Chian jar /base</td>
<td>late 4th-3rd B.C.</td>
</tr>
<tr>
<td>73C-2..</td>
<td>Chian jar /top</td>
<td>late 4th-3rd B.C.</td>
</tr>
<tr>
<td>73C-3..</td>
<td>Chian jar /top</td>
<td>late 4th-3rd B.C.</td>
</tr>
<tr>
<td>KEPÇE BURNU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73D-1..</td>
<td>basket handle /flattened</td>
<td>7th-4th B.C.</td>
</tr>
<tr>
<td>73D-2..</td>
<td>basket handle /flattened</td>
<td>7th-4th B.C.</td>
</tr>
<tr>
<td>73D-3..</td>
<td>bowl /graffito</td>
<td>(?)</td>
</tr>
<tr>
<td>KARACA ADASI I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73E-1..</td>
<td>Rhodian handle /classic</td>
<td>3rd-1st B.C.</td>
</tr>
<tr>
<td>73E-2..</td>
<td>pithos shoulder</td>
<td>(?)</td>
</tr>
<tr>
<td>MANDALYA KÖRFEZİ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73G-1..</td>
<td>Roman toe /conical</td>
<td>2nd-3rd A.C.</td>
</tr>
<tr>
<td>SERÇE LİMANI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73H-1..</td>
<td>lagynos neck</td>
<td>3rd-1st B.C.</td>
</tr>
<tr>
<td>73H-2..</td>
<td>basket handle /Indented</td>
<td>6th-5th B.C.</td>
</tr>
<tr>
<td>73H-3..</td>
<td>Byzantine jar /funnel mouth</td>
<td>7th A.C.</td>
</tr>
<tr>
<td>73H-4..</td>
<td>Rhodian jar /vertical band</td>
<td>2nd quart. 3rd B.C.</td>
</tr>
<tr>
<td>73H-5..</td>
<td>skyphos</td>
<td>12th B.C.</td>
</tr>
<tr>
<td>73H-6..</td>
<td>Laconian tile</td>
<td>(?)</td>
</tr>
<tr>
<td>73H-7..</td>
<td>Rhodian toe /knobbed</td>
<td>2nd quart. 3rd B.C.</td>
</tr>
<tr>
<td>KNİDOS II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73R-1..</td>
<td>pantile</td>
<td>5th-6th A.C.</td>
</tr>
<tr>
<td>73R-2..</td>
<td>cover tile</td>
<td>5th-6th A.C.</td>
</tr>
<tr>
<td>73R-6..</td>
<td>Knidian jar /Stratocles</td>
<td>107-97 B.C.</td>
</tr>
<tr>
<td>73R-7..</td>
<td>Byzantine jar (BM #7105)</td>
<td>5th-6th A.C.</td>
</tr>
<tr>
<td>SANÇAK BURNU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>73T-1..</td>
<td>Rhodian jar /horned handles</td>
<td>(?) 1st A.C.</td>
</tr>
<tr>
<td>73T-2..</td>
<td>Rhodian jar /spur-top handles</td>
<td>1st-2nd A.C.</td>
</tr>
</tbody>
</table>
Table 2. List of 1980 Survey Finds with Dates

<table>
<thead>
<tr>
<th>Site/Code</th>
<th>Artifact</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ÇOKERTME I</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80A-1..</td>
<td>basket handle /round</td>
<td>7th-4th B.C.</td>
</tr>
<tr>
<td>80A-2..</td>
<td>basket handle /round</td>
<td>7th-4th B.C.</td>
</tr>
<tr>
<td>80A-3..</td>
<td>basket handle /flattened</td>
<td>7th-4th B.C.</td>
</tr>
<tr>
<td><strong>ÇOKERTME II</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80B-1..</td>
<td>Knidian jar /Kleupithes</td>
<td>1st B.C. after 86 B.C.</td>
</tr>
<tr>
<td><strong>KIZIL BURUN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80C-1..</td>
<td>jug</td>
<td>ca. 250 B.C.</td>
</tr>
<tr>
<td>80C-2..</td>
<td>lagynos</td>
<td>2nd quart.3rd B.C.</td>
</tr>
<tr>
<td>80C-4..</td>
<td>Rhodian jar /vertical band</td>
<td>2nd quart.3rd B.C.</td>
</tr>
<tr>
<td><strong>GÜMÜSLÜK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80E-1..</td>
<td>peg toe</td>
<td>4th A.C.</td>
</tr>
<tr>
<td>80E-2..</td>
<td>jar /MA graffito</td>
<td>4th A.C.</td>
</tr>
<tr>
<td>80E-3..</td>
<td>stone weight</td>
<td>many centuries</td>
</tr>
<tr>
<td>80E-4..</td>
<td>&quot;bean pot&quot;</td>
<td>(?) 4th A.C.</td>
</tr>
<tr>
<td><strong>KARACA ADASI II</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80G-1..</td>
<td>Rhodian jar /blunt-spur handle</td>
<td>1st-2nd A.C.</td>
</tr>
<tr>
<td>80G-3..</td>
<td>pithos ring foot</td>
<td></td>
</tr>
<tr>
<td><strong>BENCİK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80H-1..</td>
<td>glass neck</td>
<td>late Roman-medieval</td>
</tr>
<tr>
<td>80H-2..</td>
<td>cook pot</td>
<td>5th-6th A.C.</td>
</tr>
<tr>
<td>80H-3..</td>
<td>molded bowl</td>
<td>2nd-1st B.C.</td>
</tr>
<tr>
<td>80H-4..</td>
<td>jar</td>
<td>early Byzantine</td>
</tr>
<tr>
<td>80H-5..</td>
<td>jug /concave base</td>
<td>5th-6th A.C.</td>
</tr>
<tr>
<td>80H-6..</td>
<td>jug</td>
<td>early Byzantine</td>
</tr>
<tr>
<td>80H-8..</td>
<td>&quot;acorn&quot; toe</td>
<td>early Byzantine</td>
</tr>
<tr>
<td>80H-9..</td>
<td>&quot;acorn&quot; toe</td>
<td>early Byzantine</td>
</tr>
<tr>
<td>80H-10..</td>
<td>Rhodian jar /Themison</td>
<td>2nd half 2nd B.C.</td>
</tr>
<tr>
<td><strong>KAMERİYE ADASI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80J-5..</td>
<td>Rhodian jar /spur-top handles</td>
<td>1st-2nd A.C.</td>
</tr>
<tr>
<td><strong>ALAKIŞLA KOYU /YILDIZ ADASI</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80M-1..</td>
<td>Rhodian handle /blunt-spur</td>
<td>1st-2nd A.C.</td>
</tr>
<tr>
<td>80M-2..</td>
<td>Rhodian handle /button stamp</td>
<td>3rd B.C.</td>
</tr>
<tr>
<td>80M-3..</td>
<td>Rhodian neck</td>
<td>1st-2nd A.C.</td>
</tr>
<tr>
<td>80M-4..</td>
<td>Rhodian toe /elongated</td>
<td>1st-2nd A.C.</td>
</tr>
<tr>
<td>80M-5..</td>
<td>jar neck w/handle</td>
<td>Byzantine</td>
</tr>
<tr>
<td>80M-6..</td>
<td>Rhodian toe /elongated</td>
<td>1st-2nd A.C.</td>
</tr>
<tr>
<td>80M-7..</td>
<td>handle /lagynos (?)</td>
<td>3rd-1st B.C.</td>
</tr>
</tbody>
</table>
Table 2. (Continued)

<table>
<thead>
<tr>
<th>Site/Code</th>
<th>Artifact</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>OF UNKNOWN PROVENIENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80-(?)-1</td>
<td>Rhodian jar /square-turn handle</td>
<td>3rd-2nd B.C.</td>
</tr>
<tr>
<td>80-(?)-3</td>
<td>Knidian toe /flanged</td>
<td>to 2nd A.C.</td>
</tr>
<tr>
<td>80-(?)-9</td>
<td>bowl /glazed</td>
<td>15th A.C.</td>
</tr>
</tbody>
</table>
KNIDOS I

1973 Site 1 (A)

Knidos I is located at the western end of the Datça Peninsula (ancient Triopium Peninsula), which lies between the islands of Rhodes and Kos (ill. 2, p. 5). The survey site is close to the early harbor of Knidos, which was well established by the sixth century B.C.

Finds recovered from the base of a steep cliff at a depth of 33 meters include two oil lamps dating to the second to first centuries B.C.

Lamp with central tube

Bodrum Museum No. 7111

ILL. 3; pl. 28 (p. 175).

L. 0.067; bowl h. 0.032. Upper portion of tube missing. Yellowish-brown (10YR 5/4) surface color perhaps caused by sea water. Gray (10YR 6/1) fabric with much very fine and fine black and tan grit.

Small, almost miniature lamp with rounded sides, arched rim, central tube extending somewhat above sides, small disc-like foot slightly concave in center, and spoon-shaped nozzle with large wick opening. The small hole joining oil-chamber with nozzle splays out in chamber. Wheel-made body with nozzle applied carefully by hand.
Ill. 3. Lamp with central tube, 73A-1. (Scale 1:1)

Lamp with central tube  
Bodrum Museum No. 7112

Pl. 28 (p. 175).
L. 0.069; bowl h. 0.032.

Similar to preceding 73A-1, but nozzle crudely attached.

Lamps with a central tube were common during the second and first centuries B.C., and continued to be made into the second century A.C. It is not known when they finally passed from favor. They have been found widely in the Mediterranean area including Greece (both the mainland and islands), Turkey, Egypt, North Africa and Italy.

Lamps were most effective when elevated, and thus the tube in these lamps may have been made to fit on a portable
lamp stand,\textsuperscript{11} over a peg on a shelf,\textsuperscript{12} or on a stick held
aloft.\textsuperscript{13} It is also possible that the tube merely served
as a finger stop for grasping the lamp.\textsuperscript{14} The wick would
have curled in the bottom around the tube with an end
pulled out of the nozzle.\textsuperscript{15}

Two lamps from the Athenian Agora have nozzles
comparable to those of the survey lamps, and fix the
earliest possible date for our underwater finds in the
first or early second quarter of the second century B.C.\textsuperscript{16}
The survey lamps may have been manufactured somewhat later,
however, as another parallel, from Delos, is dated to the
second half of the second century or the first third of the
first century B.C.\textsuperscript{17}

Used for rituals for many centuries, small lamps are
common finds. The very features that R.H. Howland terms
impractical (holding very little oil, likely to tip over)\textsuperscript{18}
may not have mattered if the lamps were votives carried
into a sanctuary on standards and left there, as prayer
candles are set in churches today. These shipboard lamps
may have been intended for dedication at some seaside
shrine, a frequent practice in antiquity.\textsuperscript{19}
ISKANDİL BURNU

1973 Site 2 (B)

İskandil Burnu, meaning "Sounding Point," is at the tip of the westernmost headland of the Datça Peninsula (ancient Triopium Peninsula), which stretches toward Kos (ill. 2, p. 5.) 20 Several wrecks are known in the vicinity of this steep promontory close to the harbor of ancient Knidos and north of Cape Krio. 21

Survey material came from a site located fifteen to twenty meters from land at a depth of 8 to 10 meters. Rock bottom.

Amphora

Ill. 4; pl. 14 (p. 161).

Pres. h. 0.240; rim diam. 0.061. Amphora top preserves rim, one complete handle with partial shoulder, and stump of second handle. Concreted patches. Red (10R 4/6) slip; light red (10R 6/6) very gritty fabric with medium to coarse white, buff, gray, red and black particles.

Neck tapers toward rim; external wheel ridges. Deep rim, slightly thickened, is undercut at juncture with neck just above a pronounced encircling groove. Bend of handles is at rim level. Handle shanks faceted with many longitudinal grooves. Falling shoulders.

Neck of a tubular-toe amphora, a jar with a hollow cylindrical toe. 22 For a complete example, see Bodrum
Ill. 4. Amphora, 73B-1. (Scale 1:2)
Museum amphora (unnumbered) in plate 14 (p. 161).

The tubular-toe amphora dates generally to the third and fourth centuries A.C. Characteristically these jars have handle bends positioned above the rim and a flange spreading beneath the rim. The survey amphora, whose handle bends are level with the rim and which has no flange, resembles more closely an early-fifth-century A.C. example from the Athenian Agora.

J.A. Riley supports an eastern Mediterranean origin, citing numerous early-third-century A.C. examples from Ostia, Berenice and Caesarea, and from Romania and elsewhere in the Black Sea area. Findspots stretching from England to Iraq attest to the wide popularity of the type.

Amphora 73B-2
Ill. 5; pl. 15 (p. 162).
Pres. h. 0.184; rim diam. 0.073. Upper part of amphora preserves neck, rim, upper handles and stub of one lower handle attachment on remnant shoulder. Concreted overall. Red (2.5YR 4/6) slip; red (10R 5/6) gritty fabric with frequent fine white grit, some fine black grit and occasional coarse white, tan and black grit.

Small neck tapers toward small mouth with turned-out lip. Massive handles have nearly the same width as neck. Each handle contoured with four ribs running lengthwise. Upper handle attachments form clay belt around neck.
Ill. 5. Amphora, 73B-2. (Scale 1:2)

Ill. 6. Amphora. (After Aldini, "Anfore foropoipiensi," fig. 2)
Shallow wheel ridges on outside of neck; ridges on interior somewhat more pronounced. Transition from neck to shoulder is angular.

A parallel from Knossos is reported by J.W. Hayes. He describes the type (his number 7) as having "fairly narrow tapering neck with rounded rim-moulding, high-bellied round-shouldered body, tapering below to a base of medium width with heavy external moulding and conical cavity underneath with central 'button'." For profile of a similar jar from northern Italy, see illustration 6.27

Shape common at Ostia (Form I). 28 A few examples from Athenian Agora. 29 Also documented from Yugoslavian coast. 30 A manufacturing site in the Po Valley has been identified. 31

General dating extends from the last quarter of the first into third century A.C. 32
KIZILAĞAÇ ADASI

1973 Site 3 (C)

Kızılağaç Adası, meaning "Red Timber Island," is located north of the tip of the Datça Peninsula (ancient Triopium Peninsula), where the Gökova Gulf meets the Aegean (ill. 2, p. 5). The harbor of ancient Knidos was nearby and a number of wrecks are clustered in the area.

Divers snorkeling off this island found fragments of three Chian amphoras at a depth of 5 to 7 meters.33 The general profile of the amphoras indicates they are from the late fourth to the beginning of the third century B.C.; several diagnostic features point to the later period.

For general comments on later Chian amphoras, see Appendix 4 (p. 108).

Amphora toe

Pl. 12 (p. 159).

Pres. h. 0.555; th. of wall 0.010; max. diam. of toe 0.064; l. of extant toe 0.101. Lower part of amphora. Heavily concreted. End of toe perhaps missing. Red (2.5YR 4/6) slip; red (10R 5/6) fabric with very fine sand and fine to medium white and gray grit.

Narrow cone-shaped lower portion of Chian amphora. At a distance of 0.186 above toe, the body diameter is 0.180. Toe cap has thin (0.003) walls and is open at
bottom; it enlarges the pointed end only slightly. Area obscured with concretion.

J. Boardman observes that Chian jars are most easily dated by their feet. The elongated form of the jar's lower portion together with the nearly straight sides of its toe best fit those jars illustrated by J.K. Anderson which are dated to the end of the fourth and into the third century B.C.

Amphora

Pl. 13 (p. 160).
Pres. h. 0.384; est. rim diam. 0.103. Amphora top lacking part of rim and one handle. Concreted. Red (10R 5/6) slip; red (2.5YR 5/8) fabric mixed with sand that glints. Mica is a characteristic of Chian fabric but sparkles in this clay seem the result of light reflecting off sand granules.

Long cylindrical neck with handle set well beneath rim. Rim thin. Handle extends nearly horizontally from neck before curving and dropping almost vertically to shoulder. Handle approximately circular in section (0.034 x 0.030) and adequately integrated. Slight indentation of lower handle shank where clay may have been drawn off to join handle to shoulder. The missing handle had parted cleanly from shoulder leaving an upstanding edge of clay.

Chian amphoras dating from the turn of the fourth to
the third centuries B.C. and later have necks that rise well above handles, and minimal rims.\textsuperscript{36} Handles circular in section tend to be found on jars from the second to first centuries B.C.\textsuperscript{37}

**Amphora**

Ill. 7; pl. 13 (p. 160).

Pres. h. 0.445; rim diam. 0.101. Amphora top broken off approximately at shoulder; one handle missing. Surface concreted. Red (10R 4/6) slip; light red (10R 6/8) fabric with very fine to fine black particles and coarse white particles along with grains, streaks and clumps of sand that glints. Fine air holes. Handle fabric darkens along one surface, perhaps due to conditions in kiln at time of firing.


End of the fourth or beginning of third century B.C.

Similar to 73C-2; see above for comments.
ILL. 7. Amphora, 73C-3. (Scale 1:2)
KEPÇE BURNU

1973 Site 4 (D)

Kepçe Burnu is a promontory on the north coast of the Gökova Gulf (ill. 2, p. 5). Shallow (5 to 10 meters), sandy mud slope with patches of *poseidonia* grass. Seventh-through fourth-century B.C. basket-jar handles and an unidentified bowl were retrieved by snorkeling divers.

Basket-jar handle

Pl. 1 (p. 148).

Average th. 0.050; th. at top where flattened 0.045. Upper portion of loop preserved; no handle attachments.

Reddish-brown (2.5YR 4/6) slip; yellowish-red (5YR 5/6) fabric with medium and large white grit; fine, medium and large black grit; and fine and medium red grit.

Handle rounded in section, but underside at top slightly flattened.

Seventh through fourth centuries B.C.

For other basket-jar handles with flattened surfaces, see 73D-2 (below) and 80A-3 (pp. 50-51). For a tentative linking of flattened handles and everted rim on basket-jars, see note 170 (pp. 130-31). For further comments on basket-jars, see Appendix 1 (p. 97).

Basket-jar handle

Pl. 1 (p. 148).
H. of loop 0.188; base of loop 0.239; th. 0.047 to 0.058. Handle was broken off approximately at attachments to body. Typical reddish-brown slip but heavily concreted; yellowish-red (5YR 5/6) fabric is uniformly very gritty with very coarse transparent grit, large to coarse white grit and fine to medium black grit.

