A SURVEY OF THE

ITALIAN DRESSEL 2-4 WINE AMPHORA

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by

JENNIFER MOORE, B.A.

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AUTHOR: Jennifer Moore, B.A. (Hons.Clas.Arch.,Wilfrid Laurier University)

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ABSTRACT

After more than two centuries of bottling the wines of Italy in amphorae of a standard Roman shape (Chapter One), Italian potters in the first century B.C. turned to the use of a container whose form was inspired by the wine amphora of the Aegean island of Cos. This Coan form offered certain economic and technical advantages over the previous Italian types (Chapter Two). The new Italian container, the Dressel 2-4, was adopted by pottery production centres throughout Italy, and transported Italian wines beyond the bounds of the Mediterranean, from Britain to India (Chapter Three). Its distribution, the greatest of any ancient Mediterranean amphora, inspired provinces like Spain and Gaul to imitate the shape for their own increasing wine exports. However, the emergence of the provinces onto the scene led to a dramatic change in the wine trade: Italy was no longer the dominant supplier of wine to the western Mediterranean; Spanish and Gaulish vineyards could now provide their own vintages (Chapter Four). Wine exports in Dressel 2-4s from these provinces and from Italy were already dropping by the second half of the first century A.C. in favour of increasing self-sufficiency; by the mid-second century, Dressel 2-4 production had declined to very low levels, heralding the end of production of wine amphorae intended for major overseas distribution. Although manufacture of the Dressel 2-4 continued until at least the beginning of the third century, the flat-based amphora, originating in the provinces in the early first century A.C., took over the transportation of the wines of the central and western Mediterranean, on a much more regional level of distribution (Chapter Five).

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INTRODUCTION

When amphora studies multiplied during the 1960s and 1970s, great advances were made in terms of the collection and interpretation of ancient trade material. However, the concurrent shift toward so-called scientific and methodological archaeology encouraged other scholars to adopt immediately the findings of amphora researchers, especially without careful and thorough consideration of the topic. This assumption of secure evidence has led both to the misinterpretation of some amphora evidence, and to the generalization, rather than specification, of other amphora evidence, to the detriment of a field that calls for increasingly accurate treatment. A prime example of both problems is the so-called Dressel 2-4 amphora.

The Dressel 2-4 is, in fact, not a single amphora type, but a combination of three (2 through 4) morphologically-similar forms observed by Heinrich Dressel in his study of ceramic inscriptions in Rome, and published, amongst other observed amphora types, in *CIL* XV, table II (fig. 1). However, amphorae retrieved since the publication of Dressel's table have not fitted quite so neatly into his suggested typology. As a result, the three types have since been combined into one large group, conventionally called the Dressel 2-4. Dressel's drawing in *CIL* does not show handle cross-sections, but the bifid handles have come to be recognized as the most characteristic element of the group.

The great size of this 'family' warrants sub-classifications for a better understanding of relative historic and socio-economic implications; few have found the common 'Dressel 2-4' appellation specific enough. There is certainly recognition of variations within the group, by shape, fabric, or

markings; unfortunately, the many alternate assemblages suggested by studies subsequent to that of Dressel have not met with great approval, either. As a result, instead of having to adhere to one questionable classification system, one now has to be well-versed in the classifications of several authors. For example, the form is called 'Coan' for its Hellenistic tendencies, regardless of provenance; *Ostia* LI and *Camulodunum* 182-183 for site typologies; Callender form 2, Peacock and Williams Class 10, Will types 12a and 12b, and Panella and Fano groups 1-10 for researchers' personal classification systems. The list has certainly become unwieldy, and is as unsatisfactory as ever.

The main problem with the search for a perfect typology is that keys of discretion, such as form and fabric, do not always appear in contiguous and predictable ways. Several different shapes of toe, for instance, may be included in what was apparently the production of a single atelier (see Appendix on Kiln Sites). Furthermore, when the form spread to the provinces, even if the shape was copied exactly, obviously the fabric was inherently very different. One cannot always rely upon visual appearance of the fabric, either; different tempering and firing conditions at the same site can lead to great differences in colour and texture. On the other hand, a fabric description limited to a breakdown of chemical elements is meaningless to the average person. Of course, inconsistencies in the detail of site reports are also to blame.

For these reasons, this thesis will not seek to devise yet another 'perfect' typology or sub-grouping of the Italian examples. For the sake of what remains the most familiar designation, this amphora group will be referred to as the Dressel 2-4. Any creditable support for other subgroupings will be mentioned where appropriate. The same problems are encountered, although perhaps not to the same degree, with other amphora classes; again, the most familiar name will be used here for the sake of simplicity.

However, the problems associated with the Dressel 2-4 are not only typological. The reasons for the introduction of its specific form to Italy, the chronology and locations of its manufacture, and the lack of an identified successor are still not fully understood, and have led to many well-intended but erroneous statements. These are the problems which this thesis will address.

It was not until the late fourth or early third century that Italy exported its wine, in containers that were originally based on Hellenistic Aegean models. Almost immediately after their adoption of these Greek models, however, the amphora potters of Italy began to change the form, gradually elongating it. This process continued, until two centuries later, the form bore little resemblance to its Aegean archetypes; not only had it had become thoroughly Roman in character and the standard wine jar of Italy, but it also, in the case of the Late Republican Dressel 1 form, had quantitatively seized control of the Mediterranean wine trade. Roman wine had come to rival the famous vintages of the Greeks (Chapter One).

Then, around the middle of the first century B.C., ateliers across Italy suddenly cast aside this traditional and highly-successful Roman container in favour of a very different form, originally produced on the Aegean island of Cos (Chapters Two and Three). The reasons for this sudden change have never been unanimously agreed upon, but the merits of the new form, the Dressel 2-4, were great enough to allow it to parallel Rome's expansion under the Empire and become the most widely-distributed Mediterranean wine amphora ever; it occurs on sites from Britain to India, and from North Africa to the Netherlands (Chapter Three).[1]

Very soon after its introduction to Italy, provinces such as Gaul and Tarraconensis also adopted the form (Chapter Four). The Dressel 2-4 enjoyed this popularity until the second century A.C. at least, when its production suddenly dropped off (Chapter Five). It is now known that there

[1]This thesis does not attempt to act as a guide to precise locations and numbers of Dressel 2-4 amphora finds; such a task would be impossible due to the rate of finds and the condition of publications, and, in any event, would not serve any useful purpose. It is the general picture, gathered from previously scattered publications, that is more important for comment upon the distribution of the amphora.

were later amphora forms, of a flat-based variety, produced in Italy, but these were intended for local distribution. No other Mediterranean wine amphora ever replaced the Dressel 2-4 as an major export vessel, in terms of comparable numbers or distribution.

Discussion of the production of the Dressel 2-4, therefore, obviously introduces some important questions about the nature of Italian viticulture and the wine trade during the late Republic and early Empire. Considering its frequency on sites, and the amount of publication it has accordingly received, one would expect the answers to be fairly accessible. In reality, the inconsistencies and contrasting opinions published on the subject have led to even greater frustrations. It is hoped that this thesis will both clarify the nature of the Dressel 2-4 amphora and address the larger picture of the Italian wine trade.

There are many scholars who have made invaluable contributions to the study of Roman amphorae. In general, Paterson (1982), Peacock and Williams (1986), Empereur and Hesnard (1987), and Woolf (1992) all provide handy quick-reference summaries of the history of study on the wine trade and amphorae; Sciallano and Sibella (1991) also assembled an amphora reference guide, which remains useful for its production maps for each form. There are several scholars and publications in particular which have greatly influenced and contributed to the course of research on the Dressel 2-4.

Credit must certainly be given to F. Zevi, one of the first, if not *the* first person, to investigate in depth the relationship between a Roman amphora form and its *tituli picti*, thereby credibly defining not only the contents of the container, but often also its provenance. Zevi's observations on the subject, published in 1966, are still essential readings for anyone in the field.

Despite his lead, it was some years before Roman amphora studies had really increased to the point where it was appropriate or even feasible to bring scholars together for the collection *Recherches sur les amphores romaines* (1972). While this first assemblage is still useful, it quickly became

outdated; furthermore, the extremely diverse approaches to research contained within the volume emphasized the fact that there were serious incongruities in the scientific applications of the rapidly growing field. These inconsistencies were addressed in the colloquium published as *Méthodes classiques et méthodes formelles dans l'étude des amphores* (1977), which witnessed an overwhelming desire to eliminate subjectivity in research, in favour of a more scientific and consistent methodological approach. Its sequel, *Amphores romaines et histoire économique: dix ans de recherche* (1989), was testimony to the geometric expansion of active researchers since the previous decade. The volume on a smaller level continued to address some problems of approaches to research, but was more concerned with communicating the sheer amount of investigations occurring within the field of Roman amphora studies.

One further collection of papers, published as volume 36 of the Memoirs of the American Academy at Rome, *Commerce and the Ancient Seaborne Economy* (1980), collected together some of the biggest names in Roman amphora studies in an effort to address the holes that existed in the overall picture of the wine trade. Certain papers contained within, such as A. Hesnard's report of amphorae from the port at La Longarina, near Ostia, became mainstays for the chronologies of production and distribution of export amphorae.

In fact, Hesnard's dissertation, *Les Dressel 2-4: amphores à vin de la fin de la Republique et du début de l'Empire, un essai de construction typologique* (1981), is the obvious precursor to this thesis. It is a credit to Hesnard and her co-scholars that amphora studies have increased so much in the past fourteen years that an updated and much more narrowly-focused study of the subject is called for. While her study was a typological approach to Dressel 2-4 across the Roman empire, this thesis is less concerned with matters of theoretics and classification than the development of the wine trade, and its scope is confined to Italy proper.

For Italy, specifically, A. Tchernia's book, *Le vin de l'Italie romain* (1986) is an indispensable source for tracing the evolution of the Italian wine trade, based on both archaeological evidence and ancient commentaries. His appendices and maps on wine types and regions, as attested by ancient sources, alone are of great use. Tchernia's numerous other relevant works include his co-authorship with Zevi on the wine amphorae from Campania and Tarraconensis at Ostia (1972) and his assessment of the Italian vintager between the first century B.C. and the third century A.C. (1993).

It is unfortunate that E. Lyding Will has still not published her volume, *Stamped Amphoras in the Eastern Mediterranean*, in anticipation of which she has been withholding valuable information derived from her research for over three decades now.[2] Instead, she has put out short reports on specific subjects, using her own classification system, which has never been fully published and therefore is both incomprehensible and useless to anyone else; moreover, she has made sweeping statements about data otherwise unknown from both the western and eastern Mediterranean, without providing any kind of evidence, or, perhaps even worse, with assurances to the reader that the proof would be included in her 'forthcoming volume'. Nonetheless, she is one of the most dedicated and knowledgeable scholars in Mediterranean amphora studies as a whole, and her contributions thus far, particularly with respect to production centres in the Portus Cosanus and Brindisi, have drawn attention to areas previously unexplored.

P. Arthur's survey of northern Campania (1991), which attempted to assess the social and infrastructural changes in rural northern Campania from Prehistoric to Medieval times, also serves as a useful reference. As part of the survey, he identified several kiln sites, which are included here in the Appendix. While much of the material retrieved during his study apparently remains uncatalogued[3], his brief published descriptions offer rare insights into the interconnections of the

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[2]See Tchernia, 1986, 70 and n. 87, who expresses similar frustrations.

[3]personal communication.

Campanian countryside. His studies have also taken him into another important but relatively unexplored area, that being post-Dressel 2-4 amphora production in Campania (1982 and, with D. Williams, 1992).

Northwards along the Tyrrhenian coast, the wine amphorae of the *ager Cosanus* have been investigated by D. Manacorda (1978, 1980, 1981), who has also demonstrated a detailed understanding of the Republican wine trade in general (1989). Both Manacorda and A. Carandini have bridged the gap between physical evidence and social history, in interpreting the organization of and relationships between agricultural estates, pottery workshops, and sales of viticultural goods (Manacorda 1985, 1988; Carandini 1981, 1989).

C. Panella has also followed this approach of integration with social history (1981, 1986). In addition, her Ostia excavation publications have long been treated as the gospel of Roman amphora studies (1968-1977, intermittently), while her classification with M. Fano of the Dressel 2-4 amphorae at Pompeii has provided the most satisfactory subgrouping of the type yet (1977).

Outside of Italy proper, the most important areas for this study are France and Spain. The evidence that lies between Italy and these provinces, however, is also crucial. In 1992, A. Parker published his catalogue of shipwrecks, entitled *Ancient Shipwrecks of the Mediterranean and the Roman Provinces.* It presented, for the first time, a quick but extremely useful summary for hundreds of examples of what has to be one of the most informative contexts an archaeologist can hope to find, namely a relatively intact and undisturbed site. The wrecks, most of which are named for their modern location, are presented in alphabetical order and in entries which are complete with individual reference bibliographies. Readers are encouraged to refer to Parker's monograph for further information on wreck sites mentioned in this thesis.[4] In addition, M. Scorsi-Sciallano and B. Liou's

[4]Although there is great variability in accuracy and detail in marine excavations, all but the most questionable descriptions as presented in Parker, 1992, will be accepted as fact, unless otherwise noted.

Archaeonautica volume, *Les épaves de Tarraconaise à chargement d'amphores Dressel 2-4* (1985), looked at a much smaller area than Parker's study, but contained much more detail and conclusions, particularly concerning Dressel 2-4 amphora production in Tarraconensis.

In the realm of Gaulish studies, F. Laubenheimer was for a long time the most prominent and consistent investigator of the amphorae in Gaul. The contents of her books, *La Production des amphores en Gaule narbonnaise* (1985) and *Le temps des amphores en Gaule: vins, huiles et sauces* (1990), were not restricted by the boundaries of the province, but served to piece together its part in the economy and social structure of the Empire. Fortunately, she has been joined by a host of fellow scholars in Gaulish amphora studies; the quality and range of papers presented at a Round Table conference and published as *Les amphores en Gaule: Production and Circulation* (1992) bodes well for the future of that field.

Among her colleagues in Spanish studies are M. Beltrán Lloris (1970, 1990), R. Pascual Guasch (1977), and J. Miró (1988), all of whom have worked to create the type of production and distribution assemblage that Italy has lacked, even though the intensive exploration of Roman Spain is a much more recent development than that of Italy. It seems that amphora research concerned with the provinces of Gaul and Spain has surpassed that of Italy in terms of consistency and thoroughness.

These, then, are the scholars whose names will doubtless appear many times in the pages to come. The contributions of many others, such as Peacock and Morel, whose broader perspectives on Roman pottery as a whole are equally pertinent, are also appreciated; however, the list is too great to mention all. The size of the bibliography is a happy commentary on the growth of the field in recent decades, but its manifestation as mainly articles also underlines the need for projects such as this thesis to provide one comprehensive reference for specific terrains.

CHAPTER ONE: WINE AMPHORA PRODUCTION IN ITALY PRIOR TO THE MANUFACTURE OF THE DRESSEL 2-4

From at least the end of the fourth century B.C., Italian wine-makers began to look beyond the need to meet the demands of the local community, and poured their products into ocean-going transport containers for export to sites throughout the Mediterranean. The utilitarian origins of these amphorae plausibly lay in the viticulture of the colonies of Magna Graecia, and the morphological origins in Hellenistic Aegean models, but they quickly assumed their own steady evolution in shape. While so doing, they gained an increasingly predominant place among Mediterranean wine amphorae, particularly in distribution to the west, through to the mid-first century B.C. In Tyrrhenian Italy, the first form within this evolution was the Graeco-Italic amphora, studied in depth particularly by Will; the final format was Dressel's form 1.

The first of these, the Graeco-Italic amphora, was characterized by a triangular rim, a long cylindrical neck, and a pear-shaped body, with its maximum diameter occurring at the upper body; the body usually tapered to a conical toe (fig. 2). The earliest models stood 60 centimetres or less high, but with time, the form gradually elongated and narrowed, so that by the second century, the amphora stood 80 centimetres or more tall, while its maximum diameter had hardly changed.[1] The rim, neck, and handles changed correspondingly; by the mid-second century, the rim had heightened to approach that of the Dressel 1. Although chemical analysis has not been conclusively performed,

[1]Empereur and Hesnard, 1987, 29.

the idea that the contents were wine has never been disputed. There are, however, examples with resinous coatings on the interior, which are typically indicative of wine containers.[2]

Will suggests the existence of five subtypes within this class, labelled types *a* through *e*, based primarily upon differences in suggested provenance, although size and production chronology were also taken into consideration.[3] Although there is merit in the broad sense of her divisions, caution is advised in following Will's subtypes. At least one, for instance, is based upon a single doubtfully-restored example.[4]

However, the divisions do imply that while the earliest form (Will 1a) was produced from as early as the end of the fourth century, there was a hiatus in the second half of the third century before the other forms were produced. Will relates this later production to the end of the second Punic War, when Rome was able to assert a greater control over the Mediterranean. The Graeco-Italic amphora thereby attained "the climax of the evolution of the Romanized form".[5] However, as Morel illustrated when Tchernia made much the same argument, it is inconsistent to claim steady evolution on the one hand, and to speak of disruptions and crises on the other[6]. Moreover, studies in the exchange of ancient pottery have demonstrated that war or political hostilities did not necessarily interrupt the basic flow of goods; changes need not be attributed to such obvious and primarily modern concepts as wartime embargoes.[7]

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[2]Furthermore, examples from wrecks at Grand Congloué, Lazaret, La Ciotat, and La Chrétienne C were sealed with the same pozzolano stoppers as have been found amongst Dressel 1 bungs: Empereur and Hesnard, 1987, 30.

[3]Will, 1982, 338-356, pl. 85.

[4]Will's transitional form *b*, to which she assigns a probable Italian origin: see Empereur and Hesnard, 1987, 25. Her form *e* also does not appear to fit naturally into the evolution.

[5]Will, 1987, 172.

[6]Morel, 1989, 526.

[7]MacDonald, 1982, 113 discusses Attic Pottery in Corinth during the Peloponnesian War; Morel 1982, 99, summarizes third and second century Campanian finewares exported to and imitated in North Africa; Empereur and Hesnard 1987, 28, cite Graeco-Italic amphorae at Tunisian Kerkouane (destroyed 256 B.C.).

In 218 B.C., the plebeian tribune Quintus Claudius legislated that senators and their sons could not own ships large enough to carry more than 300 amphorae.[8] Although mention of this law is made only in Livy's description of the Hannibalic War, the context makes it clear that the law was not enacted in view of a temporary wartime measure. Its significance deals more with the impropriety of senatorial involvement in sales of goods. In any case, the legislation concerning shipping could and must have been circumvented, as shipwrecks of the second century attest.[9]

The Graeco-Italic amphora was definitely Greek in its conception; the initial form was not very far removed morphologically from Aegean models, such as the Knidian and an early Rhodian form.[10] In the west, the first Graeco-Italic amphora production centres were in Sicily and Ischia, and the earliest known stamps on them were Greek. However, unlike the Aegean island forms from Knidos and Rhodes, these stamps were not easily identifiable controls or guarantees of date and manufacturer. Instead, the stamps gave names of the people presumably associated with the pottery workshop, and possibly even the wine manufacture; the meaning of the name was no longer clear. By the second half of the third century B.C., stamps in Latin lettering had been introduced for the same amphora type. At the temple of Aphrodite at Eryx, Sicily, where thousands of amphora handles have been recovered, fourteen examples of the bilingual stamp C.ARISTO were found, eight in Greek and six in Latin.[11]

From southern Italy and Sicily, manufacture of the amphora type moved northward to parts of Campania, Latium, and Etruria, possibly influenced by contact with the colonies of Magna Graecia. Identification of Graeco-Italic amphora production often gives the first surviving indication of each

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[8]Livy XXII, 63.

[9]Cf. also Plutarch's biography of Marcus Cato, XXI, 5-8, in which Cato's indirect involvement in various commercial activities seems to contradict his otherwise austere lifestyle. Carandini, 1989, although without mention of Claudius' *lex*, discusses prominent people involved in the production and shipping of wine amphorae.

[10]Will attributes her form *a1* to an Aegean source, although without proof; on this point, see Empereur and Hesnard, 1987, 28.

[11]Empereur and Hesnard, 1987, 26-27 and 29, date the stamp to probably after 240 B.C. On the other hand, Will, 1987, 172, suggests that a fragmentary SES stamp from Cosa, dated between the late third and the early second centuries B.C., may be the earliest known amphora stamp in Latin letters.

region's involvement in viticulture beyond the level of local subsistence demands. Indeed, as Arthur comments, it was "not until about the late third and second century B.C. with the appearance of Graeco-Italic amphora kilns along the coast that the *ager Falernus* appears to have become a significant wine exporter".[12] It was at this time that the *latifundia* of the upper class became predominant in certain parts of the Italian countryside; the financial possibilities of agricultural estates - meaning farms operating above basic subsistence levels - were certainly being exploited by the time of Cato, who recommended vines, rather than wheat or other absolute subsistence needs, as the crop of choice.[13]

Confirmation for production centres outside Italy remains limited to Marseille.[14] Despite the Greekness of its form, the Graeco-Italic amphora was most common at sites in the western Mediterranean; shipwrecks attest that "Graeco-Italics effectively succeed[ed] Corinthian amphoras as wine amphoras" in the west.[15] The form also ventured into the eastern Mediterranean, although in much lesser quantities, as the Aegean island forms retained control of that market.

In view of the numbers of the amphorae that appear from third century contexts onward, and particularly contexts from the second half of that century, the main period of Graeco-Italic manufacture can essentially be considered the third and second centuries B.C., although with acknowledgement of the presence of some examples in contexts as early as the fourth century B.C.[16] Tchernia suggests a terminal date circa 130 B.C., based on the dates accepted for the beginning of Dressel 1 production and the simultaneous disappearance of Graeco-Italics.[17]

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[12]Arthur, 1982, 31.

[13]Cato *Agr.* I, 7.

[14]Will attributes her type *e* to a Spanish origin, but the attribution is suspect: so Empereur and Hesnard, 1987, 28.

[15]Parker, 1992, 16.

[16]Empereur and Hesnard, 1987, 28.

[17]Tchernia 1986, 42. Empereur and Hesnard 1987, 29, affirm that Graeco-Italics were not produced after 120 B.C.

The reasons for the sudden appearance of the Graeco-Italic amphora in the fourth century as a major transport vessel when there had been no prior known evidence for an Italian wine export market have never been satisfactorily addressed. The question is partially one of ascertaining whether a surplus supply in Italy or a demand potential abroad provided the impetus. The answer may be as simple as the fact that, during the Hellenistic period in the Greek east, the export of Aegean amphorae to Italy and the west was coming to the forefront, and southern Italy and Sicily, being not far removed from the Greek identity, followed along.[18] The western Mediterranean had not by that time acquired the extent of viticulture it needed to fulfil its own needs; Tyrrhenian wines provided a closer and perhaps more convenient source of wine than did the more traditional Greek suppliers.[19]

During the late Republic, Italian wine export continued to grow. Now, the wine, at least on the Tyrrhenian coast, was marketed in the Dressel 1 form, which fit quite clearly into the progressive morphological evolution of the Graeco-Italic types, as the final form of that evolution (fig. 3). There was no sudden change to indicate the adoption of a new form; the modern demarcation of the Dressel 1 is simply a reflection of the fact that the form had evolved to the point where it was no longer recognizably the same as that produced in Italy two centuries earlier, with major change in the elongation and increasing slenderness of the body.[20] By the late Republican period, however, the amphora production was no longer linked to the wine manufacture of topographical Magna Graecia, and the stamps were entirely of Latin letters. The contents of the container were indisputably wine,

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[18]The same may be said of the pattern of lengthening the form: early Hellenistic Greek amphorae tended to be short and round, but over time, the forms became taller, as did the Graeco-Italic forms.

[19]Unwin, 1991, 101: "There were two basic elements to the Greek wine trade: a rural-urban flow of wine designed to supply the urban market, and a long distance trade, often of higher quality wines, which provided quantities and qualities unavailable locally."

[20]Tchernia, 1986, 309-320, devotes an entire appendix to the distinctions between and within the types. Empereur and Hesnard, 1987, 29, subscribe to the theory that the critical typological changed occurred when the form attained a height close to 90 centimetres, with the ratio of maximum diameter to height at about one to three, where the neck was elongated such that the ratio of the height of the neck to the height of the body was about 0.5, and where the rim was higher than it was thick.

as attested by chromatography, the resinous internal lining, the use of pozzolano sealings, and *tituli picti*.[21]

The Dressel 1 itself underwent several phases, each fairly minor in comparison with those of the Graeco-Italic, but following the same trend of lengthening the form. Lamboglia's three identified phases of the Dressel 1 - Dressel 1A, 1B, and 1C - continue to be the subtypes of most common reference, although they are inadequate.[22]

In general, the Dressel 1 was characterized by a heavy high collar or banded rim. The long handles, like those of the Graeco-Italic model, were oval in cross-section and attached immediately below the rim and to the shoulder. The neck was long and slender, and flared out smoothly into the convex shoulder. An offset marked the join between the shoulder and the cylindrical body. The Dressel 1A was closest morphologically and chronologically to the Graeco-Italic amphora, whereas the later Dressel 1B and 1C were taller and narrower, but at the same time heavier in build.

Almost all of the identified kiln sites for the Dressel 1 were Italian, and were located along the Tyrrhenian coast, practically on the seashore.[23] Dressel 1 potters worked primarily in the neighbouring areas that were most famed for their high quality of wine production, the Falernian and Caecuban Plains.[24] Fewer production centres have been identified in other areas of Latium and Etruria.[25]

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[21]In addition, at the Madrague de Giens wreck, one amphora contained the remains of grape pulp: Tchernia, Pomey, *et al.*, 1978, 13; reiterated in Empereur and Hesnard, 1987, 32. For *tituli picti*, see Zevi, 1966, 212-214.

[22]'Inadequate' because there is no unity within the subtypes in either provenance or production date; nor does every stage of the evolution fit neatly into the three subtypes: Manacorda 1978, 122-133. See also Empereur and Hesnard, 1987, 30-33, for discussion of the three subtypes, based on Lamboglia, 1955, 241-261.

[23]A southern Spanish kiln site at Belo may have engaged in small-scale production of the Dressel 1C form; this is the only known non-Italian source: see Empereur and Hesnard, 1987, 31. See Chapter Four for discussion of Spanish Pascual 1 imitations of the Dressel 1.

[24]See Hesnard and Lemoine, 1981, for a summary of specific sites, stamps, and the Dressel 1's association with the wines of these areas.

[25]For the Albinia site in Etruria, see Peacock, 1977. Empereur and Hesnard, 1987, 31, report production centres in Latium at Minturnae, near Terracina, and at Astura. Panella, 1981, 56-57, pl. XII, supplies a good production and distribution map, reproduced and/or revised in Peacock and Williams, 1986, fig. 8, Tchernia, 1986, map 4, and Unwin, 1991, fig. 22.

One of the most important centres, however, was identified in Etruria at the *Portus Cosanus*, where, particularly during the second and early first centuries B.C., the familial wine and fish product enterprise of the Sestius family directly reflected, if not influenced, the economy and well-being of Cosa.[26] Their wine amphorae, mostly Dressel 1, although they had produced numbers of Graeco-Italic amphorae in the first half of the second century B.C., were stamped with the abbreviated name SES or SEST in combination with one of over a dozen stamp devices.[27] The numbers in which these amphorae occurred at Cosa testify that the viticulture of Roman Etruria was by no means small-scale or unsuccessful at the time.[28]

Furthermore, a ship that was ostensibly on its way to the Rhône-Saône river system, but that sank instead near Grand Congloué, carried more than one thousand amphorae of Sestius manufacture. This wreck, combined with the Sestius examples from Cosa, indicates mass production of amphorae that were correspondingly intended to export mass-produced wine. This degree of mass production suggests that not all of the wine being exported was of high quality. Furthermore, if Graeco-Italic amphorae could contain the famed quality wines of Campania on the one hand, and common fare from Etruria on the other hand, the theory that the shape of an amphora alone was an indication of the precise contents cannot be valid.

The Sestius pottery at Cosa is also interesting for the family's apparent role in the transportation of their goods, an activity which one might have expected would be consigned to a merchant-trader. A reference by Cicero combined with an inscription from Delos naming an earlier Sestius as a trader, points to the Sestius *familia*'s involvement not only in the manufacture, but also

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[26]Will, 1987, 171 and 173. 86% of the amphorae found in the port bore the Sestius stamp, according to Will, 1987, 174. These were of local Cosan fabric, which is described in Will, 1979, 345.

[27]Neither Manacorda, 1978, 128, nor Will, 1979, 344, have been able to find any relationship between device and geographical or chronological distribution.

[28]Manacorda, 1978, 129, and Will 1979, 345. Away from the port, small numbers of Sestius amphora finds attest a mainly western distribution along trading routes following the coastline to Spain, and moving inland along the Rhône-Saône river system. See distribution maps in Manacorda, 1985, 201, fig. 249, and in Will, 1987, 175, fig. IX-1.

in the overseas distribution of its products. This involvement possibly included ownership of the ship that sank at Grand Congloué.[29]

The same type of situation can be envisioned for P. Veveius Papus, whose Dressel 1 and Dressel 2-4 containers were manufactured at the Canale Canneto workshop at the mouth of Lake Fondi in Campania. The wreck off La Madrague de Giens (70-50 B.C.), apparently also sunk on its way to the Gallic centres, was stocked mainly with his Dressel 1B containers, which were almost certainly transporting Caecuban wine.[30]

In terms of numbers, the Dressel 1 became the most popular overseas transport amphora of the Mediterranean during the first century B.C. It is found on sites from the western Mediterranean to Britain, and occasionally to the east. The quantity of finds of the form in shipwrecks is over double that of the preceding Graeco-Italic type, as well as that of the succeeding Dressel 2-4 type.[31] The unusual density of Dressel 1 finds at findsites especially in Gaul caused Tchernia to estimate that at least one hundred ateliers from Etruria, Latium, and Campania were producing Dressel 1 amphorae during the first century B.C.[32]

Tchernia suggests that the Dressel 1 replaced its predecessor circa 130 B.C., although Empereur and Hesnard cite slightly earlier occurrences, and Parker feels that an earlier general date is justified.[33] The distinction between the Dressel 1 and its predecessor, the Graeco-Italic, is extremely

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[29]Cicero's passing reference in *Att.* 16, 4, 4 (*navigia luculenta Sesti*) is unclear, but gives the impression that the Sestii at the very least had the use of ships: so Will 1987, 175. Manacorda 1981, 10-11, suggests that at least five wrecks may be related to the Sestius industry. The Delian inscription appears in *IG* XI 4.757; see Will, 1987 and Manacorda, 1980, for summaries of the Sestius family by inscriptional and ancient references.

[30]Tchernia, Pomey, *et al.*, 1978, 13. For information on the kiln site at Canale Canneto, see Appendix.

[31]Parker, 1992, 16. Note that Parker's addition of amphora cargoes on page 17 is erroneous; he cites sixty-nine examples of the Graeco-Italic, eight transitional between the Graeco-Italic and the Dressel 1, a total of 124 Dressel 1 (fifty-four Dressel 1A, forty-five 1B, twenty-six 1C, and seventeen unspecified Dressel 1 = 142, not 124), and a total of sixty-four Dressel 2-4 (twelve Italian, twenty-four Spanish, and thirty-one uncertain provenance = 67, not 64). Assuming - perhaps dangerously! - that the specifics are right, the numbers for the Dressel 1 and Dressel 2-4 should instead be 142 and sixty-seven respectively. The correct figures emphasize even more strongly Parker's statement that Dressel 1 cargoes far outnumbered both earlier and later Italian amphora cargoes.

[32]Tchernia, 1993, 284.

[33]According to Tchernia, 1986, 44, three sites provide a *terminus ante quem* date of circa 130 B.C. for Dressel 1 production: Frégelles, Entremont, and Ampurias; early dates provided by *tituli picti* include 119 B.C. and perhaps 129 B.C. Empereur and Hesnard, 1987, 29, quote earlier examples of the Dressel 1: the wreck at Punta Scaletta (Giannutri), dated 140-130 B.C., and Numance, dated 153-133 B.C., where the Dressel 1A type occurred at least as often as did the Graeco-Italic type. Parker 1992, 32, who points out that shipwrecks

fine; thus Tchernia's more traditional statement that the form of most amphorae by 130 B.C. was closer to that of the Dressel 1 than that of the Graeco-Italic remains both convenient and accurate.

Production of the form continued until the mid-first century B.C., when it was replaced by the Dressel 2-4; the disappearance of the Dressel 1 coincided with that of Campanian fineware, between 60 and 30 B.C.[34] Later instances are known, but they represent the last vestiges of manufacture, rather than signs of the continued dominance of the Dressel 1;[35] production of the Dressel 1 wine amphora had fundamentally dissipated by the third quarter of the first century B.C.

This chronological span closely paralleled that of the "development of a strong slave-based economy" in the *ager Falernus*, a development which reflected the growth of the wine industry and other agriculture in the area and necessitated not only large labour forces but also specialized amphora production centres.[36] The same analysis can be applied to most areas of Dressel 1 manufacture. Once again, it is unclear and perhaps faulty to attempt to discern which of these factors provided the mechanism for the others: increased estate ownership, increased intensive and specialized agriculture, or the increased availability of slave labour resulting from the Punic Wars and trade with Gaul. Nonetheless, these factors combined to reach a *floruit* during the first century B.C., when Italian amphorae were not only the most numerous, but also the most widespread, of any Mediterranean amphora known to that point.

Meanwhile, the Adriatic coast and northern Italy were producing their own wine and wine containers, oriented towards an eastern Mediterranean market. These amphorae typologically

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are a more immediate and accurate reflection of chronology than are land contexts, believes that "Graeco-Italic amphoras ceased to be exported c. 150 BC and were immediately supplanted by Dr. 1A, with the first Dr. 1B appearing c. 100 BC".

[34]Empereur and Hesnard, 1987, 32.

[35]Tchernia, 1986, 126-127 summarizes these late occurrences; attention should be paid to the dating method for each, since both consular dates and some suspect stratigraphic chronologies are used. The last consular dipinto on a Dressel 1 at Carthage dates to 30 B.C.