Handle rounded in section; inner surface slightly flattened along one leg from base to top of loop. Flattened leg narrower than other leg by 0.011.

Seventh through fourth centuries B.C.

Bowl 73D-3

Ill. 8; pl. 21 (p. 168).

H. 0.060; rim diam. 0.173; ring foot diam. 0.070. Complete. Much thick slip has flaked off exposing a rough undersurface. Dark red (2.5YR 3/6) slip with fine black particles and very fine sparkles; red (2.5YR 5/8) fabric with fine white and black particles. "Cereal" bowl with walls that are unusually thick (0.010) for vessel's size. Walls slightly assymetrical and flaring. Ring foot. Exterior of bowl retains one patch of slip; bare areas reveal faint ridges and a large (0.050 x 0.060) "double axe" graffito which would have been hidden under original surface coating. No slip preserved on bowl interior, which drops to point in center (not illustrated).
ILL. 8. Bowl, 73D-3. (Scale 1:2)
KARACA ADASI I

1973 Site 5 (E)

Karaca Adası, meaning "Deer Island," is located in the eastern end of the Gökova Gulf (ill. 2, p. 5). The region was part of the Rhodian Peraea.

Site I is off the precipitous southeast coast of the island. Beneath the water a steep, sandy mud slope, strewn with large blocks of stone tumbled from above, falls away. Artifacts recovered from a depth of 10 meters are a pithos neck of undetermined date and a Rhodian amphora handle dated to the third to first centuries B.C.

See Karaca Adası II (p. 64) for similar artifacts from a nearby site.

Amphora handle and shoulder fragment 73E-1

Pl. 5 (p. 152).

Pres. h. 0.225. Fragment of handle shank is attached to shoulder close to its juncture with neck. Reddish-brown (2.5YR 4/4) slip; mainly yellowish-red (5YR 5/6) fabric with less than 10% very fine sparkles and about 10% fine black grit.

Handle had been well integrated with body; lower end was lightly faceted where clay had been pulled off to be worked into the join. Handle in section was a slightly pointed oval.

General configuration of sloping shoulder and handle
(which matches that of 80H-10, pp. 76-77) indicates the fragment was from Rhodian amphora of classic type.

Third to first centuries B.C.

For general remarks on Rhodian jars, see Appendix 2 (pp. 98-104).

Pithos

Ill. 9; pl. 27 (p. 174).

Pres. h. 0.235; rim diam. 0.217. Top of pithos including complete neck and two handles. Red (10R 4/6) slip; red (2.5YR 5/8) fabric with fine white and black grit and very fine sparkles.

Wide, deep neck with thick walls (0.010 or more) and lip that turns out slightly. Horizontal strap handles on shoulder. Handle attachments adequately integrated; one handle is lightly faceted, probably because clay was drawn off in order to meld handle to body. Slight carination of body below handles. Wall of vessel only about half as thick as that of neck.

See 80G-3 (p. 66) for large ring foot from associated site.
Ill. 9. Pithos, 73E-2. (Scale 1:2)
1973 Site 7 (G)

A wreck site in Mandalya Bay (ancient Iasos Bay) was discovered some distance from shore at a depth of 21 or 23 meters through the use of side-scan sonar (ill. 2, p. 5). As visibility was low, divers explored the bottom ooze by feel. Several sherds were retrieved in 1973, but only one, a Roman cone-shaped toe, was found in storage in 1984.

Land excavations at nearby Iasos have uncovered Greek, Roman and Byzantine structures. 41

Amphora toe

I11. 10; pl. 15 (p. 162).

Pres. h. 0.100. Large chip off end of toe. Concreted. Slip (?); light red (2.5YR 6/6) smooth fabric with very fine black particles and yellow granules.

Thick conical toe. Exterior surface has converging lines of clay made by a tool or thumb pulled across clay before firing. Irregular lump rises in interior.

Riley reported C. Panella's finding that a conical toe with interior knob is a characteristic of Ostia Form II, dated to the second century A.C. with export occurring particularly in the second half of the second century. The form was present but not common at Berenice in third-century A.C. contexts. Riley cites additional
findspots in Cyrenaica and Egypt. \(^{42}\)

For profile of a complete jar, see illustration 11. \(^{43}\)

Ill. 10. Amphora toe, 73G-1. (Scale 1:2)

Ill. 11. Ostia Form II. (After Carandini and Panella, Ostia III, 629, fig. 24)
SERÇE LİMANI

1973 Site 8 (H)

Serçe Limanı, meaning "Sparrow Harbor," is located on the southwestern Mediterranean coast of Turkey (ill. 2, p. 5). It is set in the rocky Karayüksekdağ Peninsula (ancient Cynossema Peninsula), which angles south toward Rhodes fourteen miles away.

The narrow pasasage to the harbor opens onto a good anchorage, though the area catches north winds. That the site saw continual use over time has been documented by research on underwater remains near the entrance: an eleventh-century A.C. merchantman, a Hellenistic wreck, and anchorage finds spanning 4300 years.

Snorkeling divers collected survey artifacts from a pile of sherds of mixed date in front of the harbor. The assortment may represent pieces dumped from fishermen's nets.

Lagynos

Pl. 24 (p. 171).

Pres. h. 0.155; rim diam. 0.045. Neck of lagynos with chipped rim; handle stub. Surface almost completely corroded. Weak red (10R 5/4) slip (?); weak red (10R 4/4) well-mixed gritty fabric with frequent medium white, occasional coarse white and gray particles and some very fine sparkles. Sharp demarcation between "slip" and fabric
color is the result either of a heavy layer of slip both inside and out, or of the particular firing conditions.

Neck of lagynos tapers somewhat as it rises; some indication of a narrow, very slightly flared rim. Handle stub in section is roughly a narrow oval (l. 0.037).

The lagynos was a popular Hellenistic wine container. For further comments, see under 80C-2 (p. 58) with notes 90 and 91 (pp. 123-24).

Basket-jar handle

Pl. 2 (p. 149).
H. of loop 0.170; base of loop 0.175; diam. of handle 0.048. Handle with body section attached. Concreted. No apparent slip. Reddish-yellow (5YR 6/6) fabric with fine black grit and "flakes" of black grit; fine to medium white grit; and a few very fine sparkles.

Narrow hairpin loop. Outer surface of handle rounded. Inner surface slightly indented between two longitudinal ridges. Ends of handle were well integrated with body section, which had broken off below attachments. On interior wall there are two depressions with fingering marks where pressure was applied against handle ends when they were joined to body.48

Handle is identical to handles on a complete amphora (no. 83) presently displayed outside the library at the Bodrum Museum (pl. 2, p. 149).49 Shape dated to sixth
to fifth centuries B.C.\textsuperscript{50}

For general discussion of basket-jars, see Appendix 1 (p. 97).

Amphora

\textit{Ill. 12; pl. 18 (p. 165).}

Pres. h. 0.214; rim diam. 0.140. Upper part of amphora with one complete handle and the stump of second handle. Heavily concreted. Worn, red (2.5YR 5/6) slip (?); light red (2.5YR 6/6) fabric shows fine, medium and, rarely, coarse white grit along with a few very fine sparkles.

A large neck, dimishing in diameter as it rises, is surmounted by a funnel-shaped rim with a slightly thickened lip. Handles issue from upper neck and stretch out to attachments on spreading shoulders. Faint lengthwise band along handle.

An intact jar would have a globular body. Amphora belongs to Scorpan Type VIIA, first appearing in the later fourth century and continuing until the early seventh century A.C.\textsuperscript{51} The relatively high neck and rim is best paralleled by an unpublished amphora from the seventh-century wreck at Yassı Ada; this amphora may have been in existence for several decades prior to the ship's sinking just after 625/626.\textsuperscript{52} An Aegean origin for the type appears quite likely.\textsuperscript{53}
Ill. 12. Amphora, 73H-3. (Scale 1:4)

Ill. 13. Amphora, 73H-4. (Scale 1:4)
Amphora 73H-4

Ill. 13; pl. 4 (p. 151).
Pres. h. 0.322; approx. rim diam. 0.11 (misshapen).
Fragment preserves neck, rim, both handles and part of sloping shoulder. Weak red (10R 4/4) slip; red (2.5YR 5/6) fabric with fine to medium white and black grit and a few sparkles.

Mouth is bent out of round and finished with a vertical band (h. 0.034) that slopes outward slightly at its lower edge. Wide handles (0.044) are adequately integrated. One shank is diamond-shaped in section; the other is more oval, with evidence of a longitudinal band (not illustrated). No apparent stamps.

Rhodian, second quarter of third century B.C. ⁵⁴

For a toe that is typical of a jar with a vertical rim band and which was recovered during the same dive, see 73H-7 (p. 39). ⁵⁵ Another similar amphora top was retrieved by INA in 1979 from an anchorage site at Serçe Limanı. ⁵⁶ A complete jar (unnumbered) from an unidentified underwater site is in the Amphora Storeroom of the Bodrum Museum; for a photograph of it, see the early Rhodian jar in plate 9 (p. 156). ⁵⁷ A site near Serçe Limanı yielded a nearly complete jar of same family, 80C-4 (pp. 58-59 and pl. 3, p. 150).

For a general discussion of Rhodian amphoras, see Appendix 2 (pp. 98-104).
Skyphos

Ill. 14; pl. 22 (p. 169).

H. 0.126; est. max. diam 0.188; ring foot diam. 0.065.


Walls reach their maximum diameter at the level of handle attachments and then draw in beneath a short vertical rim that is slightly thickened. Inverted "V" handles slant upward, reaching nearly to top of rim. Rather deep, narrowed body set on a well-defined, small,

Ill. 14. Skyphos, 73H-5. (Scale 1:2)
low, flared ring foot. Bottom of cup considerably thicker than walls. Exterior of cup within ring foot relatively flat, but interior dips to slight point in center (not illustrated).

Low-footed skyphoi of this general shape were made from approximately the thirteenth to the seventh centuries B.C. (Late Helladic to Subgeometric Periods). The best parallel is a LH IIIC (Mycenaean Granary Class) skyphos from Attica, but similar cups are found also among those of later date. The form is common in the eastern end of the Mediterranean but not in the western end.

Pantile

Pl. 29 (p. 176).

L. 0.790; w. 0.412; th. 0.019.

One corner broken off; concreted patches. Red (10R 4/6) slip; red (2.5YR 5/6) fabric mixed with irregular bits of coarse and very coarse white grit so that surface is quite rough.

Laconian pantile with a slightly raised band along one short end and a second, narrower band along the opposite short end. The upper, concave surface is ridged with many longitudinal grooves (0.015 to 0.030 apart), possibly run-off channels for rain. Some grooves zigzag.

For general comments on roof tiles, see Appendix 5 (pp. 109-11).
Amphora toe

Ill. 15; pl. 4 (p. 151).

Pres. h. 0.212. Amphora toe and fragment of flared wall. Red (10R 4/6) slip and red (2.5YR 4/6) fabric with medium black grit, medium red grit and a few very fine sparkles. Knobbed toe is drawn to a blunt tip whose irregularly modeled shape resembles an acorn cap. Finger-tip-sized hollow in center interior of toe.

Rhodian, second quarter of third century B.C.63

Ill. 15. Amphora toe, 73H-7. (Scale 1:2)
KNIDOS II

1973 Site 16 (R)

Knidos II lies off the western tip of the Datça Peninsula, near the ancient harbor of Knidos (ill. 2, p. 5). The site was one hundred meters west of Knidos I (p. 12).

Artifacts were found at a depth of about 36 meters at the base of a steep cliff. Possibly some material still buried in the sand. The pottery recovered is a mixed batch which includes Hellenistic and Byzantine artifacts.

Pantile 73R-1

Ill. 16; pl. 29 (p. 176).
L. 0.632; w. 0.546; average th. of pan 0.030. Complete except for small piece broken from edge. Slip probably reddish-brown but surface heavily concreted; reddish-orange (2.5YR 6/6) fabric with abundant grit: fine white; fine, medium and coarse black; and medium to coarse purple.

A Corinthian-style roof tile with a fairly uniform rim, squarish in section, which frames the two long sides and one end. The corners of the unrimmed end are cut off obliquely. The side rims are slightly higher (0.052 and 0.058) than the end rim (0.047) with the transition a gentle slope.

Corinthian-type tiles were used from the Archaic to the Byzantine period. This example, which is similar
to tiles from the fifth-century A.C. Martyrium of St. Philip the Apostle at Hieropolis (modern Pamukkale), is adjudged Byzantine. Comparable tiles have been noted at two other Byzantine sites in western Turkey: Heraclea under Latmos and Myndos (modern Gümüşlük). For general comments on roofing tiles, see Appendix 5 (pp. 109-11).

Cover tile

Ill. 17; pl. 29 (p. 176).
Approx. l. 0.560; w. 0.160; average th. 0.017. One corner chipped. Red (10R 5/6) slip; red (2.5YR 5/6) fabric with very coarse white grit and coarse to very coarse black grit.

A semi-circular cover tile. The sides waver in and out along their length and the core bulges between upper and lower surfaces, all perhaps the results of uneven firing.

Fits pantile 73R-1 (above).

Amphora

Ill. 18; pl. 10 (p. 157).
Pres. h. 0.400; est. rim diam. 0.090. Neck, both handles and part of shoulder carination preserved. Portion of rim missing. Concreted. Reddish-brown (2.5YR 5/4) slip; red (2.5YR 5/8) fabric with speckled appearance due to
Ill. 18. Amphora, 73R-6. (Scale 1:2)
frequent fine, medium and large white grit; fine and medium buff grit; and occasional fine black grit.

Long cylindrical neck tapers slightly to mouth. Thin, rolled rim. Handles extend horizontally from attachments below rim, then curve smoothly and drop to a rapidly sloping shoulder. Outer surface of handle faceted by central longitudinal band with slanted sides; inner surface rounded. Handles generally well integrated. Wheel ridges on interior of neck. At junction of neck and shoulder there is an irregular thickening of wall where the two sections are joined (not illustrated). Body of amphora probably only slightly greater in diameter than shoulders.

Top of handle badly eroded and concreted, but there is a residual impression of a stamp with acute end, similar in shape to leaf-shaped stamp with bull's head on INA-survey amphora 82 N-4. Leaf-shaped stamps are uncommon. Neck and handles of the two amphoras are alike.

Knidian, 107-97 B.C. 70

For fragments of other Knidian amphoras, see 80B-1 (pp. 52-54) and 80-(?)3 (pp. 87-89).

For general discussion of Knidian amphoras, see Appendix 3 (pp. 105-107).

Amphora 73R-7

Bodrum Museum No. 7105

Pl. 18 (p. 165).
Pres. h. 0.779; max. diam. 0.292. Part of rim and one handle missing. Surface generally either concreted or worn to pebbly surface. Slip reddish-brown (5YR 4/3); fabric reddish-yellow (7.5YR 7/6) at core and red (2.5YR 5/8) at surface. Fabric very gritty with medium to large black grit and infrequent large buff and red grit.

Elongated body marked by carination of shoulders and slight indentation of waist with a narrowing lower portion tapering to small toe flat on bottom. Shoulders slope upward to short neck with a double rim: the lower everted edge turns in and is surmounted by widely flared lip. One extant strap handle; neck shows impressions of attachments of second handle, whose lower disk had not been well integrated.

Overall shape similar to Kuzmanov Type X, fifth to sixth centuries A.C. 71
SANCAK BURNU

1973 Site 18 (T)

Sancak Burnu is on the north coast of the Gökova Gulf (ill. 2, p. 5). The wreck site lies at a depth of 33 meters on a sand slope with rock outcropping. Amphoras concreted together. Looters using dynamite have exposed traces of wooden hull. Wreck in excellent condition. The two pieces recovered were Rhodian, probably of the first to second centuries A.C. A Knidian base noted by diver but not retrieved.

For general discussion of Rhodian amphoras, see Appendix 2 (pp. 98-104).

Amphora

Ill. 19; pl. 6 (p. 153).
Pres. h. 0.315; rim diam 0.116. Amphora top complete down to beginning of shoulder. Some concretion. No slip; reddish-yellow (5YR 6/6) fabric with fine and very coarse white grit.

Rather thin rolled rim, shallowly undercut. Upper ends of horned handles do not reach above rim. Handle shanks draw in somewhat to fit on narrow shoulders. Handles are circular in section and adequately integrated. Side views show both handles curve to right between attachments; longitudinal striations on shanks. Wheel ridges on neck interior. Distinctive long cylindrical
Ill. 19. Amphora, 73T-1. (Scale 1:2)
neck expands slightly at level of upper handle attachments; minimal spread at shoulders. Profile matches that of amphora recovered from Fishbourne Harbour, England.  

Probably first century A.C.  

Amphora

Pl. 8 (p. 155).

Pres. h. 0.468; rim diam. 0.115; th. of wall at shoulder 0.011. Portions missing from rim, neck and body. No toe. Concreted. Reddish-brown (5YR 5.4) slip; reddish-yellow (5YR 6/6) fabric with scattered fine, medium and coarse white grit along with clumps of white granules.  

Cylindrical neck tapers slightly to mouth. Rolled rim. Spur-top handles placed below rim level. Adequately integrated handles bowed to attach to narrow shoulders. Handles somewhat rectangular in section. Face of handle beneath one spur flattened. Exterior surface of body uneven; wheel ridges on interior approximately 0.015 center to center.  

Rhodian, first to second centuries A.C. Amphora would have had elongated, pointed toe.
ÇÖKERTME I

1980 Site 1 (A)

Çökertme I is located on the north coast of the Gökova Gulf (ill. 2, p. 5). The site is near a shallow reef sluiced by waves. Seventh- to fourth-century B.C. basket-jar handles recovered.

For general discussion of basket-jars, see Appendix 1 (p. 97).

Basket-jar handle 80A-1
Pl. 1 (p. 148).
H. of loop 0.180; base of loop 0.240; max. th. 0.450.
Handle had broken approximately at attachments to body.
Weak red (10R 4/4) slip; red (2.5YR 5/6) fabric with 10% to 20% very fine red, black and white grit and less than 10% very fine sparkles.