[36]Arthur, 1982, 31-32.

resembled the Graeco-Italic forms, but were distinct enough to merit their own classification. The main Adriatic wine amphora prior to the mid-first century B.C. was Lamboglia's form 2, first identified in 1952[37] and yet still a source of much controversy today, due to a continued lack of evidence. As Tchernia remarks, "il n'y a pas d'opinion admise sur les amphores qui repose sur moins de données précises."[38]

The form of the Lamboglia 2 was obviously morphologically inspired by the Graeco-Italic. It had a banded rim, thick oval handles which attached beneath the rim and to the shoulder, and a fairly long convex neck which flared out sharply to the wide shoulder (fig. 4). There was usually an offset between the shoulder and the short, bag-shaped body. To the body was added a thin and tapering solid spike toe. Stamps usually occurred above the shoulder level, and gave Latin or Greek names.

The provenance of the Lamboglia 2, while traditionally considered to be the areas of Apulia and Calabria, has not yet been proven by convincing identification of kiln sites or even by any other substantial form of evidence.[39] Because Apulia-Calabria had been traditionally considered not a source of wine, but of oil, and because the amphorae were first recognized as unique occurrences in shipwrecks, Lamboglia 2 amphorae were originally considered to be oil amphorae. However, resined examples have now corrected such interpretations and proved that the container transported wine;[40]

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[37]First defined by Lamboglia, 1952, 165, and 1955, 262.

[38]Tchernia, 1986, 54.

[39]Riley, 1979, 152; Desy, 1983, 180; Parker, 1992, 19; and others have unconditionally accepted these origins. Tchernia, 1986, 54, and Empereur and Hesnard, 1987, 33, after lamenting the lack of evidence, admit that they too agree to this provenance. Tchernia, 1993, 285, also envisions Lamboglia 2 production in Picenum and northern Adriatic Italy, as do Carre and Cipriano, 1989, 80-82, who list five Lamboglia 2 kilns between southern Picenum and eastern Veneto, but the evidence for the pottery producing nature of these five sites, as published, is not entirely convincing.

[40]Empereur and Hesnard, 1987, 33; Tchernia, 1980, 305. The idea that the Lamboglia 2 containers held wine is still relatively new; about fifteen years ago, Riley, 1979, 152, still believed that the amphorae carried oil, as first claimed by Lamboglia, 1952, 165, and 1955, 262, while more recently, Peacock and Williams, 1986, 100, have expressed doubt that wine was a more likely content than olive oil.

it was the rounder-bodied Brindisi-type amphora that carried the oil exported from that region (fig. 5).[41]

Tchernia, based on *testimonia* of Cato, Polybius, Varro, and Strabo, believes that it was the high harvest yields and good markets in sectors of the Adriatic and Northern Italy that led wine-makers to turn to an external market during the third century.[42] However, the best-dated contexts in which the Lamboglia 2 has been found date to between the end of the second century B.C. and the Augustan period.[43] There is no known physical evidence for how the quantities of wine attested by the ancient sources were exported prior to that date.

The Lamboglia 2 amphora was not truly a competitor of the Dressel 1 amphora. Its findspots have mostly been within Adriatic Italy and in the eastern Mediterranean. Surprisingly, large numbers of the wine containers have been found in Aegean areas long famed for their own wine types, such as Thasos, Rhodes, and Cos; the great quantities recovered at Delos may indicate that the amphora was redistributed to other parts of the east through that port prior to its destruction in 69 B.C.[44] It was also carried on ships to the west, although apparently more often as minor stores or ship supplies than as major cargo.[45]

The Adriatic seaboard continued to progress independently of western Italy in terms of maintaining its own wine production, market, and choice of wine container. The two coasts did briefly agree in the introduction of the Dressel 2-4 type, discussed in Chapter Three, but the Adriatic eventually chose the evolutionary successor of the Lamboglia 2, the Dressel 6, to be its main wine

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[41]See Chapter Three.

[42]Tchernia, 1986, 110-111, and 1993, 285, details the ancient descriptions: Polybius, III, 88; Cato cited by Varro, *RR* I, ii, 7; Strabo, V, iv, 2 and V, i, 7.

[43]Empereur and Hesnard, 1987, 33.

[44]Tchernia, 1986, 70-72.

[45]See discussion in Volpe, 1988. For shipwrecks, see Parker, 1992; also Tchernia 1986, 68.

container. Neither the Lamboglia 2 nor the Dressel 6 compared with their west coast cousins in either number or distribution.

CHAPTER TWO

THE INTRODUCTION OF THE DRESSEL 2-4

The Dressel 1 forms enjoyed dominance within Tyrrhenian Italian amphora workshops until approximately the second half of the first century B.C. It was at that time that a new shape of vessel came to be produced along the west coast of Italy, identified from the excavations at Rome's Castro Pretorio and classified as types 2, 3, and 4 in Dressel's typology chart, published as table II of *CIL* XV (fig. 1).

Each of Dressel's types 2 to 4 is most easily recognized by the bifid handles, made up of two parallel rods, each circular in cross-section. The handles are attached just below the rim, then move either horizontally or slightly rising to an angular or rounded elbow, from which the joined rods move vertically down to the lower-shoulder attachment. The vertical height of the handles is longer than the upper horizontal part. As for other characteristics of the form, the mouth is in the form of a rounded bead rim, which moves down into a cylindrical neck. Often there is an offset at the join between the neck and the shoulder, which has a very slight to pronounced concave curve. Another offset marks the carinated join between the shoulder and the body. The body itself is cylindrical, with fairly straight walls; the lower body tapers to a spike toe of widely-varying forms and sizes.[1]

[1]This span of variation in toes makes secure identification of toe fragments alone as belonging to the Dressel 2-4 form hazardous. See, for instance, the uncertainty in Arthur, 1982, 31.

Contents

Epigraphical evidence indicates that the Dressel 2-4 amphora carried wine as its main contents. Dipinti on 2-4s refer to several different wine types, of widely-ranging qualities, and from far-ranging areas, as examined by Zevi.[2] Select Italian wines, mostly those of Campania and Latium, were renowned across the Mediterranean, and Dressel 2-4 amphorae bear the abbreviated names of several of these vintages; the list becomes even greater when provincial wine and manufactures of the form are taken into account.[3]

One of the best wine types in Italy, and among the most renowned of all ancient times, was the Falernian wine of Campania, indicated by dipinti on Dressel 2-4 amphorae from such sites as Carthage and Rome.[4] Varro contrasted the high quality of a well-aged Falernian wine with that of most wines, of which the taste peaked after only one year, and, according to Pliny, the value of the Falernian vintage increased up until about the twentieth year.[5]

Pliny the Elder knew of three varieties of Falernian (*Caucinum*, *Faustianum*, and, in a narrower sense, *Falernum*), distinguished by the location and elevation at which they were grown, and three types (*austerum*, *dulce*, *tenue*). However, he wrote that the quality of Falernian wines was degenerating, mainly due to their common transplantation in pursuit of high quantity yields at the expense of quality[6]. Such an observation is not unreasonable, considering the massive expansion of the consumer base continuing from the previous century; huge quantities of cheap wine were in great

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[2]Zevi, 1966, 215-216. Readers are encouraged to refer to this source and to Tchernia, 1986, 322-341, for amphora epigraphy referring to the various Italian wine types. Any additional information on sources will be noted.

[3]Provincial wines will be discussed along with the provincial forms in Chapter Four.

[4]The Rome examples were from Dressel's Castro Pretorio excavations; those from Carthage appear in Delattre, 1894, and are currently in the collection of the Musée National de Carthage, Dressel 2-4 amphorae nos. 91.154, 92.20, 93.590 (unpublished).

[5]Varro, *RR* LXV; Pliny, *HN* XIV, 57.

[6]Pliny, *HN* XIV, 3; XIV, 62.

demand, for use at public banquets in exchange for votes, and for the common wine of the populace.[7] Wine was no longer the prerogative of the wealthy.

Other well-reputed wines of Campania included the Surrentine and *Statanum*, both highly rated by both Strabo and Pliny.[8] Of the Campanian wines, those from the Vesuvian area are the most frequently attested by Dressel 2-4 dipinti, in particular *Surrentinum* and an enigmatic reference to a type called *Vesuvinum*.[9]

Latium's Caecuban wine, too, was a vintage of the highest quality, as reflected in references by such authors as Strabo, Horace, and Columella.[10] Pliny named it the best wine of Italy, even though it apparently was virtually extinct by his time; he blamed the construction of Nero's canal through the Caecuban vineyards for its demise.[11] The evidence for that wine type in Dressel 2-4 containers is not very secure, although Hesnard assumes such contents as probable for those produced at the Canneto kiln site near Terracina.[12]

Latium was also the source of *Albanum* and *Fundanum* wines, both listed by Pliny as quality wines, albeit not at the same level as the Caecuban.[13] In contrast, Horace placed Alban wine on a par with Caecuban and Falernian, while Maecenas was offered his choice of Caecuban, Chian, Alban, or

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[7]Purcell, 1985, 14: "On the whole, public banquets of all kinds are a feature of the late Republic and early Empire", and were definitely not pre-Augustan in the Italian towns.

[8]Strabo, *Geog.* V, iii, 6, and V, iv, 3; Pliny, *HN* XIV, 64-65.

[9]*CIL* IV, 2557-2559; *CIL* VIII, suppl. III, 22640, 31. Zevi, 1966, 215, identifies Dressel 3 epigraphy listing contents of Surrentine wine. For morphological relationship of Dressel 2-4 amphorae to dipinti of this wine type, see the discussion in Tchernia and Zevi, 1972, 37-40, also including *Vesuvinum*; see also Panella and Fano, 1977, and Fariñas del Cerro *et al.*, 1977. A *Statanum* inscription was found in the 'second amphora wall' at Carthage; see Delattre, 1906, no. 8.

[10]Strabo, *Geog.* V, iii, 6; Horace, *Ep.* IX; Columella, *RR* III, viii, 5.

[11]Pliny, *HN* XIV, 61.

[12]Hesnard, 1977, 161. For a unique interpretation of this site, see Tchernia, 1986, 109, who thinks that there might actually have been wines of mediocre grade produced alongside the illustrious Caecuban, these lower grade wines being the ones contained within the Canneto amphorae.

[13]Pliny, *HN* XIV, 64-65. Only one inscription is known for Alban wine: *CIL* XV, 4531. For *Fundanum*, see the inscription on Dressel 4 in *CIL* XV, 2; these examples are listed in Zevi, 1966, 216.

Falernian wine at the party of Nasidienus Rufus.[14] Furthermore, the wine of Latin *Setinum* was the choice of Augustus and his successors.[15]

These were the vintages mentioned most often by writers of the late Republic and early Empire, obviously reflecting a taste for a great variety of wine. An origin in Campania or Latium did not guarantee quantity, however; *Pompeianum*, which was actually an import to the area of Pompeii of the *Murgentina* vine of Sicily, was discredited by Pliny because it did not improve with age and apparently caused terrible hangovers.[16] Those wines transported from other areas of Italy as a rule received less attention in the ancient *testimonia*, and were most often considered rough and poor. Some of these, along with wines that did not receive any mention in the sources and whose quality is therefore unknown, were also transported in Dressel 2-4 containers. In the former category, *Veientanum* was a low-grade Etrurian wine;[17] in the latter category, *Benev(entanum)* did not appear in the works of any ancient author.[18] Conversely, there are innumerable references to vintages which enjoyed great popularity, but of which no non-literary evidence is yet known.

Cases for contents other than wine are few. Two fragments of Gaulish Dressel 2-4s, one found at London and the other at Ostia, have received attention for their dipinti, which identify them as fish product containers.[19] The dipinti on both examples also listed their source, *Antipol(itanum)*, or Antibes, the Narbonensian city east of Marseilles. Laubenheimer offered an intriguing solution,

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[14]Horace, *Sat.* II, viii, 16; *Od.* IV, xi, 2; for the dinner party, see Martial, *Sat.* II, viii, 16.

[15]Pliny, *HN* XIV, 61. This wine type is named in the amphora inscriptions *CIL* IV, 1292; VI, 9797; VIII, 22640, 30.

[16]Pliny, *HN* XIV, 70. This type of wine is possibly named in the amphora inscription *CIL* IV, 5559. Tchernia, 1986, 176-177, points out that modern interpretations often assume that Pompeian wine was of high quality, but Tchernia's judgement, "qui en boirait après avoir lu Pline?" remains valid.

[17]*CIL* XV, 4595, on a Dressel 2 amphora; Zevi, 1966, 215, was the first to point out the association of this inscription with this amphora type.

[18]cf. Zevi, 1966, 215, for this inscription on a Dressel 3.

[19]Described and depicted in Laubenheimer, 1989, 106-108, and in Laubenheimer, Gebrara, and Beraud, 1992, 19.

albeit briefly and inconclusively, that the examples from London and Ostia, which are both incomplete, may actually be Dressel's form 16, of which the rim is missing in his typology chart.[20]

The arguments made for other foodstuffs as contents are equally suspect. Some of the Dressel 2-4 examples from the French coast wrecks at Dramont D and La Tradelière contained the remains of dates; another from La Tradelière may have contained sage vinegar[21]. However, the accurate typological identification of these examples is questionable; both samples have also been identified as Coan amphorae. Such an identification is not unreasonable, given that the other amphora forms in the cargo were Rhodians in the former case, and Rhodians and Chians, alongside some Dressel 6s and one Dressel 1B, in the latter. Judging by the presence of figs in the Dramont D Rhodians, re-use of these containers is a highly probable explanation for these unusual contents.

Coan amphora

What was the inspiration for this new form? The shape of Dressel's types 2 to 4 is almost certainly an imitation of the Hellenistic wine type produced on the Aegean island of Cos. The Coan amphora shared the same bifid handles and general shape, but was otherwise characterized by a wide shoulder, a body that was short and top-shaped in its earliest form, but longer and more narrow with time, and a small button toe.[22]

Coan wine, with its salt-water recipe, was famed across the Mediterranean; Strabo and Horace placed it among or not far from the best wines of the Aegean, including those from Thasos,

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[20]Laubenheimer, Gebara, and Beraud, 1992, 15-24. She also notes that despite the dipinto on the London example, the clay of the amphora by chemical analysis came from Fréjus, not Antibes. Zevi, 1966, 220, also lists a Dressel 16 amphora, *CIL* XV, 4712, with the inscription *liq(uamen) Antia(tinum) exc(ellens)*.

[21]Parker, 1992, 433 and 167.

[22]Cos actually produced at least two different amphora forms. The first, to which reference is made most commonly, is the double-handled variety. The second is a single-handled variety of the same fabric. According to Virginia Grace, the date for this single-handled variety may fall between the late fourth and early third century B.C.; since little attention has been devoted to it as a different and significant variation, the extent and impact of its distribution is unknown. See V. Grace in *Kenchreai* IV, 36-37.

Lesbos, and the much-admired blend of Chios.[23] Cato the Elder actually described the process of its preparation, which involved an elaborate and lengthy salt water distillation process, added to grapes which had ripened well on the vine, and then been dried in the sun for two to three days.[24]

In 1977, Hesnard described the Coan type as enjoying the last years of its production and mainly eastern distribution in drastically reduced numbers during the first century B.C. She was perplexed as to how this shape, as such, could possibly have influenced Italian workshops enough to cause them to take on the form around the middle of the century. Her initial assumption, however, needs correction. It was based upon the claim that Coan stamped amphorae occurred at only one site in a first century A.C. context in the Western Mediterranean.[25] The term 'stamped' is the key here: in truth, the Coan amphora must have been much more common at this time, but the predilection of Greek amphora studies to concentrate on stamps rather than the amphora itself has led the later, unstamped Coan output to be overlooked.[26] Unstamped Greek amphorae have been little studied, and in the past, when fabric descriptions were rarely reported, the only means of distinguishing between Coan and Dressel 2-4 fragments was by the occurrence of Greek or Latin lettering on stamps.

Nevertheless, sixteen years prior to Hesnard's article, Grace had realized that, in general, Coan amphorae of the first century B.C. were more typically unstamped than those of the previous century.[27] In spite of Grace's astute recognition more than thirty years ago of the fact that the containers were still

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[23]Strabo, *Geog.* XIV, ii, 19; Horace, *Sat.* II, viii, 9-19.

[24]Cato, *Agr.* 112, whose recipe was quoted by Pliny the Elder (*HN* XIV, 79). Cato (*Agr.* CV and CVI) also described the combination of the Italian Aminnian (Aminean) or ordinary white wine with prepared sea water to create a blend that *deterius non erit quam Coum*. Both he and Martial also recommended a Coan wine mixture for use as a laxative (Cato, *Agr.* CLXI; Martial, *Sat.* II, iv, 25).

[25]Hesnard, 1977, 163 n.33.

[26]Empereur and Hesnard, 1987, 22, date the stamped variety to between the first half of the third century B.C. and the first century B.C. They do note that examples are found after the mid-first century B.C. and in first century A.C. contexts, but name only two such cases, giving the impression that production was reduced at that time. They also vaguely state that manufacture of the form probably ceased during the second century A.C. Overall, though, Hesnard has never demonstrated with any great conviction a strong Coan production much after the second century B.C., "il n'en reste pas moins que la très grande majorité du matériel est antérieure à 50 av.n.è": in Hesnard, 1986, 78. Continued production of the Coan (called 'Dressel 2-5') form during the first two centuries of the empire in the eastern Mediterranean is discussed briefly in Martin-Kilcher, 1994, 344-345.

[27]In a footnote, Hesnard, 1977, 163 n. 33, does give mention to this fact, but without emphasizing its significance.

being produced throughout the early Roman Empire, Coan amphorae remain insufficiently published today.

As a result, the infrequent reported occurrences of Coan amphora finds from the first century B.C. have proven insufficient to indicate the full late morphology of this type, especially for the purposes of distinguishing unstamped examples from Dressel 2-4 amphorae. Without fabric descriptions, the distinction, then based on shape alone, is often not clear to all observers. As an illustration of this problem, a mixed Greek and Italian amphora group recovered from a shipwreck off La Tradelière, France, contained, as half of its cargo, examples that have been alternately identified as Coan or Adriatic Italian Dressel 2-4.[28] This site's particular problem of distinction, as far as is known, has not yet been resolved; a secure identification would make the evaluation of the wreck more meaningful.

The best evidence for the continued amphora production of Cos is that supplied by Parker's monograph, which lists seven ships carrying Coan wine containers that may have sunk sometime in the first century A.C.[29] Amphorae from Cos co-existed with Graeco-Italic, Dressel 1, and Lamboglia 2 amphorae as basic ship supplies in several wrecks, from perhaps as early as the end of the third century B.C. at Lazaret, down to the second quarter of the first century B.C. at La Madrague de Giens, both sites off the coast of France. Such finds provide continued support for the idea that it was an important Hellenistic amphora. The incidence of Coan wine containers on shipwrecks, however, was centred at the first century B.C., not at earlier centuries. The Coan form was assuredly not unfamiliar to the Italian ateliers of the first century B.C.

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[28]Parker, 1992, 433.

[29]For further information, see the sites listed in Parker, 1992, as Mandalya Gulf A, Turkey; Dhia A, Greece; Paros A, Greece; Kvarner Gulf, Croatia; Taranto C, Italy; and, with questionable identifications, Riace, Italy, and Shab Rumi, in the Sudan. The number is at least equal to, if not more than, the number of pre-first century B.C Coan amphora cargo wrecks.

Far from indicating that Coan amphorae were indeed being phased out of production, particularly in the west, during the first century B.C., marine archaeology has indicated exactly the opposite. Coan amphorae were among the cargo of ships wrecked off the shores of Turkey, Greece, Croatia, Italy, France, Spain, and possibly Libya and the Sudan; the locations of these finds proves the Mediterranean-wide market of this Aegean wine type. Although the dates assigned to these finds are approximate, and some shipwrecks are assigned dates spanning as many as two centuries, it appears that most ships carrying Coan amphorae were wrecked during the first century B.C.[30] Cos, although long loyal to the Roman cause, would have had even more incentive to export to the west after the recognition of Asia Minor, including Cos, as a new Roman province in 133 B.C.; after Pompey's success against piracy in 67 B.C., shipping was more secure and viable than ever before.

At that time, the Coan form must have familiar to most of the Mediterranean; it may also have at that time actually increased its distribution, so that awareness of the form was peaking just at the time when Italian ateliers rejected the standard Roman amphora in favour of the Coan shape. Interestingly, if site reports are correct, it appears that Dressel 2-4s did not travel on the same ships as Coans, unlike the earlier Italian forms.[31] If true, the Mediterranean trade routes must have expanded, or at least changed, contemporaneously with the introduction of the Dressel 2-4. Indeed, Parker's bar chart measuring the quantitative occurrence of Roman shipwrecks in the western Mediterranean over time shows that the highest rate of incidence centred in the first centuries B.C. and A.C. (fig. 24). The general increase in shipping at this time does not alter the significance of Coan inclusions in shipwrecks during that time.

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[30]Information based on site descriptions in Parker, 1992, who lists a minimum of eighteen ships that carried Coan amphorae. At least three of these are questionable, since it is not clear if the appropriate distinction between a Coan and Dressel 2-4 amphora has been made. Four wrecks are known to have contained Coan amphorae as the only amphora cargo: Mandalya Gulf A and Bodrum Area, Turkey; Paros A, Greece; and Kvarner Gulf, Croatia. These ships, all found in the eastern Mediterranean, must have sunk not long after taking on the Coan cargo.

[31]Stated with reservations as to the correct identification and distinction of the two different forms.

Rejection of the standard Roman type in favour of the Coan form

The exact reasons why Roman wine-makers would have wanted to adopt the form of amphorae from Cos are not provided in the ancient sources. Previous changes in Italian wine amphora shapes, particularly from the Graeco-Italic types to the Dressel 1, had involved fairly minor changes in comparison, but the succession of the Dressel 1 by the Dressel 2-4 was a much more drastic change. There are two main theories, not necessarily mutually exclusive, to explain the adoption of the Coan type amphora in Italian workshops after centuries of production of one standard Roman type. The first is one that recognizes certain economic and technical advantages of the Coan container over the previous Italian ones (i). The second, more difficult to prove, suggests a palpable change in the choice of alcoholic beverage during the first century B.C. (ii).

i. economic and technical advantages

In stature, the Dressel 2-4 stood slightly shorter than did the latest Dressel 1 types, although its maximum diameter was not less. The latter could reach heights of almost 120 centimetres, while the former averaged about ten centimetres less. This loss in height did not present a detriment to the overall capacity of the Dressel 2-4, however, since the thickness of the wall was accordingly lessened. The Graeco-Italic amphora had originally been a small, solid, roundish amphora; as it evolved, even though it became longer and more cylindrical in shape, it never lost its solidity. The heavy collar rim and correspondingly thick walls that typify the resultant Dressel 1 and Dressel 6 made for a very ponderous container when empty, let alone when full. The Dressel 2-4, on the other hand, with a small beaded rim, a minimum wall thickness of less than 1.0 centimetre, and maximum wall thicknesses at about 1.5 to 1.9 centimetres, was much lighter, without sacrificing the structural integrity of the vessel; very thin wall thickness was characteristic of Coan vessels.

As a result, the Dressel 2-4 afforded a better weight to capacity ratio. By simply reducing the wall thickness, the Dressel 2-4 clearly marked a technical advantage over the Dressel 1; the ratio of the capacity of an empty Dressel 1 amphora to that of a Dressel 2-4 amphora was 1 to 1.3 or 1.5, accomplished by physical changes that on the surface may not have seemed so significant.[32]

The combination of increased capacity with reduced dimensions in height, meaning less storage volume needed for each amphora, led to a tangible gain in the efficiency of use of cargo space. The cargo space on one ship occupied by 4500 Dressel 1 containers could contain more than 6000 Dressel 2-4 amphorae, translating into a gain of almost one-third of the ship's carrying capacity for wine vessels.[33] As a whole, the small divergences in one amphora meant great differences in an entire shipment, and therefore in the economic possibilities.

The exact motivations which led Italian potters and merchants to recognize these advantages is not difficult to extrapolate. For instance, the shipwreck at Madrague de Giens carried Coan amphorae among its shipboard materials. It was this same famed ship that carried the Dressel 1 amphorae of P. Veveius Papus, whose kiln site in the *ager Caecubus* made one of the first identified switches from the Dressel 1 form to the imitation 'Coan', or Dressel 2-4 form (see Chapter Three). It is not unrealistic to suggest that participants in the industry recognized the potential of experimenting with the Aegean form as a result of unavoidable comparison between the varied containers of the cargo.

At the same time, there was experimentation in other methods of mass transportation of wine. One solution was found in the use on ships of *dolia*, huge thick-walled jars standing a metre or more high, with capacities between 1500 and 3000 litres. Although the roots of carrying both *dolia* and amphorae on ships went back at least to the period of production of Dressel 1 and Lamboglia 2

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[32]Laubenheimer, 1990, 117.

[33]Hesnard, 1977, 162 n.28; Panella, 1981, 59, makes comments to the same effect.

amphorae, *dolia* in those cases did not make up a large part of the cargo; they may have existed in single cases, as a convenient storage of beverage for the crew. Then, contemporaneously with the height of Dressel 2-4 production, ships began to carry several *dolia* in the cargo area; packed around the *dolia* and filling in the spaces were Dressel 2-4 amphorae[34]. The physical evidence of this new method will be discussed in more detail in the evaluation of the evidence of shipwrecks, in Chapter Three.

ii. "a change in drinking habits"[35]

The second theory addressing the reason for the rejection of the standard Roman type suggests that the wine preferences of the Romans were changing during the first century B.C. Led by Peacock and Williams, who supplied the above subtitled comment as the most probable reason for the striking new choice of container, this way of thinking has also been adopted by Carandini, Will, and Panella, among others.[36] The theory depends upon the hypothesis that the shape of a wine container indicated its precise contents, in this case a wine more like that of Cos than the familiar Italian blends.

The wine of Cos was a particular salt-water blend.[37] However, unlike the single blend of Cos, the range of wines attested by epigraphy on the Dressel 2-4 is much too great to support the idea that every example carried a factitious Coan blend, and, since not all examples bear any kind of epigraphy, one cannot rely upon written means to identify contents. Nevertheless, the theory does have some

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[34]*Dolia*, especially major shiploads containing *dolia*, occurred most commonly in conjunction with Dressel 2-4 amphorae, although not necessarily Italian versions: nine out of the total of twenty-one ships with *dolium* remains reported in Parker, 1992. Note, however that the only evidence for six of the twenty-one wrecks was *dolium* remains; no other artifacts or ship ruins were found. Quantitatively, Italian and Tarraconensian Dressel 2-4 amphorae occurred in conjunction with *dolia* on an almost equal basis; exact numbers are not available due to several wrecks with unprovenenced Dressel 2-4 finds.

[35]Peacock and Williams, 1986, 24.

[36]Peacock and Williams, 1986, 24; Carandini, 1989, 512; Will, 1987, 206; Panella, 1981, 59. Although most combine this theory with the one that recognizes technical advantages, some, like Will, place much more emphasis upon the visual indication of contents.

[37]But salt-water blends were not necessarily the drink of choice: cf. Pliny, *HN* XIV, 73-74, on overseas vintages.

merit at a basic level, and much effort has been expended in the attempt to discern meaningful differences in shape, in hopes of discovering the magic key.

There are broad physical differences between containers of wine, fish products, and olive oil, but even within the wine amphora group Dressel 2-4, appearance may have indicated specific wine products. That there were recognizable differences in the appearance of amphorae within the entire Italian and provincial Dressel 2-4 range cannot be disputed. There can be no mistaking a Tarraconensian Dressel 2-4 with its long, heavy body and white-speckled, almost maroon-coloured chunky fabric; nor can it be confused with the smaller and finer Campanian Dressel 2-4, its lighter fabric and yellowish buff slip peppered with volcanic inclusions. However, when efforts are made to distinguish examples from Latium and Campania, particularly without clear explanation of fabric, the differences are much harder to detect.

At the time, in truth, only a few people needed the knowledge to be able to make distinctions: the merchants and middlemen, and the buyer, who would then divide the contents into smaller sizes for sale at markets or bars. On a smaller level, the potter too was cognizant of the appearance of regional versions, but that awareness was more a matter of initial exposure and then continued imitation than acquired knowledge. The average wine drinker would not have needed to recognize the details; he would buy his wine to suit his domestic needs in a smaller container, or to suit his extra-domestic activities at a bar.

The three distinctive shapes determined by Dressel are representative of the range into which the Italian bifid-handled amphorae fall, and are correct for their attempt to show meaningful differences; however, Dressel's types are far from sufficient to address the morphology of every example that surfaces in the archaeological record. Generally speaking, the Dressel 4 type seems to be one of the earliest shapes picked up by Italian ateliers. This type shares the small toe with its Coan inspiration; as the Graeco-Italic amphora had done three centuries before, the Dressel 4 copied fairly

closely an originally Aegean model, but over time, there was a tendency to elongate and lengthen parts or all of the form. This process led to the Dressel 3 and the Dressel 2. The latter type seems especially to be connected with the Spanish Tarraconensian production of the form. However, categorization is not so simple.

The identification of varieties of the bifid-handled amphora is of great use, but the methodology by which the variants are separated must be as precise and objective as possible. The format of such treatment was the subject of several relevant contributions to the 1974 colloquium at Rome, published in the 1977 volume, *Méthodes classiques et méthodes formelles dans l'étude des amphores*. Although none of the contributions was overwhelmingly successful, the attempts are worthy of note.

One such method, put forth by Ettlinger, is much too glossed and brief to be truly helpful.[38] She suggests that a compiled list of "enough material for comparison from some different places" might enable the identification of variants, and, when a distinct variant repeatedly occurs in "many findplaces", it might enable the identification of specific types.[39] Such a progression involves faulty logic, as Gardin points out, since Ettlinger's differentiation between 'type' and 'variant' is vague and subjective at best.[40] For example, the repeated use of "many" is baffling: how many is "many"? How much material is "enough for comparison"?

Her methodology ignores the significance of fabric identification, the primary indication of a distinct product: two amphorae can be identical in shape, but have very distinct origins and uses; if only one example of an amphora with a different fabric exists, it still must be segregated from other examples as a distinct type. Ettlinger's approach to scientific analysis is exactly the kind that leads to false conclusions, especially considering the deficiencies and inadequacies of publication against

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[38]Ettlinger, 1977, 9-16.

[39]Ettlinger, 1977, 10.

[40]J.-C. Gardin in response to Ettlinger, 1977, 281.

which Ettlinger herself protests. Despite Ettlinger's good intentions, initial definitions and consistency in criteria remain a major problem in her proposal.

One of the more appropriate suggestions made by Ettlinger is that catalogues of amphorae should conform to a standard description, of twelve specific points in her case, thereby facilitating comparisons. These points involve easy visual identifications, ranging from a description of the general shape outline to specific comments describing the handles, to fabric, to epigraphical markings.[41] Nonetheless, some of her points are vague, such as the manner of measurement and calculation required for the dimensions of certain attributes; inconsistencies in the points at which measurements are taken would be destructive to the entire concept of an accurate and scientific approach.

Modern speculation as to what attributes were meaningful in ancient times is precarious, but Ettlinger's last point, a formula of combined attributes, marks a fairly secure start to the identification of variations within the general form. Along the same theme, Hamon and Hesnard propose a standard classification for all amphorae of attribute variables and measurements, although again ignoring the importance of fabric. Overall formulae or combinations of these features, with consistent observations, could be compared more easily.[42] For instance, bifid-handled examples could be cross-referenced against all examples with a long vertical neck, handles with a sharp angle bend of 90 degrees, a neck-shoulder join angle of approximately 110 degrees, a narrow convex body with its maximum diameter at the shoulder join, and so on. Following this example, attributes that consistently appear together in a contiguous pattern, or formula, mark a clearly distinct and specific type. Following a universal system of categorization, then, a site report could presumably supply all

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[41]Ettlinger, 1977, 12, based on Beltrán Lloris, 1970.

[42]Hamon and Hesnard, 1977, 17-33.

the essential data needed for further research. Once again, this system overlooks the significance of fabric.

Taking the idea of comparing attribute formulae, Panella and Fano took nearly 200 bifid-handled amphorae found at Pompeii and compared the occurrence of specific dimensions with relation to specific fabrics and epigraphy.[43] Their subsequent identification of ten groups is fairly sound by morphological and fabric standards, although the significance of each group is not entirely clear.

To illustrate, their Groups 3 and 4 are quite similar in shape, often have the same fabric, and by epigraphical readings, are both from the Vesuvian and Surrentine area (fig. 7). No more specific origin is identified, much less a kiln site. The authors note that only chemical analysis could verify for certain to which of these two group an example belongs. However, if Group 4 had similar or even identical production to that of Group 3, what is the significance of differentiating between the two? Furthermore, the largest arrangement, Group 3 (over 57% of the total amphorae studied), involves a great range of physical attributes; yet there is no explanation provided as to how such wide variations could exist within one group, a group that is still restricted enough to exclude the comparable pieces of Group 4.

As a whole, Panella and Fano's system confirms some distinctions which had already been made, such as the existence of a group of short-bodied amphorae of distinctive fabric, known as the 'L.EVMACHI type' for the consistent stamp bearing that name on the height of the handle.[44] Other divisions, such as the aforementioned Vesuvian Groups 3 and 4, are enigmatic. Their formulae call for too much detail, appropriate more to a computer statistics programme than an easily understandable identification. Their entire system is thereby rendered sometimes incomprehensible and always inconvenient to anyone but a researcher studying the production of these two forms in

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[43]Panella and Fano, 1977, 133-177.

[44]Described in Tchernia and Zevi, 1972, 37-40, and here in Chapter Three.

particular and trying to assign precise production centres and individuals involved. Such a project, although not unworthy in a narrower sense, would not contribute much to the understanding of an archaeological site, or even of trade patterns, unless combined with many such specialized studies.

Fariñas del Cerro *et al.* attempt to identify four classes of Dressel 2-4 by provenance through statistical analysis also based on morphological resemblances, but with different standards of comparison from those of Panella and Fano.[45] While their results are encouraging, and the identification of the four provenance classes (Pompeii, Tarraconensis, 'Italy', and Velaux) are supported by both intrinsic and extrinsic evidence, the authors themselves admit the instability of a subjective "classe virtuelle". This instability in particular pertains to the assumption that morphology could be dictated by provenance, especially when provenance is limited to only four possibilities for the purposes of this test.[46]

Another typology problem that remains at the conclusion of these 1977 studies is the relatively imprecise definition of the Dressel 2-4 group in general. Dressel's type 5 is also sometimes included with the form, in a grouping consequently called 'Dressel 2-5'. It is taller and much more elongated through the body and shoulder than the other types, and has a small toe and raised, angular handles with slightly out-curving height. This type 5, based on its striking similarity to Aegean amphorae like those of Cos and Rhodes, probably is a true Coan amphora, the lengthened evolution of the Hellenistic model.[47] The expansion of the Dressel 2-4 group to include the Dressel 5 is likely misleading and, at any rate, counter-productive to the desire to clearly distinguish members within the group.

Lack of consistency in criteria as a whole has been one of the greatest obstacles to a full understanding of the Dressel 2-4 form. The best current typologies are comparatively simple

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[45]Fariñas del Cerro, Fernandez de la Vega, and Hesnard, 1977, 179-206.

[46]Fariñas del Cerro, Fernandez de la Vega, and Hesnard, 1977, 189.

[47]It is probable that this is the shape briefly described as "östlicher Dressel 2-5", with an average capacity of 33 litres, by Martin-Kilcher, 1994, 337.

compared to the theories outlined above, and involve a recognition of combinations of certain fabric types, general shapes, and epigraphy, all of which will fall into the discussion in Chapter Three. As for the second theory regarding the adoption of the Coan type, that it indicated new choices of wine, the general premise is reasonable only when combined with the technical considerations of the first theory. Large differences in shape and fabric communicated the likely areas of origin, and therefore the likely contents. On a more specific level, the idea that one could discern different vintages from the same region, such as the Vesuvian area, by the appearance of the vessel - and without the aid of identifying inscriptions - is less likely.

Evidence for the earliest Italian Dressel 2-4 production

Two of the most controversial aspects of this Italian amphora are the dates of its appearance and, alternatively, disappearance. According to traditional thinking, the Dressel 2-4 was first produced in Italy around the middle of the first century B.C., and was no longer produced after about the Trajanic or Hadrianic period. Evidence has come to light that suggests that both of these dates are incorrect, but such suggestions have not been taken very seriously, restricted often to an insignificant footnote or aside.[48]

Part of the problem of dating lies in the interpretation of archaeological remains, at the excavation level. It seems highly probable that, in order to remain within the traditional dates outlined above, finds of Dressel 2-4 amphorae have been listed as part of disturbed contexts when they appear unusually early, or as residual, when they appear unusually late. Many of these examples will never be available for reconsideration because of their inadvertent discard.

As a result, specific identification of the actual years, or even decade, of a noticeable new Dressel 2-4 presence has generally been avoided. Part of the problem is that it is not clear how quickly

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[48]Evidence for the end of Dressel 2-4 production will be evaluated in Chapter Five.

different workshops, let alone different regions, picked up the form relative to each other. A simple 'mid-first century B.C.' or 'circa 50 B.C.' attribution has satisfied scholars such as Panella, Hesnard and Lemoine, and Arthur and Williams.[49]

Suggested dates earlier in the first century, and even back to the second century, are not unknown. In contexts dating to the second century, finds have been made at sites such as Ventimiglia, Gênes-Pegli, Agde, Alba Fucens, and Olbia, but these are summarily discredited in a passing footnote by Hesnard, who unfortunately does not include references for these sites or criteria for proving or disproving their dates.[50] A later period is favoured by Carandini and Facchini, who are in accordance that production of the form probably began around the second quarter of the first century B.C., and gained impetus in the second half of that century. However, their basis for the initial date is unclear; hopefully it does not have more to do with the supposed cessation of Coan amphorae production at that time than any actual Dressel 2-4 evidence.[51]

Others date the container's introduction later, conservatively relying upon secure dates provided by epigraphy, rather than depending upon the ability of others to distinguish between a true Coan and an Italian imitation.[52] The earliest *titulus pictus*, from Pompeii, dates to 35 B.C., followed by a date of 28/27 B.C. from the Castro Pretorio at Rome.[53]

Further dating evidence is provided by the 'first amphora wall' at Carthage, which included consular *tituli picti* of 17 and 15 B.C. on Dressel 2-4s.[54] This wall, on the south slope of the Byrsa Hill, the suspected citadel of the new Roman Carthage, was constructed of thousands of stacked amphorae and provided a solid retaining wall for the hill. By far, the largest number of amphorae in

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[49]Panella, 1981, 58, 64; Hesnard and Lemoine, 1981, 256 (specifically on Dressel 2-4 production in the *ager Caecubus*); Arthur and Williams, 1992, 250.

[50]Hesnard, 1977, 161 n. 24. All attempts to find the references have been unsuccessful.

[51]Facchini, 1989, 560; Carandini, 1989, 512, pinpoints the beginning of production at circa 65 B.C.

[52]Tchernia, 1986, 134-5; Hesnard and Lemoine, 1981, 260 (on adoption of the form in the *ager Falernus*).

[53]Pompeii (*CIL* IV, 3, 9313), Rome (*CIL* XV 4618).

[54]Published in Delattre, 1894, 89-119.

the wall belonged to the Italian Dressel 2-4 category. However, it is three Coan amphorae from the wall that are of particular interest for the dating and means of the Italian potters' adoption of the Coan form.

Two of these are stamped P-VED-PO, an abbreviation which, when expanded, plausibly corresponds to the notorious P. Vedius Pollio, whose various acts of conspicuous consumption in Asia Minor were at first condoned by Augustus.[55] His indulgences, however, were not always to be overlooked by Augustus, who, upon inheriting large parts of Pollio's land upon Vedius Pollio's death in 15 B.C., promptly tore down Pollio's grand house in Rome. Given Pollio's involvement in Asia Minor and his various properties in Italy alone, it is not inappropriate to propose, based on the stamped amphora evidence, that he was also involved in the wine trade of Cos.

The third Carthage example is stamped P PLOTITVCC, which expands to P. Plotius Tucca.[56] It is the name of one of the executors of Virgil's will, which, according to tradition, was set aside by Augustus so that the *Aeneid* could be preserved, against its author's wishes. Plotius Tucca was a member of the literary circle of Maecenas, and an acquaintance of both Virgil and Horace.[57]

It would appear then that at least two personages belonging to the Augustan circle had direct investments in the wine trade of Cos. For the Italian workshops, they may personally have provided increased exposure to the Coan form as early as the mid-first century B.C. That their amphorae are included among those of the first amphora wall at Carthage, directly associated with Augustus' refoundation and rebuilding of the city, may not be coincidental, but may instead reflect favour bestowed upon his friends for commercial interests in the new colony.

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[55]Musée National de Carthage, nos. 92.145, 92.150 (both stamped P-VED-PO). Delattre, 1894, 116, no. 44, actually noted three examples of this stamp. For a prosopographical study of Vedius Pollio, see Syme, 1961, 23-30.

[56]Musée National de Carthage, no. 92.219.

[57]On his literary involvements, see Virgil, *Catal.* 1; Horace, *Sat.* I, v, 40. On his position as Virgil's co-executor, see Aelius Donatus, *Vita Verg.*, 39 and Servius, *Praef.* 2, 12. Th.

While these two figures neither single-handedly revolutionized late Republican amphora production in Italy, nor marked the earliest date for that 'revolution', their activities serve as demonstrations of the means by which the Coan form became popularized in Italy. The range of Dressel 2-4 fabrics from the first amphora wall indicate that several different areas of Italy were already producing quantities of the form by the end of the Republic. The predominance of the Dressel 2-4 at this and other sites of production and distribution also emphasizes the uninterrupted continuity of Italian wine exports, despite the cessation of manufacture of the traditional Dressel 1 form.

CHAPTER THREE

PRODUCTION AND DISTRIBUTION

In terms of evaluating its contribution to the contemporary wine trade, the most important parts of an amphora's life were its production, its transference from the production centre to an interested party, namely the consumer via merchant(s), and the consumption of its contents and its subsequent disposal. This chapter serves to bring together these points as they relate to the study of the Italian Dressel 2-4, through consideration of kiln sites, sites along transportation routes, or shipwrecks, and the sites at which the amphorae were finally discarded.

Kiln Sites

The ten groups of Dressel 2-4 variants identified by Panella and Fano at Pompeii indicated a great range of origins for what had previously been distinguished only as Italian amphorae; this distinction had only served to contrast the appearance of Italian amphorae with that of provincial types such as those of Tarraconensis. The results of the Pompeii study served as a reminder that the term 'Pompeian', when applied to amphorae, reflected not manufacture in the Pompeian region but discovery of amphorae in excavations there. At the expense of the countless different wine-producing regions attested in the ancient literature, stress was put upon the famed areas of the Caecuban and Falernian Plains in modern treatments until this study; anywhere else was almost a black hole as far as ancient viticulture and the Dressel 2-4 was concerned.

Nevertheless, the variety suggested by the ten Pompeii groups barely served notice of the great variety of Italian production centres for that amphora form. Now, less than twenty years later, kiln sites are either identified or inferred from various archaeological evidence all the way down the Tyrrhenian coast, from Liguria to Apulia-Calabria, and sweeping around to the Adriatic coast, up to northern Italy and Istria. The confirmation of these sites varies from identification of kiln remains, as published in the *Appendix: Dressel 2-4 Kiln Sites*, to locales of production deduced from both scientific fabric analysis and epigraphy.

The first method, kiln identification through physical remains, has revealed approximately two dozen Dressel 2-4 pottery production centres in Italy.[1] This number must represent only a very small fraction of the original total. Of the identified kilns, the majority by far are located along or close to the Tyrrhenian coast: one in Liguria, three in Etruria, three in Latium, and thirteen in Campania. The three Adriatic examples are all located in Apulia, in the heel of Italy.

The figures for these regions should not be interpreted as representative of the proportional production output of Dressel 2-4 amphorae by area; rather, they reflect the intensity of current exploration of rural areas, primarily through ground reconnaissance. For instance, Campania's high numbers mainly result from the rural survey projects of Arthur and Hesnard during the early 1980s;[2] in comparison, Liguria has not benefitted from such intensive surveys. The figures of course also rely upon publication of survey findings; the number of production centres known in Etruria, for example, is actually greater than the three identified here, but several are awaiting publication.[3]

Most sites lay quite close to the coast, either physically along the shore, or connected to it by means of a navigable waterway; the ones that were located further inland, such as Brignano Frascata

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[1]As very few of the kilns identified here were excavated or studied in detail, the reader is encouraged to read the architectural description of the amphora kiln at Apani, Puglia, in Cuomo di Caprio, 1979, 80.

[2]Arthur, 1982 and 1991; Hesnard, 1977; Hesnard and Lemoine, 1981; Hesnard *et al.*, 1989.

[3]For instance, Menchelli, 1990-1991, 171, cited a kiln site with output of types Dressel 2-4 and *Ostia* IV, 442, in Cecina, and in the mid-Arno Valley.

in Liguria and Cales near Capua, also had access to a major riverway leading to the coast. Almost all had access to a major road, not only for transporting the goods to the riverway or nearby port, but also for the transference of the agricultural products from the estates further inland. Shipping was the most frequent and efficient means of transport for the export amphorae, reflected in the long-bodied shapes that the vases took, designed for economical stacking in the cargo hold. For overland transportation, however, this shape was cumbersome and undesirable, and there was little sense in setting up a workshop specializing in heavy transport amphorae inland if there was no efficient way to get them to the coast. When the later flat-bottomed amphorae became popular, they regularly were produced and found inland, demonstrating their comparative ease in transportation by means other than boat.

Peacock and Williams state quite definitively, "it is impossible to distinguish production centres on the basis of shape."[4] Indeed, among the kiln site descriptions, whenever reference is made to the morphology of the Dressel 2-4 products at a site, there is invariably mention of the fact that there exists diversity in forms. At Brignano Frascata and Masseria Zannini, for example, two sizes of Dressel 2-4 were recovered. Among the ones at the first site, there were variations in the shape; despite the claims of Facchini that the Brignano Frascata forms recalled most closely the Dressel 2 in certain cases and the Dressel 3 in others, the examples illustrated do not conform to any specific type within the Dressel 2-4 group (fig. 8).[5] The Campacci centre's amphorae had either true bifid handles or false bifid handles, ones that were oval in cross-section but with a groove down the centre of the handle to imitate the look of a double-rolled handle (fig. 9). At Cales, there was both an 'Italian' type and a 'Coan' type (fig. 14).

Obviously, therefore, one cannot make sweeping statements that amphorae from the atelier at Canneto, for example, had the absolutely unique distinguishing physical features A, B, and C,

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[4]Peacock and Williams, 1986, 106.

[5]Facchini, 1989a and 1989b; see the entry in the Appendix.

although, as mentioned in Chapter Two, there is some merit in associating certain general features as typical of an area. On the basis of familiarity with such distinctive combinations of features through site surveys and chemical analysis, Hesnard and Lemoine mark certain stamps as belonging to the Falernian and Caecuban plains, although they are unable to determine the specific sites of origin.[6]

In other aforementioned interpretations, the exact shape of the container has instead been interpreted as a direct communication of the contents. The combination of certain anepigraphic seals with certain distinctive shapes of Dressel 1B amphorae in the La Madrague de Giens shipwreck led to the view that "small differences of shape served to differentiate contents, perhaps because of how the amphorae were supplied to wine-producers, and by no means always indicate the work of different potters [within one workshop]."[7] In order for this statement to be valid, there would have to be indications that at every pottery centre, potters made exactly the same variations in the shape of the amphora according to what type of wine it was that they knew the container would hold; only if every potter at every kiln used the same variations could these variations be meaningful to traders and consumers. No evidence for such a pattern is currently known. As indicated in the previous chapter, only the greatest of differences in shape by large regional groupings appears to have been fairly standard: the Dressel 2 of Tarraconensis, for instance, is clearly different from the Vesuvian Dressel 3.

The Dressel 2-4s recovered in Italy have received greater attention from scholars than any of the provincial examples, although the truth of this statement is now being challenged by the sharp increase in research into the Spanish and Gaulish productions. Through the use of petrological studies on amphora fabrics, distinct regions of production have been identified. These fabrics have then been

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[6]Hesnard and Lemoine, 1981, 282-283, appendices 4 and 5.

[7]Parker, 1992, 249.

compared to shape for possible relations, as was the case for Panella and Fano's study of bifid-handled amphorae from Pompeii and Arthur's comparison of Campanian fabrics.[8]

The best analogies between fabric and origin can be drawn when reports detail the fabric at three levels of description: the visual, microscopic, and chemical constituency levels.[9] The description of the appearance of the surface, core, and slip (using a Munsell Soil Colour Chart or another standard chart), the quality of firing, and texture, is of course the easiest and most superficial means of comparison, but depends upon consistency on the potter's part in the clay's treatment and firing. Microscopic analysis recognizes certain characteristic individual components and combinations of inclusions in the clay matrix, which at this level can point to a general region of origin, as in the case of the black volcanic inclusions which are typical of the Vesuvian region. The final level, a chemical breakdown, will hopefully eliminate all but a narrow range of possibilities for origin.[10]

On their own, each stage of fabric description offers limited usefulness, but when combined, they form the most secure confirmation for production centres available. While it must be acknowledged that chemical analysis is an expensive and time-consuming process, the first two levels certainly should be included in amphora descriptions in excavation reports at the minimum, including a differentiation between locally-made wares and imported goods.

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[8]Panella and Fano, 1977; Arthur and Williams, 1992, 256-258. Peacock and Williams, 1986, 87-88, also describe the Campanian fabric used in the manufacture of Dressel 1A and Dressel 2-4, stating that the distinctive 'black sand' appearance is due to the presence of green augite crystals (Peacock, 1971, Fabric 2). In view of the presence of yellow (melanitic) garnet, Courtois and Velde, 1978, originally suggested an origin in the Latium area for this fabric. However, yellow-brown garnet is also a feature of the sands further south, and a Campanian origin, particularly the area around Pompeii and Herculaneum, has been argued by Peacock, 1977b, since local materials such as bricks and tiles are in an identical fabric that is not encountered elsewhere. Further analysis on black sand amphorae through an electron microprobe by Courtois and Velde, 1983, has distinguished two separate compositional groups of yellow garnet, one source situated near to Rome and another in the region of Vesuvius. The latter suggestion agrees with Peacock's, 1977b, findings, but as yet there is no archaeological evidence for an origin near Rome for this distinctive fabric. In Peacock 1971 and 1977b, thin-sectioning showed frequent subrounded grains of green and colourless augite, together with quartz and sanidine feldspar, and lesser amounts of volcanic rock and glass fragments, brown hornblende, biotite and yellow-brown garnet.

[9]As noted by Peacock, 1977a, 25. Mineralogical and trace element analysis can be performed through tests such as thin-section under a petrological microscope, x-ray spectroscopy or diffraction, and neutron activation and emission, all processes described in Peacock, 1977a.

[10]While extremely valuable for determining likely areas as clay sources, chemical analyses do have their limits when fairly close proximities are under scrutiny. One study, conducted at the laboratory at Lyons, could find very little differentiation between the clay used for the production centres on the Plain of Fondi and those around Mondragone: see Picon and Ricq in Hesnard *et al.*, 1989, 52. This chemical analysis confirms the results of a thin-section test performed earlier on material from the same area; see D. Williams in Arthur, 1982, 30.

Adriatic Production

While some Dressel 2-4 production centres existed on the Adriatic coast, the majority of known sites is heavily weighted on the Tyrrhenian coast. Such a location is in accordance with the direction in which most of the wine trade occurred, to the west, as far as is known, and also complements the major developing urban centres of late Republican or Early Imperial Rome. However, it is precisely the kiln sites in eastern Italy that may have been the first to adopt the 'Coan' form, long before the west used it to replace the Dressel 1.

The Apulian production centres of Giancola, Apani, and Felline included Dressel 2-4 amphorae among their wares. The first two were located close to Brindisi, and probably relied upon that port for the export of their goods. They were all situated along the coast or connected to the coast by means of a river or canal, so that their goods could travel to Brindisi by means of boat from a small nearby port; the *via Minucia* also served Apani for transportation purposes.[11] Felline, about two kilometres west of Ugento and the same distance from the sea, made use of the port at Torre San Giovanni, to which it was linked by a major route.[12]

Most of the evidence revealing these kilns and their unidentified contemporaries is epigraphical and relies upon comparanda of the markings on Brindisi-type amphora and Lamboglia 2, the predecessor of the Dressel 2-4 on the southern Adriatic coast. In each case, it is clear that the Dressel 2-4 was subordinate to the other Adriatic amphorae in number; oil, carried in the Brindisi-type amphora, was a much more important commodity than wine as far as ceramic evidence is concerned.[13]

At Felline, the stamps on Dressel 2-4s and the more frequent Brindisi-types were of varied formats, but the most notable type listed two names: one, in the nominative case most often of a

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[11]Desy, 1989, 15.

[12]Desy, 1993, 247-248.

[13]Desy, 1993, 248, based on quantitative finds at Felline and Torre San Giovanni.

Greek name, that of a slave-potter, and the second, in the genitive, that of the Roman proprietor.[14] The proprietor attested most frequently at Felline was Pull(i)us, whose amphora potters left their marks, according to the formula, ARISTIDES PVLLI, EROS PVLLI, and FELIX PVLLI. Pull(i)us apparently also had different potters making other products: the brickstamps RVFIO.PVLLI and ZOS(i)MVS PVLLI are known at Ugento and Gallipoli respectively.

Pull(i)us' workshop, and those of Visellius and Vehilius at Giancola and Apani, respectively, are examples of the few cases for which stamps clearly communicate the relationship of the people named therein. Pull(i)us' status as *dominus* over a group of slave-potters is explicit, although whether he was also the landowner for whose agricultural products the amphorae were intended is indeterminable at this point.

Amphora stamps attested on Dressel 2-4s at Alexandria and Delos were M.ARPINI, CARITONI, and VEHILI, all markings also attested on Brindisi-type amphorae. Vehilius's kilns at Apani employed at least eight potters; Carito worked at the Giancola workshop of Visellius, who owned at least two slave-potters. The as yet unlocated pottery centre of Postumus Curtius, perhaps the same as C. Rabirius Postumus, praetor in 48 B.C., made both the Dressel 2-4 and the Lamboglia 2 or Brindisi-type containers.[15] These shared stamps are strong evidence for a chronologically close, if not contemporaneous, production of the Brindisi-type oil amphora and the Lamboglia 2 and the Dressel 2-4 wine amphorae, the last of which may have replaced the Lamboglia 2 within the atelier just as it did the Dressel 1 on the Tyrrhenian coast. Also evident is the participation of the same ateliers in containers intended for very different contents and commercial directions.

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[14]The kiln and associated stamps were published by Pagliari, 1968.

[15]For M.ARPINI at Alexandria, see Benoit, 1956, 26; for VEHILI and CARITONI at Delos, see Hesnard, 1980, 144. In Desy, 1989, 169, the name of Postumus Curtius appears only on Dressel 2-4s and Lamboglia 2s, but according to Tchernia, 1986, 129, the second kind is the Brindisi-type oil amphora. If Desy's report is true, Postumus Curtius' workshop made the same transition from a Republican wine amphora shape to the Dressel 2-4 as did certain Tyrrhenian kilns (see below). For all of the names mentioned here, consult also the catalogue of Apulian amphora stamps by Desy, 1989.

Other personages named on Brindisi-type amphorae included Tarula, the wealthy freedman of Sulla, M. Tuccius Galeo, Cicero's *amicus* whose slaves are named in inscriptions at Minturnae, and possibly the brothers L. Cornelius Lentulus, one of whom was consul in 49 B.C. and producer of Dressel 1 jars on the Tyrrhenian coast.[16] The Cornelius name is included in a group of stamps in which the name is followed by a filiation abbreviation and a 'Q.', as in L.CORNELI L.F.Q. Desy interprets this last letter as indicative of a local Apulian quaestor.[17] There is no reason to believe that the added letter indicated a magistrate who had inspected or approved the containers as a guarantee in the style of Hellenistic Aegean amphorae, as opposed to the non-magisterial marks on the others.

Such prominent people, from freedmen to consuls, not only had an interest in the state of trade to the east, the normal direction of Brindisi-type amphora trade, but also had connections to western Italy. While the pottery workshops of these last persons did not, as far as is currently known, leave their mark on any Dressel 2-4, it is tempting to think that influential persons like them were responsible for the introduction of the bifid-handled amphora to Tyrrhenian Italy, through its simultaneous production with their oil amphorae.

The exact period during which this co-production took place is unknown, but scholars such as Will, Hesnard, and Desy have assigned great significance to it, since it could represent the origin of Dressel 2-4 production in Italy.[18] Based on a recipe of Cato the Elder[19], Italians had known how to imitate the wine of Cos since at least the first quarter of the second century. Nevertheless, the alleged production of imitation Coan wine - and, presumably, its accompanying placement into

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[16]For Tarula (*CIL* IX, 6079, 9) see Sall., *H.* I, frg. 55, 21, and for Tuccius Galeo (died 46 B.C.), Cic., *Att.* XI.12.4 and *Fam.* VIII.8.1. Manacorda, 1988, 101-102, gives a summary of both Tarula and the Lentuli, while Desy, 1993, 213 does the same for Tuccius Galeo, whose slaves' inscriptions appear in Johnson, 1933, 23 no. 6, 11; 39 no. 20, 2; 46 no. 27, 8. See also Desy, 1989.

[17]Manacorda, 1988, 104, and Desy, 1993, 234-235.

[18]Will, 1991, 151; Hesnard, 1980, 144; Desy, 1993, 232.

[19]Cato, *Agr.* CXII.

imitation Coan amphorae as an indication of such contents - did not gain noticeable popularity in Italy until much later.

Combining the date of Cato's recipe with one of the late second century and early first century B.C. for the Brindisi-type amphora, Will assumes an adoption of the 'Coan' form by the end of the second century B.C.[20] This date is too early, though, for the Brindisi-type amphorae from Delos which also bore the same stamps as Apulian Dressel 2-4 support a date early in the first century B.C.[21] Furthermore, Will's own publication of the Latin-stamped handles from the Maison des Comédiens at Delos attests that it was the Dressel 1 and Lamboglia 2 wine amphorae, not the Dressel 2-4, that appeared at that port, despite the peak of wine and oil trade there during the first quarter of the first century B.C.[22] If the Adriatic coast had begun to ship its wine in the Dressel 2-4 by the start of the first century B.C., it was not sending that product to the same major port, Delos, at or through which other Italian containers, let alone Adriatic containers, found a market.

In contrast to Will, Desy maintains that solid evidence exists for Adriatic wine and oil production only for the first half of the first century B.C.; his opinion is extreme and inaccurate, but recognized the most concentrated period of trade in those Adriatic goods. The numbers of both types of export goods after the first part of the first century declined quickly; excavations at La Longarina, near Ostia, revealed only one Apulian Dressel 2-4 and three Brindisi-type oil amphorae in a late Augustan context, the latest known date for these items. At this site, African and Spanish imports

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[20]Will, 1991, 151; her "certain" dates for the Brindisi-type amphora (her type 11A) are based on contexts at the Athenian Agora.

[21]Hesnard, 1980, 144: at Delos, there were two handles of the Brindisi type that shared the same stamp as a Dressel 2-4 amphora at the site (otherwise unpublished). Hesnard mentions only one other unpublished Dressel 2-4 example known at Delos.

[22]Will in *Délos* IV, 383-386. Dressel 2-4 amphorae are not mentioned at all in the amphora report for Delos; their absence cannot be a simple misidentification of Coan amphorae, as Grace and Savvatianou-Pétropoulakou in *Délos* IV, 283-284, identified only seven handles of the Coan type. The only known examples of Dressel 2-4s at Delos are the two mentioned in the previous footnote.

outnumbered the oil of Apulia (ten examples versus three); Spanish wines too were numerous, but a distant second to the wines of central western Italy (fifty-eight examples versus 101).[23]

Part of the blame for the downfall of the market for Adriatic oil and wine has been placed on the fall in 69 B.C. of the trading port of Delos, which had been "the favourite market for traders that exchanged goods between the Aegean and the Adriatic."[24] However, Delos' collapse made only a partial and perhaps relatively minor contribution to the Adriatic decline; the use of Apulian ports during the civil wars after the mid-first century B.C., when the activities of those ports was constantly being interrupted by occupations and invasions, must have had an even greater effect.[25]

Despite the alleged early date of the beginning of the first century for the east coast Dressel 2-4 manufacture, it was not until almost half a century later that kilns on the central Tyrrhenian coast wholeheartedly took on the form. It was at this point that the use of a container as an indicator of its contents blurred: Campanian Dressel 2-4s transported both "factitious" Coan wine and the local Campanian wines, those attested by inscriptions and made the object of Panella and Fano's typological study.[26] There, the Dressel 4, with its short neck and toe most similar to the Coan amphora, soon lengthened into the Dressel 3, or Panella and Fano's Group 3, the most popular Dressel 2-4 form at Pompeii.

Etruria

Although there is no obvious connection between the three kilns of Etruria, which are separated by great distances, they do share some common features. As seen most often among kilns,

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[23]Hesnard, 1980, 144, lists a total of 183 wine amphorae, of which 101 are Italian, a dozen Aegean, and a further 58 Spanish. With a total of only thirteen oil amphorae, La Longarina does not provide the best context for establishing the hierarchy of commercial oil sources at this period, but other comparable sites are not common.

[24]Frank, 1959, 274. Baldacci, 1972, 7-28, was the main instigator of the Delos theory.

[25]Desy, 1993, 258-260.

[26]Will, 1991, 152; at 155-156 n.8, Will concludes that the Dressel 2-4, "though originally used in Italy for imitation Koan wines, ultimately became a shipping container for other wines produced in the Vesuvius-Sorrento area of Campania."

those at Campacci, near Pisa, and at Albinia, near Ortobello, were right on the coast and had access not only to major ports, but also riverways to the interior. Sutri was the only inland location.

None of the three sites specialized in amphorae alone. They all produced coarse wares; Campacci and Albinia also made bricks, and Sutri, finewares. The indication of only three kilns seems to be that the pottery production centres of Etruria served the needs of the local community as well as those of the vineyards. At the two more northerly sites, it was the concerns of the vineyards that came first, to judge by the relative proportions of pottery types; Albinia's amphorae included Dressel 1s and Dressel 2-4s, while Campacci made only Dressel 2-4s (fig. 9), although earlier Republican types occurred in the fabric of that locale. In the case of Sutri, a late first century A.C. site, the emphasis was on coarsewares before any other product, including its Dressel 2-4 amphorae.

Intensive chemical analysis of Republican Tyrrhenian kiln site amphorae and of amphorae excavated at seven Gaulish sites has been compared in an attempt to identify the relative quantitative importance of certain kiln sites.[27] On all seven sites, the Dressel 1s of the kiln at Albinia were present, forming 9% of all Dressel 1 imports, making it by far the foremost amphora exporter of Italy to those regions. Its success and its identity as a mass exporter may have been in large part due to the Albinia kiln's proximity to a major point of embarkation, as was the second-placed Dressel 1 exporter to Gaul, Cosa. To judge by the quantities of wine which must have been exported in their pottery vessels, kilns at Albinia and Cosa are likely examples of single Republican pottery workshops serving several vineyards in the region.[28]

Not long after this dominance of Gaul, the market served by these two centres must have changed. After the great success of its Dressel 1 containers, Cosa production appears not to have included Dressel 2-4s at all. Albinia's peak production had been of Dressel 1s; Dressel 2-4s were a

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[27]The seven sites are La Lagaste, Lastours, Martyrs, Verbe-Incarné at Lyons, La Cloche, Tournus, Mont-Beuvray. See Picon and Ricq in Hesnard *et al.*, 1989, 59.

[28]Picon and Ricq in Hesnard *et al.*, 1989, 59.

subordinate line in comparison, although they are significant for demonstrating the rejection of a successful Roman form in favour of the new Coan shape. So far the export market served by the Dressel 2-4s of Etruria has not been identified. None of the bifid-handled amphorae from these sources bore stamps.

Latium

There is no substantial evidence for Dressel 2-4 production south of Sutri until the *ager Caecubus* in northern Latium. Here, two kilns along the rivers serving Lake Fondi and one above the lake made Dressel 1 and Dressel 2-4 amphorae; two also made Graeco-Italics. Once filled, the wine amphorae were probably collected at the port at Torre San Anastasia, which had the most serviceable docking area of the three.

Each of the sites has stamps of Latin lettering associated with it, mostly identifiable as Greek and Roman slave names, with the exception of P.VEVEI.P.F/PAPI at Canneto.[29] The stamp P.VEVE(i.Papi)A with ACIME at Canneto and the stamp ACIMME at Monte San Biagio, and P.VEVEI.PAPI with SABINA at Canneto and the stamp SABINVS at Monte San Biagio, are strong evidence for a relationship between these neighbouring centres.[30]

As at Albinia, Dressel 2-4s replaced the Dressel 1s at kilns with long histories of production. The occurrence of the stamp P.VEVEI.PAPI on Dressel 2-4s at the Canneto site and on Dressel 1 amphorae from the wreck at La Madrague de Giens, east of Toulon, has often been cited as an example of this cross-over of products.[31] The discovery at Alexandria of two handles of the Brindisi-type oil amphora, both stamped with the name of P. Veveius Papus, also makes the situation more

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[29]See Hesnard and Lemoine, 1981, 282-283, appendices 4 and 5, for attributions of stamps.

[30]The Canneto examples are published in *CIL* X 8050, 1 (ACIME) and 4 and 5 (SABINA).

[31]Excavations at the Fos 1 wreck site along south-west coast of France also recovered Dressel 1B amphorae with stamps associated with those of Canneto and at the Madrague de Giens wreck. The Fos parallels are summarized in Hesnard *et al.*, 1989, 33, based on Amar and Liou, 1984, 145-211, nos. 4, 6, 37, 13, 41, Pl. 1 and 3.

complex; he must have had pottery interests in both Latium and Apulia.[32] This identification is an important connection for the means by which Dressel 2-4 production shifted from the east to the west.

Northern Campania

The extensive list of kiln sites in northern Campania deserves special attention. Arthur has gone to some length to describe the effect of Roman colonization at Suessa Aurunca (founded 313 B.C.), Sinuessa (296/5 B.C.), and Minturnae (295 B.C.).[33] These three colonies combined to form a triangle of control over movement in the fertile *ager Falernus*, with Minturnae regulating river traffic, Sinuessa having command over the coastal pass into Campania proper, and Suessa Aurunca overseeing the heartland of the Aurunci.[34]

Within this triangle was "a centralized 'industrial' area of amphora manufacture",[35] with two principal lines of pottery production centres, the first along the coast from Sinuessa to the River Savone (*Savus*), and the second lining the southern flank of the Massico mountain chain (fig. 11).[36]

These kilns serviced the agricultural lands of the interior, and the vineyards in particular (fig. 13).[37] The same sort of situation in which an independent kiln serviced the needs of more than one consumer can be envisioned for other production centres such as Felline on the east coast, where the owner of the kiln, Pull(i)us, had several potters making at least two different types of amphorae and tiles, the last of which have were recovered twenty kilometres from Ugento.

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[32]Empereur and Hesnard, 1987, 35. P. Veveius Papus is unknown; the name Veveius is very uncommon, but occurs in rare inscriptions primarily naming freedpersons of the family and found at Rome, Setia, Venafrum, Luni, Forli, Akrai, and Delos. See Tchernia, Pomey, Hesnard *et al.*, 1978, 14-15, for prosopography.

[33]Arthur, 1991.

[34]The last detail according to Livy, IX, xxviii.

[35]Arthur and Williams, 1992, 255.

[36]D. Williams in Arthur, 1982, 30, performed thin-section tests on material from Arthur's (1982) kiln site survey, and concluded that there is an observable difference in the clays used by the inland and coastal sites, although distinctions within those categories were not obvious: "The local geology of the area in which the kilns are situated is composed principally of lavas from the volcano of Roccamonfina deposited on an Eocene limestone platform with some Pliocene formations... Apart from plentiful amounts of quartz and volcanic products, a feature of the material from the area of Sinuessa is the presence of crypotcrystalline limestone. This latter inclusion appears to be lacking in the samples from [Masseria Dragone]."

[37]Arthur, 1982, 22-23.

The kilns at Garigliano, Sinuessa, and the three at Mondragone all produced both Dressel 1 amphorae and the later Dressel 2-4 amphorae (fig. 10); all except one of the Mondragone sites also made Graeco-Italics. Clearly, a good portion of the Italian ateliers manufactured these different forms of early Roman amphorae; the change from the traditional Italian type to the Coan type was a conscious choice at these sites, and did not indicate a new group of potters taking over their amphora-producing interests.