Head-on view of one end shows a roughly circular core wrapped in mantle of clay; mantle at opposite end had broken off. Handle had not been well integrated with amphora shoulder.

Seventh through fourth centuries B.C.
Basket-jar handle 80A-2 (below) also has a round cross-section.

Basket-jar handle 80A-2
Pl. 1 (p. 148).
Pres. 1. 0.390; approx. diam. 0.047.

Fragment of cylindrical handle with massive attachment.

Red (2.5YR 4/6) slip; reddish-yellow (5YR 6/6) fabric with fine black grit as well as fine, medium and large white grit.

Circular outline of core visible in mantle of clay that had joined handle to vessel.

Seventh through fourth centuries B.C.

The preceding basket-jar handle 80A-1 also has a round cross section.

Basket-jar handle 80A-3

Pl. 1 (p. 148).

Pres. h. 0.310; h. of loop 0.235; base of loop 0.231.

The ends of handle are round in section (diam. 0.056); handle is flattened at center of arc (diam. 0.045). Loop handle with portion of body preserved. Heavily concreted.

Dark brown (2.5YR 4/2) slip (?); light reddish-brown (5YR 6/4) fabric with fine black and orange grit, medium white grit and infrequent sparkles.

Handle had been joined to body with buttressing ribs; portion of body wall had broken away with handle. Some fingering on inside body wall at point of handle attachments.

Seventh through fourth centuries B.C.

Other loop handles with flattened surfaces are 73D-1
and 73D-2 (pp. 24-25), both from Kepçe Burnu, which is close to Çökertme. For tentative linking of flattened handle and everted rim on basket-jars, see note 170 (pp. 130-31).
ÇÖKERTME II

1980 Site 2 (B)

For comments on this site, see Çökertme I (p. 49).
A first-century B.C. Knidian amphora was recovered from a rock outcropping near a shallow reef. 80

Amphora

Ill. 20; pl. 11 (p. 158). 81

Pres. h. 0.290; oval rim 0.116 x 0.092. Neck and both handles preserved. Concreted patches. Reddish-brown (2.5YR 4/4) slip; fabric, darkening through reds (10R 5/8, 4/8, 4/6) from outer to inner surfaces, contains about 20% medium to coarse buff, red and black grit. Cylindrical neck; mouth pulled to oval by handles. Rim undercut; upper edge of rim compressed. Handles angle upward from attachment below rim; shanks curve in slightly toward shoulder. Upper handle attachments incompletely smoothed at neck; lower attachments obscured by corrosion. Handles compressed at bend. Handle shanks are somewhat oblong, comfortable to hold. Both handle tops are stamped with squarish imprints, one showing an amphora in relief (set lengthwise on handle) and the other, a grape cluster. Stamps poorly preserved; no lettering (pl. 11, p. 158). Finger grooves on both inside and outside of neck are faintly visible under encrustations. Overall workmanship of jar perfunctory.
Ill. 20. Amphora, 80B-1. (Scale 1:2)
Amphora is dated to the first century B.C. after 86 B.C. on the basis of its stamp with amphora device. Depiction of an amphora is common on late Knidian stamps, and most frequently is to be associated with the fabricant Kleupithes.

The complete amphora was probably similar to Knidian jars of the early first century B.C. pictured in V.R. Grace, *Amphoras and the Ancient Wine Trade* (Princeton, 1961) fig. 64, third and second jars from right. Her second jar has a possible Kleupithes stamp with amphora device and no name. For jar (unnumbered) from the Bodrum Museum of Underwater Archaeology, see plate 10 (p. 157).

Other Knidian survey fragments are 73R-6 (pp. 42-44) and 80-(?)-3 (pp. 87-89).

For general comments on Knidian amphoras, see Appendix 3 (pp. 105-107).
KIZIL BURUN

1980 Site 3 (C)

Kızıl Burun, meaning "Red Point," is located on the southwesternmost extension of the rocky Karayükselköy Peninsula (ancient Cynossema Peninsula) which veers toward the Greek island of Simi, north of Rhodes (ill. 2, p. 5). Ancient Loryma (modern Bozukkale) was located nearby. The area was an integral part of the Rhodian Peraea.

The site, which is reported looted, is at the base of a steep cliff at a depth of 45 meters. Artifacts recovered date to the second quarter of the third century B.C.

Jug

Ill. 21; pl. 23 (p. 170).
Pres. h. 0.125; rim diam. 0.087. Upper part of jug preserves complete neck, handle and part of curving shoulder. Heavily concreted. Strong to dark brown (7.5YR 5/6-4/2) slip; reddish-yellow (7.5 YR 6/6) fabric with fine black grit.

Constricted neck expands to prominent rounded rim. Below neck, body swells rapidly. Strap handle with mid-point groove on outer face along length. Ridges on neck interior.

The shape of the neck is found repeated by Hellenistic jugs of varying sizes. A black-glazed jug of similar
Ill. 21. Jug, 80C-1. (Scale 1:2)

Ill. 22. Lagynos, 80C-2. (Scale 1:2)
dimensions dating to first half of third century B.C. was reported from the Kerameikos. 87

Lagynos 80C-2

When found and first photographed, this vessel, though broken, preserved a profile complete from ring foot to upper handle attachment (pl. 24, p. 171). Subsequently the fragment was broken in two and the separate sherds catalogued and drawn individually. In this entry, the information is consolidated.

Ill. 22; pl. 24 (p. 171).

Est. pres. h. 0.230; est. max. diam. 0.230; est. neck diam 0.045; ring foot diam. 0.117. Rim and portion of neck and body missing. Slip red (10R 4/8 on lower part of vessel and 2.5YR 4/6 on upper part); red (2.5YR 5/8) fabric with fine, medium and large white grit, fine black grit and some sand.

The body swells out above the base to reach a maximum diameter at the level of lower handle attachment and then draws in rapidly to a narrow neck. The handle extends horizontally before curving slightly outward and down. Outer handle face lightly faceted; inner face marked with longitudinal grooves. Ring foot has fairly sharp edges and is well integrated with body. Within ring foot, bottom of vessel is flat. There is a faintly incised line 0.018
above ring foot and another line 0.056 above ring foot, marks which probably resulted from turning. On the interior of vessel a thickened zone marks the juncture of neck and body. Closely spaced wheel ridges on inside of neck, and widely spaced (0.017 center to center), lumpy ridges within bowl.

The vessel has a relatively broad, rounded body and a wide ring foot. It is similar to a lagynos found at Koroni, Greece, which is dated to the second quarter of the third century B.C., but dating of lagynoi by shape is tentative. In this instance the third-century date is supported by an associated amphora, 80C-4 (below), which also has a Koroni parallel.

The lagynos, a wine container with squat body, tall neck and single handle, was popular during the Hellenistic Period. It was manufactured in a number of places including Chios and Rhodes, both of which produced some stamped lagynoi.

Amphora 80C-4
Pl. 3 (p. 150).
H. 0.747; est. max diam. 0.530. Part of shoulder and body missing. Reddish-brown (2.5YR 4/4) slip; light red (2.5YR 6/6) fabric with about 20% fine to medium buff grit, less than 5% coarse to very coarse red and black grit, even less coarse to very coarse buff grit and 10% very fine
sparkles.

V-shaped reservoir flares to pronounced carination. Cylindrical neck is set on upward sloping shoulders, and finished with vertical rim band (0.037). Adequately integrated strap handles, positioned below rim, are flattened ovals in section. Handles arch, then draw in toward lower neck. Each handle marked with rectangular stamp; letters are indistinct (pl. 4, p. 151). Knobbled toe pulled down to thick point. Lump of shiny black substance, probably pitch, stoppered toe. Walls are thick (0.011); wheel ridges on interior. Slight hollowing, or ghost, in wall beneath one handle.

Rhodian, second quarter of third century B.C.

See Appendix 2 (pp. 98-104) for general comments on Rhodian amphoras.
GUMUŞLUK

1980 Site 5 (E)

Gümüşlük, meaning "silver place" (silver used to be mined here), is situated on the Aegean coast west of Bodrum, at ancient Myndos (ill. 2, p. 5). A fourth-century A.C. amphora and amphora toe were recovered; additional jars left in place. A "bean pot" found at the site shows the same sturdy construction as the amphora, but its shape is unusual. A stone weight also was found.

Amphora toe 80E-1
Ill. 23; pl. 17 (p. 164).
Pres. h. 0.157. Reddish-brown (2.5YR 5/4) slip; red (10R 5/8) fabric with very fine sparkles.
Profile similar to that of toe of amphora 80E-2 but fabric different.

Fourth century A.C.

Amphora 80E-2
Pl. 16 (p. 163). H. 0.683; max. diam. 0.373; rim diam. 0.121. Complete. Concreted patches. One handle narrower than the other (0.027, 0.032). Narrower handle cracked (in antiquity?) along its upper curve. Slip (2.5YR 4/6) red; light red (2.5YR 6/6) fabric with frequent fine to medium black grit.
Ill. 23. Amphora toe, 80E-1. (Scale 1:2)

Ill. 24. Pot, 80E-4. (Scale 1:2)
Bag-shaped body with tapering peg toe. From maximum diameter at about one-third of total height, body draws in slightly about mid-point, and then swells over shoulders. Cylindrical neck with faint vertical band at base; upper neck bulges immediately beneath a well-made roll rim. Flat strap handles with shallow longitudinal depression along outer surface.

Body surface from level of lower handle attachments to below curve of shoulder, a distance of 0.100, decorated with narrow combing. The next subsequent body section (0.047 wide) is smooth. Lower three-fourths of body grooved with finger-sized ridges that become smaller above toe and disappear altogether at juncture of toe and body (a point 0.076 from bottom of toe). Flat bottom of toe slightly splayed.

A shoulder area between handles, when cleaned of concretion, showed one shallow concentric groove and graffito "MA" inscribed before firing (pl. 17, p. 164). 99

Amphora belongs to a general type in existence from the third to sixth century A.C.; type, symmetrical and full in body shape in third century, tends to become more irregular in profile, and more elongated and bag-like with passage of time: C. Scorpan, "Origini și linii evolutive in ceramica romano-bizantină (sec. IV-VII) din spațiul Mediterranean și Pontic," Pontica 9 (1976) 158 and plate 3. Amphora body is closest in shape to that of amphorases
from a fourth-century A.C. wreck at Yassı Ada, Turkey.  

Fourth century A.C.

Ovate stone with hole 80E-3  

Pl. 27 (p. 174).  

Max. l. 0.024; max w. 0.021; approx. diam. of hole  
(concreted) 0.030; approx. th. of hole 0.050. Gray stone,  
heavily encrusted.  

Basal end thinned. Thickness increases toward top,  
which is pierced.  

Probably a fishing-net weight.

Pot 80E-4  

Ill. 24; pl. 26 (p. 173).  

H. 0.180; max. diam. 0.184; base diam. 0.150. Complete.  

Dark reddish-brown (2.5YR 3/4) slip; strong brown (7.5YR  
5/6) fabric with medium black grit and large orange grit.  

From a flat bottom the sides flare slightly. Shoulders  
begin at a point of strong carination and draw in quickly  
to wide mouth. Rim is a narrow, downturned collar with  
projecting interior edge. Two ring handles straddle  
carination. Handles, roughly oval in section with length-  
wise depression. Encircling groove at shoulder mid-point.  

Pottery with same blocky look, ring handles and  
decorative incising has been recovered from Adriatic.  

Possibly fourth century A.C.
KARACA ADASI II

1980 Site 7 (G)

Karaca Adasi, meaning "Deer Island," is located in the eastern end of the Gökova Gulf (ill. 2, p. 5).\textsuperscript{102}

Karaca Adasi II, a refuse dump area, is approximately twenty-five meters offshore from an ancient foundation wall. A fragment of an unusually large ring foot and a Rhodian amphora (first to second centuries A.C.) were recovered.

The 1973 sampling of another location off the same island (Karaca Adasi I, p. 27) yielded an unidentified pithos fragment and a Rhodian handle (third to first centuries B.C.). The two Rhodian jars, separated stylistically by centuries, emphasize the long duration of Rhodian interest in this area, which was included in the Peraea.

Amphora 80G-1

Pl. 7 (p. 154).\textsuperscript{103}

Pres. h. 0.295; rim diam. 0.118. Amphora top with complete rim and neck with one handle and small portion of shoulder. Second handle missing but its attachments are preserved. Some surface areas gouged off. Red (10R 4/6) slip; red to dark red (10R 5/8 to 2.5YR 4/6) fabric, smooth and even, with less than 5% coarse black grit and 5% very fine sparkles.
Rolled rim. Horned handle with small blunt protrusion at rim level (ill. 25). Handle shank bowed; longitudinal striations. Handle in section is an irregular circle approximately 0.030 in diameter. Base of neck roughly 0.170 in diameter. Slight taper of neck above shoulders.

Upper portion of handle was strengthened with extra clay and carefully shaped. Strong handle welds; the attachments of the second handle had held firm even though the shank itself broke away, indicating how well made the joins were. Angular ridge on interior where neck joined body.104

First to second centuries A.C. Complete amphora probably would have had narrow shoulders and tapering toe.105 Handle 80M-1 (pp. 80-82) is from an amphora of the same general class.

For general discussion of Rhodian amphoras, see Appendix 2 (pp. 98-104).

Ill. 25. Amphora, 80G-1, rim and handle detail. (Scale 1:2)
Ring foot

Pl. 27 (p. 174).
Pres. circumference 0.240; th. of splayed lower edge 0.012; th. at juncture with body 0.009; th. of vessel bottom 0.006. Fragment of ring foot from large container. Reddish-brown (5YR 4/4) slip; reddish-yellow (5YR 5/6) fabric with fine and large white and black grit along with fine and large sparkles.

Vessel has rounded bottom and flared ring foot thickening at its lower edge. Body and foot well integrated.

Possibly a ring foot from pithos. For a pithos top recovered from an associated site, see 73E-2 (pp. 28-29).
1980 Site 8 (H)

Bencik is situated on the Hisarönü Gulf at the base of the Datça Peninsula (ill. 2, p. 5). 106


Glass neck 80H-1

Pl. 30 (p. 177).
Pres. h. 0.055; est. diam. 0.056; th. 0.001. Fragment of rim and neck. Translucent; glass marked with striations and laced with air bubbles of various sizes. Pale olive green (5Y 6/4) neck with darker green rim.

Rim formed by curling edge of glass to inside. According to G. Weinberg, the many large bubbles are indicative of a low-quality glass intended for everyday use rather than for export.

Dated to the late Roman or medieval period by Weinberg. 107

Pot 80H-2

Ill. 26; pl. 22 (p. 169). 108
Pres. h. 0.136; max. diam. 0.170; rim diam. 0.142. Bottom missing. Surface discolored. No apparent slip. Dark gray (2.5Y 4/0) fabric with less than 5% coarse white grit and very fine sparkles.

Pot has round belly, narrowed waist and flaring rim finished in a piecrust edge with interior ledge and upright lip to seat a lid. Flat strap handles with two shallow indentations running the length. Wheel ridges approximately 0.060 apart on interior of belly; ridges farther apart in shoulder area (not illustrated). On exterior, several faint concentric indentations around shoulder and body.

Pot shape is midway between the classic, rounded chytra, which was used chiefly as a kettle for heating water, and the shallow, covered lopas, used as a casserole for stewing. Its rounded body indicates the pot was placed on stand to be heated, not set directly in the fire as vessels with ring feet were. Estimated capacity: two liters.

Profile similar to that of pot from Demetrias, Thessaly, dated to the second half of the fifth- to early sixth-century A.C.

Bowl 80H-3

III. 27; pl. 23 (p. 170).

Pres. h. 0.076; est. max. rim diam. 0.090 (mouth slightly
Ill. 26. Pot, 80H-2. (Scale 1:2)

Ill. 27. Bowl, 80H-3. (Scale 1:2)

Shoulder carination 0.040 below short upstanding rim. "Inchworm" handle attached to shoulder; one end of handle integrated with body, the other end only pressed down. Two incised lines on shoulder at base of rim. Shoulder angle, which was compacted, may have been turned with tool, resulting in two other incised lines on upper surface and two more below angle; distance across angle between these lines is 0.016. The slightly elevated surface of the next zone is stamped with egg and dart pattern above a horizontal rib. Egg and dart relief repeated below rib. Lowest extant section has irregular surface, possibly eroded leaf motif. Wall thickness of molded portion even; patterning of individual details regular but not crisp. Rote ordering of elements. Vessel may have been made in two parts by joining a mold-made bowl to a sloping shoulder.

The egg and dart is a decorative feature of Hellenistic hemispherical mold-made ceramic relief bowls. S.I. Rotroff has attributed the advent of these bowls to Athens between 240-220 B.C.; they continued to be manufactured into the first century B.C. Known centers of production include Greece, the west coast of Asia Minor, the Black Sea area, Syria, Egypt, Italy and Spain. Local imitations common.
The stamped design of the survey piece, so typical of mold-made bowls, was used here to embellish an atypical vessel with carinated shoulders, narrowed mouth and improvised handles. No parallels have been found for the shape. It was perhaps an individual potter's response to the mold-made bowl mania.

Second to first centuries B.C.

Amphora

80H-4

Ill. 28; pl. 20 (p. 167).

Pres. h. 0.175; mouth diam. 0.101. Complete neck with two handles and portion of shoulder preserved. Dark brown (7.5YR 3.5/4) slip; yellowish-red (5YR 4/6) fabric with medium gray and brown grit as well as very fine and medium sparkles.

Neck has straight sides with finger grooves on inner and outer surfaces. Rim flares slightly; lip smoothed. Cleft on inside where neck joins body. Upper handle attachments poorly integrated; lower attachments adequate. Two raised ribs run length of each handle.

Amphora belongs to same general type as 80E-1 and 80E-2 (pp. 60-62); absence of body leaves date uncertain.

Early Byzantine.

Jug

80H-5

Ill. 29; pl. 25 (p. 172).
Pres. h. 0.230; max. diam. 0.178; base diam. 0.130.
Portion of rim and neck missing. Trace on handle of dark brown (7.5YR 4/4) slip (?); light reddish-brown (5YR 6/4) fabric with very fine, fine and medium sparkles mixed with gray, brown, black and purple grit.