These late Republican-early Imperial kilns occur in quantity, but even the difference in pottery ratios at individual kiln sites hints at a coming change: "to judge by the relative proportions of Dressel 2-4s found on the kiln sites, there may already have been a decline in the quantity of wine exported from northern Campania by the mid first century A.D."[38] As discussed in Chapter Five, there is some evidence to suggest that levels of industrial wine production in and exportation from northern Campania decreased but did not end from at least the beginning of the second century A.C. Mass production of amphorae was more something to be associated with the Graeco-Italic and especially the Dressel 1 than with the Dressel 2-4.

Not only were Dressel 2-4s becoming a minor product, but probably as early as the Dressel 1 production there, kilns as a whole were evolving towards a less-specialized line of goods. The hypothesis does seem to be supported by the kilns studied here, not all of which were entirely dependent upon amphora production.

Table 3.1. Non-amphora products at rural northern Campanian Dressel 2-4 Kiln Sites. The sites are ordered from earliest to latest suggested initial dates; only those sites with dates suggested by the publishers of the site are included. Dates in the centuries B.C. are indicated by Roman numerals in the upper case, those in the centuries A.C. by lower case Roman numerals.

[38]Arthur, 1982, 23, 33; Arthur, 1991, 74-75.

	coarse / common wares	fine wares	architec-tural
Garigliano (L III - L i)			
Sinuessa (L III - L i)			
Mondragone A (L III - L i)			
Mondragone C (L III - L i)			
Mondragone B (L II - L i)			
Cales (E/M I - E i)			
Masseria Pagliare (L I - L i)			
Masseria Zannini (E i - M i)			
Masseria Dragone (L i - v/vi)			

Table 3.1 shows the production of pottery other than amphorae at the Dressel 2-4 kilns of northern Campania. The first site lies not far upstream from the coastal outlet of the River Garigliano, the next four sites are coastal, the last four inland. The dates supplied for the sites make a move inland during the first century B.C. clear. Also clear is the increased tendency for inland production centres to have a more extensive array of goods than the specialized kilns by the coast.

According to the table, one of the coastal and three out of the four inland kilns produced architectural supplies such as bricks, *tegulae*, and *tubulae*. Since there was a tendency for bricks and tiles to remain near their source, it is not surprising that the less concentrated interior kilns produced their own bricks and tiles. Only two sites manufactured finewares, both of them interior sites, but more than half served the basic needs of the community for basic cooking and dining pottery, in terms of common wares and coarse wares. Cales and Masseria Dragone supplied all of the ceramic needs for nearby inhabitants.

Were the amphorae produced on the estate of the vineyard owner, at a kiln owned by the landowner but physically removed from the estate, or at nominally independent pottery centres? The

question is extremely difficult to address, and must rely upon the little physical evidence that is known.[39] Varro recommended that all supplies be made on the farm in order to realize the best profits,[40] but he did not recognize that the situation of amphorae was not so straightforward.

The dense concentration of sites along the coast of northern Campania eliminates the possibility of these kilns being located on the estates; they were set up separately, with the intent to facilitate transportation and access to raw materials. The vineyards and wine processing plants, in view of *villae* and presses, were located more to the interior.[41] Beyond this physical separation, even though their products were dependent upon the vitality of the vineyards, neither the pottery centres nor their amphorae clearly define the relationship to the wine-producing lands.

Outside of Campania, the kilns at Campacci, Torre San Anastasia, and, to the interior, Brignano Frascata and Sutri, apparently operated alongside more rustic rural habitations or industrial *officinae*.[42] Within Campania, where many more inland production centres are known, only one as published, Masseria Zannini, was possibly in association with a villa. Arthur, in two separate publications, mentions a kiln site near Falciano and an Imperial vineyard near the same community, but he evidently does not think that there was a connection between the two.[43] The presence of Dressel 2-4 kilns in Forlimpopoli is another anomalous case because of its urban situation.

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[39]Finley, 1985, 24, bemoans the lack of evidence for this problem, in which the type of people involved in the ownership and operation of pottery centres is so rarely clear. Another source of frustration is the unknown relationship of potters and kilns to the ownership of the land, including the clay beds, to the traders, and to centres that were obviously connected to others. Apart from the important work of Helen, 1975, on the relationship between brick stamps and ownership of *figlinae*, which seems fairly well-founded, argumentation for relationships in the large-scale production of coarse ceramics is only speculation which does not apply to every case. For estate management and the relationship of potters to the estate owner in Egypt according to papyri, see Cockle, 1981, and Rathbone, 1991, both of whom also mention the manufacture on the estates of wine jars intended to hold imported wine, and also the re-use of wine jars on the estate.

[40]Varro, *RR*. I, xxii, i.

[41]Arthur, 1991, 74-75; he places the location of the vineyards "on the slopes of the Massico, in the *ager Falernus* proper and in the Garigliano basin."

[42]Arthur, 1982, 23 and 25: "Contrary to what Panella [1980, 253] states..., there is no particular concentration of villas in this area, but rather what appears to be a fairly normal density of sites such as is encountered at most points in the heavily occupied piedmont area on the south-east of the Massico; testimony of the intense agricultural activity that took place in the territory after the Hannibalic wars."

[43]For the kiln site, see Appendix; for the vineyard, Arthur, 1991, 77.

The introduction of the Dressel 2-4 amphora coincided with the period during which pottery production moved inland, presumably to locations on the same estates as the vineyards. The location of Republican kilns near the coast had avoided the need to carry full and awkwardly-shaped amphorae all the way from the vineyards, but now the burden was apparently no longer as much of a concern with the lighter Dressel 2-4s. At the sites along the Garigliano, boats still sufficed for taking the agricultural produce out to the coast, but the sites below the Massico hill chain had no such waterways and had to rely upon roads.

In Arthur's view, this move was takeover of a part of the commercial domain of the *negotiatores* by estate owners, possibly a restriction of the merchandise, and had direct bearing upon the practice of stamping amphorae; he writes, "the disappearance of stamps on amphorae may perhaps be explained by their being no longer necessary for the identification of the produce of individual vendors".[44]

There is no clear support for his interpretation of the decline in amphora stamps, though. None of the coastal sites except for Mondragone B stamped their amphorae, and those stamps are rare and mostly abbreviations consisting of one to two Greek or Latin letters. The inland *fundi* of the Maesiani Celsi and of the Lollii stamped their amphorae and finewares respectively. Arthur's primary observation was correct, however: very few Dressel 2-4s in Italy as a whole were stamped as common practice, reflecting the pattern of markings on contemporary Aegean amphorae.

The only known exception to this rule is the estate of the senatorial Maesiani Celsi, whose inland villa at Corigliano was identified by Arthur on the Garigliano northeast of Minturnae.[45] At this villa and the nearby kiln site were Dressel 2-4 amphorae marked MAESCELS, associated with the ligatured stamp most often read as CALI; MAESCELS amphorae are only known at Oberaden and

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[44]Arthur, 1982, 32; Arthur, 1991, 75-76.

[45]Arthur, 1991, 52 and n.98, who recommends, for a brief discussion of the villas in the area, A.M. Villucci (1979), "Note di presenza romana nell'agro di Suessa Aurunca", *Stud.Suess.* I, 41-59. The site itself and the associated kiln are unpublished.

at Carthage, where the first amphora wall contained at least thirty examples.[46] Arthur positively affirms that the villa and the pottery workshop were within the same *fundus*, which manufactured the MAESCELS amphorae for its own viticultural processes, since the stamps explicitly name the Maesiani Celsi.[47] In this case, then, "both production and *negotiato* may have been in the same hands".[48]

The same premise may apply to the kiln at Cales, also further inland than most of the identified Central Italian sites. That centre's amphorae were unstamped (fig. 14), but its Arretine-like finewares were stamped with the name M. Lollius. The Lollius name is a familiar one at Delos, where M. Lollius Q.f. Men. was a *negotiator* and a *magister* of the Hermaistai in c. 146-144 B.C. A person of the same name was *magister Campani* at Capua, and, at the end of the second century, a member of a Pergamene *consilium* designed to address a tax dispute of the Roman *publicani* there.[49]

Furthermore, the stamp M.LOLLIO.Q.F. appeared on a Lamboglia 2 amphora at the wreck of La Madrague de Giens (70-50 B.C.), and on unspecified amphorae at Narbo in Gaul, indicating the possible ownership of a kiln on the Adriatic coast in addition to that at Cales.[50] Q. Lollius was an important equestrian and landowner in Sicily during the late 70s B.C. and could be the same as Q. Lollius Q.f. Hor(atia) of the slave trader's cult of Isis Capitolinus at Rome.[51] Morel dates the Calenian kiln's production by the pottery evidence to between 75 B.C. and 25 A.D.;[52] the early date fits in with the main period of that trading families' activity.

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[46]Delattre, 1894, 114, no. 33. The Oberaden example is not a Dressel 2-4 amphora, but rather a flat-bottomed amphora: see Chapter Five.

[47]Arthur, 1991, 74, 75.

[48]Arthur, 1991, 75.

[49]Roussel and Launey (1926), nos. 1442 and 1731 (*magister Herm.* 146-144), 1444; *ILLRP* 723b.

[50]Parker, 1992, 249-250 no. 616; Callender, 1965, 1133.

[51]Cic., *Verr.* II, iii, 61; *CIL* I^2 1263 = *ILLRP* 159. See Rauh, 1993, 30-32, 50, 72-73, 103-104, for more information and bibliography on the Lollii.

[52]Morel, 1989b, 558-559.

For the other sites, the situation is less clear. As at kilns in other parts of Italy, pottery stamps could offer a partial solution for this problem of ownership, if correctly interpreted, but they are too rare in this area and the reading of the markings is unclear. Although the epigraphical evidence is rare, the coastal kilns must have been independently-operated enterprises, overseen by individual potters or *negotiatores*.[53] Whether the kilns were independently-owned or not is another matter. One other possibility is that only certain landowners set up kilns on the coast, primarily for their own use, but secondarily allowed some commercial activity to serve the needs of their neighbouring estates and the traffic along the coast.[54]

Unfortunately, these kiln sites, as currently published, can contribute little in the way of further defining the chronology of Dressel 2-4 production on the west coast of Italy. In fact, sites like those published by Hesnard and Lemoine, Aldini, and Peacock are dated, in a rather circuitous manner, by the traditional chronologies accepted for any general amphora form that appears there.

For instance, Sinuessa produced Graeco-Italic, Dressel 1, and Dressel 2-4 amphorae. Graeco-Italics appear in the area starting around the end of the third century, while Dressel 2-4s, in the traditional view of a number of crises towards the end of the first century A.C.,[55] disappeared towards the end of the first century A.C. The publication of the site therefore dated the activity of the kiln at Sinuessa to between the late third century B.C. and the Flavian period.[56]

Since most such forms were produced over a long period, one site's period of activity could be attributed to a span of several centuries when it in truth perhaps lasted only one or two generations; the very compact date of 60 to 70 A.D. for the Sutri kiln serve to illustrate this point. Dating by cross-

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[53]Arthur, 1991, 75, made this suggestion for the *ager Falernus*, but his observations also suit the situation of the coastal kilns of other regions.

[54]Peacock, 1982, 133, draws similar conclusions about the manufacture of tiles and bricks, for which he envisions "a natural tendency for production to become increasingly centred on the commercial market rather than the estate so that there will be a transformation from estate production to ... the 'workshop'."

[55]See Chapter Five.

[56]Hesnard and Lemoine, 1981, 243-295, also date the sites near Mondragone by this method.

referencing other finds, such as fineware or coins, has taken place for only a few of the sites; too many are described as having other products which are no more clearly defined than 'bricks' or 'common wares', a problem that relates to the quick ground surveys that have identified most of the sites. The amount, accuracy and precision of detail varies greatly from site to site, but except in cases of obviously incorrect information, the data provided must for the moment be accepted as fact.[57]

Southern Campania

Further to the south in Campania, in the Vesuvian region, identified kilns are lacking. In this case, epigraphy provides the best evidence for production centres there, the most convincing of which is usually in combination with mineralogical analysis.

Consider, for example, the case of amphorae with the handle stamp L.EVMACHI (fig. 15). The L. Eumachi amphorae have gained a name for themselves due to their very distinct 'black sand' fabric, often called 'L.Eumachius type' even when not accompanied by such a stamp[58]. Well over fifty examples of the L.EVMACHI stamp have been recovered from sites from Smyrna to Ampurias, and from Carthage to Nijmegen in the Netherlands. The earliest evidence for the date of the stamp is that supplied by the first amphora wall at Carthage, for which a dipinto on a Campanian Dressel 2-4 attests a consular date of 15 B.C. The presence of Eumachius' amphorae at Carthage is not a chance find; Delattre cited over forty examples from his partial excavation of the wall, by far the largest concentration of Eumachius's amphorae anywhere.[59]

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[57]In addition, while the number of sites and their dispersion across Italy does not allow a sound statistical evaluation of Dressel 2-4 production centres, there are some common denominators among these kilns.

[58]An Italian origin has been confirmed by petrography, with the volcanic inclusions suggesting the region south of Rome, especially around Pompeii: see van der Werff, 1991, 8. On the basis of visual fabric comparison, certain Dressel 1 amphorae also occur in the Eumachius fabric, according to Hesnard, *et al.*, 1989, 29. By the description of Tchernia and Zevi, 1972, 40, the fabric is generally described by an extreme density of very fine, mainly black inclusions, with shiny small white particles, a fine yellowish slip, and an irregular, almost layered fracture. Using the Munsell Soil Colour Chart, the fabric colour of the Carthage examples often lies in the range of 2.5YR light red/red to 5 YR reddish-yellow, with an exterior contrast slip in 10YR very pale brown to white range (information J. Freed).

[59]Delattre, 1894, 113, no. 30. Thirty-three examples of the amphorae have been counted in the collection of the Musée National de Carthage; it is not clear whether all of them came from the first amphora wall, or if some came from other excavations in Carthage. For the distribution of the stamp, see map in van der Werff, 1991. For further Eumachius bibliography, see Tchernia and Zevi, 1972, 37-40.

While further epigraphy is lacking for L. Eumachius himself, there is substantial evidence to identify his family as among the most prominent of Pompeii. His daughter served as a priestess of the city and dedicated a building in the Pompeian forum during the Tiberian period,[60] and in 32 A.D., L. Eumachius Fuscus was aedile. Tiles stamped with the name of L. Eumachius and L. Eumachius Eros, presumably his freedman, have also been found around Pompeii.[61] Since tiles did not normally travel far from their region of production, the Eumachius tiles also lend credence to a location near Pompeii for his pottery workshop.

The combination of fabric and typological analysis on amphorae of this type does not allow the specification of an origin any narrower than the area of Surrentum to Mount Vesuvius. There is substantial evidence for Surrentine wine being carried in Dressel 2-4 amphorae, as demonstrated by Panella and Fano's study.[62] Eumachius' presence at Pompeii does not exclude the possibility that he owned vineyards closer to Surrentum, and that his amphorae were also made there.

Amphorae of the same fabric as the Eumachius examples, but bearing instead a related series of sloppily applied ligatured stamps, point to another wealthy person involved in the wine trade from the Vesuvian region. In 1972, Tchernia and Zevi read the stamps Q. CAV SVR and Q. CAVSIR SVR; in 1991, Will read M.CANSTR or M.CAVSTR. Especially because of the discrepancies in readings, reconstruction of the name abbreviated in the stamps is challenging. The *nomen*, abbreviated in the stamp to CAV or CAN, could expand to the rare name Causius, or the Pompeian names Cantrius, Canius, or Caudinus.[63] These amphorae are found at Ostia and Pompeii in Italy, at

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[60]*CIL* X 810-813 = *ILS* 3785.

[61]*CIL* X 8042, 47 and 48.

[62]As strongly argued by Jongman, 1988, 125-127.

[63]At Ostia and Pompeii, the stamp read [--]ivi Causi Suri (ivi uncertain and could be M): in *NSA*, 1946, 84. Based on these examples, Tchernia and Zevi, 1972, 40, do not like the expansion to Causius because of the name's rarity; they prefer an alternate reading of the first letter of the stamp, 'Iul', hence Iul(i) Causi, Causus being the name of the proprietor, and Surus in the nominative the name of his slave. Will, 1991, 153 and 156 n. 11, looking for specific Pompeian parallels, suggests that the person named on the stamp might be related to M. Cantrius Marcellus, duovir and benefactor of the city (*CIL* X 857d; cf. P. Castren, 1975, *Ordo Populusque Pompeianus*, Rome, 147 no. 98) or Canius (Castren, 1975, no. 97) or Caudinus (Castren, 1975, no. 108).

Avenches and Vindonissa in Switzerland, and at Mathura in India.[64] The great distribution of this amphora group parallels that of Eumachius' group, and is indication of the importance of the wine trade of southern Campania.

Other inscriptions also support a major wine and amphora industry in the area of Pompeii. Dressel 2-4 amphora stamps at Athens, Alexandria, and Tarantum name P. Cornelius Sulla, the leader of the colonization to Pompeii.[65] In addition, Carrington's study of Vesuvian *villae rusticae*, with a cross-reference of his findings to amphora inscriptions, led him to assert that "certain of the most prominent Pompeian families, traceable back in the history of the city to at least the Oscan period, had a definite interest in the wine trade, e.g. the Stlaborii, Marii, Popidii, Vibii, and Holconii, and others of less note".[66] These names are those of families prominent from the Republican (pre-colony) period to the eruption of Vesuvius, and set the stage for the prominence of the area during the production of the Italian Dressel 2-4.

In view of the high concentration of kilns in the *ager Caecubus* and the *ager Falernus*, the prosopographical evidence for Vesuvian wine exportation, and the frequency of Campanian amphora finds across the Mediterranean, there must have been a great demand for wine containers in Central Italy. The scale of viticulture which must have taken place especially in Campania in the late Republic and early Empire is a stark contrast to the level of such viticulture that exists today.

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[64]At Avenches, the stamp read Q. CAV SVR: in *Pro Aventico* 1959-60, 29-30; at Vindonissa, Q. CAVSIR SVR on one Dressel 3 handle and ...EA on the other: in *Pro Vindonissa*, 1959-60, 29; at Mathura - incidentally, the only site in India at which an amphora trademark, specifically this stamp, is yet known - on an "earlier, short-necked" Dressel 2-4 amphora, M.CANSTR or M.CAVSTR with the associated stamp SVR, Mathura Inv. no. MTR-8: in Will, 1991, 153 and 156 n. 11, who adds without specific references that Carthage and Alexandria also have examples. The comparanda were collected by Tchernia and Zevi, 1972, 40, with photograph of fabric sample on pl. II, 5, and by Will, 1991, 153 and 156 n.11.

[65]Cic., *Sull.* 60-62; in Will, 1991, 152 and 156 n.9. Will has promised that further details on P. Cornelius Sulla's amphorae will be published in her 'forthcoming' volume.

[66]Carrington, 1931, 118. Apart from their significant political titulature from the very beginning of Pompeii's foundation, individuals from these families were responsible for such material contributions as the rebuilding of the temple of Isis (*CIL* X 846) and possibly of the city's theatre (*CIL* X 838), and the Porticus of Vibius (*CIL* X 794); see Richardson, 1988, for further information on these families. Other local *gentes* involved in wine production, as evidenced by amphora inscriptions, included the Domitii of Carrington's *villa* no. 19 at Scafati (*CIL* IV 5818) and the Arelli, owners of Carrington's *villa* no. 23 at Boscotrecase (*CIL* IV 5863, 2643): so Carrington, 1931, 113.

Calabria

Fabric analysis has provided the only conclusive and undeniable evidence for Dressel 2-4 production further south along Italy's west coast. Near the Tyrrhenian coast of Calabria, surveys in the area of Vibo Valentia revealed large numbers of Dressel 2-4 amphorae.[67] About 70% of these shared a characteristic yellowish clay, with frequent small and medium dark biotite inclusions; mineralogical analysis concluded that the clay matrix was consistent with a southern Calabrian source.

This same fabric was used for certain Graeco-Italic and Dressel 1 amphorae. These amphorae indicate a continuous history of wine production in the Calabrian region during the Hellenistic period and into the first century A.C. The Graeco-Italic activity is not surprising considering the location of the kiln, but it is interesting that thereafter the products were transported in export vessels adhering to the popular amphora forms of the more northerly Tyrrhenian kiln sites, rather than those of Brindisi. Wine production at Vibo Valentia may also have resumed between the mid-fourth and late sixth centuries A.C., to judge by the presence of some late Roman amphorae of the Keay typology.[68] Prior to this mineralogical analysis, only very rare amphora markings and unsupported hypotheses had hinted at amphora production in the area of Calabria.[69]

Northern Italy

The only kiln site has been excavated in Liguria, in an industrial area near the River Curone at Brignano Frascata. The kiln's main product was the Dressel 2-4, with a minor line of vases and

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[67]Sangineto, 1989, 833-843.

[68]At the end of the fourth and during the fifth century A.C., the flat-bottomed amphorae classified as Keay type LII carried the wine of the region; for a description of this amphora type, see Keay, 1984. A mid-imperial Dressel 2-4 derivative identified at kiln sites in Campania may also have been produced in Calabria, in the opinion of Arthur and Williams, 1992, 251. Arthur and Williams, 1992, 258, describe the petrological content of one such amphora: "The most distinctive inclusions scattered throughout the clay matrix are small fragments of metamorphic rocks, especially quartz-mica-schist. Also present are discrete grains of potash, and some plagioclase feldspar, flecks of mica, foraminiferal limestone, quartzite and subangular quartz grains."

[69]The *titulus pictus* VINUM RHEGINUM on a Dressel 1 at the Castro Pretorio and the stamp PIX BRUT had earlier provided rare indication of Calabrian production (*CIL* XV 4590-4591). Two of the Dressel 2-4s retrieved during the surveys bore stamps, both in rectangular cartouches; the first read RIMICENI and the second, found at Cantiere Fuscaldo, read ROM; Sangineto, 1989, 842, plates CXXV, 4 and LIII.

common wares unspecified in the publications. This kiln, dated between the latter half of the first and the early second centuries A.C., fits in with the pattern observed for the later sites of southern Latium and northern Campania, that of non-specialized pottery production in kilns operating after the mid-second century. This non-specialization could also be a reflection of the observation made by Strabo, that Ligurian wine was a minor cultivation of poor quality.[70] No stamps were reported from the site.

The only other evidence for Dressel 2-4 production in northern Italy is epigraphical, and likely Istrian rather than Ligurian. The stamps of T. Palfurius Sura at Trieste, Aquileia, La Longarina, and Ostia occur in combination with a whitish fabric and a greater wall thickness than usual.[71] Other Istrian personages known from stamps at La Longarina include C. Laecanius Bassus and Calvia Crispinilla, both of whom also left their marks on Dressel 6B oil amphorae found at Magdalensberg.[72] However, in view of the quantity of Dressel 2-4s identified as being of north Italian origin, and the rare occurrences of Dressel 2-4s in general at the major sites of the north and the Adriatic, the north Italian Dressel 2-4 constituted a very minor sideline to the Dressel 6 wine amphora, the more familiar product of that region.[73]

Just as the Dressel 1 was an evolution of the Graeco-Italic amphora, the Dressel 6 evolved out of the Adriatic wine amphora Lamboglia 2, adding an elongated neck and long tapered toe (fig. 18). Unlike the continuous evolution of the Tyrrhenian amphorae at the certain kilns, however, the Dressel 6 did not share the same production centres as the Lamboglia 2, on the southern to central Adriatic coast. Instead, it was probably the first wine amphora to be produced in northern Italy, part of a

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[70]Strabo, *Geog.* IV, vi, 2.

[71]For suggestions of the provenance of amphorae stamped T.PALFVRI.SVRAE, see *Ostia* II 127-31; Hesnard, 1980, 144-145; and Carre, 1985, 226.

[72]Hesnard, 1980, 145, states that the fabric used by C. Laecanius Bassus is local to Pola.

[73]Carre, 1985, 226-228. According to Tchernia, 1986, 129, Dressel 2-4s might have constituted a minor production at the atelier at Sala Baganza; cf. M. Marini Calvini (1981), "Un impianto produttivo romano a Sala Baganza", *Centro Studi della Val Baganza*, 127-129 (*non vidi*).

Dressel 6 production arc from Aquileia southwards towards the *ager Praetutianus*, penetrating far to the interior in the Po plain.[74]

Although Baldacci's proposal of Dressel 6 production dating from 50 B.C. has been willingly taken up by Sciallano and Sibella, Tchernia maintains that there is not sufficient evidence to date the beginning of Dressel 6 production until the first amphora wall at Carthage, where one example bore a consular date of 17 B.C.; in other words, there is no indication that it began before the reign of Augustus.[75]

Besides the landowners who manufactured both Dressel 2-4s and Dressel 6s named above, the stamped markings give the names of several important figures who must have owned land in northern Italy, including M. Herennius Picens, consul in 38 B.C., and L. Tarius Rufus, consul in 16 B.C. and proprietor of estates in Picenum.[76] Unlike the Dressel 2-4, the Dressel 6 was practically absent at Tarantum, but it was this latter form that carried wine to most other regions of Cisalpine Gaul and the Adriatic.[77]

Shipwrecks

Once loaded with their contents, the amphorae were taken to a nearby port for shipping. The major ports through which traders passed, such as Ostia, Puteoli, Tarentum, and Brundisium, served as collection points for goods assembled from lesser ports along the coasts of Italy, including

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[74]Tchernia, 1986, 129. A certain amount of confusion derives from the fact that long-toed versions of this form are known on the basis of inscriptional evidence to have carried wine (Dressel 6A), while the stub-toed versions of Istria carried oil (Dressel 6B). That the Dressel 6A carried wine is indicated by inscriptional evidence (*CIL* XV, 4582, *CIL* XV, 4653-4685) and the fact that the interior of examples at La Longarina were coated with resin: Tchernia, 1986, 132. When the term Dressel 6 is used here, it refers to the wine-bearing amphora.

[75]Tchernia, 1986, 132.

[76]L. Tarius Rufus met his ruin in these farms: Pliny, *HN* XVIII, 37.

[77]Desy, 1993, 251, table VI and 252, knows of only one Dressel 6 at Tarantum.

Minturnae, Sinuessa, and Volturnum in Campania and Torre Guaceto and Torre San Giovanni in Apulia. From there, the ships traced their way along the coasts of the Mediterranean following trade routes. Unfortunately for the traders, but fortunately for archaeology, sea-trade was a hazardous occupation and many ships sunk en route, leaving behind a context which, in many cases, provides a detailed scenario of Mediterranean trade.

The earliest shipwrecks with Dressel 2-4 cargo are unfortunately suspect in date. The one at La Almadraba, Spain, is dated to the second century B.C. by its excavators based on unspecified evidence; that at Pomègues B, France, dated to sometime between the second and first centuries B.C. had a Campanian cup of the third to second century type and a cargo of Dressel 2-4s.[78] In these cases, the amphorae are probably of Coan, not Italian, origin.

Beyond those examples, there are thirteen wrecks known to have contained Italian Dressel 2-4s as the major cargo: four off the coast of Italy, four in France, four in Croatia, and one in Tunisia.[79] These numbers should in fact probably be greater, since Parker's monograph lists another thirty Dressel 2-4 cargoes of uncertain provenance, but they do make it explicit that Dressel 2-4 cargoes were sent in several directions. Notable is the absence of wrecks off the coast of Spain, in contrast to the pattern of the Dressel 1.

The difference between the number of Dressel 2-4 cargoes and those of the preceding Dressel 1 is striking; about ten times as many Dressel 1 shipwrecks are known. The sharp decrease in wrecks is comparable to that of Adriatic products, which declined from sixty-three Lamboglia 2 cargoes to ten Dressel 6 cargoes and one partial cargo of Adriatic Dressel 2-4s.[80]

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[78]Parker, 1992, 52 no. 35 (La Almadraba) and 325 no. 852 (Pomègues B); the Campanian cup was of the type Lamboglia 27.

[79]Parker, 1992, lists these examples: in Tunisia, Cap Bon (late first century B.C. to first century A.C.); in Italy, Cervo (50 B.C.-100 A.D.), Ladispoli A (1-15 A.D.), Maratea A (mid-first century A.C.), Panarea (Alberti) (50-100 A.D.); in France, Dramont D (40-50 A.D.), La Garoupe A (10-35 A.D.), Le Grand Ribaud D (10-1 B.C.), La Tradalière (20-10 B.C.); in Croatia, Ilovik (c. 120 A.D.), Krava and Mlin (both first to second centuries A.C.), Plavac A (late first century B.C. to early first century A.C.): in Parker, 1992. The last example is actually listed as a cargo of unprovenanced Dressel 2-4s, but the stamps on several of them, CAVSIVS SVRVS, are known from other examples to occur in association with the Vesuvian fabric.

[80]See totals in Parker, 1992, 17.

The total number of Dressel 2-4 shipwrecks, combining containers of Italian, Spanish, and uncertain origins, is sixty-four; the number reaches closer to eighty when instances of very small numbers of Dressel 2-4s accompanying other major cargo are included. In such cases where a handful or less of different amphorae were present, they were often separated from the bulk of the cargo, and have been interpreted as shipboard materials, meaning wine for the consumption of the crew.[81] They could, alternately, be leftovers from a previous leg of the trade route.

Confusion between Coan and Dressel 2-4 amphorae also renders several cases suspect. At Riace and Valle Ponte in Italy, and Shab Rumi in the Sudan, the identifications are questionable; the excavators of the second site, for instance, identified a bifid-handled amphora with Greek inscriptions accompanying Aegean amphorae as a Dressel 2-4, when in fact it is much more likely Coan.[82]

Intriguingly, the results from shipwrecks provide a contrast to the kiln site situation. Whereas the Dressel 2-4 replaced without any apparent interruption and even temporarily co-existed with the Dressel 1 at kiln sites, the instances of their co-existence on ships were practically nil. At the wreck off L'Estérel, France, dated circa 100 B.C., the cargo included Dressel 1 amphorae and 'Dressel 2' amphorae; at Santa Severa, Italy, Dressel 1B formed the major cargo. One particularly suspect wreck at Campo Bello, near Pantalleria, Italy, was identified as having Dressel 2-4, Punic, and Graeco-Italic amphorae as cargo, a very improbable combination. In these cases, Coan amphorae have likely been likely mistaken for Dressel 2-4s.

Instead, ships carrying Dressel 2-4s were much more likely to use another form of wine container alongside them. The adoption of the Dressel 2-4 was not the only alternative means of wine transportation sought during the first century B.C. At that time, shippers experimented with rows of immense permanently-installed *dolia*, which, in the largest size, could each take the place of well over

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[81] See, for example, Parker, 1992, 165-166 no. 371, 203 no. 477, 315 no. 824.

[82] Parker, 1992, 367, 401, 443.

one hundred amphorae in the cargo hold, and still leave room for several hundred amphorae to be packed in around them (fig. 16).[83] While the huge containers had appeared singly alongside earlier Republican amphorae, it was only with the height of Dressel 2-4 production that traders began to use series of *dolia* on one ship in combination with amphorae of that form.[84]

The huge permanently-installed containers were the most efficient carriers found yet, both economically and technically; wine could be dispensed from them at any or every port into whatever containers the local consumers found efficient to carry, whether amphorae or smaller jars, barrels or skins;[85] the consumers therefore could presumably have control over how much they bought. Large-scale use of *dolia* may provide a partial explanation as to why the Dressel 2-4 never attained the quantitative importance of the Dressel 1, despite its more widespread distribution: Italy was exporting more wine than ever, but much of it travelled in large, re-usable tank-like jars.[86] The quantity of wine sold to the provinces out of trading ship *dolia*, rather than traditional amphorae, is inestimable since the frequency of their use is unknown, but it could have been quite a significant amount.

The convenience afforded therein may also have meant better returns for the merchants who employed this new method. Unless strict controls were put in place, for which no contemporary evidence is known, dishonest merchants could have altered or otherwise meddled with the wine and its price. Such was presumably the case on Thasos during the fifth century B.C., when at least two official inscriptions ruled that "'small quantities of wine may not be sold from a larger container,

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[83]Calculation based on the average capacity of a Dressel 2-4 amphora, 26 litres (see below), and the citation in Tchernia, 1986, 139, of a *dolium* of capacity 3000 litres at the Diano Marina wreck.

[84]*Dolia*, especially major shiploads containing *dolia*, occurred most commonly in conjunction with Dressel 2-4 amphorae, although not necessarily Italian versions: nine out of a maximum total of the twenty-one wrecks containing *dolium* remains that are reported in Parker, 1992. Note, however, that the only evidence for the identification of a shipwreck was *dolium* remains for six of these twenty-one examples; in other words, no other artifacts were found. Quantitatively, Italian and Tarraconensian Dressel 2-4 amphorae occurred in conjunction with *dolia* on an almost equal basis; exact numbers are not available due to several wrecks with unprovenanced Dressel 2-4 finds.

[85]Arthur, 1991, 76 posits that a new type of flat-bottomed amphora, developed in coastal Gaul (see Chapter Four), may have been designed to accommodate smaller amounts of the wine brought in ships in large amphorae and *dolia*, and make the transportation of that product inland more manageable.

[86]Tchernia, 1986, 139.

whether amphora, large jar, or 'false pithos'".[87] This and many of the other regulations set forth in the Thasian inscriptions was concerned with enforcing a control or guarantee for the quality of the wine.

The Thasian inscriptions offer a rare early glimpse into the structure of the Greek wine trade, which is only otherwise known by the Hellenistic practice of stamping the handles of every amphora with the potter's mark and a date guarantee.[88] In contrast, stamps on Roman amphorae, including Dressel 2-4 amphorae are relatively rare, and evidently do not have the same meaning, since the names reflected on them are as likely to be common slave names as the *tria nomina* of Roman citizens.

In terms of capacity, however, Dressel 2-4s are very consistent and adhere quite closely to the ancient definition of one *amphora* as equal to two *urnae*, or just over 26 litres.[89] This uniformity implies that some kind of standard was in place, a practice consistent with the attention given to weights and measures in marketplaces, and surely necessary for the calculation of duties. However, the capacity is not so precise that examples do not fall into a great range centring around the 26 litre measurement, probably reflecting the manmade nature of their manufacture and the variation within the Dressel 2-4 range.[90]

Whatever the controls that were enforced on Roman amphorae, the problem remains of how the integrity of wine from a shipboard *dolium* was ensured remains. No regulations equivalent to the two inscriptions from Thasos have been discovered for the late Republic or early Roman empire,[91]

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[87]The inscription is recorded in Pouilloux, 1954, 37-45, 7. Inv. 895, 130-132; the translation provided in the quotations appears in Osborne, 1987, 104-108, who provides a summary of the Thasian wine trade from both inscriptional and amphora evidence.

[88]For example, Grace, 1961, fig. 23.

[89]As specified by, for example, Cic., *Font.* 19. The same capacity still served as a standard measurement in the second century; cf. Gell., *NA* 18, xiii, 1; and L. Volusius Maecianus, *iur.* 79.

[90]In Panella and Fano, 1977, 151-152, their Vesuvian groups measure over 28 litres. Sites at which miniature versions occur are the exception; cf. the two lines of amphorae that were produced at Brignano Frascata, one of 19 litre capacity, and the other of 26 litre capacity.

[91]Not to say, that is, that the Roman export trade could have existed without a high level of organization and standards in its practice; unfortunately, the only obvious control used in combination with Roman wine amphorae, as currently known, dealt with customs collections rather than quality guarantees: according to Palmer, 1980, the type of duty tax known as *ansarium* was calculated according to a count of amphora handles (*ansae*) within a shipment at the customs barriers of the city of Rome. Although they probably did not reach their full potential until the construction of Aurelian's wall, Palmer conjectures, these customs barriers could have been in operation as early as Augustus, but definitely by the time of the censorship of Vespasian and Titus (73-74 A.D.), based on a description by Pliny, *HN* III, 65-66.

although Cato the Elder did lay out strict terms for the sale of wine in *dolia* on land, specifying the obligations of both seller and purchaser to ensure honesty on both sides.[92] To resolve the problem of shipboard *dolia* sales, which could not be controlled in the same way, Carandini, along with Desbat and Martin-Kilcher, has proposed that the huge receptacles transported mediocre wine intended for the masses, while the wine amphorae that accompanied them contained higher grade wines. Tampered goods, according to this reasoning, were not such a concern.[93]

The technical advantage of the large jars, according to Laubenheimer, was that one level of *dolia* could replace two levels of amphorae, translating into a manifest capacity advantage for small ships; the larger ships which could carry three levels of amphorae were therefore outmoded for this type of transport.[94] On the other hand, the concentrated weight of the ship and its contents must have been considerable, and the list of the liquid cargo must have been dangerous in bad weather.[95] This consideration might in fact explain why *dolia* ships were never popularized beyond a select group of merchants.

This select merchant group, composed mainly of the Piranus *familia* from the region of Minturnae, made unique use of *dolia* in order to transport wine. Six shipwrecks spanning in date from as early as 10 B.C. and to as late as the mid-first century A.C., bore *dolia* stamped with the names of members of the Pirani household; all of the known ships sank in the western Mediterranean, along the coasts of Italy and France.[96] The main amphora consignment of their earlier ships was Dressel 2-4s from Campania and, in the case of Le Grand Ribaud D, also from the Adriatic.

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[92]Cato, *Agr.* 148.

[93]Carandini, 1989, 516, in accord with Desbat and Martin-Kilcher, 1989, 355; for the latter, see under 'Consumption Sites', below.

[94]Laubenheimer, 1990, 118. If the capacity of the average amphora was just over twenty litres, a *dolium* with a capacity of 2000 litres could eliminate the need for almost 100 amphorae, and save cargo space in so doing: see Parker, 1992, 309. Even in a ship like the one that sank near Diano Marina, Italy, which carried twenty-one *dolia* in three sizes, over 1000 Tarraconensian Dressel 2-4 amphorae were still able to fit in and around the huge permanent containers.

[95]Suggestion thanks to J. Freed.

[96]As listed by Parker, 1992, wrecks with *dolia* of the Pirani are known from Le Grand Ribaud D, France (10-1 B.C.); Ladispoli A, Italy (1-15 A.D.); La Garoupe A, France (10-35 A.D.); Diano Marina, Italy, Ile-Rousse, France, and Le Petit Congloué, France (all mid-first century A.C.).

Soon after the beginning of the first century A.C., the amphora cargo accompanying *dolia* of the Pirani changed to Tarraconensian wine in Dressel 2-4s, often in combination with fewer numbers of Gaulish amphorae. Barring the coincidence of the early wrecks belonging to the westward journey and the later wrecks marking the return journey with new freight, the Pirani had apparently altered their line of goods. The changeover of cargo from Italian to Spanish wine supports the idea that Rome's population had expanded to the point that the wines of both the provinces and Italy proper were needed to satiate Rome's expanding population.[97]

The novel idea of the Piranus *familia* did not reach general use. Although their *dolia*-bearing ships were sailing within the period of the greatest shipping activity in the Mediterranean, they barely register among the shipwrecks for that period.

Considering the importance of the sea trade to wine commerce during the late Republic and early Empire, it is odd that there are no physical signs of controls on the market or of colleges of Roman wine *negotiatores* until near the end of the first century A.C. After all, it was precisely the relationship between landowners and their shipping merchants that led to the creation of corporations of *navicularii* like those that advertised their activities in the mosaics of the Square of the Corporations at Ostia.[98]

Consumption or Deposit Site

Although the Dressel 1 retained the distinction of being the most important Mediterranean amphora type in number, the Dressel 2-4 became the Mediterranean amphora most widespread in

[97]Purcell, 1985, 15-19.

[98]Fredericksen, 1975, 167.

distribution[99]. Findsites stretch beyond the bounds of the Mediterranean, from Britain to India. At every site, it is clear that several different workshops from several different areas contributed to the wine trade to that site. No one workshop, or wine producer, held a monopoly over its consumers, although the Vesuvian region in particular played a dominant role.

In keeping with their identity as sea-going containers, Dressel 2-4s that were exported generally stayed near the coast or transportation waterways. Just as they were produced near the coast in order to avoid problems of overland transportation, they tended to be discarded near waterways for the same reason. This observation does not eliminate the possibility that their contents were transferred into a smaller or more easily transported container.

Evidence in Italy for the early Imperial import wine market unfortunately depends almost entirely upon the excavations at Ostia and nearby La Longarina. As Arthur and Williams justly remarked, the use of a single port site such as Ostia for the interpretation of the economy of Imperial Italy is folly. Despite its identification as the port of Rome, Ostia does not accurately reflect the activities of Italy as a whole, or even of Ostia's surrounding countryside.[100]

It is indeed absurd to measure the chronology and importance of the Dressel 2-4 through finds at Ostia alone, since the main output of Italian wine was not produced in that area, and therefore probably not unloaded at Ostia if it was not intended for use at Rome. Puteoli was a very much more important port and tariff station during the late Republic and early first century A.C., the exact period during which the Dressel 2-4 was at its height, and it was well-located within the major Campanian

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[99]The density in Gaul of all Dressel 2-4 amphorae combined is still less than the number of Dressel 1 examples there. On the other hand, there are some sites where the Dressel 2-4 form is found more commonly, namely in Britain and the camps along the German *limes*: Haltern, Oberaden, and Neuss, for instance; see Tchernia, 1986, 136-137.

[100]Arthur and Williams, 1992, 250.

Dressel 2-4 territory.[101] Traders regularly shipped wine from Puteoli, especially to Egypt and the east, and probably brought much-needed grain back to Italy on their return.[102]

However, the state of Puteoli's excavation and publication denies the possibility of any insights that city could provide. Furthermore, the proximity of kilns in the *ager Falernus* and *ager Caecubus* to minor ports serves as a reminder that there were many small ports servicing the coast; while the trading ships carrying goods from such areas may have included in their routes stops at the more important Tyrrhenian ports, one should not assume that remains of the cargo would be found at those ports in quantity.

The different kinds of consumption or deposit sites, meaning the final resting place of the amphora, offer correspondingly different insights into the commercial wine economy. Stress may be placed upon particular sites with unusual accumulations of wine amphorae, such as the terracing files of amphorae at La Longarina, the Castro Pretorio, and the two retaining walls at Carthage, all dated to specific points within the beginning of the Imperial period. As such, these sites provide unusual evidence for both large-scale consumption of a variety of specific wines and the re-use of empty amphorae for public benefit. Their evidence is paralleled by other sites in Italy and throughout the Empire.

At La Longarina, dated to about 12 A.D., almost three-fifths of the wine imports were Italian. Of these Italian amphorae, 50% were southern Campanian, 5% northern Campanian/southern Latin, and 4% northern Italian and Apulian combined; the Dressel 6 made up another 41%.[103] The statistics

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[101]Frank, 1959, 204, who adds that "shippers putting in for Campanian articles at Puteoli only paid the Roman port dues (2-1/2%), whereas those shipping through Naples into Roman territory paid both the Neapolitan and the Roman dues". Tantalizing glimpses of the wine commerce at Puteoli are offered by a statue of a "freedman" bearing a wineskin, retrieved from a local nymphaeum, and mention of the thousands of amphorae which, despite constant treasure hunting, still lie submerged along the submerged docks of the Portus Julius; see Sirpettino, 1981, 32-33 and illustration 1. Furthermore, a Dressel 5/Koan amphora from the first amphora wall at Carthage, described in Delattre, 1894, 100 no. 24 and pl. IV, no. 6 (no. 91.143 in the collection of the Musée National de Carthage), bore the name of that port in a dipinto inscription.

[102]Rathbone, 1983a, 87.

[103]Hesnard, 1980.

emphasize that northern Italian Dressel 2-4s were subordinate to the Dressel 6, which was second only to Campanian exports at this time, and that the Apulian wine market really had declined by the end of the first century A.C. Most of all, though, the dominance of Vesuvian wines is notable.

As described in Chapter Two, the 1977 publication of Panella and Fano clearly distinguished the amphorae of Pompeii-Surrentum on the basis of typology and fabric. Out of 190 amphorae from Pompeii analyzed by them, almost three-quarters were from the Vesuvian region.[104] The distribution of Vesuvian amphorae such as those of L.Eumachius throughout the Mediterranean is considerable, but many obviously did not even leave the region. The fact that so many Dressel 2-4s are found at Pompeii is strong support for a source further south along the coast, at Surrentum, since one would expect that vineyards around Pompeii would not package their goods in transport amphorae if the wine was not going far.

At both Ostia and Pompeii, Campanian bifid-handled amphorae maintained a strong presence through to the third quarter of the first century A.C. The proportions of such imports by stratum, as published in *Ostia* II, for example, show that 80 out of the total 140 were recovered from Flavian levels (see also fig. 17). At Pompeii, consular dipinti attest imports from 56, 62, 72, and 75 A.D.[105]

Excavations at Carthage besides those of the amphora walls tend to show the same statistics as the Italian sites. At the German excavations, for instance, Italian Dressel 2-4s made up almost two-thirds of the total Dressel 2-4s recovered. Of these, the Vesuvian 'Eumachius-type' amphorae were by far the most numerous, with exactly two-thirds of the total; other Campanian imports were second at more than one-fifth, and non-Campanian third at just over one-tenth.

Carthage also details another very important point in the early Imperial wine trade. The majority of the wine carried in the amphorae of the first amphora wall, dated to the Augustan period,

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[104]In Panella and Fano, 1977, 149, their Groups 3 and 4, both from Pompeii-Surrentum, account for 57.1% and 14.7% respectively; Groups 1 and 2 are also probably local.

[105]*Ostia* II, 500, table 6, and Panella and Fano, 1977, 151 and 153.

was Italian in general; of these amphorae, most were Tyrrhenian Dressel 2-4s.[106] Non-Italian wines, those from Tarraconensis and Gaul, were demonstrably in the minority, but these early provincial examples must indicate that the provinces adopted the double-handled form at approximately the same time as did Campania, but with comparatively minor exports at first to distant sites such as Carthage. By the time of the second amphora wall at Carthage, circa 30 A.D., the scenario had totally shifted in favour of Spanish imports.[107] Between the dates of the two walls, then, there was a major turning point in the sources of wines being exported to the site.

Such a pattern is not unique. At the late Augustan site at La Longarina, over half of the wine imports were Italian, but the wines of Tarraconensis and Baetica also showed a strong presence.[108] The significance of the provincial wines at these and other sites will be discussed in detail in the following chapter.

Based on *CIL* inscriptional evidence, Zevi in 1966 proposed that the height of Dressel 2-4 production occurred during the reigns of Augustus and Tiberius.[109] The results of excavations since that year have only proved his analysis correct again and again. Even taking into consideration the manufacture of the form in the provinces, it was the first half of the first century A.C. that saw the greatest distribution of the form. Even more so than the Dressel 1, the wine carried in the Dressel 2-4 during this period met with great success along the *limes*.[110]

At Saint-Romain-en-Gal (Vienne), throughout the excavated layers corresponding in date to between 30 B.C. and 20 A.D., Dressel 2-4 amphorae maintained a hold of almost a fifth of the total

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[106]Delattre, 1894.

[107]Delattre, 1906.

[108]In Hesnard, 1980, the breakdown of non-Italian wine amphorae (eighty-two examples = almost 45%) at La Longarina is as follows: imports from the Aegean were few, and probably limited to those of Rhodes (eight examples) and Cos (four). In terms of Spanish imports, Tarraconensian wines arrived in Pascual 1s (fifteen) and Dressel 2-4s (eleven), while Haltern 70s (thirty-two) brought the wines of Baetica. Another dozen Dressel 2-4s are of uncertain provenance. Spanish wines therefore account for almost a third of the total wine amphorae imported to La Longarina.

[109]Zevi, 1966, 215.

[110]In contexts of the end of the first century B.C. and the first decades of the first century A.C., Dressel 2-4s were abundant at Oberaden, Haltern, Hofheim, Augst, Strasbourg, Koblenz, Trier, Köln, and Geneva: see Panella, 1981, 77, and Peacock, 1971, 167.

amphorae.[111] Within this period, there was a noticeable change in proportions within this amphora group. Even though bifid-handled amphorae occurred in great numbers along the Rhône-Rhine axis, the numbers of those of Italian origin steadily shrank in proportion to those of other origins. The Coan models maintained fairly consistent numbers over the course of the first centuries B.C. and A.C.,[112] while the Gaulish Dressel 2-4s appeared in contexts dating from between 30 and 20 B.C.; they were evidently manufactured soon after that amphora form became the choice of Campanian kilns. Tarraconensian examples were even more infrequent than Italian ones, and relatively late in appearance;[113] evidently Spanish wine imports to France were not common, perhaps due to a certain amount of redundancy in products. At both Saint-Romain-en-Gal and Lyons, wine made up more than half of the imports contained in amphorae.[114]

So far excavations have not revealed a great number of Italian Dressel 2-4s in Spain, although L. Eumachius' amphorae went to Ampurias. No Italian Dressel 2-4 shipwrecks have been reported for the coasts of this province, either. As will be demonstrated in Chapter Four, Spain had a large wine cultivation and export market established already during the first century B.C.; perhaps wine imports to that province after initial exposure to the Dressel 1 were not so crucial.

Although Spain and France knew and had begun to produce Dressel 2-4s by the end of the first century B.C., the bifid-handled amphora appeared much later in Britain, and then in small but significant numbers. At Fishbourne, for instance, there were almost three dozen examples of varying fabrics during Period I (c. 43-75 A.D.), with a further twenty-one belonging to the late first and early second centuries A.C.[115] The imports of the form to that site did not, therefore, begin until the

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[111]Desbat and Martin-Kilcher, 1989, 344 fig.2: the statistics for Dressel 2-4s at Saint-Romain-en-Gal, by phase, were A (30/20 B.C.) 17% out of 199 amphorae, B (15 B.C./5 A.D.) 21% out of 176, and C (level of abandonment, 15/20 A.D.) 19% of 307.

[112]At Lyons and Vienne, eastern imports as a whole averaged between 10 and 15%: see Desbat and Martin-Kilcher, 1989, 346.

[113]Between SRG 1 and SRG 2, products of Italy decreased from 52% to 21% of the total wine amphorae, while those of Spain rose from 18% to 39%, Gaul from 2% to 17%; Aegean imports constituted between 10% and 15% of the total wine amphorae at both Lyons and Vienne throughout the phases. See Desbat and Martin-Kilcher, 1989, 341 and 346.

[114]Desbat and Martin-Kilcher, 1989, 341.

[115]*Fishbourne* II, 1971, 208.

invasion of Claudius, and continued on in only slightly reduced numbers after the construction of the Flavian palace there. With the exception of one site each in Dorset, Bedfordshire, and Middlesex, and three in Essex, they did not occur on any of the pre-Roman sites at which the Dressel 1 appeared.[116]

The Dressel 2-4's predecessor, the Dressel 1, had gone mostly westward in its distribution. During the first century A.C., Italian wines expanded their market to North Africa and the east, as seen by the number of shipwrecks in those directions. There, the Italian Dressel 2-4 maintained a dominance over Dressel 2-4s of other origins, and moved in on the more traditional eastern wines. Of the hundreds of double-handled amphorae recovered at an underwater deposit at Corinth, the majority were Dressel 2-4, not Coan, amphorae.[117] They must represent the return of Corinth's trading identity after Caesar's foundation in 44 B.C., and the increased importance of Rome to the eastern Mediterranean. Unlike the Lamboglia 2 and Dressel 1, neither the true Coan nor the Italian Dressel 2-4 imitations of that shape had registered at Delos as anything but very rare imports; perhaps both were always shipped through another eastern port.

At Berenice, Campanian Dressel 2-4s first appeared during the Augustan period and peaked during the first half of the first century A.C. at about six percent of the total amphorae, after which they slowly diminished.[118] This pattern of a peak during the early first century A.C. is also consistent with the results of American excavations at Carthage, and probably those of Ostia, as shown by the chart in fig. 17.

The relative proportions of Dressel 6s at Berenice provides an interesting comparison (fig. 18), for it was unknown at the site until the early first century A.C., when they suddenly appeared in quantities almost equal to those of the Dressel 2-4. Thereafter, though, they quickly dropped off, while the Dressel 2-4, with a less dramatic initial appearance at the site, declined much more slowly.

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[116]Judging by the amphora site descriptions in Peacock, 1971.

[117]*Kenchreai* IV, 1979, 108-109.

[118]Riley, 1979, 150.

The great diffusion of the Dressel 2-4 amphora reached much further east to India, most notably to the site of Arikamedu, on the southeast coast of the Indian subcontinent, the most prolific Mediterranean amphora findspot of India. Recognition of the quality and rarity of Indian goods such as spices, oils, and precious raw materials dated back to the second century B.C., when the earliest wine imports to India were carried in true Coan amphorae, which, to judge by their covering in pozzolana cement, may have been used at the time when the port installations of the site were being built.[119] It was not long, however, until Italian imports overtook and replaced the true Coan wine.

Strabo commented upon the habit of shipping quality Italian Aminean and Laodicean wines via Coptos and then the Red Sea to India.[120] His note was echoed by the *Periplus Maris Erythraei*, a "merchant's guide" describing what to ship where in the Erythraean Sea.[121] The Nikanor Archive, actually ostraka that functioned as receipts for wine deliveries, testifies to the transportation of Italian and Laodicean wines also by overland routes from Egypt to Arabia, Ethiopia, and India.[122] It is clear from the types of containers excavated in India that a large amount of the Italian wines shipped there were contained in Dressel 2-4 amphorae from Campania, the main region for Aminean vineyards.[123]

From at least the early first century A.C., this practice of shipping wines through Egypt to the east had grown to involve several aristocratic Roman Egyptians;[124] the measure of their success is the continued engagement of similarly ranked Egyptians in this activity during the third century A.C. One

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[119]Will, 1991, 151, 153-154.

[120]Strabo, *Geog.* XVI, 652.

[121]Rathbone, 1983a, 84. The period during which the *PME*'s anonymous author was writing has been a source of contention, with an incredible range of possibilities: Geremek, 1971, 170, who summarizes earlier opinions by other authors, concludes that a date circa 230 A.D. is most likely. The most recent opinions, such as those of Rathbone, 1983, 84, and Casson, 1991, 8, date it to the mid-first century A.C.

[122]Rathbone, 1983a, 85, who dates the Archive to between 6 and 62 A.D.

[123]Recall that the amphorae of Pompeian origin with stamps sometimes read as Q.CAV SVR were found south of Delhi as well as at sites in Switzerland, a distribution that "throws further light on the importance of India as an integral part of the Roman trading network": Will, 1991, 153, and see also 156 n.11.

[124]Rathbone, 1983, 87, who emphasizes the links with Puteoli of several traders, and assumes that the Aminean wines came via the port at Puteoli. The individuals whom he points out for their involvement include the Claudian Annii Plocami, whom he relates to the Annii of Puteoli, *domi nobiles* at Puteoli and traders for the eastern Mediterranean from the second century B.C.; and Marcus Iulius Alexander, brother to a prefect of Egypt and whose father had possibly been a procurator of the Egyptian estates of Claudius' mother, Antonia.

of these, a prominent landowner in the nome of Oxyrynchus, apparently imported Italian wines to his estate to be mixed with the wines of his own vineyards, and then resold, either locally or to the eastern market.[125]

The Italian Dressel 2-4 has been recovered in most of the provinces of the Roman Empire: Spain, Gaul, North Africa, Germany, England, and the East. Hispania, Gallia, Africa, and Germania had all apparently had exposure to the Italian Dressel 2-4 by the end of Augustus' reign or at the latest by that of Tiberius, the height of Dressel 2-4 production; England and the east by the mid- to late first century A.C.[126]

There is no other wine container identified as having been employed to the same degree during or following the second half of the first century B.C. or the first half of the first century A.C. No other Mediterranean amphora, including the Dressel 1, which had apparently had often gone to several different markets in the west, enjoyed such extensive distribution. Wine transport may have been provided during this period by the Dressel 6, but only on a comparatively minor, short-lived, and less widespread basis.

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[125]The request for Italian wine is contained in the papyrus P. Iandana 99, published and interpreted in Geremek, 1971, 159-171. For pottery manufacture in Egypt based on the evidence of papyri, see Cockle, 1981, and for the economic and agricultural operation of an Egyptian estate, see Rathbone, 1991, especially the discussion of wine jars at pages 303-306.

[126]Panella, 1981, 77.

CHAPTER FOUR

IMITATION OF THE DRESSEL 2-4 IN TARRACONENSIS AND GAUL

Tchernia views the period of the early Empire as one of monumental change in commercial history, a time of reduction for the trade routes that had essentially governed the flow of wine, if not other expressions of goods and culture, throughout the Mediterranean, and an "inversion" of certain trade routes to serve a more localized or specialized area.[1] One of the clearest examples of this reversal in commerce is the imitation of the Dressel 2-4 amphora outside of Italy. The wines carried in these imitations, originating in the western Mediterranean, at first enjoyed a broad consumer base across that part of the Roman Empire, but during the course of the first century A.C., their distribution became more limited and of less consequence quantitatively, until they were replaced by a new type of container, the flat-bottomed jar, that was specifically designed for the new currents of local trade.

Production sites outside of Italy have been identified in varying numbers in a great many of the provinces in which the Italian forms have been found. In almost every case, their productions were closest to the Dressel type 2 amphora, a taller and more slender version than most of the imitation Coan types made in Italy. Despite the protests of Hesnard, it remains the general rule that one of the most notable features of provincial examples is false bifid handles, or single oval-sectioned rods that have a groove down the centre to give the appearance of two rods together.[2]

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[1]Tchernia, 1986, 125.

[2]This feature was first remarked upon by Tchernia and Zevi, 1972, 57. When Martin-Kilcher, 1992, 52, made allusion to this tendency, Hesnard, in the discussion on page 58, argued that the rule was erroneous, that false double-rolled handles occurred in Italy also (see here, for example, Campacci in the Appendix). The fact remains, however, that provincial executions of the form had great tendency to have false bifid handles, whereas in Italy there was not nearly the same rate of occurrence. As Desbat, on page 58, responded "on a 98% des amphores gauloises qui sont pseudo-bifides, ce n'est pas le cas des amphores d'Italie."

Although manufacture of the form has been proposed for a variety of provinces,[3] the two major provincial producers of amphorae like in form to the Italian bifid-handled amphora were Hispania and Gallia. Most of the scholarship in the field of the provincial manufacture of the Dressel 2-4 has been devoted to these two areas, leading to the discovery of many Dressel 2-4 workshops, and increasingly frequent major additions to the body of knowledge within the two fields.

Traditionally, the progression of the adoption of the Coan shape in the west has been viewed as a sequence from Italy to Spain, then Gaul, and finally England.[4] The most recent studies, however, have revealed that, at least in the cases of the first two provinces, the first imitations of the form outside of Italy occurred very soon, if not contemporaneously, with that of southern Campania, in the early Augustan period.

Tarraconensian Dressel 2-4 Production

Although there is some evidence for the production of the Dressel 2-4 in Baetica,[5] it is Tarraconensis that has the clearer and greater testimony in that area. Studies of Tarraconensian production by scholars such as Tchernia, Pascual Guasch, Miró, and Beltrán Lloris have revealed several different lines of manufacture.[6] By 1988, over fifty kilns along the Spanish Mediterranean coast had been identified as having produced amphorae of various types, including the Dressel 2-4, a stark contrast to the smaller number discovered so far in Italy.[7] Most of these kilns centred on the northeastern Catalan coast of Spain, broadly in the area between Barcelona and Tarragona.

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[3]For British imitations, see Castle, 1978; for northern Europe, see, for example, Martin-Kilcher, 1992; for Egypt, Empereur, 1986; for Tripolitania, Tchernia, 1986, 248-249.

[4]Miró, 1988, 78, after Castle, 1978.

[5]See Beltrán Lloris, 1977.

[6]Tchernia, 1971; Tchernia and Zevi, 1972; Pascual Guasch, 1977; Miró, 1988; and Beltrán Lloris, 1990.

[7]Miró, 1988, 12-59, lists these kilns in some depth, attempting, where possible, to supply information for each site with a site description, the amphora types produced there, their fabrics, associated stamps or markings, a date for activity at the site, and a bibliography.

Baetican imports of oil and garum appeared earlier and on a more important basis than did Tarraconensian wine amphorae in levels at Saint-Romain-en-Gal and La Longarina.[8] Once Spanish imports were introduced to such consumption sites in the western Mediterranean, however, they quickly combined with Gallic wines to claim a share of the market previously dominated by Italian wines.

The first major indication of Spanish wine cultivation on a large scale was the fabrication and distribution of wine containers just after the mid-first century B.C.[9] The initial choice of container was an imitation of the popular Italian Dressel 1, called the Pascual 1, or Dressel 1/Pascual 1 (fig. 19). Physically it differed from the Italian shape in having a higher vertical rim, a more ovoid body, a heavy solid spiked toe, and, often, a vertical groove down the handles, giving it a pseudo-bifid handled look.[10]

Unlike the Dressel 1, the Pascual 1 appeared most frequently during the Augustan period; in other words, the height of the Dressel 1/Pascual 1 coincided with the disappearance of the Dressel 1.[11] Not only did its appearance coincide with the cessation of Dressel 1 production, but it also marked the time from which no Mediterranean amphora would ever again achieve such high concentrations quantitatively in its various markets; Italy could no longer claim a monopoly on the western markets.

In general, the distribution of the Pascual 1 was quite similar to that of the main areas of the Italian Dressel 1. It was fairly widespread in the west, from Spain to France, Italy, Britain, and Germany.[12] It was especially important to Gaul, which in the late first century B.C. did not cultivate

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[8]Desbat and Martin-Kilcher, 1989, 340: the development of Spanish wines at SRG was tentative at first and appeared in the second and third phase.

[9]Carandini, 1989, 513, suggests a time frame for the export of Tarraconensian wine in the Pascual 1 of 55 to 40 B.C.

[10]Peacock and Williams, 1986, 93; Miró, 1988, 70.

[11]Tchernia 1983, 102.

[12]Tchernia 1971; Peacock and Williams, 1986, 94.

wine on a large-enough scale to meet its own needs, let alone export surplus, until the very end of the century;[13] wine was distributed throughout the interior by means of the River Narbonne up to Bordeaux. It arrived less frequently at Italy; at La Longarina, for instance, it numbered only fifteen out of the 183 wine amphorae, and certainly was rare in the comparatively later strata of Ostia.[14]

The wines carried in the Pascual 1 therefore never really gained a market comparable in consumption to those of the Dressel 1. It was not long before the Dressel 2-4 amphora became the container of choice in Spain, as a reflection of its popularity in Italy. Just as the kilns of Italy readily rejected the Dressel 1 in favour of the Dressel 2-4, those of Tarraconensis dropped the Pascual 1 for the Coan shape.[15]

In general the Tarraconensian form was closest to Dressel's form 2, and is typified by a thicker rim than the Italic type, often almost to the point of being banded or triangular rather than rounded. Also fairly standard were a longer neck narrowing down, squarer, almost peaked handle elbows, a sharper carination at the join between shoulder and body, and a long, heavy toe, often rounded at the bottom. Relatively infrequent among Italian variants, false bifid handles were fairly typical, although not unfailingly so.[16] If stamped, the mark usually occurred on the toe; less often did it appear on the neck.[17]

The fabric is the most decisive factor distinguishing the Dressel 2-4s of Tarraconensis from those of any other source: it is traditionally a heavier and coarser deep red colour with white

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[13]Miró, 1988, 181; Carandini, 1989, 513.

[14]Hesnard, 1980, 145-146. One must again, of course, question the representative nature of these two sites for Italy in the discussion of an amphora that reached its height at the end of the first century B.C.

[15]Miró, 1988, 70.

[16]As noted by Tchernia and Zevi, 57, 61.

[17]The sources for many of the stamps have been associated with several specific kiln sites. Usually the stamps are between one and four letters; stamps of three or more letters are often ligatured. The most common names are those of Greek and Roman slaves, rendered in Latin; their occurrence in pairs on amphorae in certain instances has in part enabled the identification of their production centres, where the origin of one of the stamps was already known. Large groups of potters evidently worked at the workshops, and some potters worked at more than one; an in-depth study of these operations and relationships would be extremely informative. See Pascual Guasch, 1977, and Corsi-Sciallano and Liou, 1985, 159-166.

inclusions, as defined by Tchernia and Zevi, although more yellowish or brownish colours are known from particular production centres.[18]

An important detail revealed by shipwrecks is the fairly neat break between two specific shapes of Dressel 2-4 manufactured in Tarraconensis. The type used on the earliest wrecks tended to be a small amphora, standing circa 90 centimetres tall, corresponding most closely to Dressel's type 3; those on the later wrecks were taller, over one metre high, and proportionally narrower, closest to Dressel's type 2 (fig. 20). Despite the change in height, the average capacity of these containers did not change; they remained at or close to the canonical 26 litre measurement. The ratio of weight to capacity varied between 1:1.5 and 1:1.98, emphasizing the technical advantages of this Coan type over the Dressel 1B, at 1:1.[19]

Only one wreck containing Tarraconensian Dressel 2-4s could be dated to the first century B.C., and that only barely: Le Grand Ribaud D, off the coast of France, dating between 10 and 1 B.C. On that ship, the major cargo was Italian Dressel 2-4s (226 examples); the fourteen other amphorae included two Pascual 1s and seven Dressel 2-4s from Tarraconensis.[20] Such a balance supports the scene at Carthage, where Spanish imports probably were no more than about five percent of the Dressel 2-4s, the major amphora type in the first amphora wall. By the time of La Longarina, the rate of occurrence had more than doubled to about 13% of the Dressel 2-4s.[21] Evidently the long-distance export of wines in those Spanish containers was just beginning in the last two decades or so of the first century B.C., and slowly increased from that point forth.

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[18]Tchernia and Zevi, 1972, 37; Pascual , 1977, 52, 54. Corsi-Sciallano and Liou, 1985, 14-15, describe in more depth the distinctive fabric and shape.

[19]Corsi-Sciallano and Liou, 1985, 167-168.

[20]See Parker, 1992, 203.

[21]Calculations for Carthage based on information collected by J. Freed at the Musée National de Carthage; for La Longarina based on numbers published in Hesnard, 1980.

The period of greatest importance for Tarraconensian wine exports was the Julio-Claudian period, when it was exported in considerable quantities of Dressel 2-4 amphorae.[22] Out of fourteen shipwrecks of Tarraconensian Dressel 2-4 cargo reported by 1985, all fell after the end of the Augustan period, and largely between the reigns of Tiberius and Nero.[23] These wrecks signify a period of brief but vigorous economic movement,[24] aided by the Piranus family's use of *dolia* on ships transporting wine from Tarraconensis. It was during this period that Spanish imports came to rival the Italian varieties at such sites as Carthage, La Longarina, and the Roman Palatine.[25]

The area of the main consumption of Tarraconensian wines had changed, however. The Italian types had witnessed a change in market at the Dressel 1-Dressel 2-4 changeover; now the Spanish types were doing the same at the Pascual 1-Dressel 2-4 shift. Although Dressel 2-4s were still found throughout the western Mediterranean, including along the Narbonne-Bordeaux axis via the River Garonne, and even in North Africa and Britain, the primary consumption now occurred in Italy, and specifically at Rome.[26] Judging by ancient *testimonia* and *tituli picti* on amphorae at the Castro Pretorio, Romans were regularly drinking the Spanish wines by the mid-first century.[27]

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[22]Miró, 1988, 183.

[23]Dramont B (late Augustan); Planier 1 (c. 15 A.D.); Chrétienne H, Sud-Lavezzi 3/C, Perduto 1 (c. 15-25 A.D.); Cavallo 1 (second-third of the first century); Est-Perduto (first half of the first century); Petit-Congloué, Grand-Rouveau, Les Fourmigues, Diano Marina, Ile-Rousse, Bará, Cala Vellana (all mid-first century). Descriptions of these wrecks and explanations of their assigned dates appear in Corsi-Sciallano and Liou, 1985.

[24]Corsi-Sciallano and Liou, 1985, 171.

[25]For Carthage, see Delattre, 1906; Miró, 1988, 159-160 no.047 A-D; Martin-Kilcher, 1993, 275, Table 2. For La Longarina, Hesnard, 1980. For Palatine, Ciotola in Miró, 1988, 154 no.029 D. Tchernia and Zevi, 1972, 53-54, warn, however, that one should not interpret this strong rivalry as the cause of the decline in wine exportation in Dressel 2-4s from either source, since wine from both sources was consumed at Ostia equally.

[26]Corsi-Sciallano and Liou, 1985, 172. While Dressel 2-4s from Tarraconensis made up 1.6% of the total amphorae from first century A.D. levels at Berenice, the same type at Ostia accounted for 9.7% of the total amphorae in the Flavian period alone: see Riley, 1979, 111.