Jug with a carefully modeled concave base that has a wide flattish perimeter and an indented center with small pointed central projection (not the flattish "button" often noted with this type of base.)\textsuperscript{119} Rounded body. Point of maximum diameter of belly is just below the lower handle attachment. Plain strap handle. Wheel ridges both outside and inside. Curl of clay in center of interior bottom. Contained lump, perhaps pitch.

A somewhat similar parallel found at Histria, dated to the fifth to sixth centuries A.C.\textsuperscript{120}

Jug

\textsuperscript{80H-6}

Ill. 30;\textsuperscript{121} pl. 26 (p. 173).
Pres. h. 0.260; est. max. body diam. 0.210.
Fragment preserves neck up to probable rim height, one complete handle and a portion of body. Concreted. Trace on handle of brown (7.5YR 5/4) slip (?); yellowish-red (5YR 5/8 to 5/6) fabric but varying striations of color were observed. Clay that is rosy-orange along outside surface shades to orange and then to brown along interior surface; clay reddish-brown at core changes to brownish-
Ill. 30. Jug, 80H-6. (Scale 1:2)

(Scale 1:2)
gray at inner wall. Clay not well mixed: pockets of sand and accumulations of fine white grit; frequent fine sparkles on interior surface.

Rounded body reaches maximum diameter below handle. Cylindrical neck. Pause in curve linking body and neck. Rather broad (0.033) flattish strap handle extends horizontally from neck and drops vertically to body. "Rim" area concreted; slight thickening noted, but neck may have continued higher. On neck interior there are flat ridges (not illustrated). Exterior of belly marked with widely spaced shallow indentations while the lower body exhibits a series of closely spaced, faint groovings.

Early Byzantine. 122

Amphora toe 80H-8
Ill. 31; pl. 20 (p. 167).
Pres h. 0.053; cap diam. 0.022. Solid toe with acorn-cap-like end; "stem" broken off. Slip probably brown but surface heavily concreted; reddish-yellow (7.5YR 6/6) fabric with large white and black grit and fine sparkles.

Similar in shape to 80H-9 (below), which see for parallels.

Early Byzantine.

Amphora toe 80H-9
Ill. 32; pl. 20 (p. 167).
Pres. h. 0.118; cap diam. 0.028. Solid toe with acorn-cap-like end; beginning flare of body preserved. Strong brown (7.5YR 5/6) slip; reddish-yellow (5YR 6/6) gritty fabric with irregular fine, medium and large black, gray, brown and purple inclusions and very fine sparkles.

A Bodrum Museum amphora (no. 7414) from an unspecified underwater site has a similar toe (pl. 19, p. 166). This amphora has a long oval body that widens slightly in lower half and a short, cylindrical neck; it is heavily ridged overall. Amphoras from an early Byzantine cistern on Samos have a comparable body profile, but their toes are flat and splayed at the bottom, more like those of 80E-1 and 80E-2 (pp. 60-62).

Early Byzantine.

Amphora 80H-10
Ill. 33; pl. 5 (p. 152).
Pres. h. 0.455; rim diam. 0.132. Upper part of an amphora including portion of shoulder and body. Dark brown (7.5YR 4/4) slip; reddish-yellow (7.5YR 6/6) fabric with scattered fine brown grit.

Long cylindrical neck on sloped shoulders. Neck slightly indented beneath rolled rim. Wheel ridges on interior. Thick body walls (0.011). Handles bend at an acute angle and clay is compressed somewhat at bend. Handle attachments well integrated. Upper handles
impressed with rectangular stamps. One stamp illegible; second stamp names fabricant Themison (pl. 5, p. 152).

Rhodian, second half of second century B.C. 126

This is the classic Rhodian jar made from the mid-third into the first century B.C. 127 The toe would have been a short cylinder. 128 Because this shape remained remarkably constant throughout approximately two hundred years, it is not possible to date precisely jars without stamps. 129

For general comments on Rhodian amphoras, see Appendix 2 (pp. 98-104).

Ill. 33. Amphora, 80H-10. (Scale 1:4)
KAMERİYE ADASI

1980 Site 9 (J)

Kameriye Adası, an island in the eastern Hisarönü Gulf, is located off the north coast of the Bozburun Peninsula, near the harbor of modern Delikiyol (ill. 2, p. 5).

Accumulations of refuse, which are scattered up to one hundred meters offshore from an abandoned monastery, yielded miscellaneous artifacts.

Amphora 80J-5

Pl. 8 (p. 155). Pres. h. 0.551; rim diam 0.123; th. of wall at shoulder 0.010. Amphora missing part of one handle and portion of body from shoulder to toe. Concreted. Red (2.5YR 4/6) slip and red (2.5YR 5/6) fabric with fine black and streaks of clustered white grit.

Cylindrical neck that broadens toward its lower end is set on an oval body with falling shoulders. Rolled rim undercut. Spur-top handles level with rim; spurs vertical. Handle arch reinforced with clay; attachments well joined. Handle shanks somewhat bowed; face nearest neck indented and face farthest from neck rounded. Wheel ridges on interior of belly roughly 0.002 center to center; ridges somewhat closer (0.0175) at shoulder. Undulating outer surface.

Rhodian, first to second centuries A.C. Jar would
have had a pointed, elongated toe.\textsuperscript{133}

For general discussion of Rhodian amphoras, see Appendix 2 (pp. 98-104).
1980 Site 12 (M)

Alakışla Koyu /Yıldız Adası is located along the north coast of the Gökova Gulf (ill. 2, p. 5). Shallow site with scattered, concreted surface finds.

Of seven sherds recovered, four were from Rhodian amphorae of the first to second centuries A.C. Two other fragments were of an earlier date: a third-century B.C. Rhodian amphora, and a Hellenistic handle, possibly from a lagynos, which is quite likely Rhodian as well. The neck from a Byzantine jar also was retrieved.

For general discussion of Rhodian amphorae, see Appendix 2 (pp. 98-104).

Amphora handle 80M-1

Ill. 34; pl. 7 (p. 154).
Pres. h. 0.312; est. rim diam. 0.120. Fragment preserving part of rim and neck and one complete handle. Red (2.5YR 4/6) slip; red (2.5YR 5/8) fabric with fine white and medium gray grit.

Rolled rim slightly undercut. Highest point of handle is at rim level. Upper handle attachment is thickened and well integrated. Lower attachment disc, however, which had separated intact from body, had not been well joined; disc positioned at an angle to accommodate a rapidly sloping shoulder. Outer surface of neck uneven; no wheel ridges
Ill. 34. Amphora handle, 80M-1. (Scale 1:4)

Ill. 35. Amphora handle, 80M-2. (Scale 1:4)
on interior.

First to second centuries A.C. Complete amphora probably would have had narrow shoulders and tapering toe.

Amphora handle

Ill. 35; pl. 6 (p. 153).

Pres. h. 0.275; best est. rim diam. 0.115. Fragment preserving small portion of rim and neck with one complete handle. reddish-brown (2.5YR 4/4) slip; light red (2.5YR 6/6) fabric with infrequent fine white grit.

Rolled rim. Arched handle set below rim. The nearly vertical shank would have joined an almost horizontal shoulder. Clay compressed in bend of handle. Upper handle attachment solidly made; lower attachment also well integrated, as seen in the irregular parting of clay at the break. Handle is comfortable to grasp with flattened surface facing neck and rounded surface to outside. Button stamp 0.025 in diameter on upper handle surface; name illegible.

Rhodian button stamps generally date to the third century B.C. They occur on jars with both a rim band and a rolled rim, and have been recovered from findspots ranging widely around the eastern Mediterranean and Black Sea areas: Alexandria, Palestine, Rhodes, Caria, Samos, Romania, Bulgaria.
Handle profile is similar to that of a handle of fabricant Xenotimos illustrated by Canarache.\textsuperscript{137} Xenotimos is paired with eponym Pausanias on amphoras from the Hotel de Soleil, Rhodes, dating ca. 240-230 B.C.\textsuperscript{138}

Amphora 80M-3

Pl. 7 (p. 154).

Pres. h. 0.250; diam of neck at shoulder approximately 0.225. Neck and shoulder fragment; no rim or handles. Surface pitted and gouged. Red (2.5YR 5/6) slip; red to yellowish-red (2.5YR 5/8 to 5YR 5/6) fabric with fine white grit.

Cylindrical neck above rapidly sloping shoulders. Pronounced groove on interior where neck joins shoulders, with a second groove 0.035 below first, followed by a third at interval of 0.025.\textsuperscript{139} Shallow circular imprints where lower handle attachments had come loose, showing handles had not been well integrated with body.\textsuperscript{140}

First to second centuries A.C.\textsuperscript{141}

Amphora toe 80M-4

Pl. 7 (p. 154).

Pres. h. 0.310. Fragment preserving lower end of amphora with solid, elongated toe. Reddish-brown (2.5YR 4/4) slip (?); red (2.4YR 5/6) to reddish-yellow (5YR 6/6) fabric with pocket of unmixed sand.\textsuperscript{142}
At a distance of 0.080 from bottom of toe, the lower walls begin to flare; at 0.130 from bottom of toe, walls spread more noticeably. Interior wall marked with wide finger grooves, as much as 0.033 apart. 143

First- to second-century A.C. Rhodian amphoras have horned handles, a slim body and a similar toe. 144

For another elongated toe, see 80M-6 (below).

Amphora

80M-5

Ill. 36; pl. 20 (p. 167).
Pres. h. 0.107; best est. rim diam. 0.095. Neck fragment preserving partial rim and one complete handle.
Reddish-brown (2.5YR 4/4) slip; red (2.5YR 5/8) fabric with fine white grit and fine sparkles.

Short cylindrical neck set on sloping shoulders; slight demarcation between the two parts. Low-profile rim rounded off but not flared or thickened. Tool-made groove below rim and fingering on outside surface of neck. Handle is flattened oval in section; lower shank stretches out to attach to spreading shoulder. Bulge of clay marks the upper handle attachment on one side. Probably amphora, but might have been a one-handled vessel.

Byzantine.

Amphora toe

80M-6

Ill. 37; pl. 7 (p. 154).
Ill. 36. Amphora, 80M-5. (Scale 1:2)

Ill. 37. Amphora toe, 80M-6. (Scale 1:2)

Ill. 38. Handle, 80M-7. (Scale 1:2)
Pres. h. 0.150. Long tapered amphora toe. Reddish-brown (5YR 4/4) slip; red (2.5YR 5/6) fabric with infrequent coarse gray grit.

Center of toe filled with scraps of clay.

First- to second-century A.C. Rhodian amphoras have horned handles, a slim body and elongated toe. 145

80M-4 (pp. 83-84) is similar toe.

Handle

Ill. 38; pl. 23 (p. 170).

Pres. h. 0.065. Fragment of small handle. Weak red (10R 5/4) slip; red (2.5YR 5/8) fabric with very fine black grit and very fine sparkles.

Sherd preserves one splayed attachment. Handle extends horizontally, rises slightly, then turns downward. Pointed handle bend. Crease in clay close to attachment knob.

Similar in configuration to some handles of lagynoi, but possibly a handle from miniature amphora.

Hellenistic.
ARTIFACTS OF UNKNOWN PROVENIENCE

Amphora 80-(?)-1

Ill. 39; pl. 6 (p. 153).

Pres. h. 0.076; rim diam 0.122. Fragment preserves complete rim with portion of neck and upper part of one handle. Strong brown (7.5YR 4/6) slip; reddish-yellow (5YR 6/8) fabric with fine to medium black grit.

Well-defined rolled rim curves out above a smoothed indentation. Handle, placed just below rim, extends nearly horizontally from neck and turns down at a ninety-degree angle. Handle joined to neck with bulging circular attachments. Rectangular stamp (illegible) on top of handle.

Handles with right-angle bends are known from the third and second centuries B.C. The earlier handles seem to be placed higher on neck than later ones.

See Appendix 2 (pp. 98-104) for general comments on Rhodian amphoras.

Amphora toe 80-(?)-3

Ill. 40; pl. 10 (p. 157).

Pres. h. 0.119; diam. of flange 0.065. Toe with fragment of amphora wall. Yellowish-red (5YR 5/6) slip; red (2.5YR 5/6) fabric with very fine and medium white grit as well as fine and large black grit.

Solid, conical amphora toe surmounted by flange whose
Ill. 39. Amphora, 80-(?)-1. (Scale 1:2)

Ill. 40. Amphora toe, 80-(?)-3. (Scale 1:2)
turned-up edge forms encircling trough. Amphora walls begin spread immediately above flange.

Toe with similar flange, a surface find at Berenice, is reported by Riley. Fabric color identical but ware not as gritty and body flare begins higher up.

Flanged toes are characteristic of Knidian amphorae into the second century A.C.

For general discussion of Knidian amphorae, see Appendix 3 (pp. 105-107).

Bowl

Pl 30 (p. 177).

Est. diam. 0.265; th. 0.004-0.007.

Rim sherd. Interior glazed; exterior mostly unglazed and concreted. Yellowish-brown (10YR 5/8) and yellow (5Y 7/6) glaze; red (2.5YR 5/6) fabric with very infrequent coarse white grit.

Narrow (0.016) band backs rim on exterior. Band possibly formed by compressing and turning under original rim of bowl rather than by applying separate piece. Band glazed yellow, but rest of exterior unglazed. Interior glazed yellowish-brown with decorative yellow brush strokes in free-flowing pattern. Finger ridges on inside and outside surfaces.

Considered to be Egyptian and dated to the Mamluk period of the fifteenth century A.C.
CONCLUSIONS

Of the seventeen sites surveyed in 1973 and 1980, ten are wreck sites, summarized in Table 3. Four of the remaining sites are refuse dumps, while a single item is attributed to each of three sites.

Table. 3. Wreck Sites Dated by Survey Finds

<table>
<thead>
<tr>
<th>SITE</th>
<th>ARTIFACTS</th>
<th>DATE BY CENTURY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Çökertme I</td>
<td>Basket-jars</td>
<td>7th-4th B.C.</td>
</tr>
<tr>
<td>Kepçe Burnu</td>
<td>Basket-jars</td>
<td>7th-4th B.C.</td>
</tr>
<tr>
<td>Kızılagaç Adası</td>
<td>Chian jars</td>
<td>1st-2nd A.C.</td>
</tr>
<tr>
<td>Kızıl Burnu</td>
<td>Rhodian jar</td>
<td>1st-2nd A.C.</td>
</tr>
<tr>
<td>Knidos I</td>
<td>Hellenistic lamps</td>
<td>3rd-5th A.C.</td>
</tr>
<tr>
<td>Alakışla/Yıldız</td>
<td>Rhodian jars</td>
<td>1st-2nd A.C.</td>
</tr>
<tr>
<td>Sancak Burnu</td>
<td>Rhodian jars</td>
<td>1st-2nd A.C.</td>
</tr>
<tr>
<td>İskandil Burnu</td>
<td>Roman jars</td>
<td>3rd-5th A.C.</td>
</tr>
<tr>
<td>Gümüşlıük</td>
<td>Late Roman-early Byz. jars</td>
<td>4th A.C.</td>
</tr>
<tr>
<td>Knidos II</td>
<td>Early Byz. jar</td>
<td>5th-6th A.C.</td>
</tr>
</tbody>
</table>

The wide range of dates assigned to the pottery confirms what already was known—that traders have sailed along the coast of southwestern Turkey for centuries.

Fifty-nine artifacts were studied. Of these, thirty-eight (63%) are amphoras, thirteen (22%) coarse ware, and eight (15%) miscellaneous items.

The amphoras are tabulated by type in Table 4. The most noticeable feature is the preponderance of Rhodian-type jars. They number more than any other amphora group, and were found at many more sites. The figures are not surprising. The importance of Rhodes as a commercial
Table. 4. Frequency of Survey-Amphora Types

<table>
<thead>
<tr>
<th>AMPHORA TYPE</th>
<th>NUMBER OF EXAMPLES</th>
<th>NUMBER OF SITES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhodian</td>
<td>15</td>
<td>8 (9)</td>
</tr>
<tr>
<td>Late Roman-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>early Byzantine</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Basket-jar</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Roman</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Knidian</td>
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<td>2 (3)</td>
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<td>1</td>
</tr>
<tr>
<td>Byzantine</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Unidentified</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

Notes: One Rhodian and one Knidian jar are of unknown provenience.

The total number of amphorae recovered in 1973 and 1980 is forty-six, but eight have not been identified yet and are not mentioned in this study. Among this unreported group there are no further examples of basket-jars, Knidian or Chian amphorae and probably no Rhodian jars. A final accounting might modify the numbers in other groups.

center during the Hellenistic period is well known; further, it was at this period that she controlled the neighboring Anatolian mainland, known as the Incorporated Peraea. 152

In the third century B.C., Rhodes replaced Athens as the principal eastern Mediterranean trading center, 153 a position of preeminence that faded gradually over the next centuries. It is not clear to what extent Rhodian commerce was affected in the second century by the establishment of a free port at Delos. P.M. Fraser found evidence that trade links with Egypt, for instance,
continued to be strong, involving direct import-export exchanges as well as goods intended for reshipment.\textsuperscript{154} In any event, Rhodian amphoras found their way to nearly every corner of the Mediterranean, sometimes in astonishing numbers.\textsuperscript{155}

Rhodian activity along the Turkish coast has been noted in a companion study of an anchorage site at Serçe Limani.\textsuperscript{156} There, of the third-century B.C. artifacts recovered, 86\% are Rhodian amphoras, and of the second-century finds, 40\% are Rhodian amphoras. Among the first-century finds, however, there is not one Rhodian jar, a fact attributed to the rising importance of Tarsus.\textsuperscript{157}

The large proportion of Rhodian amphoras recovered from the survey sites is in remarkable contrast to the small proportion of Knidian jars found: only three of the latter were recovered, less than 1\% of the total amphora count, despite the fact that part of the survey was probing the Knidian coast, and Knidos, like Rhodes, exported a cheap and popular wine. One might expect to find numbers of Knidian jars here, if anywhere, but such was not the case. Again, the situation is echoed at the nearby Serçe Harbor site where, of 82 amphoras identified, only two were Knidian, of the second century B.C.\textsuperscript{158}

Knidian amphoras are found more frequently than Rhodian jars at only three locations: Knidos, and two sites to
the west, Delos and Athens. M. Rostovtzeff has reported evidence of Knidian trade to the north, and a group of Knidian handles is known from Alexandria to the south. Possible explanations for what seems a surprising scarcity of these jars in home waters might be that Knidian ships had little reason to hook around the coast toward Rhodes, and perhaps the volume of Knidian trade simply did not equal that of Rhodes.

Table 5 illustrates how the dated survey finds are grouped by periods. There is a wide span of 2500 years between the earliest and the latest piece, but the general concentration falls in the middle 1200 years.

Of interest is the rather extensive collection of artifacts assigned to the Hellenistic period. Once again the emphasis is echoed by figures from the Serçe Limanı study, diagrammed in Table 6. There, the largest grouping of finds, twenty-one, is dated to the second century B.C. In both studies the many pieces from this period would seem to reflect the ferment of Hellenistic trading, a time when harbors were improved, and when the biggest merchant ship of antiquity, the Syracusia, was built.

One other correlation between our survey finds and the Serçe Harbor finds might be mentioned: in both cases, there is a noticeable decrease in the number of artifacts after the seventh century A.C.

This collection of survey artifacts confirms the long
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<thead>
<tr>
<th>MYCENEA N</th>
<th>ARCHAIC</th>
<th>HELLENISTIC</th>
<th>ROMAN</th>
<th>LATE ROMAN-</th>
<th>LATE</th>
<th>MEDIEVAL</th>
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<tr>
<td>LH IIIC</td>
<td>7th-4th B.C.</td>
<td>3rd-1st B.C.</td>
<td>1st-3rd A.C.</td>
<td>4th-7th A.C.</td>
<td>8th-11th A.C.</td>
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Amphoras

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<tr>
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<th>Rhodian</th>
<th>80E-1</th>
<th>80E-2</th>
<th>80H-4</th>
<th>80H-8</th>
<th>80H-9</th>
<th>73B-1</th>
<th>73R-7</th>
<th>73H-3</th>
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<td>80A-1</td>
<td>80C-4</td>
<td>73T-1</td>
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<td>80M-2</td>
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</table>

Other artifacts

| skyphos,  | jug, 80C-1 | "bean pot," 80E-4 | bowl, |
| 73H-5     | lagynos, 80C-2 | cook pot, 80H-2 |       |
|           | lagynos, 73H-1 | jug, 80H-5 |       |
|           | handle, 80M-7  | jug, 80H-6 |       |
|           | molded bowl, 80H-3 | tile, 73R-1 |       |
|           | lamp, 73A-1   | tile, 73R-2 |       |
|           | lamp, 73A-2   |         |       |

|        |         | glass neck, 80H-1 |       |
Table 6. Serçe Limanı Anchorage Finds Grouped by Century

<table>
<thead>
<tr>
<th>CENTURY</th>
<th>TOTAL FINDS</th>
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</tr>
<tr>
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</tr>
<tr>
<td>10th</td>
<td>x 1</td>
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<td>9th</td>
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<td>8th</td>
<td>xxx 3</td>
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<td>6th</td>
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<td>1st A.C.</td>
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<td>x 1</td>
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<tr>
<td>13th</td>
<td>x 1</td>
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</table>

history of trade in the area. The material is attributed to a period of 2500 years, with a distribution of most artifacts between the seventh century B.C. and the seventh century A.C. It highlights two well-known features of ancient commerce in the area: the strength of Rhodes as a mercantile center, and the general vigor of Hellenistic trade.
APPENDIX 1. BASKET-JARS

The basket-jar, a massive amphora with tapering base and vertical loop handles, was a common transport container from the seventh through fourth centuries B.C. in the eastern Mediterranean. These jars are found in numbers in Cyprus, along the Syro-Palestinian coast and in Egypt, but have not been documented at Carthage or points further west in the Mediterranean.

Early basket-jars are biconical in shape. Later, the body elongates, becoming more cylindrical, and the toe lengthens. Typically the rim is upstanding. Handles, generally round in section, rise above the rim. Basket-jars are considerably larger than other types of amphoras. Due to their bulk and weight, they may have been used primarily for transport via ship; they are recovered most often from coastal and underwater sites. Examples marked with graffiti indicate that some held oil, a semi-luxury product of the times. The lack of resin coating on the interior is an indication that they probably did not carry wine.

Basket-jars were used contemporaneously with torpedo jars. Both amphora types disappeared by the end of the fourth century B.C., at a time when Rhodian amphoras were becoming increasingly evident.
APPENDIX 2. RHODIAN AMPHORAS

Shape

The classic Rhodian amphora with rolled rim, cylindrical neck, acutely angled handles with straight shanks, egg-shaped body and short cylindrical toe was manufactured during a period of about two hundred years, from the mid-third to well into the first century B.C. (See the classic Rhodian jar in pl. 9, p. 156; see also 80H-10, pp. 76-77.) Although this basic profile persists throughout two centuries, small changes in proportion are documented. The girth of the body tends to decrease and its height to increase. Dimensions of the neck are modified as well: the third-century neck, for example, is slimmer in proportion to the body than the second-century neck, which tends to be wider and taller.

The classic body type evolved before a handle shape was firmly settled upon. During the period of transition, the handle bend might take one of three forms: arched, or bent at a right angle, or, finally, bent at an acute angle. The arched handle is the earliest version and is phased out by the late third century B.C. A handle with a right-angle turn, used contemporaneously with the arched handle, continues to be seen when the dominant form is the classic, acutely angled handle. Thus handle configuration provides only an approximate date for a jar. Over time, the vertical handle height, as measured from
the top of the bend to the center of the attachment at
the shoulder, tends to lengthen.\textsuperscript{180}

By the first century B.C. these small but ongoing
changes in the classic Rhodian amphora shape have been
emphasized to such a degree that the typical Rhodian jar
assumes a new profile: the egg-shaped body is elongated;
the handles, which have been bent to an increasingly
smaller angle, point upward like horns; the handle shanks
are bowed and placed on greatly narrowed shoulders; and
the short cylindrical toe has been replaced with a
spreading button.\textsuperscript{181} Whereas the handle rod of the classic
jar had been shaped simply by being bent to an acute angle,
the diminishing top section of the horned handle is
sometimes thickened with additional clay to make this part
very sturdy. (See 80G-1, pp. 64-65; 80J-5, pp. 78-79; and
80M-1, pp. 80-82.) It appears that the neck of this
horned-handled jar tends to expand in diameter just as
the neck of the classic Rhodian jar grew wider for a while.

By about the first century A.C. the Rhodian jar,
further modified, has a wide cylindrical neck tapering
somewhat to the mouth; handle bends with spurs at rim
level; sloping shoulders; a small oval body; and a long
pointed toe. (See the late Rhodian jar in pl. 9, p.
156.)\textsuperscript{182} In a subsequent development, the spur-top handles
swing above the rim and then the body typically is
bag-shaped with the greatest diameter in the lower half
and the toe a stubbed protrusion.\textsuperscript{183}

Early Rhodian jars of the second quarter of the third century B.C., the period preceding that of the classic amphora, are characterized by (1) a neck of moderate length finished with a vertical rim band and (2) shoulder and body joined at a pronounced angle. (See, for instance, 80C-4, pl. 3, p. 150 and the early Rhodian jar in pl. 9, p. 156.) An example of a still earlier Rhodian amphora, which comes from the 300 B.C. Kyrenia wreck, has a spreading rim, long neck with long arching handles, strongly carinated shoulder and tapering body.\textsuperscript{184} These elements (except for the rim configuration) are also typical of early Chian and Thasian jars and perhaps resulted from their influence.\textsuperscript{185} There is an echoing of shapes in other periods, too. Certain Knidian jars, for instance, exhibit features typical of the contemporary, classic Rhodian amphora: cylindrical neck, egg-shaped body and arching handles that later become angular.\textsuperscript{186} The flanged Knidian toe, however, is always dissimilar to the short cylindrical Rhodian toe.\textsuperscript{187} (For general comments on Knidian amphoras, see Appendix 3, pp. 105-107.)

Fabric

Fabric can sometimes differentiate a Rhodian amphora from a similar jar of another locale.\textsuperscript{188} Rhodian clay is reddish-yellow (our Munsell range is from 2.5YR 4/6
to 7.5YR 6/6, but see p. 7 for cautions). It is typically well-settled.\textsuperscript{189} Walters notes that Rhodian clay fractures "sharp as delf."\textsuperscript{190} A deeper red core may be evident. There is usually no mica,\textsuperscript{191} but white grit is sometimes present.\textsuperscript{192} INA-survey finds thought to be Rhodian also contain at times gray, brown and black grit. Generally the temper is evenly mixed, but three of our artifacts (73T-2, p. 48; 80J-5, pp. 78-79; and 80M-4, pp. 83-84) have clay with clumps of white grit. Overall workmanship of all three jars is perfunctory.

Others have noted a typical beige slip on some Rhodian amphoras, but it is absent from the survey pieces.\textsuperscript{193} Our examples most often have a reddish-brown slip, frequently close to fabric color. The question arises, were our jars coated with a slip made from the body clay? Or were the spotty patches herein identified as slip actually surface deposits laid down by sea water?

Not all Rhodian-type amphoras were made in Rhodes, as A. Hesnard has pointed out.\textsuperscript{194} Scientific analysis of fabric can sometimes distinguish between real Rhodian jars and look-alikes manufactured elsewhere, but such exact identification is beyond the scope of this study.\textsuperscript{195} Here, vessels with characteristic Rhodian shapes are identified as Rhodian. The proximity of their findspots to Rhodes makes it a likely supposition, but divergences between survey pieces and the norm have been highlighted.
Stamping

Most Rhodian amphorae are stamped on both handles. When legible, the information enregistered provides a means of close dating. Grace suggests that Rhodian stamping began about 332 B.C., when Alexander established a Macedonian garrison on Rhodes. While no stamped jar from this early period is known to the author, stamped jars were recovered from the 300 B.C. Kyrenia wreck. Rhodian amphorae continued to be stamped into the last quarter of the first century B.C.

Typically, the manufacturer's name appears on one handle; the dating official, on the other. Rhodian stamps, like Knidian stamps, are generally circular or rectangular in outline; a Rhodian pointed-leaf shape is also known (as is a comparable Knidian stamp). Usual logos are the rose, common on circular stamps, and the sun's head, common on rectangular ones.

Beginning around 240 B.C., the name of a month may be included on a rectangular stamp, usually on the one bearing the dating official's name. A secondary stamp, an additional imprint, may be added to one or the other stamped handle, a custom documented from the very late third century B.C. to the second half of the second century B.C.

Stamping in general began to decline in the early first century B.C. At this time the upper handle was
shortening (see p. 99) and with less area to receive a stamp, incomplete stamps were frequent. Handles that rose in curving horns were not stamped.

Capacity

How amphora capacities were monitored in ancient times is a continuing problem. A recent study of Rhodian amphora capacities of four groups of third-century B.C. jars spanning the entire century has shown that capacities fluctuate during this hundred-year period between a high of about 27 1/4 liters to a low of about 25 1/4 liters, gross, as the dimensions of the jars undergo the small changes discussed on page 98. Measurements taken from a limited number of first-century B.C. jars indicate that by the second or third quarter of that century the gross capacity is at a low of under 23 liters.

Content

It is assumed that the amphorae generally carried Rhodian wine, which was cheap and popular. Rhodian jars may also have been shipped empty to other cities to be used as transport containers for non-Rhodian products, as today these jars are exported to Beirut.

Distribution

Rhodian amphorae are known from sites around the
Mediterranean basin, a spin-off of vigorous Rhodian trading, particularly during the Hellenistic age. Rostovtzeff observes, "There is scarcely a single excavated place where Rhodian jars have not been found." Of interest is the rise and fall of their numbers as documented in several areas of the eastern half of the Mediterranean. Their incidence in the Black Sea region peaks during a limited period from the late third to early second century B.C. In Africa at Berenice, the period of their greatest use stretches out slightly longer, extending from the mid-third to the mid-second century B.C. At Alexandria large numbers are documented throughout the second century. At Athens and Delos, by contrast, numbers fall off during the second century.

These two INA surveys, where pieces were collected randomly from selected sites, have turned up an even sampling from nearly the complete range of production with only the very earliest and the very latest jars absent. Not unexpectedly, it would seem that Rhodian trade swept continuously along this stretch of Anatolian coast not far from Rhodes. Pulsations of commerce picked up further afield were not evident so close to home.
APPENDIX 3. KNIDIAN AMPHORAS

Knidian amphoras dating from the third century B.C. are characterized by (1) a broad body with indication of shoulder carination, (2) a cylindrical neck with diameter diminishing slightly to the rim, (3) long sloping handles and (4) a conical toe with flange. Subsequently the body stretches out, but the shoulder angle usually persists; the neck still tapers but is shorter; and the handle bends are higher and tighter. The result is that the upper body of a Knidian amphora looks more and more like that of the typical, contemporary Rhodian amphora.

Certain details, however, differentiate Knidian and Rhodian jars. The Knidian toe retains a flange into the second century A.C.\(^\text{213}\) The length of the toe itself varies over the years; in Roman times it dwindles to a stub.\(^\text{214}\) The rim of a third- or early-second-century B.C. Knidian amphora has a sharp lower corner.\(^\text{215}\) Later, the corner rounds and the rim becomes a roll similar to the Rhodian. Handles, sometimes crudely made, are joined to the neck with wedge-shaped attachments. The fabric is a coarse red that occasionally shows white grit or mica. Frequently the core fires gray. Grace mentions a "rough grained" surface as typical.\(^\text{216}\)

Knidian stamps appeared relatively late, ca. 240 B.C.\(^\text{217}\) They were in use until about the third quarter of the first century B.C., when they were phased out,
around the time that Rhodian stamping also was ending.\textsuperscript{218}

Frequent stamp logos include a bull's head, amphora, grapes, or palm leaf. The word "Knidian" generally appears. Names of both the Knidian eponym and potter often are included in the same stamp. (On Rhodian jars, it is more usual for the two names to be on separate stamps.)

Names other than eponym and potter might appear on Knidian stamps during certain periods. This use of the names of additional, or sometimes alternate, officials may reflect succeeding Rhodian, Athenian and Roman political and commercial influences on Knidos. Men designated as \textit{phourarchoi} (garrison commanders) sometimes were listed on jars dating to the first half of the second century B.C. The precise period may be 188-167 B.C., when Rhodes controlled Knidos. It has been suggested that these garrison commanders were Rhodian mercenaries stationed in Knidos. Evidently one of their jobs was to certify amphoras.\textsuperscript{219}

About a generation later, on jars dating to the turn of the second century B.C., another set of names, of men who may have been commissioners, sometimes was added to Knidian stamps. Grace suggests that the extra control represented by stamps with these names may have been connected with Athenian standard regulations in effect at the end of the second century B.C. Knidian trade at this time was primarily with Athens and with Athenian-
dominated Delos. 220

A hundred years later, at the turn of the first century B.C., the designation duoviri (two men) sometimes appeared in front of names on Knidian stamps. The men may have been Roman commissioners holding office during a time when Rome administered Knidos, 108-80 B.C. Apparently this pair also certified amphoras. 221

Stamped Knidian handles comprise the majority of handles found at only three sites: Knidos, Athens and Delos. 222 (At other sites Rhodian outnumber Knidian.) Knidian handles have turned up at spots widely ranging from the Black Sea to Palestine to Marseilles. 223

Most jars held Knidian wine, which like Rhodian, was considered of average quality and drunk "in bulk." 224
APPENDIX 4. CHIAN AMPHORAS

By the fourth century B.C. the Chian jar has evolved into a container with a long narrow neck, very sharply carinated shoulders, and a body whose straight sides intersect at a pointed toe. During the fourth to third centuries the toe lengthens, the neck stretches high above the handles, and the rim becomes thinner. Handle sections tend to be chunky, deep as they are wide, particularly in the second and first centuries B.C. The fabric typically is red, though often with a grey core, and may be mixed with sand and mica, and surfaced with a pale slip.

Chian amphoras of the Hellenistic period are stamped infrequently; a miniature representation of a Chian jar is often used as a logo. It is assumed these containers were filled with Chian wine, which was extolled by contemporary writers.

Chian jars have been recovered from sites throughout the Mediterranean region. Beyond the island itself, findspots include Delos, Israel and Alexandria. First-century A.C. jars were found on a wreck off the coast of southern France. Sixth-century B.C. jars in Bulgaria attest to early trade with the Black Sea area. Though distributed widely, Chian amphoras are not found in the same numbers as Rhodian or Knidian jars, which probably carried a cheaper wine.
APPENDIX 5. ROOF TILES

The two basic units of roofing tiles are the pantile and the cover tile. The pantile (also termed bottom tile, flat tile, rain tile, keramos, stegaster or solen in Greek, tegula in Latin), is typically a large rectangular tile that is positioned on the roof first. Pantile sides abut. The ends, however, are lapped, with an upper row overhanging the next lower row. This arrangement deflects rain from the tiles' back edges. The spaces between abutted sides are shielded by narrow cover tiles, whose ends fit one inside the other. The cover tile (called kalypter in Greek, imbrrex in Latin) has a higher profile than the pantile.

Pantiles and cover tiles were made in two styles: Laconian and Corinthian. The older, Laconian-style pantile is a long, rectangular (or wedge-shaped) tile with a gently concave upper surface. The associated Laconian cover tile is arced to a greater degree and used rounded side up. Laconian tiles are relatively thin (as thin as ca. 0.012); when recovered from excavations, they often are in fragments.

Corinthian-style tiles, on the other hand, tend to be massive. The heavy, flat Corinthian pantile is squarish and bounded on two to three sides with a raised edge. Sometimes the fourth side, which would be placed on the downslope, is grooved on the underside to hook snugly over
the raised edge of the next lower tile. Corinthian cover tiles are either peaked or semi-circular.

The basic shapes were modified for tiles used on particular areas of the roof, such as along the ridgepole and eaves.

Terracotta tiles might be glazed. Some are stamped. Tile standards for both Laconian and Corinthian tiles have been found.