[27]Spanish wines were commented upon, in varying degrees of admiration and abhorrence, by ancient writers: Pliny, *HN* XIV, 71; Mart., I, 26; , I, 9-10; VII, 53, 6; XIII, 118; Sil., *Pun.* III, 369; XV, 177; Florus, *Vergilius orator an poeta* II, 8; and Juv. V, 29; see Tchernia, 1986, 273. At the Castro Pretorio, *tituli picti*identified the wine type LAVR(onense) (*CIL* XV 4577-4579), and a stamp noted an origin at Saguntum, BC MATERNI SAGYNTO (*CIL* XV 2632; cf. *CIL* II, 6254,9). Zevi, 1966, 215, associates this epigraphy with the Dressel amphora forms 2 and 3 *similis*, supporting the observations on the two types of Coan-type amphorae made above. See Miró, 1988, 153-154, for further Tarraconensian Dressel 2-4 finds at Rome.

After the Julio-Claudian period, the finds of Tarraconensian Dressel 2-4s dropped off rather quickly, both in shipwreck and land attestations. They had declined to only about 6% of the wine amphorae at Ostia by the Trajanic period, and during the second century A.C., they went only sporadically to Rome, its principal market.[28]

According to Miró, the impetus for the growth of wine cultivation and exportation during the first century B.C. was primarily due to the immigration of Italian settlers during that period; in other words, Italians accustomed to the availability of wine at home required that comparable products be made available to them in their new homes. Miró also correlates the commercial success of wine production in Tarraconensis with the economic welfare of its coastal cities and towns; in his opinion, the cultivation of and trade in Tarraconensian wines brought prosperity to the coastal communities. However, before that financial support became available in the first century B.C., and after it diminished in the second century A.C., those centres operated on a much lower economic level .[29]

The welfare of both the vineyards and the settlements was not to end with the decline of the Dressel 2-4 or of *dolia*-ships after the middle of the first century, however. An important new design of wine container was starting to appear in the western Mediterranean from the late first century A.C. This was a flat-bottomed wine amphora, of a capacity not much greater than that of its predecessor, but a vessel that nonetheless was clearly designed for a different type of marketing.

Its thin walls and flat bottom made it inefficient for long-distance shipment in large quantities, but they were ideal for comparatively short-distance transportation up the rivers of the Rhône-Saône trading network, and also for overland transport in carts. Without the heavy toes of amphorae and the necessarily sturdy construction of amphorae like the Dressel 2-4, ring-based amphorae actually offered

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[28]Corsi-Sciallano and Liou, 1985, 172; Miró, 1988, 91.

[29]As accurately summarized for Miró, 1988, 248-281, by S. Keay in Miró, 1988, xi.

a better capacity to weight ratio than did the Dressel 2-4; just as the Coan type had improved the technical aspects of wine transport, the flat-based amphora was recognized for its efficiencies.[30]

The first recognized ring-based amphorae were indeed associated with the *limes* along the Rhine river network. The Haltern 68, as it was called at that findsite, was found at Haltern, Oberaden, and Ensérune, all in contexts dating to the first third of the first century A.C. It proved successful for short-distance haulages, and variants remained in use until the late Empire, carrying the wines of several provinces.[31]

The success of the form encouraged its imitation in Spain; Tarraconensis adopted the similar form, called the Dressel 28 or Oberaden 74, for similar distribution along the *limes*, from the Augustan period (fig. 21). In smaller amounts, they did travel further; ring-based amphorae were among the cargo of the ship that wrecked off La Madrague de Giens, and occurred at La Longarina.[32]

Gaulish Dressel 2-4 Production

During the late Republic, Gaul was a major importer of Italian wines where, according to the dramatic Diodorus Siculus, exploitive traders and their alcoholic consumers considered one amphora of Italian wine fair exchange for a Gaulish slave.[33] Despite this inauspicious beginning, it was not long after those words were written, in the mid-first century B.C., that Gaulish wine cultivation and exportation became a strong force in the wine trade of the Roman Empire.

Although the Dressel 1/Pascual 1 was taken on in a minor capacity by amphora potters in at least three sites in Narbonensis - Aspiran, Corneilhan, and Marseilles - it was the Dressel 2-4 that

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[30]Tchernia, 1986, 282, cites measurements of flat-bottomed amphorae weighing between 9 to 12 kilograms with a capacity of over 30 litres. The ratio of capacity to weight for these specimens is therefore at least 2.5.

[31]Miró, 1988, 91.

[32]Tchernia, 1986, 282.

[33]Diod.Sic., V, xxvi, 1.

Gaulish ateliers more often imitated.[34] New settlement and agrarian patterns in the lower and middle Rhône valley may have provided the stimulus for the increased wine cultivation and export amphora production centres there.[35]

Laubenheimer reported in 1989 thirteen separate Dressel 2-4-producing workshops irregularly operating in the region of Narbonensis, along the Rhône valley; many more have been identified since.[36] As with the Tarraconensian version, the most widely-imitated shape within the Dressel 2-4 group produced in Gaul seems to have been the Dressel 2, with a long, narrow body and thickened rolled rim.

In contrast to its Spanish neighbour, however, the Dressel 4 amphora may have been the early choice at Gallic ateliers. Kilns around Lyons, for instance, produced the same two genres of amphora as did the Cales centre in Campania.[37] The first, Dressel 4 type, called 'Coan' at the site because of its sharply raised handles and small toe, was found at La Favourite in Lyons, dating to the first years of the first century A.C. (fig. 22); the production centre further south along the Rhône at Sainte-Cécile-les-Vignes manufactured this same type during this period.[38]

The second, 'Italic' type was being exported by 15 B.C., as attested by its presence at Saint-Romain-en-Gal, and was the more common of the two at consumption sites. The duration of its production was not long, however, for it was apparently not produced after the Claudian period.[39] Its shape was reminiscent of the type made in the *ager Falernus* in particular, with the high neck narrowing down, a strong shoulder carination, and a toe with characteristic flare to a rounded tip, as seen on Falernians (fig. 22; compare fig. 10). The handles, unlike the majority of Falernian examples,

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[34]Meffre, 1992; Empereur and Hesnard, 1987, 32-33.

[35]Meffre, 1992.

[36]Laubenheimer, 1989; see the volume *Les amphores en Gaule*, 1992, for the most recent identifications.

[37]See Dangréaux, Desbat, Picon, and Schmitt, 1992, for the types of amphorae attributed to Lyons production.

[38]Meffre and Meffre, 1992; this site showed Pascual 1 production being replaced by that of the Dressel 2-4.

[39]Dangréaux, Desbat, Picon, and Schmitt, 1992, 44.

and unlike the Gaulish Dressel 4 type, were typically pseudo-bifid; the shape overall was closest to the Dressel 2. The fabrics ranged in colour from whitish to orange, and from a coarser matrix of common inclusions to a sandy and finer consistency; the last were standard tempering inclusions for the Saône region.[40]

Ateliers in Gaul had therefore taken on the Dressel 2-4 shape from the very beginning of the Empire. The adoption of the form in this province is a little less clear than that in Spain, since identification of the Gaulish production was more recent and is only now being recognized on sites. Nevertheless, its period of production seems to be the same as that of the Tarraconensian form, with tentative adoption during the Augustan period, which was then increased to peak during the first half of the first century A.C.[41]

For the same reason, the distribution of the form is equally uncertain. The evidence for production of this form in Gaul suggests that it generally followed the same *floruit* by the mid-first century A.C. as it did in Spain and Italy, and was exported via the Rhône-Rhine axis, primarily to Italy.[42] Pliny did not regard with great favour the wines of Gaul, but his description of the wines of Beziers, *Baeterrarum intra Gallias consistit auctoritas*, does not negate the fact that Dressel 2-4 amphorae bearing dipinti naming that type were recovered at the Castro Pretorio.[43]

For a termination date, the production by a Narbonensian atelier of forms with false bifid handles in Ponteilla ended around the end of the first century or beginning of the second century

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[40]The origins of the sandy fabrics was determined by Dangréaux, Desbat, Picon, and Schmitt, 1992, 38. Sandy orangish-red fabrics were reported for the kiln at Sainte-Cécile-les-Vignes by Meffre and Meffre, 1992, 29, while the very different fabric with many inclusions in both whitish and orangish colours were attributed to Fréjus by Laubenheimer, Gebara, and Beraud, 1992, 15.

[41]Meffre and Meffre, 1992, 30.

[42]See Laubenheimer, 1989, 106 fig.1; Desbat and Martin-Kilcher, 1989, 339-365. This was the same route that Italian wine amphorae had earlier taken to get to the sites along the *limes*. The monograph of Parker, 1992, contains no mention of a Gaulish Dressel 2-4 amphora, although it does include some identifications of Gaulish flat-bottomed amphorae named according to Laubenheimer's typology; either these forms had very little overseas transportation, or Laubenheimer's relatively new publications of Gaulish production (mid- to late-1980s and 1990) were too recent and considered too unconventional to be used for proper identifications. If the last is true, it in turn casts doubt upon the strength of some of the shipwreck reports. Small amounts of the amphorae reached Carthage: see Martin-Kilcher, 1993, 275, table 5.

[43]Pliny, *HN* XIV, 68; *CIL* XV 4542-4543. According to Zevi, 1966, 215, wines from that region were brought to Rome in Dressel 2 and possibly Dressel 3 *similis* amphorae.

A.C.[44] Identified workshops in Gaul followed a general trend of adoption of the common Mediterranean wine amphora shapes during the first centuries B.C. and A.C., but there was already a growing dissatisfaction with these standard forms at that time.

As early as the beginning of the first century A.C. in some cases, ateliers in the Rhône valley switched to the production of the flat-bottomed Gauloise types that were more ideal for local and overland transport (fig. 23).[45] This pattern, also seen in Tarraconensis, witnessed the last major exports in amphorae from the provinces as they turned to more internalization of wine supplies. Once again, the flat-bottomed amphorae did not travel the great distances that its predecessor, the Dressel 2-4, had. Interestingly, this choice of shape was one not much removed from those that had been produced in southern France by the Etruscans and the Greek colony at Marseilles centuries before, but that had been ultimately rejected in favour of the bigger Italian overseas transport amphorae during the Roman Republic.[46]

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[44]Laubenheimer, 1989, 112.

[45]Laubenheimer, 1989, 105.

[46]See typology charts for Etruscan and Massiliot amphorae during the first centuries of the Greek colonization of the western Mediterranean in Laubenheimer, 1990, 161-163.

CHAPTER FIVE

THE DECLINE AND END OF DRESSEL 2-4 PRODUCTION

The decline of the Dressel 2-4 is much better understood than its demise. On all sites, levels of the type declined from at least the mid-first century A.C. onwards. At Ostia, levels of this amphora group were unusually high in second century A.C.; in the Trajanic period, Italian examples still made up approximately 15% of the amphorae.[1]

The disappearance of the Dressel 2-4 of Tyrrhenian Italy is a more complicated issue, and any treatment of the subject must consider a combination of physical evidence in addition to geographic, environmental, and administrative influences. Consideration of these elements shows that not only did production in certain areas cease quite early, but also that other, sometimes contradictory, evidence demonstrates surprisingly late continued production.

For manufacture in the *ager Caecubus*, the latest consular date attested is 24 A.D.;[2] certain identifications by other means, such as fabric analysis, are lacking. The construction of Nero's canal had already devastated local viticulture by Pliny's time, including cultivation of the renowned *Caecubum*.[3] Nero's plan never came to fruition, but there is no sign of an attempt to restore the vineyards of former prestige.

To the south, however, wines were just coming into vogue in the area of the Bay of Naples. One of these, *Gauranum*, from the Mons Gaurus above Puteoli, was first mentioned by Pliny the

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[1]Tchernia, 1986, 261, based on *Ostia* III, 682 and Panella, 1981, 65 and 75.

[2]*CIL* XV 2, 4568.

[3]Pliny, *HN* XIV, 61.

Elder.[4] Florus rated it highly, and, about a century after Pliny wrote about it, Marcus Aurelius praised *Gauranum* as a quality wine.[5] Physical evidence for its commercial sale lies in *tituli picti* on two Dressel 2-4s, with consular dipinti for the years 43 or 47 A.D. and 88 A.D.[6]

The eruption of Vesuvius in 79 A.D. is considered by Purcell and, to a lesser extent by Tchernia, to mark the end of large-scale viticulture in southern Campania.[7] The effects of the eruption were not so far-reaching, however, that they eradicated viticulture in Surrentum, a major wine-producing area at the bottom of the Bay of Naples, nor, judging by the Domitianic dipinto on the *Gauranum* amphora above, the vineyards at the other end of the Bay of Naples. In addition, any soil of volcanic ash contains prime nutrients ideal for agriculture of all kinds; although Pompeii itself was not reinhabited on any sizeable level, other areas devastated by the eruption were reinhabited and re-cultivated, and the Bay of Naples as a whole continued its pre-eruption activities.

Then, in 92 A.D., a bumper crop of wine coincided with a very poor grain harvest. In reaction, Domitian declared a moratorium on the *vinearum studium* at the expense of wheat, as he perceived it. No new vines were to be planted in Italy, and the number of vines in the provinces was to be cut in half.[8] The overall effect of Domitian's edict was not as great as might be imagined, for, according to Suetonius, Domitian never executed its requirements;[9] in other words, the production of wine in Italy may not even have been affected by his supposedly drastic measures.

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[4]Pliny, *HN* XIV, 61. Other new Campanian wine cultivations described by Pliny, *HN* XIV, 69-70, but as yet unsupported in the archaeological record, were *Trebellicum* (near Naples), *Caulinium* and *Trebulanum* (near Capua).

[5]Florus, I, xi, 5 (probably writing under Hadrian); Fronto, *Ad M.Caes.* IV, 4.

[6]*CIL* IV 2, 5511; *AE* 1991, 553 and Ceglia, 1991, especially 274, figs. 36-37 (my thanks to Dr. Haley for bringing this inscription to my attention). On the second inscription, the reading of the marking was incomplete. The consular date was clear by comparison to other examples found at the site, but the second part was unparalleled. As it was published, *Gauianum* was suggested to be a *fundus* near Rome, but the description of the amphora, "de production campanienne", is contradictory to such an origin. The reading of the word should be *Gauranum* instead.

[7]Purcell, 1985, 12; Tchernia, 1986, 232-233.

[8]Suet., *Dom.* VIII, 7; Stat., *Silvae* IV, iii, 11-12.

[9]Suet., *Dom.* VIII, 7: *nec exequi rem perseveravit.*

Nevertheless, both amphora and survey evidence suggests that the Flavian period marked the turning point towards a decline in - but not a demise of - viticulture on a mass-production level in at least some parts of Italy, and, in consequence, manufacture of the Dressel 2-4.[10] Hesnard and Lemoine attribute the cessation of Dressel 2-4 production at Sinuessa in the *ager Falernus* to this period, based on the presence of amphorae from that source at Pompeii and Herculaneum.[11] Those closed contexts, however, indicate the continued success of the amphora and its wine, rather than its demise, in 79 A.D. The silting-up of the harbour at Sinuessa has also been blamed for the decline in wine exports from the *ager Falernus*, albeit in a much more gradual process, but with devastating economic effects for that community.[12]

Indeed, physical evidence suggests that manufacture of the Dressel 2-4 continued into the second century, although it did largely cease during the first half of that century. Within that timespan, everyone has their preferences for a specific termination: while Callender decisively asserted that production of the form did not occur after 130 A.D.,[13] a Trajanic date is preferred by Panella, Paterson, and Finley.[14] Zevi considers a consular *titulus pictus* read by Dressel and dated to 146 A.D. a sign of abnormally late manufacture.[15] In agreement with this assessment, Tchernia acknowledges certain instances of Dressel 2-4s in second century contexts, but interprets them as mostly residual. Once again, Ostia provides the 'proof': in strata dating after the reign of Marcus Aurelius and throughout the second half of the second century, Dressel 2-4s are practically absent (fig. 17).[16] On the whole, most agree that production had ceased by the mid-second century.[17]

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[10]See, for instance, Tchernia, 1986, 261 and 284; Peacock and Williams, 1986, 27.

[11]Hesnard and Lemoine, 1981, 260; hence their termination dates for the kilns around Sinuessa (see Appendix).

[12]Arthur, 1982, 32, and 1991, 101.

[13]Callender, 1965, 12.

[14]Panella in *Ostia* III, 499. Although Panella quotes several 'later' finds of Dressel 2-4s at other sites, she interprets these examples as exportations of older wines, or residual material; her reasoning convinced Paterson, 1982, 150, and Finley, 1985, 21.

[15]Zevi, 1966, 215, on *CIL* XV, 4585.

[16]Tchernia, 1986, 261, based on *Ostia* III, 682 and Panella, 1981, 65 and 75.

[17]Cf. also Woolf, 1992, 286 and Peacock and Williams, 1986, 106.

There is other archaeological evidence to explain the decline of this amphora form. Both north and south of Rome, there is a pattern of abandonment of wine presses, indeed of entire farms and villas, beginning at the end of the first century and continuing throughout the second century A.C. At the Settefinestre villa, near Cosa, viticulture was apparently discontinued in favour of cereal cultivation, but the villa itself was abandoned shortly thereafter, by the end of the Antonine period. The same pattern, with few exceptions, is visible further north in the Albegna valley, as well as closer to Rome in the *ager Veientanus*.[18]

The same fall into disuse occurred in northern Campania. Kiln sites first moved inland and diversified their products; specialization in amphorae was no longer an option, and, by their shrinking numbers in proportion to other kiln products, they were not even a major product any longer. Between the first century B.C. and the early first century A.C., rural sites were abundant in the area (fig. 13), but by the end of the first century, their habitation and use decreased, until "by the third century less than a third of the sites were apparently still functioning."[19] Those sites that did survive were the ones that worked towards self-sufficiency in agriculture, not specialization to meet the demands of a removed market.[20]

The reasons for this change must have been multiple. The slave-based system had become less cost-effective and advantageous from the first century A.C.[21] In addition, land confiscations in the name of the Emperor claimed more and more prime farmland;[22] the cultivation of grain replaced that of vines. From the archaeological evidence, it appears that when rural properties became the prerogative of a few wealthy owners in the form of *latifundia*, the soil was not used to its full agricultural potential. Once properties came to be treated as expressions of wealth and power, or real

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[18]Tchernia, 1986, 265; Arthur, 1991, 84.

[19]Arthur, 1991, 84.

[20]Arthur, 1991, 102.

[21]Garnsey, 1980, 35; Carandini, 1989, 513.

[22]For procurators of the *tractus Campaniae*, for instance, see the brief discussion and bibliography in Arthur, 1991, 83.

estate to be used to political advantage, their basic functional uses suffered. Smaller farmers and landowners, including the veterans who had been settled in the countryside during the first century, were pushed out by the confiscations and the concentrations of wealth.

External factors were also at work. For the vineyards in particular, the increasing self-sufficiency of the provinces had removed a market that had been guaranteed under the Republic. From a peak in the first centuries B.C. and A.C., shipwrecks drastically declined; sea-trade never again in ancient times attained such heights (fig. 24). This decline ties in directly with the internalized production and distribution of agricultural products such as wine, as over half of the ships that sank in the Mediterranean had been carrying amphorae as their cargo.[23] Regional distribution of goods, by river or road, had taken on a new importance; the construction and paving of the *via Domitiana* and the *via Hadriana*,[24] for instance, allowed inland settlements in northern Campania such as Suessa Aurunca to prosper, rather than be cut off from supplies and means of exchange.

Despite this physical evidence for a decline in Italian wine production and exportation, there are now known several unusually late attestations of Dressel 2-4s at consumption sites from Gaul to Asia Minor. Dated by their contexts to a wide range of dates between the second half of the second century and the last quarter of the third century, these amphorae were found at Salamis (Cyprus), Gözlü Kule (Tarsus), Via Gabina (near Rome), Saint-Romain-en-Gal, and Corinth.[25]

These finds raise a question about pottery reports from other sites at which the excavators, following the more traditional dating methods for the Italian Dressel 2-4, interpreted fragments from second and third century contexts as residual. At Ostia and Berenice, for example, Dressel 2-4s were still present in third century layers (see fig. 17).

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[23]Parker, 1992, 20; the next largest homogeneous cargo group was pottery other than amphorae, at 15%.

[24]Arthur, 1991, 47-54, discusses the road network of northern Campania.

[25]Salamis: Calvet, 1972, no. 111 (Inv. 163 = A 5) and fig. 121, no. 112 (Inv. 296 = A 9) and fig. 122. Gözlü Kule: *Tarsus*, 274, no. 793 and fig. 162 no. 793. Via Gabina: Freed, 1989, 616-617. Saint-Romain-en-Gal: Desbat and Savay-Guerraz, 1990, 203-213. Corinth: Williams and Zervos, 1985, 56-57.

In all of these late cases, the fabric descriptions - ranging from a meagre one- or two-word colour description to a more comprehensive and analytical report[26] - identify the western side of Italy as the source of these vases. The clearest recognized origin is for the examples at Saint-Romain-en-Gal, for which, on the basis of both visual and chemical fabric analyses, two sources in Campania were identified. For the most part, the largest lot of amphorae (fifty-two examples) recalled the Eumachius type Dressel 2-4s in fabric; the second major lot (twenty-eight examples), while still in the volcanic Italic fabric and Campanian shapes (mainly Panella and Fano Group 4), did not share the distinctive Eumachius fabric. In addition, several examples bore dipinti in paints characteristic of Pompeii; one of these read SVR(rentinum vinum).

The common links between the amphorae from these various sites are the location and appearance of their stamps, which, while not ubiquitous, exist in enough numbers to warrant consideration. In each case, the stamp is on the neck, below the rim; stamps from Latium and Campania in Julio-Claudian times were more likely to occur on the handles. The second unusual trait is a rectangular two-line binomial stamp, or a combination of two such stamps, in several cases clearly delineating the relationships of the persons named. These markings were not normal for Late Republican or Early Imperial amphorae from central and southern Tyrrhenian Italy.

In general, the presentation of the neck stamps, in terms of format, is very similar to that used for Roman bricks during the second and early third centuries A.C. On such bricks, binomial stamps referred to the *dominus*, regularly a person of senatorial status, whose name was rendered in the genitive, and the *officinator*, or manager of the workshop, whose name appeared in the nominative.[27]

Thus, the stamps on two Dressel 2-4s from Via Gabina and one from Salamis, CORNELI POLLIO(nis) \ SILVANVS.F(ecit), signal that Silvanus was the *officinator* for the pottery centre of

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[26]In Calvet, 1965, fabric descriptions were limited to a cursory description of the fabric colour; the Saint-Romain-en-Gal examples were examined at the macroscopic level.

[27]Helen, 1975, whose observations were applied to amphora stamps by Freed, 1989, 616.

Cornelius Pollio (fig. 25). Understandably, Silvanus is unknown in the epigraphical tradition, but his *dominus* was possibly C. Iaviolenus Calvinus Geminius Capito Cornelius Pollio Squilla Q. Vulcacius Scuppidius Verrus, whose extensive political career included a consulship under Hadrian or Antoninus Pius.[28] An inscription naming this man and his titles was found on a marble base within ten kilometres of the Via Gabina site.[29] The appearance of the letters on this stamp is consistent with those on brick stamps, dated to the first half of the second century A.C., and is thus in keeping with the suggested identification of the *dominus* here.[30]

The same formulaic presentation had been used on amphora and brick stamps at the Felline pottery centre of Pullius before the mid-first century B.C. There, however, since there were at least five names combined with that of Pullius, the relationship seemed more one of potter-*dominus* than *officinator-dominus*.

The subsequent shift of Dressel 2-4 production to the Tyrrhenian coast, even after as many as three centuries, may not have changed this formula. For example, three amphorae at Saint-Romain-en-Gal bore the two-line stamp REDEMPTVS \ CL.CLADI. The name of the *dominus* here, possibly identifiable as Tiberius Claudius Claudianus, consul circa 200 A.C.,[31] also appeared on two amphorae at Via Gabina, but in the combination AMPLIATVS \ CL.CLADI (fig. 25). Redemptus and Ampliatus could have been, according to the brick formula, successive *officinatores* of the workshop, or even of two separate kilns owned by the same man; alternatively, following the pattern of the Felline amphora stamps, they could both have been the potters who made the amphorae.

The same situation, although in a slightly different format, occurs on amphorae stamped CAEDICIAE \ M.F.VICTRICIS, known from examples at Rome, Florence, Terracina, and Carthage,

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[28]Freed, 1989, 616, based on *PIR*² I 13.

[29]*CIL* XIV 2499, found in the *ager Tusculanus*.

[30]Dressel in *CIL* XV, 1, p.2, whose criteria were used by Freed, 1989, 616.

[31]*PIR*² C 834, associated with the person named on this stamp by Freed, 1989, 617: Tiberius Claudius Claudianus, originally an equestrian, rose to the position of consul suffectus or was adlected *inter consulares* in 199 or 200 A.D.

and in contexts dated to the third century at Corinth and Saint-Romain-en-Gal. Although the precise identification of this person is not known, the family name was an important one from late Republican times onwards in the *ager Falernus*, in administrative, proprietary, and commercial aspects; furthermore, a woman named Caedicia, along with her husband, Flavius Scaevinus, was among those exiled from Italy by Nero in 65 A.D.[32]

At least three people worked under Caedicia Victrix, as indicated by the combination of her stamps with theirs on the necks of Dressel 2-4s. The name of the first was on an illegible stamp found at Carthage. The second was MARTIAL SER(vvs), as found on amphorae at Rome and Saint-Romain-en-Gal; another fragmentary example from Salamis may also be the same.[33] The third stamp read DIONISIVS \ S.E.R(vus), and is only attested at Corinth. The slave status of these persons does not exclude the possibility that they were *officinatores*, but positions as potters seems more likely.

There are, therefore, still examples of important senatorial, if not consular, personages manufacturing Dressel 2-4s in Tyrrhenian Italy long after that amphora type had supposedly disappeared. Their existence is especially significant in the case of the two lots of southern Campanian amphorae at Saint-Romain-en-Gal. Such origins for late Dressel 2-4s call into serious doubt the entire interpretation of Campanian viticulture, for, as discussed above, it has been assumed that the Vesuvian eruption, reinforced by Domitian's edict of 92 A.D., devastatingly and permanently obliterated the vineyards of the Pompeii region.[34]

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[32]This formula appeared on amphora stamps noted in Callender, 1965, 86 no. 218 (= *CIL* X 6252; *XV* 3424; *XI* 6695, 25; *VIII* 22637, 23; *II* 73, 3). One Caedicius was *duumvir* at Sinuessa before the Augustan period, and that name was given to *tabernae* along the *via Appia*, a *vicus* near Sinuessa, and a *campus* on the Massico. Ancient attestations of the name appear in Pliny, *HN* XI, 241; XIV, 62; and Tac., *Ann.* XV, 71. The best prosopographical source for this name is Manacorda, 1985, 143-144, who added further related inscriptions; see also Johannowsky, 1975, 22, for further evidence of the family's political activities in the area of Sinuessa.

[33]Less likely to be related are five examples of the stamp MARTIALIS, with the two initial letters sometimes ligatured, listed in Callender, 1965, 176 1024.

[34]The resin lining preserved on several examples at Saint-Romain-en-Gal is strong support for the continued use of these vessels for the transportation of wine: see Desbat and Savay-Guerraz, 1990, 206.

Evidence for Dressel 2-4 manufacture after the early third century has not been identified. Nevertheless, several of the major vintages of Italy were still fairly widely available by the time of Diocletian, who, in his Price Edict of 301 A.C., fixed prices on standard measurements of some of the long-familiar wines of the Tyrrhenian coast, including *Aminneum, Setinum, Surrentinum, Falernum,* and three others (2.1.1a-7).[35] The Edict assigned the same price, thirty *denarii* per *sextarium* (roughly one pint), to all of these wines; evidently Falernian wine, as predicted by Pliny, had declined in quality from its top ranking to equal ranking with the other wines. Among alcoholic beverages of lesser quality, *vini rustici* cost eight *denarii* per *sextarium,* and Pannonian or Celtic beer four (2.1.10-11).

In comparison, a farm labourer earned 25 *denarii* per day, a shipwright sixty per day for sea-going vessels or fifty per day for river boats, a barber two per man, and a brick potter two daily for every four bricks and for clay preparation (7.1.1a, 13-15, 22). In consideration of these wages, the wines mentioned by name in the Price Edict were well beyond the means of the majority of the populace, even if the dilution of wine with water extended the use of one *sextarium.*[36] Nevertheless, there was a market for them.

How, then, were these wines being transported? Tchernia in 1980 suggested that from the Trajanic period there was a general turn toward either containers unidentified as of the time of his publication, or an increased use of wineskins and barrels.[37] More recently, however, excavation finds have led Arthur in particular, but also Tchernia himself, to identify the probable successor to the

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[35]The text used here for Diocletian's Price Edict is that of Giacchero, 1974; see also Frank, 1940, 307-421 (Appendix).

[36]The same conclusion is reached by Arthur, 1982, 33.

[37]Tchernia, 1980, 307. For depictions of these containers in art, see Unwin, 1991, fig. 24 for a wineskin in an ox-cart and Tchernia, 1986 figs. 2, 4, and 5, for barrels.

Dressel 2-4 as the flat-bottomed amphora, the same form to which the wine trade of Tarraconensis and Gaul had turned.[38]

This slow process of Dressel 2-4 replacement may have begun in Italy in much the same way as the imitation Coan amphora had replaced the Dressel 1 there, for flat-bottomed amphorae have been identified as products of the Campanian Dressel 2-4 kilns at Forlimpopoli (fig. 26) and possibly the estate of Maesianus Celsus. Similar amphorae were also made in Umbria at sites such as Spello, and in the Po valley, including kilns along the *via Aemilia*. These amphorae apparently tend in excavations to appear either close to their production site or at Rome, a tendency which supports the idea of an internalization of the wine trade.[39]

Just as the Dressel 2-4 had marked certain technical advantages over the Dressel 1, the flat-bottomed amphora did the same over its predecessor. The better capacity to weight ratio and the flat base also facilitated transportation overland, apparently a much more important method of distribution during the middle and late Empire than in previous times. These amphorae, however, possibly never approached the Dressel 2-4 in quantitative output.

This distribution of wine on a much smaller scale accompanied rises in the cost of wine. Diocletian's Price Edict makes it clear that by at least 301 A.D., only quality wines travelled outside of their *ager* of origin and, in doing so, commanded prices of almost four times what a person would pay for a local ordinary wine. These cost increases in turn may have resulted from the substitution of "more insular and parochial labour-forces" for the previous 'industrial' villa- and slave-based practices, as seen in the move inland and diversification of products of kilns.[40]

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[38]Arthur, 1991, 76; Arthur and Williams, 1992, 254-255; Tchernia, 1986, 282. Arthur and Williams have also recognized a pointed-bottomed Dressel 2-4 derivative which may have carried Campanian wine between the second and early fourth centuries, but this type (their 'Falernian-type') was a unique shape local to inland Campania. Panella, 1989, also identifies further regional types that appeared from the second century.

[39]Tchernia, 1986, 258-259 and 1993, 287; Arthur and Williams, 1992, 251.

[40]Arthur and Williams, 1992, 254.

The chronology of the appearance of flat-based amphorae throughout the Empire is still rough. Arthur, for instance, asserted that the form was first produced in Campania, and then adopted in the provinces. For him, this order of appearance had seductive appeal because it continued the pattern of adoptions by the provinces of previous southern Tyrrhenian shapes, the Dressel 1 and Dressel 2-4, thereby "further reinforcing the concept of the exportation of a whole productive system (including the slave mode of production and techniques of viticulture) by Italian landlords who acquired properties in these provinces."[41]

His argument, however, ignored the appearance of Gaulish amphorae in contexts as early as the cross-over between the first centuries B.C. and A.C. at Sainte-Cécile-les-Vignes and Nîmes (Laubenheimer's form Gauloise 2), and before the middle of the first century A.C. at Saint-Romain-en-Gal (Gauloise 1),[42] versus contexts of not earlier than the mid-first century A.C. for Italian examples.[43] Arthur's idea that the origins of the shape lay in Italy also contradicts his own subsequent suggestion that flat-based amphorae in Gaul originated in response to "the need to transfer Italian wine from maritime transport containers (amphorae or dolia) to river and land transport containers."[44] By this more practical logic, their appearance in Gaul was motivated by reasons independent of whatever regional developments were occurring in Italy, and may even have come to influence Italy itself. The appearance of flat-based amphorae symbolizes the decentralization of the Roman economy.

The lifespan of the Dressel 2-4 amphora and its reflection on Italian wine production is therefore a complicated issue. Since the period of known examples is characterized by a growing decentralization towards relative provincial and even regional independence, the disappearance of the Dressel 2-4 cannot be approached as if it were a unified and gradual but contemporaneous

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[41]Arthur, 1991, 76.

[42]Meffre and Meffre, 1992, 28-32; Laubenheimer, Schwaller, and Vidal, 1992, 140; Desbat and Dangréaux, 1992, 153 fig. 6.

[43]Cf. *Ostia* II form 521 / *Ostia* III form 369-370.

[44]Arthur, 1991, 76.

'eradication'. Beyond the eventual bowing to social and economic pressures, it was obviously not the case that all workshops simultaneously dropped the form. The search for precise encompassing dates for its production is therefore ineffectual.

Clearly, however, levels of Dressel 2-4s, after peaking before the mid-first century, began to drop rather quickly around the Trajanic period, and certainly had diminished to a very small output by the mid-second century, coinciding with drastic changes to the identity of the Italian countryside. The main lifespan of the amphora thus fell between the Augustan and Antonine periods, which Purcell describes as the height of Italian wine production,[45] when the vintages of Italy went to sites throughout the Mediterranean and catered to members of every social stratum.

[45]Purcell, 1985, 12. Purcell's statement, that "the nature of the [later] Antonine material makes it abundantly clear that the [wine] trade flourished for a century and a half after the demise of the last identifiable amphorae" is an exaggeration at best, given the conclusions reached above for the continued production of the Dressel 2-4 into the second century.