Terracotta tiles replaced earlier wood roofing and are considered to date at least from ca. 700 B.C. Later, tiles were also made of more costly materials, such as marble, limestone and bronze for use on special buildings, but they continued to be shaped in either the Laconian or Corinthian style.

The kind of material used for the tiles determined the roofing substructure. Terracotta tiles, which crack easily, were bedded in clay or mortar; stronger tiles, such as those made of marble, were placed directly on wooden cross beams. Nail holes are infrequent in terracotta tiles, which generally were held in place on low-pitched roofs by their own weight. Joints were sometimes sealed with mortar.

Mediterranean tile trade is documented as early as the fourth century B.C., and tiles dating to many succeeding periods have been discovered underwater. That not all tiles found on wrecks were cargo, however,
is evident from a reconstruction of the galley roof of a seventh-century A.C. Byzantine merchantman by fitting together tile fragments recovered in the stern. 243
NOTES


6. As a comparison, readings on fabric and slip of 80H-10 were taken on bright and overcast days with the following results:

<table>
<thead>
<tr>
<th>Bright sunlight</th>
<th>Overcast sky</th>
</tr>
</thead>
<tbody>
<tr>
<td>fabric: reddish-yellow (7.5YR 6/6)</td>
<td>reddish-yellow (5YR 6/6)</td>
</tr>
<tr>
<td>slip: dark brown (7.5YR 4/4)</td>
<td>reddish-brown (5YR 4/4)</td>
</tr>
</tbody>
</table>

7. Artifact codes are denoted by the survey year plus a letter corresponding to the site number (assigned chronologically according to the original survey sequence) plus an arbitrary artifact number. Thus 73B-1 identifies an artifact recovered in 1973 from site B (the second site visited, İskandil Burnu), and assigned the study number 1.
8. Bass, IJNA (supra n. 4) 335 (3); Bass, TürkArkDerg (supra n. 4) 33-34 (D); Bass, NatGeoSocRR (supra n. 4) 46 (1); and Gifford (supra n. 4) 24 (3).


10. See W. Deonna, "Les lampes antiques trouvées à Délos," BCH 32 (1908) 140-41, for listing of references.

11. For a tube lamp placed on a stand, see D.M. Robinson, Excavations at Olynthus II, Architecture and Sculpture: Houses and Other Buildings (London 1950) fig. 299.26. Lamp and stand in one piece are common in both ancient and medieval times. For a Greek version, see O. Broneer, Corinth V, pt. 2, Terracotta Lamps (Cambridge, Mass. 1930) 49, fig. 24.

12. Howland (supra n. 9) 86.

13. Two scholars were not convinced that the tube was a socket. H. Thompson argues in "Terracotta Lamps," Hesperia 2 (1933) 198 that because of their design, many early lamps with central tube would be unstable if balanced on a pointed standard. Howland, (supra n. 9) 86, finding no signs of wear within the tubes of such lamps, concurs.

14. Howland (supra n. 9) 86.

15. Vegetable fibers such as flax, hemp, jute and papyrus were used as wicking in ancient lamps. Salt was sometimes added to the oil for a brighter, steadier flame, as Herodotus (II, 62) notes. Chemical analysis of a wick remnant from a second-century A.C. lamp found in Algeria suggests that animal fiber (wool) may also have been used. The sodium level in the wick is high: J. Bussière, "Note sur une meche de lampe," AntAfr 7 (1973) 256-57.

16. According to J. Binder of the American School of Classical Studies at Athens, the shape of the nozzle as seen from above is the most reliable indication of a lamp's date (personal communication, September 1983). I am grateful to Mrs. Binder for sharing her insight and for locating the following parallels in the Athenian Agora collection: Agora L4993 (unpublished). Middle Stoa Building Fill=Agora Deposit H-K 12-14 (construction fill going down


Survey lamps 73A-1 and 73A-2 are not perfect parallels to the Agora lamps, but they are fitted with the same nozzle narrowed at its juncture with the body which Howland, (supra n. 9) 87-88 with pl. 40.383, terms "spoon-shaped" and which he finds "totally unlike most Athenian nozzles of the period." He suggests Samos or the Asian Minor coast as their source and classifies them as Type 27B. Additional features of Howland's 27B are a lug and a flat base, neither of which the survey lamps has.

The survey lamps, without lug and with slightly raised base, are similar in these two aspects to Howland's closely related Type 27C, which is, however, fitted with the typically Athenian semicircular nozzle: Howland (supra n. 9) 88. The survey lamps thus combine the nozzle of Type 27B with the body of Type 27C and may represent a variant of lamp that never reached Athens, particularly since only a few examples of either type have been found there: Howland (supra n. 9) 87-88.

17. P. Bruneau, *Exploration archéologique de Délos* XXVI, *Les lampes* (Paris 1965) 31-32 with pls. 8.1600 and F.1600. Bruneau divides the 115 lamps with central tube from Delos into Type I and Type II. Type I has a profile identical to the survey lamps, but it has a lug and is glazed. According to Bruneau, the tube lamps from Priene reported by R. Zahn in "Thongeschirr" in T. Wiegand and H. Schrader, eds., *Priene* (Berlin 1904) 449, figs. 555 and 556 can be divided into the same two types. Another similar lamp but glazed is illustrated in G. Heres, *Die punischen und griechischen Tonlampen der Staatlichen Museen zu Berlin* (Berlin 1969) 32 (69) and pl. 7.69.

18. Howland (supra n. 9) 85.


20. Bass, TürkArkDerg (supra n. 4) 34 (J); and Bass, NatGeoSocRR (supra n. 4) 46 (2).

21. For a study of artifacts from one of the wrecks, a sixth- to seventh-century A.C. ship with a cargo from Palestine, see Lloyd (supra n. 2).
22. Alternative designations are Aegean Red, Zeest 79, Ostia VI and Kuzmanov VII.

23. Appreciation is due O. Alpözen, Director of the Bodrum Museum, for permission to include this photograph.

24. H.S. Robinson, The Athenian Agora V, Pottery of the Roman Period: Chronology (Princeton 1959) 112 (M303) with pl. 31.M303. For third- and fourth-century examples, see ibid., 69 (K113) with pl. 15.K113; 106 (M237) with pl. 28.M237; and 110 (M274) with pl. 29.M274. The tubular-toe amphora is not common in Athens until the second half of the third century, after the Herulian invasion in A.D. 267.

1982 survey amphorae 82-I-5 and 82-I-6 (unpublished), also from the vicinity of Ïskandil Burnu, are similar to 73B-1.

25. For summary of range and dating, see J.A. Riley, Excavations at Sidi Khreibeish Benghazi (Berenice), Libya Antiqua V, suppl. 2 (Tripoli n.d.) 190-92.


28. A. Carandini and C. Panella, eds., Ostia III, Le Terme del Nuotatore, Studi Miscellanei 21 (Rome 1973) 482-84 and 632, fig. 41. For recent reference to a comparable jar found off an island south of Ostia, see V.J. Bruno and E.L. Will, "The Island of Pontia: A Nautical Survey," Archaeology 38 (1985) 43, jar on right, dated to the last half of the second century A.C.

29. Robinson (supra n. 24) 69 (K114) with pl. 15.K114. Hayes notes that most of the Athenian jars are made from a different fabric, perhaps local: Hayes (supra n. 26) 145.

30. D. Vrsalović, Istraživanja i zaštita podmorskih arheoloških spomenika u Hrvatskoj (English summary) (Zagreb 1974) figs. 115 and 116. These jars have quite sharply bent handles.

31. T. Aldini (supra n. 27) 234. For parallels, see pls. 89 and 90.

32. Aldini (supra n. 27) 245. Example K114 from the Athenian Agora (supra n. 29) is dated to first half of third century A.C.
33. Bass, TürkArkDerg (supra n. 4) 34 (K); and Bass, NatGeoSocRR (supra n. 4) 36 (3).


35. J.K. Anderson, "Excavations on the Kofina Ridge, Chios," BSA 49 (1954) 169-70 with fig. 9 k, l and m. A Bodrum Museum amphora with a similar lower body and toe is shown in plate 12 (p. 159). For permission to include this jar, I wish to thank the museum director, O. Alpözen. At a distance of 0.186 from its toe, the jar measures 0.170 in diameter. Because of the slightly slimmer lines and the sharp edge of carination, it may be an amphora of later date than the survey jar.

36. Anderson (supra n. 35) 170.


38. Bass, IJNA (supra n. 4) 335 (1); Bass, TürkArkDerg (supra n. 4) 34 (L); and Bass, NatGeoSocRR (supra n. 4) 46 (4).

39. Bass, TürkArkDerg (supra n. 4) 34 (Q); and Bass, NatGeoSocRR (supra n. 4) 46 (5).

40. Bass, IJNA (supra n. 4) 337 (8); Bass, TürkArkDerg (supra n. 4) 33 (A); Bass, NatGeoSocRR (supra n. 4) 46 (7); and Gifford (supra n. 4) 24. Bass gives depth as 21 meters, Gifford as 23 meters. Side-scan sonar was successful here because of the flat bottom of the bay. Efforts of modern technology to ferret out shipwrecks hidden along the southwestern Turkish coast have been hampered by the rocky, steep contours of the underwater shelf, which tend to scramble readings. INA has found that sponge divers provide the most reliable source of information on wrecks tucked in this irregular terrain: J. Gifford (supra n. 4) 23-24. See also C. Pulak and D.A. Frey, "The Search for a Bronze Age Shipwreck," Archaeology 38 (1985) 20.

41. E. Akurgal, Ancient Civilizations and Ruins of Turkey (Istanbul 1983) 246-47.

42. Riley (supra n. 25) 198, fig. 85.266; and Carandini and Panella (supra n. 20) 562-71. For jar from Lepcis Magna, see F. Zevi and A. Tchernia, "Amphores de Byzacene au Bas-Empire," AntAfr 3 (1969) 193, fig. A.
43. Carandini and Panella (supra n. 28) 629, fig. 24.

44. G.F. Bass and F.H. van Doorninck, Jr., Yassi Ada I: A Seventh-Century Byzantine Shipwreck (College Station, Texas 1982).

45. Pulak and Townsend (supra n. 2)

46. Slane (supra n. 3).

47. Bass, TürkArkDerg (supra n. 4) 34 (P); and Bass, NatGeoSocRR (supra n. 4) 46 (8).

48. The weakest point of a basket jar is the juncture of handle and body. For examples of joins that came apart, see 73D-2 (pp. 24-25) and 80A-1 (p. 49). In some instances, as here and in 80A-3 (pp. 50-51), the weld was so strong, the body cracked before the join separated. In order to meld the handle with body, the potter would pile large amounts of clay around the handle ends, and then integrate the mass with the body by working the clay smooth and pressing hard against the interior wall, leaving indentations of his fingers: J.-F. Salles, "Le Niveau 4," in J. Briend and J.-B. Humbert, eds., Tell Keisan (1971-1976): une cite phénicienne en Galilée (Paris 1980) 137.

49. I am indebted to O. Alpözen, Director, Bodrum Museum, for his permission to mention the amphora and to include a photograph. For further reference to this jar, see T.O. Alpözen, "Bodrum Müzesi Ticari Amphoralari," TürkArkDerg 22, 2 (1975) 17 (83) with pls. 10.3, 10.4, 10A.3 and 10A.4.


52. F.H. van Doorninck, Jr., personal communication, February 1986.
53. Riley (supra n. 25) 219.

54. The profile is similar to that of an amphora (no. 27) from Koroni, Greece in E. Vanderpool, J. McCredie, A. Steinberg, "Koroni: A Ptolemaic Camp on the East Coast of Attica," Hesperia 31 (1962) pl. 22.27; finds from that site are linked to the Chremonidean War of 265-261 B.C. Amphora 27 also is illustrated in V.R. Grace, "Notes on the Amphoras from the Koroni Peninsula," Hesperia 32 (1963) 323, fig. 1.2 and discussed on 322, 324 and 333; its single extant handle bears a small rectangular stamp of eponym Agrios. A jar with vertical rim band and button stamps giving names of eponym Mentaios and fabricant Kallikleus, reported from Thasos in Y. Grandjean and D. Knoepfler, "Travaux de l'Ecole Francaise en 1972. Thasos II. La Porte du Silène," BCH 97 (1973) 550-51 with figs. 14-16, is dated to the early third century B.C.

55. Possibly the two sherds are from same jar. Fabric appears similar but petrographic tests have not been completed.

56. Amphora AS39: Slane (supra n. 3) 74. Stamps record names of Damosthenes and Arethakles.

57. I wish to thank O. Alpözên, Director of the Bodrum Museum of Underwater Archaeology, for his kind permission to include this reference and a photograph of jar.

58. The following is a simplified time table.

<table>
<thead>
<tr>
<th>Period</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late Helladic IIIB</td>
<td>13th century B.C.</td>
</tr>
<tr>
<td>Late Helladic IIIC</td>
<td>12th century</td>
</tr>
<tr>
<td>Protogeometric</td>
<td>10th century</td>
</tr>
<tr>
<td>Early Geometric</td>
<td>9th century</td>
</tr>
<tr>
<td>Late Geometric</td>
<td>8th century</td>
</tr>
<tr>
<td>Subgeometric/Proto-</td>
<td>7th century</td>
</tr>
<tr>
<td>corinthian/Protoattic</td>
<td></td>
</tr>
</tbody>
</table>

During the many centuries in which this general type of low-footed skyphos was made, there was continuing modification of cup, foot and rim.

Late Mycenaean to Protogeometric cups are deep while Geometric cups tend to be shallower, with the height generally about half the width: S.S. Weinberg, Corinth VII, pt. 1, The Geometric and Orientalizing Pottery (Cambridge, Mass. 1943) 14. The height of the survey skyphos is about two-thirds that of its maximum diameter, a possible indication of an early date.

In the Protogeometric period a high ring foot of small diameter is common. At the end of the period this foot is superceded by one that is of small diameter, but low:
Weinberg, op. cit., 13. As the succeeding, Geometric period progresses, the small low foot widens, commensurate with the broader body being favored. See, for instance, the Late Geometric cups with ring feet illustrated in E.T.H. Brann, "Late Geometric Well Groups from the Athenian Agora," Hesperia 30 (1961) 101 with pl. 19.126, I29 and I35. Other kinds of feet, however, and footless cups, are also seen in the Geometric period. For late ninth- to late eighth-century B.C. variations from Corinth, see O. Broneer, "Investigations at Corinth, 1950," Hesperia 20 (1951) 293 with pl. 89.d.

A vertical rim like that of 73H-5, which rises from the body without a break, is seen sporadically over the long time span. While the rim on Protogeometric cups typically flows upward smoothly, it often is gently flaring; the rim on Geometric vessels tends to be clearly differentiated from the body and to spread more widely.

Changes in the Attic skyphos from the eighth to seventh century are tracked by E.T.H. Brann in The Athenian Agora VIII, Late Geometric and Protoattic Pottery, Mid 8th to Late 7th Century B.C. (Princeton 1962) 46-47. She finds that the mid-eighth-century cup typically has a disc foot, a rounded body and a vertical, offset rim; that by the last quarter of the century, the cup is without a foot and the rim is only slightly set off from the body; and that in the mid-seventh century, a skyphos frequently has a ring foot, full body and articulated rim.


59. F.H. Stubbings, "The Mycenaean Pottery of Attica," BSA 42 (1947) pl. 10.8. In his comments concerning Type D cups (p. 40), he notes that such cups are embellished in the space between the handles with a single wavy line. For another, slightly earlier skyphos, see a LM IIIB cup from Khania (West Crete): B.P. Hallager, "Crete and Italy in the Late Bronze Age III Period," AJA 89 (1985) 297 (1) with pl. 38.1. The design on this cup is made up of single, short, curving lines whose ends lap. One important means of dating a skyphos is by its decorative elements but the survey fragment is heavily corroded and no pattern was discerned.

60. For a similar, mid-eighth-century skyphos, see Weinberg (supra n. 58) 28-29 (80) with fig. 8 and pl. 13.80. Weinberg observes: "The shape of this skyphos
is deeper than the usual skyphos of the later Geometric period....Also, the lip, which is usually high in this period, has practically disappeared in this example."

For a comparable Protocorinthian skyphos, see E. Pfuhl, "Der archaische Friedhof am Stadtberge von Thera," AthMitt 28 (1903) 195 (28) with pl. 33.3 (K28). The many variations of the low-footed skyphos make dating by shape tentative.


For decorative finger grooves on the upper surfaces of Byzantine flanged galley-roof tiles, see Bass and van Doorninck (supra n. 44) 97-98 and 107 with figs. 5-4, 5-5, 5-6 and 5-13. See also O. Graber, City in the Desert. Qasr al-Hayr East (Cambridge, Mass. 1978) 280 with fig. 30.

63. An early Rhodian jar (unnumbered) in the Bodrum Museum Amphora Storeroom has a similar toe. A photograph of this jar, shown in plate 9 (p. 156), is included by the kind permission of O. Alpözen, Museum Director. The amphora shares the general features and thereby the general time period of 80C-4 (pp. 58-59), which has been dated to the second quarter of the third century B.C. The Museum jar has a slightly smaller rim band, handles that descend directly to somewhat narrower shoulders, and a shorter toe than 80C-4.

It is possible that amphora toe 73H-7 and amphora top 73H-4 (p. 36) belong to the same jar.

The early Rhodian knobbed toe is associated also with amphoras with rolled rims, for which see Grace (supra n. 54) 324 and fig. 1.4.

64. Bass, IJNA (supra n. 4) 335 (3); Bass, TürkArkDerg (supra n. 4) 34 (E); Bass, NatGeoSocRR (supra n. 4) 47 (16); and Gifford (supra n. 4) 24 (4).

65. Downslope corners may have been prone to chipping.
66. In this version of the Corinthian-style tile, the thick rim across the end adds strength for the support of the upper, overlapping tile; it also serves as a backstop against rain.


A comparable INA-survey tile of unknown provenience (unpublished) has the following dimensions: 1. 0.632, w. 0.540, th. of flanged sides 0.061 and 0.059, th. of flanged end 0.061. The end without a flange has square corners rather than the oblique corners of tile 73R-1. The clay of one flange is pressed very flat along the outside and marked with striations, perhaps the imprint of a wooden mold. (See infra n. 235 on molds.) The top surface of this flange swells out slightly.