CONCLUSIONS

Observations

Inconsistent attention to detail has been one of the greatest obstacles to this attempt to survey the production of the Italian Dressel 2-4 amphora. One of the biggest problems in the modern sources has been the lack of distinction between a Coan and an Italian amphora, a confusion in identification that could have drastic repercussions on the interpretation of a site. Since the shapes of the amphorae from those two sources are so similar, one cannot rely upon form identifications alone. Confusion among products native to Italy, due to reliance upon form, is also apparent. In the past, unfortunately, the emphasis has been on exactly that manner of identification, by shape.

There are certain types of information that should be considered essential to any amphora description, but that often have been ignored in the past. What follows is not an attempt to create a perfect pottery report, but rather select examples of often overlooked details that should be included in a pottery report if a better understanding of the vase is ever to be gained. Examples of the problems and of the application of information are included to illustrate the points.

Fabric. The first key of discretion in any pottery report should be the fabric, best described on the three levels of visual, microscopic, and chemical analysis. The clays of the Greek islands are very different than those of Italy, even allowing for variables in firing and clay tempering; yet this fairly clear distinction is too seldom made. In addition, there are large enough regional variations in the clays of Italy itself to make detailed fabric observations worthwhile. The identification of locally-made amphorae versus those imported from elsewhere in Italy or from the provinces is extremely

important for a complete understanding of the socio-economic dynamics of a given site.

Shape. Shape is not unimportant, however. Examination of kiln sites throughout the areas of Dressel 2-4 production demonstrates that the earliest versions were of the Dressel 4 type, produced at the southern Apulian and northern Campanian kilns in the first half of the first century B.C. The Dressel 4 type, closest to the original Coan form with its small toe, was also the earliest version produced in Narbonensis near the end of the first century B.C. Southern Campania adopted the Dressel 3 type by the second half of the first century B.C., followed by Tarraconensis by the last quarter of that century. The Dressel 2 type, however, was the primary choice of both Tarraconensis and Narbonensis in the first century A.C. Over time, in general, the toe became longer and heavier, and the rolled rim became thicker. In each of these cases, the fabric description eliminates confusion as to the exact origin.

However, if the shape of the amphora does not easily fit into Dressel's typology, especially in the case of a fragmentary example, one should not force the issue. For instance, the publication of the Brignano Frascata kiln site identifies production of Dressel's types 2 and 3 there, but the amphorae illustrated actually bear little resemblance to those types; the insistence upon association with a particular Dressel form in this instance is therefore wrong.

If identifications use a typology other than that of Dressel, the alternate categorizations should be clearly defined and consistent. If, furthermore, it cannot offer new insight into the amphora shapes, an established classification system is preferable to the creation of yet another one of limited usefulness. At present, the typology of Panella and Fano is the best alternative, especially since it combines fabric descriptions with shape definitions. Nevertheless, one must realize that their classification system has its own short-comings, and does not include variants from every area for which Dressel 2-4 production has been identified.

Measurements. Depending on the state of preservation of an amphora recovered on site, dimensions such as rim and maximum body diameter, total height of the body, and height and diameter of the base (toe) should be the minimum observations made; more detail is needed if a system like that of Panella and Fano is used. An attempt should be made to assess the capacity of the amphora, at least to determine whether it fits the 26 litre canon or a 'mini' 19 litre version. The production of 'mini' Dressel 2-4s at sites like Brignano Frascata in Liguria and Masseria Zannini in the *ager Falernus* is intriguing, but unless such variants are reported at findsites, their significance cannot be understood. Attention to a detail like wall thickness will also segregate Dressel 2-4s from the earlier, thicker-walled Republican amphorae that may share the same fabric and even toe shape.

Markings. For the Dressel 2-4, reliance upon stamps and *tituli picti*, though not as compulsive or exclusive as seen in traditional Greek amphora studies, still forms an integral part of the study. Comparanda of Dressel 2-4 stamps with those of Lamboglia 2 and Brindisi-type amphorae have allowed the identification of the origins of the Dressel 2-4 form in Italy on the east coast from the early first century B.C. Comparisons with Dressel 1 stamps have demonstrated the same adoption of imitation Coan vessels at Republican kilns on the Tyrrhenian coast from the second quarter of the first century. Furthermore, it is stamp identifications that have pointed out the integrity of the form right through to the Severan period in Italy, with a distribution reaching beyond the bounds of the Mediterranean.

Such mass production of wines, by virtue of the amount of land needed to support the industry alone, had to have been a pursuit of the wealthy. Amphora stamps provide the proof: despite bans on senatorial commercial involvement, the stamps make it explicit that senators and even consuls partook in the wine trade. As shown in Chapter Two, Cato advised his fellow landowners that viticulture was the best way to realize a profit on a farm; it was largely landowners of senatorial status and *domi nobiles*, not subsistence farmers, whom Cato was addressing. The stamped evidence does

not make it clear, however, if these notable figures owned the vineyards or the kilns, or both. In certain other cases, such as those of the Pirani and of Veveius Papus, the people whose names appear on stamps also appear to have had interests in the ships that took the wines to Gaul and Spain.

Stamps additionally offer a different picture of the development of amphorae in Italy than do amphora forms alone. After Graeco-Italic production ended during the second century, there emerged a clear split between eastern and western Italy in terms of the development of wine amphora shapes; the east turned to the Lamboglia 2, and the west to the Dressel 1. Even though both parts of Italy produced the Dressel 2-4, the eastern manufacture of that form was not long-lived. There are certain indications, however, that the production of the east and the west cannot be segregated so easily. Figures like P. Veveius Papus and the Cornelii Lentuli apparently owned kilns and property on both sides of Italy.

Other men like P. Vedius Pollio and P. Plotius Tucca, with their connections to the Aegean east and their personal associations with Augustus, had the ability to reinforce the acceptance of the imitation Coan form at important new colonies such as Carthage. In this case, the foundation of Carthage, it is clear that certain people in high places were given advantages when it came to the opening of a new market: the wines carried in the containers stamped L.EVMACHI and MAESCELS were among the first to meet the needs of that market, and the concentration of their amphorae at Carthage is unparalleled at any other Dressel 2-4 findsite.

The second and third century A.C. productions of people like Cornelius Pollio and Claudius Claudianus are interesting for their promotion of a senatorial name at a time when much of the rural land in Italy was under Imperial ownership. The presence of their Dressel 2-4s in third-century contexts shows that wine exportation continued, although the handful of examples is sign of a great reduction of that practice. These instances, however, serve as strong admonishments to excavations

which exercise little caution in distinguishing residual from contemporary materials in mid-Imperial contexts.

Consumer. In the case of Carthage, the importation of Italian wines is explicable, in that it was Italians colonizing the city. In other cases, the delineation of the consumer is not so clear. For instance, Dressel 2-4s travelled up the Rhône-Rhine axis, following the *limes*. Were they bought by the camps, by the associated settlements that grew up around those camps, or by the locals?

The question is perhaps best answered by a consideration of the Dressel 1 amphora. During the height of Dressel 1 trade, in the early to mid-first century B.C., millions of Dressel 1s went to the *limes* alone, and Gaul in particular. The Dressel 1s were truly examples of mass production in the ancient world, not only of amphorae, but of wine also. These Republican amphorae signalled a change in the availability of wine to consumers both within and outside of Italy. It is likely that the Dressel 1 was exported originally for consumption by Italians abroad, but its sheer numbers attest that wine, a basic medium of Roman culture, soon reached the indigenous cultures. Its importance is especially clear in Gaul, where the wine was imbibed undiluted, and the demand for Italian wines led to the importation of literally millions of Dressel 1 amphorae. Dressel 2-4s then carried on and even expanded the distribution of Italian wines to such sites, which are referred to by such scholars as Peacock and Panella as the *limes*. The traditional use of the term *limes* carries with it strong overtones of a Roman military presence in *castra* along the frontier; in reality, sites along the Rhine must reflect a more indigenous consumer base.

Conclusions

From Republican times, Italy set the standard for wine amphora containers in the western Mediterranean. When Italy's Dressel 1 flooded the market, Tarraconensis and Narbonensis copied the

form for their own wine export containers, the Dressel 1/Pascual 1. When Italy changed to the use of the Dressel 2-4, the same process of imitation occurred in the western provinces.

Long before the second half of the first century B.C., the period during which the Dressel 2-4 fully replaced the standard type, wine was a Roman convention. Especially during the Augustan-Tiberian period, Italian wine travelled in Dressel 2-4s to every province, from Britain to India, and to sites of very different identifications, from inland *villae* to military camps in the provinces to the wine shops of Pompeii. The wines that it carried to these sites varied not only in origin within Italy, but also in quality. The ability of wine traders to cater to consumer demands was amplified even more when, between the end of the first century B.C. and the middle of the first century A.C., *dolia* were built into ships for the mass transportation of wines.

Sometime during the reign of Augustus, however, the wine trade of the western Mediterranean began to change. What had previously been a market dominated by Italian exports quickly became one dominated by Tarraconensian and, to a lesser extent in terms of current information, Gaulish exports. This reversal reached its pinnacle in the next change in the wine trade, with every part of the western Mediterranean becoming largely responsible for its own wine needs. Especially during the second century, the wine supplies were regionalized; there was no great reliance on imports of the ocean-going wine trade any longer, as reflected in the shipwreck evidence. Flat-based amphorae and the other types that appeared thereafter were only intended for fairly local or regional transportation. This inward view was apparently not an inspiration of Italy this time, but of the provinces, in their replacement of the Dressel 2-4 with flat-based amphorae.

The disappearance of the last major Mediterranean export amphora accompanied great changes in the infrastructure of the Italian countryside. After approximately the middle of the first century A.C., and especially from the turn of the first to the second century, levels of Dressel 2-4s dropped dramatically at all sites; by the reign of Antoninus Pius, production had diminished to very

low levels. This decline was accompanied by a general pattern of farm abandonment down the Tyrrhenian coast as ownership of rural lands became concentrated in the hands of the few. Italian viticulture, though injured by this progression, managed to maintain several of its prized vintages, as attested by their mention in Diocletian's Price Edict of 301 A.C.

The selection of the Coan amphora shape itself on the surface appears to be a sign of the late Republican taste for Hellenistic culture. However, the Hellenistic look of the amphora was not its main asset; nor was the change in shape particularly indicative of its contents, whether or not its initial use was to carry factitious Coan wine. Rather, it was economic and technical aspects that were the form's main advantages. The shapes of the Dressel 2-4, of the shipboard *dolium*, and of the flat-based amphora, were chosen for functional reasons, and reflect the efficiency of the wine trade from the Dressel 2-4's introduction in the late Republic to the survival of flat-based amphorae beyond the end of the Roman Empire.

APPENDIX: DRESSEL 2-4 KILN SITES

The sites listed below are those that have been published as production centres for the Dressel 2-4 amphora in Italy. In an effort to present a systematic synopsis of each kiln, information appears in the following order of presentation: location, evidence for ceramic production, products of the kiln, fabric, suggested date, other items of note, and bibliography. Those sites along the Adriatic coast are listed first; on the Tyrrhenian coast, the general order of presentation is north to south. Any inconsistencies in degree of description result from the individual goals of those publishing the sites, and from the fact that most of the sites are only known through ground reconnaissance, instead of thorough excavation. As such, in cases where very close clusters of kilns have been located through survey work, their descriptions here have been combined to form one entry, as in the case of the sites near Mondragone lying at between 14.75 and 16.0 kilometres along the *via Domitiana*. The names in quotation marks appearing first after the 'location' heading are the names used in the text.

The means of establishing kiln site status are the most problematic aspect. In general, the only valid evidence for the identification of a kiln site is the recognition of parts of the kiln itself or its associated structures. The verification of Dressel 2-4 production at the site requires further evidence, since it is not unreasonable for pottery not originating at the site to be present in order to meet other needs of the potters. Therefore, the surest evidence for Dressel 2-4 production is wasters, amphorae that were rendered useless due to damage incurred during or prior to the firing process; such pieces are thus unlikely to travel far from the kiln site.

Other means of identification remain questionable. Deposits of quantities of ceramic material do not provide sufficient evidence; nor does evidence of burning, as there are ample reasons for such damage that have nothing to do with pottery production. Discrepencies in fabric are especially suspect. Based on these criteria, the sites listed below that are very probably Dressel 2-4 kilns have an asterisk (*) in front of their names. Sites with questionable identifications should not be wholly discounted, however, until such a time as more extensive study has been conducted upon them.

A short reference bibliography has been included for each site. This bibliography does not pretend to be a complete list of sources, but merely indicates the most pertinent and/or comprehensive publications.

APULIA

1. location: *'Apani', 11 kilometres northwest of Brindisi, and several hundred metres from the coast, along the Canale Apani. Several hundred metres southwest of the site was the *via Minucia*; the small port at Torre Guaceto, presumably used in antiquity (although details are not provided), was a distance of three and a half kilometres away.

evidence for ceramic production: four kilns, rectangular water reservoirs, one cistern; abundant amphora fragments, tile and common ware sherds litter the area. The kiln of importance here is the so-called 'kiln of Vehilius', named for the indigenous amphora stamps VEHILI; Cuomo di Caprio details its structure, which used amphora fragments as the building material.

products of the kiln: Brindisi-type oil amphorae; Dressel 2-4s were a very minor component of the production here.

fabric: no information available.

suggested date: no information available.

other items of note: excavated by B. Sciarra during the 1960s and early 1970s. Desy, 1989, 14, calls this site the richest in Latin amphora stamps without a doubt: the stamps of Vehilius alone number over fifty. Eight potters working under Vehilius stamped their names on products of this kiln: Gorgias, Hermogenes, Leontiscus, Menecrates, Perdica, Apollo(nius?), Damas, and Menopilus.

bibliography:

Cuomo di Caprio, N. (1979), "Apani (Brindisi) - Una fornace", *NSA* 36, 423-428.

Desy, P. (1989), *Les timbres amphoriques de l'Apulie républicaine. Documents pour une histoire économique et sociale*. BAR International Series 554, Oxford.

Sciarra, B. (1964), "Un primo saggio di scavo ad Apani", *Ricerche e Studi* 1, 39-43.

Sciarra, B. (1966), "Alcuni bolli anforari brindisini", *Epigraphica* 28, 122-134.

Sciarra, B. (1972), "Ricerche in contrada Apani", in Baldacci, P. *et al.*, *Recherches sur les amphores romaines*. Collection de l'Ecole Française de Rome 10, Rome, 29-34.

2. location: 'Giancola', roughly three and a half kilometres from Apani in the direction of Brindisi, close to the sea and served by a river.

evidence for ceramic production: no information.

products of kiln: Brindisi-type oil amphorae and Dressel 2-4s.

fabric: no information available.

suggested date: Manacorda, 1990, 399, believes that the Dressel 2-4s belonged to the second half of the first century B.C.

other items of note: Brindisi-type oil amphorae stamped with the name of this kiln's proprietor, Visellius, are known in great quantity; Will in Desy, 1989, 146 no. 1132, states that over sixty examples of Visellius have been found in the Mediterranean area, from Tarragona in Spain to Kertch in southern Russia. Visellius' two slave-potters, Scopas and Stabuas, made Brindisi-type amphorae. The main Dressel 2-4 stamp associated with this site is CARITON(i), which also appears on the Brindisi-type amphorae.

bibliography:

Desy, P. (1989), *Les timbres amphoriques de l'Apulie républicaine. Documents pour une histoire économique et sociale*. BAR International Series 554, Oxford.

Manacorda, D. (1988), "Per uno studio dei centri produttori delle anfore brindisine", in C. Marangio (Ed.), *La Puglia in età repubblicana: atti del I Convegno di studi sulla Puglia romano*, Galatino, 91-108.

Manacorda, D. (1990), "Le fornaci di Visellio a Brindisi. Primi resultati dello scavo", *VetChr* 27, 375-415.

Santoro, C. (1971), "*Brundisium*. Contributo all'antroponomastica greca e latina da documenti inediti della *Regio II Apulia* e *Calabria*: *Instrumentum domesticum (Amphorae Calabrum)*", *Ann.Fac.Magist.Bari*. 10, 378-454.

3. location: 'Felline', part of Alliste (locality of Lecce), in the 'Malora' zone, and near Ugento.

evidence for ceramic production: no data published.

products of kiln: Dressel 2-4s and another type of amphora with round-sectioned handles, probably Brindisi-type amphorae; other minor vases such as jugs; tiles. Bricks, relief plaques, and isolated antefixes found in the area probably originate from this kiln.

fabric: no information published.

suggested date: in the opinion of Desy, this kiln was likely contemporary to those at Brindisi, hence before the mid-first century B.C.

other items of note: brief exploratory excavation conducted in 1967 under the aegis of the Soprintendenza alle Antichita della Puglia. The amphorae recovered were stamped FELIX, EROS, and ARISTIDES, the tiles ZOSIMVS and RVFIO, each accompanied by the nomen of the dominus PVLL(ivs) in the genitive; two further stamps bore single names in the nominative, HARP and POTHVSCA (TH ligatured).

bibliography:

Pagliara, C. (1968), "Bolli anforari inediti da Felline (Prov. Lecce)", *SCO* 17, 227-231.

Desy, P. (1989), *Les timbres amphoriques de l'Apulie républicaine. Documents pour une histoire économique et sociale*. BAR International Series 554, Oxford.

LIGURIA

4. location: *'Brignano Frascata', in the southeast artisan zone of *Regio IX*. Located in the marshy territory of the River Curone, Brignano Frascata is actually on the boundary between the environs of Alessandria and those of Pavia. The site was probably part of a minor road network along the *via Postumia*, travelling both to the coast and the interior. The kiln structures are associated with an "edificio rustico", possibly the residence of the head of the *officina*.

evidence for ceramic production: one unusually well-preserved amphora furnace, another smaller furnace, various accumulations of workshop waste and cooked material, including amphora waster fragments, and a separate area set aside for large deposits of complete and fragmentary amphorae, other storage vases , and common wares.

products of kiln: two sizes of Dressel 2-4 amphorae, with capacities of 19 and 26 litres. Facchini identifies these most closely with Dressel 2 and 3 forms, but her illustrations show little morphological consistency between the examples, let alone adherence to one specific Dressel form (fig. 8). Also produced were unspecified conical vases for agricultural use, and perhaps common wares.

fabric: macroscopic study revealed two different fabric types: one coloured light orange with beige grog, the other ochre-coloured with or without grog, and with medium-sized white inclusions.

suggested date: major production activity in the second half of the first century A.C. and perhaps into the first decades of the second century A.C., based on unspecified evidence. These dates are in accordance with the period of the major economic activity of the Brignano area, during the second half of the first century and into the early second century A.C.

other items of note: Facchini believes these amphorae enjoyed only limited, local distribution. Excavations were conducted in the area from 1982 to 1986.

bibliography:

Facchini, G.M. (1989a), "Anfore romane di forma Dressel 2/4 dal territorio alessandrino: la fornace di Brignano Frascata", *Acme* 42, 63-70.

Facchini, G.M. (1989b), "Una fornace d'anfore Dressel 2/4 a Brignano Frascata (AL)", in *Amphores romaines et histoire économique: dix ans de recherche.* Actes du colloque de Sienne. Collection de l'Ecole Française de Rome 114, Rome, 560-561.

ETRURIA

5. location: *'Campacci'. In the locality of Campacci, approximately two kilometres northeast of Livorno, and in the area of the *Portus Pisanus*, the principle port of Pisa. Three riverways also

service this flat area, namely the Ugione, Cigna, and Acqua Puzzolente. Remains in the proximity of the site indicate a Hellenistic rural habitation and a "fattoria" active into late antiquity.

evidence for ceramic production: in a large reddened soil area was found kiln waste in the form of amphorae and common wares, cooked or vitrified clay, and pierced bricks of the type usually used in the construction of the firing chamber.

products of kiln: predominantly Dressel 2-4 amphorae, of both the true bifid and pseudo-bifid varieties (fig. 9); bricks and common wares were also manufactured.

fabric: at the macroscopic level, six distinct fabric groups have been distinguished; however, petrographic analysis suggested that the clay base was homogeneous, typical of the alluvial clay from the area of the Arno; a clay source close to the kiln site is probable. The same fabric is present in certain amphorae of types Graeco-Italic, Dressel 1, *Ostia* II, 521/*Ostia* III, 369-370, and *Ostia* IV, 279.

suggested date: based on the variety of types produced in this fabric, the area was probably active in amphora production from the Hellenistic period through to late antiquity. No date has been suggested for this particular kiln.

other items of note: locally-produced finewares, of the Italian terra sigillata and late Italic 'pisana' varieties, were most likely distributed alongside the amphorae; their commercialization throughout the Empire, and in particular in the *castra* along the *limes*, has been well-documented. The publication of this site also mentions several other kiln sites in the area which are unpublished, but not enough information is provided to include them here.

bibliography:

Menchelli, S. (1990-1991), "Una fornace di anfore *Dressel 2-4* nell'*ager Pisanus* ed alcune considerazioni sui contenitori vinari prodotti nell'Etruria settentrionale in età romana", *Opus* 9-10, 169-184.

6. location: 'Albinia', near Ortobello, in the municipality of Grosseto, by the S.S. I Aurelia, fifty kilometres east of km 150.900. On a flat, fertile plain, the site, with a diameter of approximately thirty metres, is located near the mouth of the River Albegna.

evidence for ceramic production: a pottery spread of dark cindery waste fragments and occasional crude pot supports.

products of kiln: the main product was apparently Dressel 1B amphorae, although Dressel 1A amphorae were also produced. Also common were Dressel 2-4 amphorae. Notably, variations in form were evident in all three types. Minor ceramic remains included bricks, *tegulae*, and some coarse wares.

fabric: all of the pottery was of an identical hard, reddish-brown (Munsell soil colour 2.5 YR 6/6 or 6/8) fabric with traces of an outer slip. The fabric itself was peppered with small dull black and

white specks - relatively clean with sparse quartz (c. 0.02 mm), scattered inclusions (0.3 mm), generally rounded quartz/quartzite, cryptocrystalline limestone, or often voids with reaction rims indicating limestone. Less common inclusions included plagioclase, sanidine feldspar, green augite, pale monoclinic pyroxene, lava, quartz, sandstone, iron ore.

suggested date: the Dressel 1B fragments suggest a main activity of the second half of the first century B.C., although the presence of Dressel 1A amphorae creates the possibility of an earlier date. The Dressel 2-4 examples indicate that the manufacturing activity continued into the last two decades of the first century B.C., or even into the first century A.C.

other items of note: this site is significant not only for showing Dressel 1 production in Etruria, but also for showing the change-over in products from Dressel 1 to Dressel 2-4. The only stamp appears on a Dressel 1A rim, and the reading is unclear: L.CAE or L.ALE possibly. Hesnard *et al.*, 1989, 21, mention, without specific details, that several kilns are visible here; it therefore must have been an important area for amphora production.

bibliography:

Hesnard, A; Ricq, M.; Arthur, P; *et al.* (1989), "Aires de production des Gréco-Italiques et des Dr. 1", in *Amphores romaines et histoire économique: dix ans de recherche.* Actes du colloque de Sienne. Collection de l'Ecole Française de Rome 114, Rome, 21-65.

Peacock, D.P.S. (1977), "Recent Discoveries of Roman Amphora Kilns in Italy", *AntJ* 57, 262-269.

Peacock, D.P.S., and Williams, D.F. (1986), *Amphorae and the Roman Economy: An Introductory Guide*, New York, 71.

7. location: *'Sutri'. 1.8 kilometres north of Sutri, on an isolated ridge of clay about 800 metres east of the modern Sutri-Ronciglione road at point 713823 of the 1:25,000 map of the Istituto Geografico Militare (Sheet 'Ronciglione'). An adjacent simple concrete-walled building may have been a combined house and workshop for the potters who worked in an earlier, Julio-Claudian pottery.

evidence for ceramic production: kiln, kiln wasters, location on clay bed.

products of kiln: coarse wares to suit a wide range of common needs were the main product of the kiln; Dressel 2-4 amphorae were a minor product, and there were also a few examples of imitation terra sigillata.

fabric: the fabric of at least some of the Dressel 2-4 examples was homogeneous with that of the rest of the ware from the site. One double-rolled handle had fine pale orange clay, containing little mica and few impurities; a rolled rim with double-rolled handle found in the ploughsoil had moderately fine brown-buff clay, containing little mica but several impurities.

suggested date: based on finds of coins of Nero and Vespasian, and terra sigillata, lamps, and the absence of stratified black-glazed ware or red polished ware, the site likely dates to the third

quarter of the first century A.C., with the main period of production falling "in, or very near, the decade 60-70 A.D." (Duncan, 1964, 88).

other items of note: ground survey shows that there are actually three different closely grouped sites at this location; Site I, the kiln site, was partly excavated in August 1959 by Duncan, while the other two sites are only known from ground survey and are apparently earlier in date. Kiln wasters of unidentified types, but with a lack of chronological continuity to the kiln itself, indicate that a pottery was in operation here before the excavated kiln came into operation. None of the wares bore any kind of *tituli picti*. Duncan suggests that the local pottery industry, with production for local consumption only, arose as a direct result of the increased commercial opportunities afforded by the colonization of Sutri under the Triumvirs or Octavian, although this specific kiln dates much later. There was no evidence of site occupation after the kiln fell into disuse. "Although the distribution of its own particular wares may not have reached very far afield, the similarity of its products to those of another local pottery and, more telling, the general likeness of contemporary output in an area as far away as the Ticino show that parallel work may be expected over an extensive area of the Italian peninsula" (Duncan, 1964, 88).

bibliography:

Duncan, G.C. (1964), "A Roman Pottery near Sutri", *PBSR* 32, 38-88.

J. Hayes in Arthur, P. (1982), "Roman Amphorae and the *Ager Falernus* Under the Empire", *PBSR* 50, 32.

Peacock, D.P.S., and Williams, D.F. (1986), *Amphorae and the Roman Economy: An Introductory Guide*, New York, 71.

LATIUM - *AGER CAECUBUS*

8. location: 'Canneto', on the right bank of the Canale Canneto at the western mouth of Lake Fondi, not far from Terracina. The site covers an area of about 200 metres.

evidence for ceramic production: broken and burnt amphorae fragments.

products of kiln: Dressel 1A, Dressel 1B, and Dressel 2-4 with handles of rectilinear profile. Other remains included tiles and bricks.

fabric: visual identifications not recorded. Brief chemical analyses were conducted for the purpose of comparing the fabrics recovered from the sites surveyed by Hesnard and Lemoine, for which see their pages 264-281.

suggested date: production may have begun in the late second century B.C. and possibly extended into early first century A.C.

other items of significance: stamps appearing on the amphorae included ACIME, SABINA, HILARI, and P.VEVEI PAPI (VE, VE, AP ligatured). The last stamp is also known from a major part of the Dressel 1 cargo in the wreck at La Madrague de Giens, east of Toulon. Hesnard believed that the Dressel 1 examples from Canneto contained Caecuban wine; the same contents were theorized for the subsequent Dressel 2-4 products.

bibliography:

Hesnard, A. (1977), "Note sur un atelier d'amphores Dressel 1 et Dressel 2-4 près de Terracine", *MEFRA* 89, 157-168.

Hesnard, A. and Lemoine, C. (1981), "Les amphores du Cécube et du Falerne: prospections typologie, analyses", *MEFRA* 93, 243-95.

Peacock, D.P.S., and Williams, D.F. (1986), *Amphorae and the Roman Economy: An Introductory Guide*, New York, 71.

9. location: 'Monte San Biagio'. Near the cemetery of Monte San Biagio, north of Lake Fondi (not far from Terracina), and between the lake and the railway line.

evidence for ceramic production: large quantities of broken sherds.

products of kiln: in isolated groups were found Graeco-Italic, Dressel 1, and Dressel 2-4 amphorae.

fabric: visual identifications not recorded. Brief chemical analyses were conducted for the purpose of comparing the fabrics recovered from the sites surveyed by Hesnard and Lemoine, for which see *idem*, pages 264-281.

suggested date: late second century B.C. to possibly into the early first century A.C.

other items of significance: stamps used by the atelier included ACIMME (MM ligatured), SABINVS, HERMO, FA[ ]OCOS, and DIODORCVP.

bibliography:

Della Corte, M. (1911), "Monte S. Biagio - Scoperta di anfore nella palude comunicante col lago di Fondi", *NSA*, 348-349.

Hesnard, A. (1977), "Note sur un atelier d'amphores Dressel 1 et Dressel 2-4 près de Terracine", *MEFRA* 89, 157-168.

Hesnard, A. and Lemoine, C. (1981), "Les amphores du Cécube et du Falerne: prospections typologie, analyses", *MEFRA* 93, 243-95.

Peacock, D.P.S., and Williams, D.F. (1986), *Amphorae and the Roman Economy: An Introductory Guide*, New York, 71.

10. location: *Torre S. Anastasia', on the banks of Canale S. Anastasia, at the eastern mouth of Lake Fondi. As a site, it was more extended and complex than Canneto, partly because the outlet from the lake was larger than that at Canneto; there may in fact have been a small port at this location, by traces of lines of quays on the right bank.

evidence for ceramic production: kiln walling, burnt pottery fragments, and widespread high concentration of sherds.

products of kiln: Graeco-Italic, Dressel 1, and Dressel 2-4 amphorae; also common wares.

fabric: visual identifications not recorded. Brief chemical analyses were conducted for the purpose of comparing the fabrics recovered from the sites surveyed by Hesnard and Lemoine, for which see their pages 264-281. Very similar local alluvial clay was used at the Canneto and Monte San Biagio kiln sites.

suggested date: the site was in use from the late second century B.C. to perhaps the early first century A.C. There was also a habitation connected with the site during the first century B.C.

other items of significance: Hesnard associates this manufacture with the lot of amphorae in the Musée des Thermes in Rome and with some Dressel 1B examples from the Madrague de Giens wreck, bearing the stamp ALEXSAND. (ND ligatured) and typically featuring finger imprints at the mid-height of the handles.

bibliography:

Hesnard, A. (1977), "Note sur un atelier d'amphores Dressel 1 et Dressel 2-4 près de Terracine", *MEFRA* 89, 157-168.

Hesnard, A. and Lemoine, C. (1981), "Les amphores du Cécube et du Falerne: prospections typologie, analyses", *MEFRA* 93, 243-295.

Lafon, X. (1981), "À propos des villas de la zone de Sperlonga: les origines et le développement de la *villa maritima* sur le littoral tyrrhénien à l'époque républicaine", *MEFRA* 93, 297-353.

Peacock, D.P.S., and Williams, D.F. (1986), *Amphorae and the Roman Economy: An Introductory Guide*, New York, 71.

Ricq de Boüard, M., Meille, E., *et al.* (1989), "Les argiles utilisées pour la fabrication des amphores en Italie: Étrurie, Latium, Campanie", in *Amphores romaines et histoire économique: dix ans de recherche.* Actes du colloque de Sienne. Collection de l'Ecole Française de Rome 114, Rome, 262.

CAMPANIA - *AGER FALERNUS*

11. location: Melfa River area, Liri valley.

evidence for ceramic production: no information available.

products of kiln: Dressel 2-4 amphorae.

fabric: no information published.

suggested date: none recorded.

other items of significance: See Hayes and Wightman (citation below) for a preliminary survey report which includes kilns of unspecified date and reports of locally-made Dressel 2-4s.

bibliography:

J. Hayes in Arthur, P. (1982), "Roman Amphorae and the *Ager Falernus* Under the Empire", *PBSR* 50, 32.

Hayes, J. and Wightman, E.M. (1984), "Interamna Lirenas: Risultati di ricerche in superficie 1979-1981", *Archeologia Laziale* VI, 137-148.

12. location: 'Garigliano'. Several hundred metres upstream from Minturnae on the right bank of the River Garigliano (*Liris*), now partly destroyed by fluvial erosion.

evidence for ceramic production: amphora material at water level and kiln bricks at the height of the slope beside the river.

products of kiln: Graeco-Italics, Dressel 1 (illustrated in Hesnard *et al.*, 1989, 26 fig. 9), and Dressel 2-4 amphorae of two types, one of which is illustrated in Arthur, 1982, 30 fig. 5, no. 14.

fabric: no data.

suggested date: none published, but following the dates used by Hesnard and Lemoine, 1981, for sites with these forms, late third century B.C. to the Flavian period.

other items of note: Hesnard *et al.*, 1989, 36, also indicate another Garigliano Dressel 1 and Dressel 2-4 kiln site, located a dozen kilometres from the sea, by N. 430, on the left bank of the Garigliano, which is otherwise unpublished; see their illustration of the amphora fragments in *idem*, fig. 10.

bibliography:

Hesnard, A., Ricq, M., Arthur, P., Picon, M. and Tchernia, A. (1989), "Aires de production des Gréco-Italiques et des Dr.1", in *Amphores romaines et histoire économique: dix ans de recherche*. Actes du colloque de Sienne. Collection de l'Ecole Française de Rome 114, Rome, 21-65.

Arthur, P. (1982), "Roman Amphorae and the *Ager Falernus* Under the Empire", *PBSR* 50, 22-33.

13. location: 'Falciano'. By the present-day Falciano slaughter-house, at the junction of three sunken country roads. Arthur's (1982) kiln site 1.

evidence for ceramic production: concentration of sherds.

products of kiln: Dressel 2-4 amphorae were the only identified products.

fabric: no information published.

suggested date: none recorded, but probably falls somewhere within the range of the second half of the first century B.C. to the late first century A.C.

other items of note: none recorded.

bibliography:

Arthur, P. (1982), "Roman Amphorae and the *Ager Falernus* Under the Empire", *PBSR* 50, 22-33.

Peacock, D.P.S., and Williams, D.F. (1986), *Amphorae and the Roman Economy: An Introductory Guide*, New York, 69.

14. location: *'Forlimpopoli' (*Forum Popilii* of *VIII Regio Italica*), on the *via Aemilia*. Several different kilns were identified within the city, at least two of which made Dressel 2-4s.

evidence for ceramic production: kiln waste, large deposits of broken pottery, wasters.

products of kiln: four types of flat-bottomed amphorae; Dressel 2-4s (fig. 12).

fabric: fabric colours ranged from pinkish to light brown with a light brownish surface.

suggested date: last quarter of the first century A.C. and throughout second century A.C.

other items of significance: T. Aldini's book, *Fornaci di Forum Popili* (Forlimpopoli 1981) was not available to me, but very likely contains more information on the Dressel 2-4 production at the site. Certain amphora handbooks such as that of Sciallano and Sibella, 1991, place the origin of the flat-bottomed "amphores de Forlimpopili" in the northern Adriatic, suggesting that certain evidence after 1978 rendered the identification of this kiln site suspect, but it is now known that flat-bottomed amphorae were produced throughout Italy, including at this site; see, for instance, Tchernia, 1986, and Arthur, 1991.

bibliography:

Aldini, T. (1978), "Anfore foropopiliensi", *ArchClass* 30, 236-245.