68. F.H. van Doorninck, Jr., personal communication, August 1984.

69. Athenian Agora stamp SS147, illustrated in V.R. Grace, "Stamped Amphora Handles Found in 1931-1932," Hesperia 3 (1934) 268 (196), is identical in size and shape to 82 Ν-4. Grace attributes stamp SS147 to the eponym Stratokles, while noting that it is "considerably smaller" than a Stratokles stamp illustrated by A. Dumont, Inscriptions céramiques de Grèce (Paris 1871) 366 (206). 82 Ν-4 was recovered off Knidos in 1982 and is in the INA storeroom at the Bodrum Museum (unpublished).

70. A stamped handle (SS 6613 [KT 2126]) of eponym Stratokles was found in Agora manhole C 10:1: Rotroff (supra n. 16) 97.

71. G. Kuzmanov, "Typology and Chronology of Amphoras of the Late Byzantine Period" (in Bulgarian; French summary), Arkeologiya 15 (1973) 17 and fig. 1.

72. Bass, IJNA (supra n. 4) 337 (5); Bass, TürkArkDerg (supra n. 4) 34 (G); Bass, NatGeoSocRR (supra n. 4) 47 (18); and Gifford (supra n. 4) 24 (6).


74. For evolution of shape, see p. 99.
75. Fabrics of 80J-5 (p. 78) and 80M-4 (p. 83), which are similar jars, are also poorly mixed.

76. A. Zemer, Storage Jars in Ancient Sea Trade (Haifa 1977) 49 (38) with pl. 14.38.

77. Rosloff (supra n. 4) 279-80 (1); and Bass and Rosloff (supra n. 4) 23 (1).

78. Rosloff (supra n. 4) 280, fig. 3.

79. See n. 48.

80. Rosloff (supra n. 4) 279-80 (2); and Bass and Rosloff (supra n. 4) 23 (2).

81. Rosloff (supra n. 4) 280, fig. 4.

82. V.R. Grace, personal communication, September 1983. I am indebted to Miss Grace for her help in identifying this amphora.

83. Grace and Savvatianou-Petropoulakou (supra n. 37) 354 (E220) with pl. 59.E220; in this example the amphora device is placed instead crosswise to the handle. See also C.G. Koehler, "Amphoras on Amphoras," Hesperia 51 (1982) 285, n. 6. Riley, (supra n. 25) 128, found four stamped Knidian handles at Berenice, of which one has a Kleupites stamp with amphora device and name. The small number of Knidian fragments at this site is in keeping with their usual scarcity in the eastern Mediterranean.

84. The third jar (SS7918) is from Agora deposit N 20:4, presently dated to the first quarter of the first century B.C.: Grace (supra n. 37) 318; and Rotroff (supra n. 16) 104. The second jar (SS9461) is from Agora deposit F 19:6, presently dated to the first half of the first century B.C.: Grace (supra n. 37) 354 (E220) and 333 (E96); and Rotroff (supra n. 16) 100. For another jar similar to the second one, see Alpözen (supra n. 49) 10 (1125), pls. 3.4 and 3A.4.

An amphora device on a stamp generally represented in miniature the jar it appeared on: Koehler (supra n. 83) 285; the depiction on this stamp is too worn to be helpful.

85. For permission to include this photograph, I am grateful to the director of the museum, O. Alpözen.

86. Rosloff (supra n. 4) 280 (3); and Bass and Rosloff (supra n. 4) 23-24 (3).
87. K. Braun, "Der Dipylon-Brunnen Bl. Die Funde," AthMitt 85 (1970) 143 (105) with pl. 58.105. The jug, from level III of Dipylon well B1, is dated by Braun to ca. 280 B.C., but the date would be lowered to ca. 250 B.C. if the revised Hellenistic chronology proposed by V.R. Grace, "Revisions in Early Hellenistic Chronology," AthMitt 89 (1974) 199, is accepted.

88. Concentric or spiral scratches may be left as a result of shaping a revolving clay vessel with metal tools: G.M.A. Richter, The Craft of Athenian Pottery (New Haven 1923) 12-14 with figs. 17 and 18.

89. Vanderpool, McCredie and Steinberg (supra n. 54) 39 (50) with pl. 21.50.

90. Whether or not there is a predictable pattern to the changing shapes of lagynoi over time is an unresolved question. H. Thompson, "Two Centuries of Hellenistic Pottery," Hesperia 3 (1934) 451, supports the position of G. Leroux, who, in a 1913 study of fine lagynoi, postulates that their differences in shape are not significantly related to chronology.

A. Westholm in O. Vessberg and A. Westholm, The Swedish Cyprus Expedition IV, pt. 3, The Hellenistic and Roman Periods in Cyprus (Lund, 1956) 75 and P. Hellström, Labraunda II, pt. 1, Pottery of Classical and Later Date, Terracotta Lamps and Glass (Lund 1965) 17-19, dissent. They postulate that two separate but contemporaneous progressions in the lagynos shape took place. Hellström presents their view on 18: "in the one the body is composed of a high lower half and a lower upper half, while in the other both halves are of similar height with a pronounced carena where the two halves meet. In the later stages of development the former type gets stouter, the base widens and the shape of the lower half goes from conical toward cylindrical. The latter type gets more and more depressed and the carena is still more pronounced."

In dealing with a group of lagynoi from a single site (but probably representing different places of manufacture), G.R. Edwards, "The Hellenistic Pottery from the Shipwreck of Antikythera," TAPS 55 (1965) 18, invokes the precept that shape development evolves from "early broad and low to later taller and constricted."

The dating of lagynoi remains difficult. The general characteristics of 80C-2, for instance, span two centuries, as illustrated by its similarity to the stamped Chian lagynos (Agora SS 10259) from the end of the third century in V.R. Grace, Amphoras and the Ancient Wine Trade (Princeton 1961) fig. 50, as well as to lagynoi from the
second quarter of the first century in Edwards, op. cit., 23-24 with figs. 18-20, and 27 with fig. 29.24-26.

91. Grace (supra n. 37) 361. Through the courtesy of O. Jaxou-Alexandré, Ephor of the Archives, National Museum, Athens, I examined six out of the approximately thirty-five Antikythera lagnoi (AVG12 plus five that are unnumbered). All six jars are made of gritty orange fabric. Four of them are made of clay containing black and white particles, and thus their fabric is similar to that of this lagynos and Chian amphora 73C-3 (p. 22). Two of them are made of clay that contains, in addition to black and white particles, other kinds of grit. Observations were made with a 16-power hand lens.

Antikythera lagnoi in general are larger than container 80C-2, but show comparable interior neck ridging, handle configuration and striations around lower bowl, suggesting similar techniques were used in their manufacture.

92. Rosloff (supra n. 4) 280, fig. 5.

93. For an amphora with a rim band that slopes outward slightly at its lower edge, see 73H-4 (pp. 35-36). Both variants were present at Koroni, Greece: Grace (supra n. 54) 323, figs. 1.2, 1.3 and 1.5.

94. Amphoras that carried wine were sometimes lined with pitch or similar substance to seal the porous terracotta. For discussion of jar caulking, see A. Zemer (supra n. 76) 94-97. Herodotus (IV, 195) mentions pitch obtained from Pieria (Macedonia) and Zacynthus.


96. V.R. Grace proposed the date from a photograph of jar (personal communication, September 1983). For comments on and drawings of similar jars, which are representative of a class of early Rhodian amphoras, see Grace (supra n. 54) 322, 323, figs. 1.3 and 1.5 (toe of latter jar is different from 80C-4) and 333 (3 and 5).

97. Rosloff (supra n. 4) 281 (5); and Bass and Rosloff (supra n. 4) 24 (5).

98. Rosloff (supra n. 4) 281, fig. 6.

99. The letters MA appear on amphoras of the Roman period with some frequency and various meanings. They
can be the abbreviation of a name, such as, for example, \( \Lambda \alpha \rho \kappa \circ \xi \). They are also used as an abbreviation for measurement, an Egyptian measure equal to 2.911 liters: M. Lang, "Dated Jars of Early Imperial Times," Hesperia 24 (1955) 284-85 (24) and pls. 80.11 and 80.24. In view of the dimensions of our amphora, the latter meaning can in the present instance be ruled out. The letters may represent the number 41 and refer to either a date or the amphora's capacity. MA appears on an amphora from the Athenian Agora apparently as an abbreviation of PMA or the number 141, this number representing a date of 141 years after the Battle of Actium (31 B.C.) or A.D. 110: Lang, op. cit., 280. Thus it is conceivable that the MA on our amphora is an abbreviation for \( T \alpha \) or \( T \mu \alpha \) and gives a date of A.D. 210 or 310. It is more likely, however, that the graffito indicates that the amphoras's capacity was 41 \( \xi \epsilon \sigma \tau \alpha \); a late-fourth-century amphora from the Athenian Agora of the same general type with a preserved height of 0.59 (the toe is either extremely short or partly missing) and a maximum diameter of 0.335 has a capacity of 37 1/2 \( \xi \epsilon \sigma \tau \alpha \); Robinson (supra n. 24) 109-10 (M273) with pl. 29.M273. Unfortunately, the actual capacity of our amphora has not as yet been measured.


101. Vrsalović (supra n. 30) nos. 180 and 181.

102. Rosloff (supra n. 4) 282-83 (7); and Bass and Rosloff (supra n. 4) 24 (7).

103. Rosloff (supra n. 4) 283, fig. 8.

104. The interior join of neck and body is more rounded on 80M-3 (p. 83), which probably is from a somewhat similar jar.

105. Compare with Grace (supra n. 90) fig. 62, jar on right (P18342), dated to the early second century A.C.

106. Rosloff (supra n. 4) 283-85 (8); and Bass and Rosloff (supra n. 4) 24 (8).


108. Rosloff (supra n. 4) 284, fig. 3.

110. For pots on stands, see Sparkes (supra n. 109) pls. 5.4, 5.6 and 6.5. A cooking pot similar to 80H-2 is shown set on a warmer in G. Siebert, "Travaux de l'Ecole Francaise en 1975," BCH 100 (1976) fig. 28.


112. Roslof (supra n. 4) 283, fig. 10.

113. A bowl fragment stamped with the egg and dart design banded by ribs above a leaf motif is illustrated by R.A.S. Macalister and J.G. Duncan, "Excavations on the Hill of Ophel, Jerusalem," PEFA 4 (1923-25) pl. 17.5.

114. For a mold-made bowl used inverted as the shoulder of an unusual pitcher, see P.V.C. Baur, "Megarian Bowls in the Rebecca Darlington Stoddard Collection of Greek and Italian Vases in Yale University," AJA 45 (1941) 241 (208) with fig. 11.

115. Rotroff (supra n. 16) 10.


117. For a bowl fragment with non-functional, flat squiggle handle from a Hellenistic site in Bactria, see Schlumberger and Bernard (supra n. 116) 625 and fig. 23.

118. Rosloff (supra n. 4) 283, fig. 9.

119. Vessels with concave bases are reported from a number of Byzantine sites. See, for instance, H.P. Isler, "Heraion von Samos: Eine frühbyzantinische Zisterne," AthMitt 84 (1969) 207 (K3810) with pl. 89.2; Bass and van Doorninck (supra n. 44) 171-72 with fig. 8-12; and H.W. Catling and A.I. Dikigoropulos, "The Kornos Cave: An Early Byzantine Site on Cyprus," Levant 2 (1970) figs. 3.5, 3.6 and 3.8-10.

120. Scorpan (supra n. 51) 171 with pl. 23.6.

121. The profile mirrors extant body sherd, and rim shown is therefore conjectural. Vessel might have had
trefoil mouth, or might have had second handle. Body sherd from opposite side illustrated.

122. General profile is similar to jug from Cyprus: Catling and Dikigoropoulos (supra n. 119) 48 (1) with fig. 3.1.

123. I wish to thank O. Alpözen, Director of the Bodrum Museum, for his kind permission to include this amphora. Its dimensions are 1. 0.727; max. diam. 0.303; rim diam. 0.103.

124. Isler (supra n. 119) pls. 86.1, 86.2, 87.1 and 87.2.

125. Roslof (supra n. 4) 283, fig. 11.

126. M.P. Nilsson, Exploration archéologique de Rhodes V, Timbres amphoriques de Lindos (Copenhagen 1909) 429 (231); E.M. Priddik, Inventory-Catalogue of the Stamps on Handles and Necks of Amphoras, and on Bricks, of the Hermitage Collection (in Russian) (Petrograd 1917) pl. 1.21. I am aware of these references through the kindness of V.R. Grace.

127. Riley (supra n. 25) 122.

128. Grace (supra n. 90) fig. 22 with text, fig. 31 (jar at left) and fig. 62 (jars at left and center). A classic jar from the Bodrum Museum is shown in plate 9 (p. 156). The photograph is included with the kind permission of the museum director, O. Alpözen.

129. For consideration of minor changes in the form, see p. 98.

130. Roslof (supra n. 4) 285 (9); and Bass and Roslof (supra n. 4) 24 (9).

131. Roslof (supra n. 4) 284, fig. 15.

132. 73T-2 (p. 48) and 80M-4 (pp. 83-84), from similar jars, also are made of fabric that is poorly mixed.

133. A comparable amphora (but with thinner walls and handles round in section) was found in mid-first-century A.C. levels of legionary fortress at Gloucester-Kinsholm, England: D.P.S. Peacock (supra n. 73) 269-70 and fig. 3.1.

134. See Grace (supra n. 90) fig. 62, jar on right (P18342). Compare with fragments from similar amphoras: 80G-1 (pp. 64-65) and 80M-3 (p. 83).
135. Grace (supra n. 54) 324. See also Grandjean and Knoepfli (supra n. 54).

136. Grace (supra n. 54) 328-29, n. 20.

137. V. Canarache, Importul amforelor stampilate la Istria (Bucharest 1957) 224, fig. 46.


139. 80G-1 (pp. 64-65) has a more angular ridge neck ridge.

140. See 80M-1 (pp. 80-82), which may have been from similar amphora. Its handle disc had separated intact from body.

141. See n. 134.

142. A poorly mixed paste was observed on two other fragments: 73T-2 (p. 48) and 80J-5 (pp. 78-79). These three sherds from separate sites appear to be from comparable jars and exhibit a like carelessness of manufacture.

143. Sherds 73T-2 and 80J-5 (n. 142) also are characterized by coarse wheel ridging.

144. See n. 76.

145. See n. 76.

146. See, for instance, G.H. McFadden, "A Tomb of the Necropolis of Ayios Ermones at Kourion," AJA 50 (1946) pls. 37 and 41.

147. Riley, (supra n. 25) 149 (D115) and fig. 74.115, reports a pointed handle fragment from a miniature Rhodian amphora at Berenice and cites another displayed at Herculaneum.

148. See n. 179.

149. Riley (supra n. 25) 129 (D35) with fig. 69.D35.

150. V.R Grace, "Timbres amphoriques trouvés à Délos, BCH 76 (1952) 521.


154. P.M. Fraser, Ptolemaic Alexandria (Oxford 1972) 164: "Rhodian amphora stamps in Alexandria of the period 200-140...are not only more numerous than at any other time, they also seem to remain fairly constant throughout the period." Delos was declared a free port in 167 B.C. It has been suggested that a main Rhodian industry was the manufacture of amphorae for the reshipping of merchandise: M. Avi-Yonah, Hellenism and the East (Ann Arbor, Mich. 1978) 225.

155. Rostovtzeff (supra n. 153) 1487, n. 97; and Fraser (supra n. 161).

156. Slane (supra n. 3).

157. Slane (supra n. 3) 74-81; 95-97; 97-100; and 103-105.

158. Slane (supra n. 3) passim. For Knidian amphorae, see 84-86.

159. Grace (supra n. 69) 201, n. 1.

160. Rostovtzeff (supra n. 153) 107 and 1334, n. 55.

161. In 1965 there were some 6,860 Knidian handles known at Alexandria, the second-largest identified group. The number is tiny in comparison with the largest group, the approximately 80,000 Rhodian handles: Fraser (supra n. 154) 165 with n. 259.

162. Slane (supra n. 3). For second-century B.C. artifacts, see 81-97. The Serçe anchorage showed strong intermittent activity through the sixth century A.C.


165. Slane (supra n. 3) 188-204.

166. E. Stern, Material Culture in the Land of the Bible in the Persian Period 538-332 B.C. (Jerusalem 1973) 111; and Salles (supra n. 48) 137-40.
167. Stern (supra n. 166).

168. For the basket-jar types found in Cyprus and Palestine, see Salles (supra n. 48) 137-39. On Cyprus jars, see also V. Karageorghis, Salamis V, pt. 3, Excavations in the Necropolis of Salamis (Nicosia 1974) pls. 221-24.

169. Rims vary in height and profile; see n. 170 for further comments. Salles, (supra n. 48) 137, suggests that the neck on Tell Keisan amphoras might have been wheel-made and attached in a separate step. For discussion of the probable sequence in complete manufacturing process of basket-jars, see ibid., 136-37.

170. Of the six basket-jars handles herein reported, two handles are round in section: 80A-1 and 80A-2 (pp. 49-50); three have one flattened face: 73D-1, 73D-2 and 80A-3 (pp. 24-25 and pp. 50-51); and one has an indented face: 73H-2 (pp. 33-34). Handles with variously angled surfaces are reported at Tel Mevorakh as belonging to fifth- to fourth-century B.C. basket-jars: E. Stern, "Excavations at Tel Mevorakh (1973-1976), Part One: From the Iron Age to the Roman Period," Qodem 9 (1978) figs. 8.12, 8.13 and 8.14. Ribbed basket-jar handles of the fifth century B.C. are illustrated by J. Porath, "A Fortress of the Persian Period" (in Hebrew; English summary), 'Atigot 7 (1974) 50, fig. 4.14.

Such variations in handle cross section may be diagnostic of a particular overall profile. Amphora studies show that a change in dimension or attitude of one part of a jar usually is linked with a proportional adjustment in another part. For instance, as handles on Rhodian amphoras elbow higher, the body slims, the toe lengthens: Grace (supra n. 90) fig. 62 with text. Thus a flattening of the underside of a basket-jar handle may be linked to other modification of the standard profile. Four examples suggest a shift from vertical to out-turned lip.

a. Amphora 4.472: Salles (supra n. 48) pls. 24.7 and 127.24.7. Apropos of its somewhat flattened handle section and everted rim, Salles (opposite pl. 24) writes: "La section de l'anse est plus ovale que ronde, le col est tres court, d'un type different des autres." Tell Keisan jars are dated from the seventh to mid-fifth centuries B.C.

b. Amphora 1016: Zemer (supra n. 76) p. 31 (24) and pl. 8.24. Dated to the fifth to fourth centuries B.C.

c. Amphora 77.308.4: P. Marchetti, "Travaux de l'Ecole Française à Amathonte en 1977. Chantier C: Terrasse Nord," BCH 102 (1978) 946 and fig. 15. Dated to the fourth or not earlier than fifth century B.C.

d. A flattened handle fragment from seventh-century

171. Salles, (supra n. 48) 153, n. 8, determined mathematically and empirically that amphoras from Tell Keisan held from 65 to 80 liters. By contrast, common jars of the early third century B.C. have approximately the following capacities according to V.R. Grace, "Standard Pottery Containers of the Ancient Greek World," Hesperia Suppl. 8, Commemorative Studies in Honor of Theodore Leslie Shear (Princeton 1949) 180: Knidian, 40 liters; Rhodian, 28 liters; Thasian, 21 liters. Tell Keisan amphoras have an average height of 0.850 and an average maximum diameter of 0.570; Salles, (supra n. 48) 136, estimates that when full, even with a product of low density, they must weigh about a hundred kilograms.

It took two men to move a basket jar by inserting a sturdy branch through the handles and hefting, as shown on a Cypriot bowl: G. Gjerstad, "Decorated Metal Bowls from Cyprus," OpusArch 4 (1946) pl. 5.

172. Stern (supra n. 166).


174. For resin coatings on wine amphoras, see n. 94.

175. Salles (supra n. 48) 141.

176. Compare two jars illustrated in Grace (supra n. 90) fig. 62: jar to left and jar in center. For detailed measurements of several groups of third-century B.C. jars, see report by Matheson and Wallace (supra n. 138); the authors remark on 297, n. 12 that even small variations in the maximum diameter of a jar, or in its profile, can substantially affect capacity. For some Rhodian capacities, see Appendix 2 (p. 103).

177. Grace (supra n. 69) 203; and Matheson and Wallace (supra n. 138) 301.

178. Riley (supra n. 25) 122.

179. Compare the square-turn handle of the third century B.C. illustrated in Grace (supra n. 37) pl. 53.E5(1:2)
with a square-turn handle of the late second century B.C. in her pl. 55.E42(1:2). The later handle seems to be set farther below the rim.

180. Grace, (supra n. 54) 333 (1), remarks that this dimension is "difficult to take and not very exact but useful for comparison." The measurements of jars in her figure 1 (p. 323), given on 333, illustrate the progression of lengthening handles.

181. For example, see Robinson (supra n. 24) 20 (F94) with pl. 3.F94. V.R. Grace, "The Commercial Amphoras from the Antikythera Shipwreck," TAPS 55 (1965) 6, characterizes first-century B.C. Rhodian amphoras as being slim with a "tendency toward careless manufacture, lumpiness of surface, indistinct articulation of neck and toe from body."

182. I would like to express my appreciation to O. Alpøzen, Museum Director, for allowing me to include a photograph of this jar from the Bodrum Museum.

183. Riley, (supra n. 25) 148 (D108), mentions an early example of a bag-shaped horned amphora from mid-first-century A.C. Vindonissa (Switzerland) and later examples from Cyprus dating to the early second century A.C.


185. Grace (supra n. 69) 204; and Grace (supra n. 37) 292 and 300. See Grace (supra n. 90) fig. 46 for a fourth-century B.C. Chian amphora and fig. 52 for fourth- and third-century B.C. Thasian amphoras.

186. Grace (supra n. 69) 204, n. 2. Knidian stamps of the time showed Rhodian influence also: Grace (supra n. 171) 183.

187. For an overview of the development of Rhodian shapes, see Grace (supra n. 90) fig. 62 with accompanying text; Grace (supra n. 54) 322-27; and Grace (supra n. 37) 291-92 and 298.

188. For a recent study of ceramic clay, see Peacock (supra n. 73) 261-78, with discussion on 266-70 of fabrics of some Roman Rhodian-style amphoras

189. In the process of levigation, or settling, the clay slip flows through a long shallow trough where baffles cause larger, or heavier, particles to settle while the finer material remains in suspension. Sherds from
well-levigated clay have extremely fine mineral inclusions. Temper (which is incorporated by potter) may be coarse. Mineral inclusions, which occur naturally in the clay, tend to vary in shape, while temper tends to be uniform in shape: O.S. Rye, Pottery Technology: Principles and Reconstruction. Taraxacum Manuals of Archaeology 4 (Washington 1971) 32 and 37.


191. Grace, (supra n. 69) 203, states that mica was "entirely" lacking from Rhodian amphora fabric. On 203, n. 4 she mentions the "curious fact that early terracotta figurines generally recognized as Rhodian are identified, even when in small fragments, by a soft highly micaceous buff clay which bakes grey at the core, as does often that of Thasian handles." For another instance of the use of atypical clay, see Grace (infra n. 195).

192. Riley (supra n. 25) 122.

193. Grace (supra n. 90) text under fig. 22; Y. Calvet, Salamine de Chypre III, Les timbres amphoriques (Paris 1972) 11; and Riley (supra n. 25).


195. Technical analysis does not always provide positive answers. Tests on a Knidian-type amphora showed that it was made, not from the typical Knidian clay, but from clay similar to that called Rhodian: Grace (supra n. 37) 319-20 and 320, n. 1. Peacock, (supra n. 73) 262, reviewing the information, warns: "Before accepting the conclusion that clay was transported from Rhodes to Knidos, it is worth noting that the two regions are geologically similar.... Thus,...at certain periods Knidian potters [might have] exploited local clays similar to those commonly used on Rhodes."

196. J.-Y. Empereur, "Les anses d'amphores timbrés et les amphores: aspects quantitatifs," BCH 106 (1982) 226. The practice may account for the disproportion of stamped Rhodian handles as compared with handles attributed to other locales, where jars customarily may have been stamped on only one handle, or even not at all, and which accordingly have left far fewer traces in the archaeological record. See also Fraser (supra n. 161.)
197. Grace (supra n. 37) 300.

198. Matheson and Wallace (supra n. 138) 296.

199. Riley (supra n. 25) 123.

200. The "manufacturer" may have been the individual potter or the supervisor of the pottery shop. Names of manufacturers include some women's names: Grace (supra n. 69) 199, n. 3. The Rhodian dating official in most cases seems to have been a priest of Helios. Both identifying names are commonly, though not invariably, in the genitive as objects of either a stated or of an understood preposition. The preposition para (issuing from) is used in front of the manufacturer's name on some early (Koroni) stamps: Grace (supra n. 54) 327. The preposition epi, standing for the phrase epi tou deinos ierous (during the time of the certain priest), may be seen in front of the name of dating official, the eponym. V.R. Grace, "The Eponyms Named on Rhodian Amphora Stamps," Hesperia 22 (1953) 122-24, gives an updated alphabetical list of some Rhodian eponyms, with additional references on 116, notes 1 and 2); and Grace, (supra n. 87) 200, revises dates for Koroni eponyms and several potters.

201. For a leaf-shaped Knidian stamp, see 73R-6 (p. 44).

202. Grace (supra n. 37) 293. Rhodian months are listed in Grace (supra n. 69) 307 and in Walters (supra n. 190) 156.

203. Riley (supra n. 25) 123. For photographs of a secondary monogram stamp, see Matheson and Wallace (supra n. 138) pl. 80.c.1 and c.3. For secondary stamps naming months, impressed on amphoras with button stamps, see Grace (supra n. 200) 120, n. 10. Additional references to secondary stamps are found in Grace (supra n. 37) 291, 294 with n. 3, 295 with n. 1 and 380; and Grace (supra n. 87) 199.

204. Riley (supra n. 25) 123; and Grace (supra n. 37) 298.

205. Grace (supra n. 87) 197, n. 181; and Calvet (supra n. 193) 11.

206. Robinson (supra n. 24) 20.

207. Matheson and Wallace (supra n. 138) 294 with n. 5; to arrive at net capacity, they subtract three-quarters
of a liter for lining and stoppering. For comments on linings, see supra n. 94.

208. Grace (supra n. 37) 298; and Grace (supra n. 181) 7, n. 8.

209. Fraser (supra n. 154) 168 and n. 282. An overwhelming number of stamped Rhodian fragments (approximately 80,000) have turned up in Alexandria. The number seems out-of-line with what is known of Rhodian-Alexandrian commerce from other sources and the disparity has led Fraser to suggest that empty Rhodian jars might have been used as shipping containers for non-Rhodian products bound for Egypt. In particular, Fraser, (supra n. 154) 165-68, wonders whether Rhodian jars might have carried Laodicean wine to Alexandria, as Strabo mentions export of this wine to Egypt but no Laodicean jars have been identified there. Empereur, (supra n. 196) 231, n. 42, observes that it is quite possible Laodicean jars were not stamped and therefore go unrecognized.


211. Riley (supra n. 25) 123; and Fraser (supra n. 154).

212. Grace (supra n. 37) 295; Rostovtzeff (supra n. 153) 1647, n. 10; and Empereur (supra n. 196) 223-25.

213. Grace (supra n. 150) 521.

214. Grace (supra n. 69) fig 1.8.

215. Grace (supra n. 69) 204-205.

216. Grace (supra n. 69) 203 and 205; and Riley (supra n. 25) 128. For progression of shape, see Grace (supra n. 90) fig. 64; for additional identification of jars in figure 64, see Grace (supra n. 37) 317-18, n. 2.

217. Empereur (supra n. 196) 223, n. 18.

218. Riley (supra n. 25) 128.

219. Grace (supra n. 37) 318-19; Fraser and Bean (supra n. 152) 93-94 with n. 3; and Grace (supra n. 90) text under fig. 64.

220. Grace (supra n. 171) 183-84 with n. 35; and Grace (supra n. 69) 201, n. 1.

221. Grace (supra n. 90) text under fig. 64; Grace supra n. 171) 184, n. 35; and Grace (supra n. 69) 241. For list

222. Grace (supra n. 69) 201, n. 1; and Grace (supra n. 171) 183. Although most of the handles from Delos are Knidian, a preponderance of them (97.9%) date to a narrow time span, the period between 146-ca. 78 B.C. The majority of handles from earlier levels, however, have been Rhodian, and Empereur, (supra n. 196) 222-25, expects, when these levels are excavated fully, that the total number of Rhodian handles at Delos will increase substantially.

223. Riley (supra n. 25) 128.

224. Grace (supra n. 90) text above fig. 31.

225. Grace (supra n. 90) fig. 46 with accompanying text; and Anderson (supra n. 35) 169-70 with fig. 9.h-o. Anderson illustrates (fig. 9.h and i) a Chian toe with and without its cap.

226. Grace (supra n. 37) 361.

227. Grace (supra n. 69) 201.

228. See n. 226.

229. Grace (supra n. 69) 296-97. Evidence of resin remains in some jars. The ancient practice of lining jars with resin to seal the porous terracotta (supra n. 94) evidently lent the wine a distinctive taste that came to be favored. Retsina (resinated wine) is popular today in Greece. Chios is called "Mastic Island" (Sakız Adası) in Turkish.

For a discussion of Chian capacities, see Grace (supra n. 37) 359-60.


233. On the two systems of tiling, see J. McK. Camp II and W. B. Dinsmoor, Jr., Ancient Athenian Building Methods (Princeton 1984) 23-24, figs. 39-41. For profile drawings, see Jones, Sackett and Graham (supra n. 67) 84, fig. 3.

Assymetrical tiles with one rounded end and one angular end were reported from Samothrace: K. Lehmann-Hartleben, "Preliminary Report on the Second Campaign of Excavation in Samothrace," AJA 44 (1940) 337-38 with fig. 14. These unusual tiles date to the late third century B.C.

234. Stevens (supra n. 62) 176.

235. Tiles with flanges were made in wooden frames: M. E. Blake, Ancient Roman Construction in Italy I. From the Prehistoric Period to Augustus (Washington 1947) 302.

236. Hooked tiles probably of the classical period are reported from Attica: Jones, Sackett and Graham (supra n. 67) 83-84. Hooked tiles dating to the end of the fourth to the first half of third century B.C. are reported from Chios: Anderson (supra n. 35) 171. Very early (ca. 700 B.C.) tiles from Corinth interlocked with "lugs and notches": H. S. Robinson, "Excavations at Corinth: Temple Hill, 1968-72," Hesperia 45 (1976) 233.


239. For comparison of techniques, see Camp and Dinsmoor (supra n. 233) 23, fig. 39.

240. S. Woodford, The Parthenon (Cambridge 1984) 16. For very early cover tiles pierced with spike holes, see Robinson (supra n. 236) 233 and pl. 52.

241. Anderson, (supra n. 35) 171, reports bits of mortar on Chian tiles dating from the end of the fourth century to the first half of the third century B.C.

242. Riley (supra n. 25) 312-13. Corinthian tiles were found on the Antikythera wreck of the first century B.C.:
K. Kourouniotes, "The Finds from the Antikythera Shipwreck" (in Greek), Archaiologikē Ephēmeris (1902) pl. 0. Four tile wrecks in the Gökova (Kerme) Bay in southwestern Turkey are noted by Frost (supra n. 62) 217. She observes on 220 that tiles frequently are recovered intact from underwater sites.

243. Bass and van Doorninck (supra n. 44) 89, 97-110.
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(Scale 1:4)
PLATE 2. Basket-Jars with Indented Handles

73H-2. (Scale 1:4)

Bodrum Museum No. 83. (Scale 1:8)
PLATE 3. Early Rhodian Amphora

80C-4. (Scale 1:4)
PLATE 4. Early Rhodian Amphorae

73H-4. (Scale 1:4)

73H-7. (Scale 1:4)

80C-4, stamped handles. (No scale)
PLATE 5. Classic Rhodian Amphoras

73E-1. (Scale 1:4)

80H-10. (Scale 1:4)

80H-10, Themison stamp. (No scale)
PLATE 6. Miscellaneous Rhodian Amphoras

80-(?)-1. (Scale 1:2)

73T-1. (Scale 1:4)

80M-2. (Scale 2:5)
PLATE 7. First- to Second-Century A.C. Rhodian Amphoras

80G-1. (Scale 1:4)

80M-3. (Scale 1:4)

80M-1. (Scale 1:4)

80M-4. (Scale 1:4)

80M-6. (Scale 1:2)
PLATE 8. Rhodian Amphoras with Spur-Top Handles. 
(Scale 1:4)
PLATE 9. Rhodian Amphoras from the Bodrum Museum (unnumbered)

Early Rhodian jar.  
(No scale)

Classic Rhodian jar.  
(Scale 1:8)

Late Rhodian jar.  
(Scale 1:8)
PLATE 10. Knidian Amphoras

73R-6. (Scale 1:4)

80- (?)-3. (Scale 1:4)

Knidian jar, Bodrum Museum (unnumbered). (Scale 1:8)
PLATE 11. Knidian Amphora

80B-1. (Scale 1:2)

80B-1, Kleupithes stamp with amphora (at right). (No scale)
PLATE 12. Chian Amphoras I

Chian jar, Bodrum Museum (unnumbered).
(Scale 1:8)

73C-1. (Scale 1:4)
PLATE 13. Chian Amphoras II. (Scale 1:4)
PLATE 14. Roman Amphoras I

73B-1. (Scale 1:2)

Tubular-toe jar, Bodrum Museum (unnumbered). (No scale)
PLATE 15. Roman Amphoras II. (Scale 1:2)
PLATE 16. Late Roman-Early Byzantine Amphora

80E-2. (Scale 1:4)
PLATE 17. Late Roman-Early Byzantine Amphoras

80E-2, graffito. (Scale just under 1:1)

80E-1. (Scale 1:2)
PLATE 18. Early Byzantine Amphoras

73H-3. (Scale 1:4)

73R-7. (Scale 1:8)
PLATE 19. Early Byzantine Amphora

Bodrum Museum No. 7414. (Scale 1:4)
PLATE 20. Early Byzantine and Byzantine Amphoras.
(Scale 1:2)
PLATE 21. Bowl with Graffito

73D-3. (Scale 1:1)

73D-3, graffito. (No scale)
PLATE 22. Miscellaneous Finds I. (Scale 1:2)

Skyphos, 73H-5

Pot, 80H-2
PLATE 23. Hellenistic Finds

Jug, 80C-1. (Scale 1:2)

Bowl, 80H-3. (Scale 1:2)

Handle, 80M-7. (Scale 1:1)
PLATE 24. Lagynoi

73H-1. (Scale 1:2)

80C-2, as found. (No scale)

80C-2. (Scale 1:2)
PLATE 25. Jug with Concave Base

80H-5. (Scale 1:2)

80H-5, concave base. (No scale)
PLATE 27. Miscellaneous Finds III. (Scale 1:4)

Pithos, 73E-2

Ring foot, 80G-3

Stone weight, 80E-3
PLATE 28. Lamps with Central Tube. (Scale 1:1)

73A-1

73A-2

73A-2, top view

73A-2, bottom view
PLATE 29. Roof Tiles. (Scale 1:8)

Laconian pantile, 73H-6

Pantile, 73R-1

Cover tile, 73R-2
PLATE 30. Late Roman (?) to Medieval Finds

Glass neck, 80H-1. (Scale 1:1)

Bowl, 80-(?)-9. (Scale 1:2)
VITA

MARGARET MARY COWIN

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Education

1955-1956 Sorbonne, University of Paris
French teacher's certificate

1951-1955 University of Michigan
B.A. Greek major

1950-1951 University of Geneva (Switzerland)
French studies

Experience
Summer 1982 INA excavation. Yassı Ada, Turkey
Sixteenth-century ship
Director: George F. Bass
Field school participant

Summer 1981 INA-sponsored excavation. Castine, Maine
Revolutionary War ship, Defence
Director: David C. Switzer
Earthwatch expedition member