15. location: *'Masseria Zannini'. Associated with an upstanding triple-vaulted cistern of *opus incertum* on the side of a small hill. The amphora production may be associated with a villa. Johannowsky's site 13, Arthur's (1982) kiln site 2; Arthur's (1991) site C39.

evidence for ceramic production: very dense concentration of Dressel 2-4 sherds and wasters, thin scatter of non-Dressel 2-4 sherds.

products of kiln: Dressel 2-4 in 'normal', miniature, and flat-based versions; coarsewares.

fabric: large sanidine dominant, fragments of volcanic rock often abundant, smaller clinopyroxenes in varying amounts, medium to very small quartz inclusions.

suggested date: the pottery present suggested that activity extended from the late Republic to at least the second century A.C., but the activity of the kiln itself was probably restricted to the Tiberio-Claudian period.

other items of note: site excavated by Arthur (August 1980) for the Soprintendenza.

bibliography:

Arthur, P. "Roman Amphorae and the *Ager Falernus* Under the Empire", *PBSR* 50, 22-33.

Johannowsky, W. (1975), "Problemi Archeologici Campani", *RAccArchNap* 50, 36.

Peacock, D.P.S., and Williams, D.F. (1986), *Amphorae and the Roman Economy: An Introductory Guide,* New York, 69.

Ricq de Boüard, M., Meille, E., *et al.* (1989), "Les argiles utilisées pour la fabrication des amphores en Italie: Étrurie, Latium, Campanie", in *Amphores romaines et histoire économique: dix ans de recherche.* Actes du colloque de Sienne. Collection de l'Ecole Française de Rome 114, Rome, 262.

16. location: 'Masseria Corbo'. Modern orchard near Masseria Corbo. Arthur's (1982) kiln site 3.

evidence for ceramic production: thin scatter of sherds.

products of kiln: Dressel 2-4 amphorae.

fabric: no information published.

suggested date: none recorded, but probably falls into the range of the second half of the first century B.C. to the late first century A.C..

other items of note: none recorded.

bibliography:

Arthur, P. (1982), "Roman Amphorae and the *Ager Falernus* Under the Empire", *PBSR* 50, 22-33.

Peacock, D.P.S., and Williams, D.F. *Amphorae and the Roman Economy: An Introductory Guide.* New York 1986, 69.

17. location: *'Masseria Pagliare', in a ravine by the Rio Fontanelle. Arthur's (1982) kiln site 4.

evidence for ceramic production: concentration of amphorae and tile wasters.

products of kiln: Dressel 2-4 amphorae; tiles; coarsewares.

fabric: no information published.

suggested date: first century B.C. to first century A.C.

other items of note: One of the tiles was stamped CALCLEM, the same stamp that appeared on *tegulae* of a villa at Loc. I Greci, Arthur's (1991) site S48 on the Sessa Aurunca Map Sheet (IGM F.A1 I SE), roughly four kilometres north of the Masseria Pagliare kiln.

bibliography:

Arthur, P. (1982), "Roman Amphorae and the *Ager Falernus* Under the Empire", *PBSR* 50, 22-33.

Arthur, P. (1991), *Romans in Northern Campania: Settlement and Land-use Around the Massico and the Garigliano Basin.* Archaeological Monographs of the British School at Rome No. 1, London.

Peacock, D.P.S., and Williams, D.F. (1986), *Amphorae and the Roman Economy: An Introductory Guide*, New York, 69.

18. location: *'Masseria Dragone'. Grid. ref. on Carinola Map Sheet IGM F. 172 IV S.O. VF 138625. Road blocks (Roman?) lie at bottom of field in which this kiln is located. Arthur's (1982) kiln site 7, Arthur's (1991) site C19.

evidence for ceramic production: very dense scatter of pottery and tiles, including wasters. Some of the tiles, mortared and overfired, might have been from rectangular kiln structures.

products of kiln: Dressel 2-4 and Falernian amphorae. Other products included tiles, finewares, coarsewares, and imitations of ARS wares, especially Hayes 61, but also including Hayes 23, 104, and 197.

fabric: large sanidine dominant, fragments of volcanic rock often abundant, smaller clinopyroxenes in varying amounts, medium to very small quartz inclusions.

suggested date: little Late Republican or first century material was present; the pottery suggested more of a late Roman date, primarily based on the dating of the imitation Hayes 61 pieces, about 325-450 A.C. The site appears to have produced pottery from the later first to the mid-fifth or early sixth century A.C.

other items of note: if this site can indeed be assigned a slow start with production increasing later in the Imperial period, the fact that amphorae were only a minor product here parallels the evidence from other types of sites, in that Italian wine amphorae were not produced on as large a scale as at the beginning of the Empire. The previously unknown Falernian type amphorae existed in apparently rare quantities, suggesting small, local distribution. The imitation ARS wares "undergo numerous variations and ... the degree of product standardization was very low", as notes Arthur, 1982, 31.

bibliography:

Arthur, P. (1982), "Roman Amphorae and the *Ager Falernus* Under the Empire", *PBSR* 50, 22-33.

Arthur, P. (1991), *Romans in Northern Campania: Settlement and Land-use Around the Massico and the Garigliano Basin.* Archaeological Monographs of the British School at Rome No. 1, London.

Peacock, D.P.S., and Williams, D.F. (1986), *Amphorae and the Roman Economy: An Introductory Guide,* New York, 69.

Ricq de Boüard, M., Meille, E., *et al.* (1989), "Les argiles utilisées pour la fabrication des amphores en Italie: Etrurie, Latium, Campanie", in *Amphores romaines et histoire économique: dix ans de recherche.* Actes du colloque de Sienne. Collection de l'Ecole Française de Rome 114, Rome, 262.

19. location: 'Sinuessa', along the seashore up to the mouth of Rio de San Limato, and of Canale d'Auria. Near this last site were found blocks of stone, possibly from the port of Sinuessa. Hesnard and Lemoine sites 12 to 16.

evidence for ceramic production: overfired sherds.

products of kiln: Graeco-Italic, Dressel 1, and Dressel 2-4 amphorae.

fabric: visual identifications not recorded. Brief chemical analyses were conducted for the purpose of comparing the fabrics recovered from the sites surveyed by Hesnard and Lemoine, for which see *idem*, pages 264-281.

suggested date: possibly third century B.C. to the Flavian period.

other items of note: none recorded.

bibliography:

Hesnard, A. and Lemoine, C. (1981), "Les amphores du Cécube et du Falerne: Prospections, typologie, analyses", *MEFRA* 93, 243-295.

20. location: *'Mondragone A'. North of Mondragone, along the *via Domitiana*, at between 14.75 and 16 kilometres. Hesnard and Lemoine sites 7 to 10. Site 8, on the sea side of the route, was located near a stream descending from Monte Crestegallo; sites 7, 9, and 10, which was located on the inside of the route, were also located near streams. Arthur's (1991) site M77 lies at the 15.2 kilometre mark.

evidence for ceramic production: at site 7, cinders and overfired sherds; at site 9, dark red burnt earth mixed with cinders; at site M77, abundant Dressel 2-4 wasters. At all sites, large deposits of sherds.

products of kiln: all sites show evidence for production of Graeco-Italic, Dressel 1, and Dressel 2-4 amphorae (Panella and Fano Groups 8 and 9 = Fariñas del Cerro *et al.* Group C3; see fig. 10), except site 9, which produced Dressel 2-4 amphorae alone.

fabric: visual identifications not recorded. Brief chemical analyses were conducted for the purpose of comparing the fabrics recovered from the sites surveyed by Hesnard and Lemoine, for which see *idem* pages 264-281.

suggested date: perhaps from third century B.C. to the Flavian period.

other items of note: none.

bibliography:

Arthur, P. (1991), *Romans in Northern Campania: Settlement and Land Use Around the Massico and the Garigliano Basin.* Archaeological Monographs of the British School at Rome No. 1, London.

Hesnard, A. and Lemoine, C. (1981), "Les amphores du Cécube et du Falerne: Prospections, typologie, analyses", *MEFRA* 93, 243-295.

21. location: 'Mondragone B'. A few kilometres north of Mondragone, along the beach, at 16.1 kilometres along the via Domiziana. This site lies on the northern edge of the flat fertile Falernian plain, bounded by the Monte Massico hill range to the north. Hesnard and Lemoine site 6.

evidence for ceramic production: broad concentration of sherds, measuring about 100 metres, and containing occasional wasters of grey cindery over-fired sherds.

products of kiln: mainly Dressel 1A, some Dressel 1B, and Dressel 2-4 (Panella and Fano Groups 8 and 9 = Fariñas del Cerro *et al.* Group C3). Also bricks, *tegulae*, rare mortaria, and coarse vessels.

fabric: fairly uniform fabric: hard, reddish-brown (2.5 YR 6/6); abundant dull white and black specks (less than 1mm); flecks of mica in small numbers; traces of pale slip on outer surface; abundant inclusions (ca. 0.3 mm), generally rounded; quartz predominates, much cryptocrystalline limestone, prominent feldspar (plagioclase and sanidine); lesser amounts trachytic lava, tufa, volcanic glass, green augite, white and brown mica, iron ore.

suggested date: late second to the second half of the first century B.C.

other items of significance: five types of amphora stamps:]HOS]VS (HO ligatured), π, PR, PI (or possibly M). At the early first century Spargi wreck at Sardinia, among the Greek and Oscan stamps on containers was the stamp π. The combination of cargo on the wreck, inlcuding Dressel 1 amphorae and possible Calenian Black Glaze ware, common at Sinuessa, supports an origin at that port for this cargo; see Arthur, 1991, 76. Hesnard and Lemoine found five other kiln sites nearby, all quite similar to this one in terms of products, although they thought that this site and one other, their sites 5 and 6, produced only Dressel 1 amphorae, while the rest also produced Graeco-Italics and

Dressel 2-4s. A wall of amphora sherds was located not far away, 2.8 kilometres north of Mondragone; and Dressel 1 rims were found on the beach in the area.

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22. location: *'Mondragone C', between via Alcide de Gasperi and the *via Domitiana*. The exact extent of the site was difficult to ascertain owing to subsequent building over and habitation of the site. Hesnard and Lemoine site 18 bis.

evidence for ceramic production: overfired and deformed fragments, kiln waste.

products of kiln: Dressel 1, Dressel 2-4 (Panella and Fano Groups 8 and 9 = Fariñas del Cerro *et al.* Group C3; see fig. 10), common wares.

fabric: visual identifications not recorded. Brief chemical analyses were conducted for the purpose of comparing the fabrics recovered from the sites surveyed by Hesnard and Lemoine, for which see *idem*, pages 264-281.

suggested date: possibly third century B.C. to the Flavian period.

other items of note: part of salvage excavation of Mondragone conducted in 1978-79 by the Superintendant of Naples and Caserte, under the direction of V. San Paolo.

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CAMPANIA - *AGER CALENUS*

23. location: *'Cales' (*Calvia Vecchia*). Located northwest of Caserta, by the via Casilina (*via Latina*), close to the Pezzacozza waterway.

evidence for ceramic production: decantation basin, clay reserve, deposits, cooking racks, separators, fragments of kiln walls, decorative stamp, cinders, and overfired pieces of pottery.

products of kiln: two types of Dressel 2-4 amphorae were apparently simultaneously produced (fig. 14). The first was of the 'Hellenic Coan' style: short neck, handles at upper attachment rising to an angular or marked bend, a slightly sinuous shoulder, and a small toe in a normal and larger size. The second, 'Italic', type consisted of a comparatively longer neck, handles rising less from the upper attachment and having a more rounded bend, shoulder more extended, and toe longer and thickened at the end. These are apparently the only amphora forms produced at the site, if four very dubious fragments of Dressel 1 in a different, reddish clay can be considered foreign. Other ceramic products include variants and imitations of Campanian B and Arretine wares respectively, thin-walled wares, common wares, unspecified Augustan lamps, and architectural pieces, including tiles and *tubulae*.

fabric: fine, with colour varying from orange to pink to chamois. There is often a whitened slip on the surface.

suggested date: collectively, the pottery suggests an approximate date between the second quarter of the first century B.C. and the first quarter of the first century A.C.

other items of note: While no stamps from the site are associated with the Dressel 2-4 products, the Arretine-like ware features the stamps M.LOL, M.LOLLI, PHILOM.LOLL, ARETINV and SECVNDI, and the Augustan lamps BAS, FORMALE, L. CAECILI, and VIBI.

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ILLUSTRATIONS

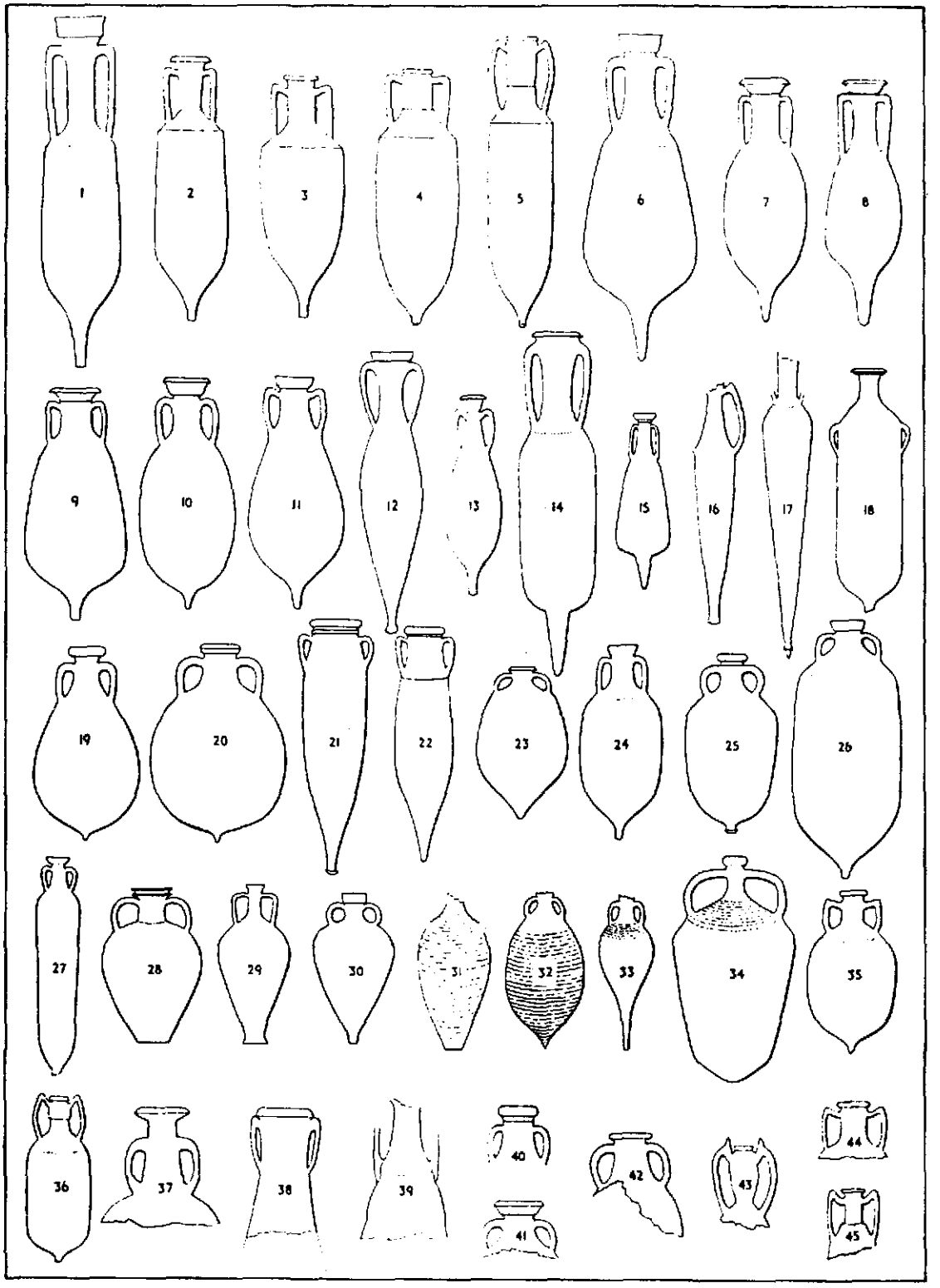


Fig. 1. Dressel's amphora typology chart.

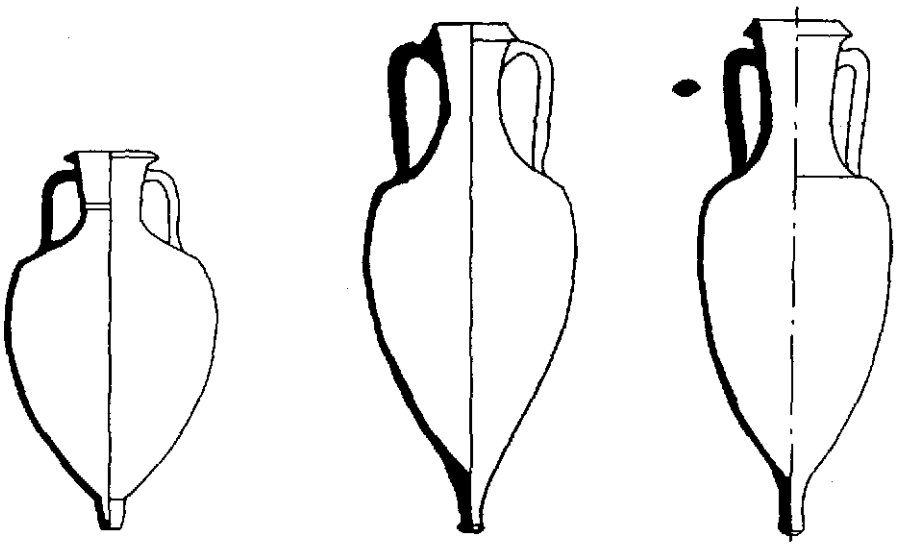


Fig. 2. Graeco-Italic amphorae.

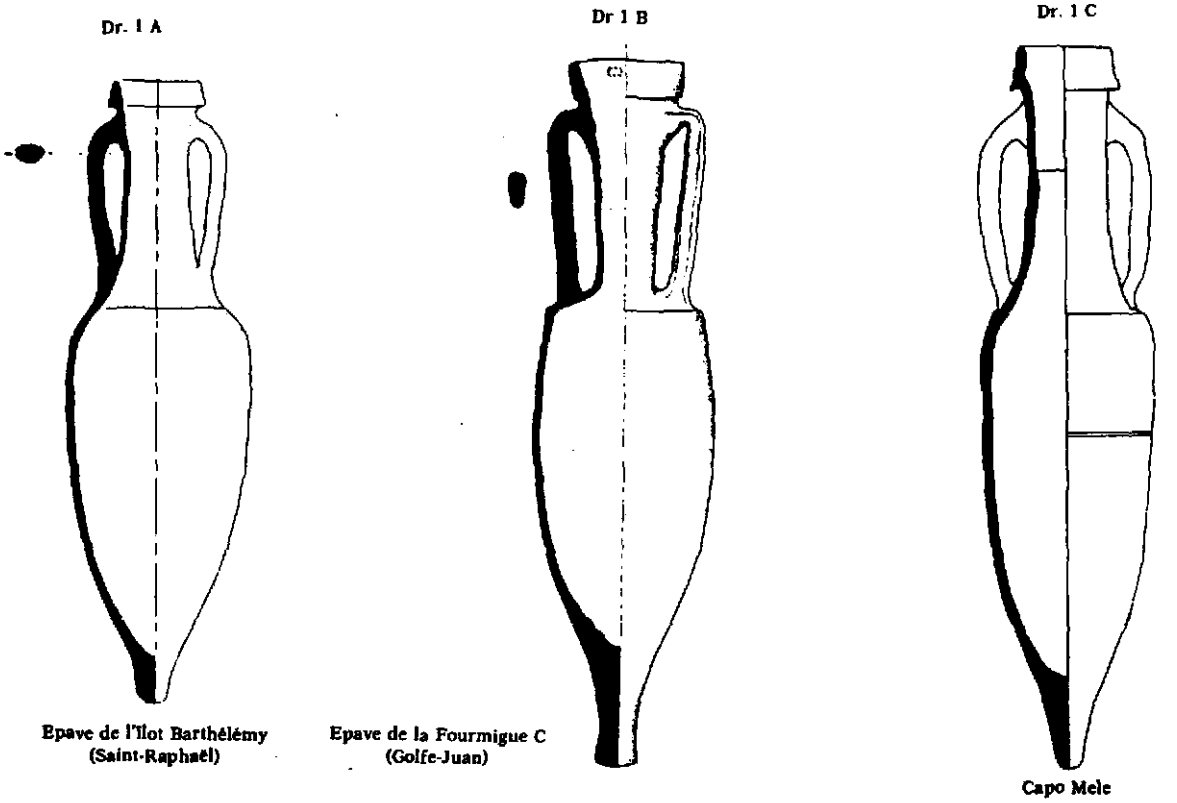
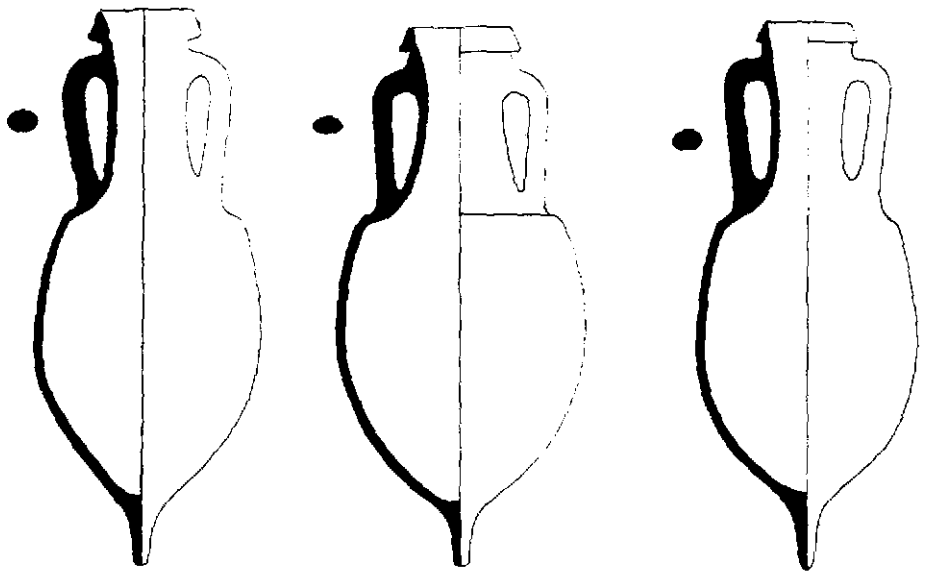


Fig. 3. Dressel 1 amphorae.



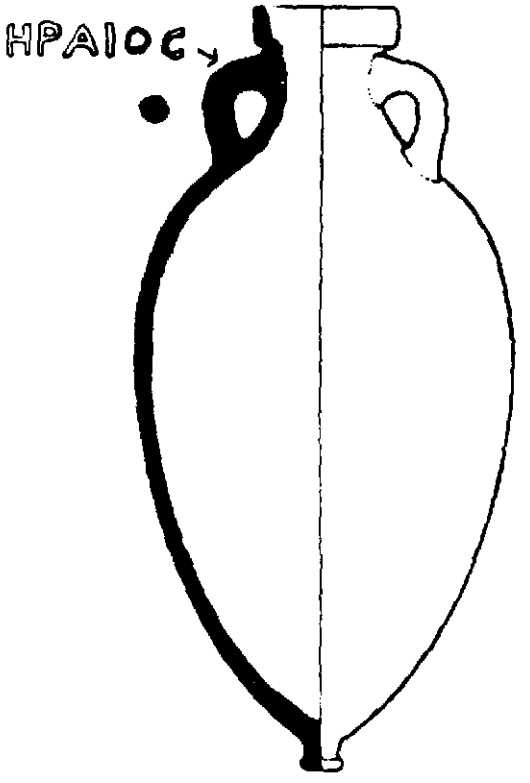
- Anfora Lamboglia 2. Vela Svitnja. Scala 1:10. Museo di Vis.

- Anfora Lamboglia 2. Vela Svitnja. Scala 1:10. Museo di Vis.

- Anfora Lamboglia 2. Vela Svitnja. Scala 1:10. Museo di Vis.

Fig. 4. Lamboglia 2 amphora.

Fig. 5. Brindisi-type amphora, from Ascoli Satriano.



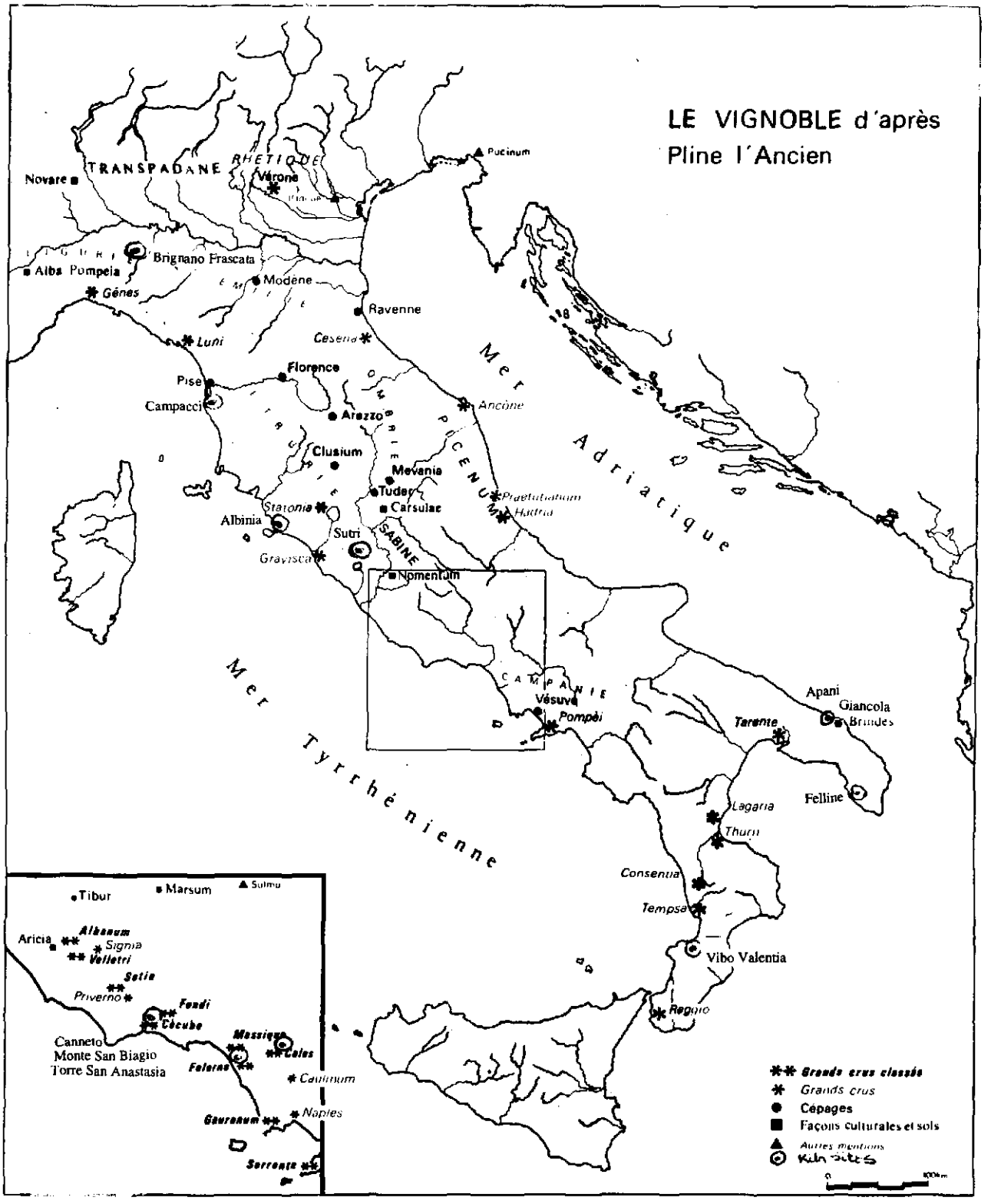
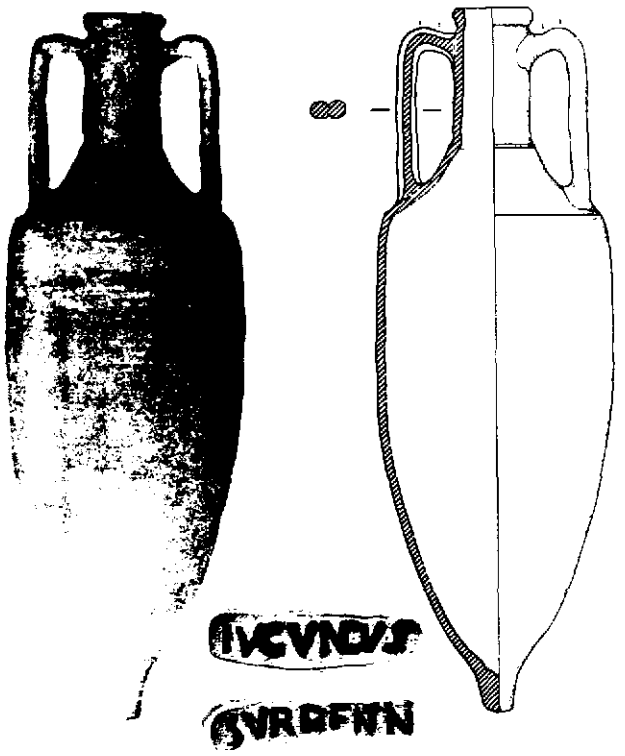
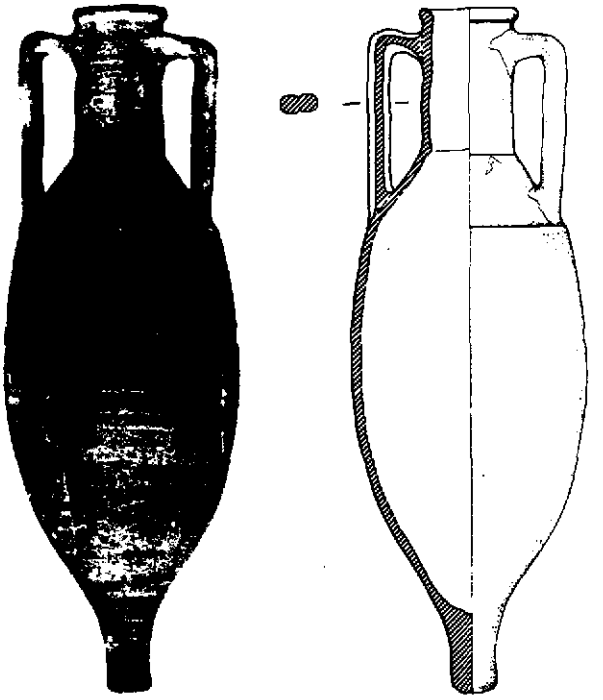


Fig. 6. Major viticultural areas as identified by Pliny the Elder, with the addition of identified Dressel 2-4 kiln sites.

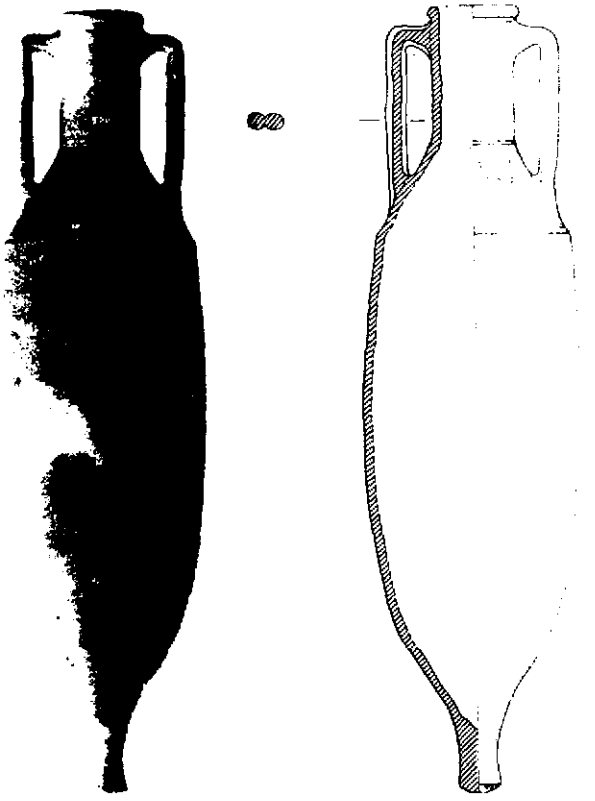


Gruppo 3. Pompei, n. 1001 A.

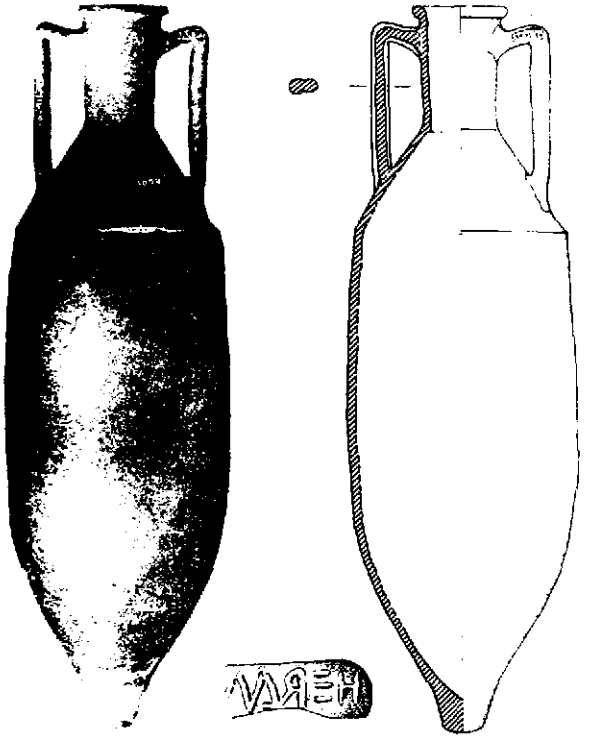


Gruppo 3. Pompei, n. 122.

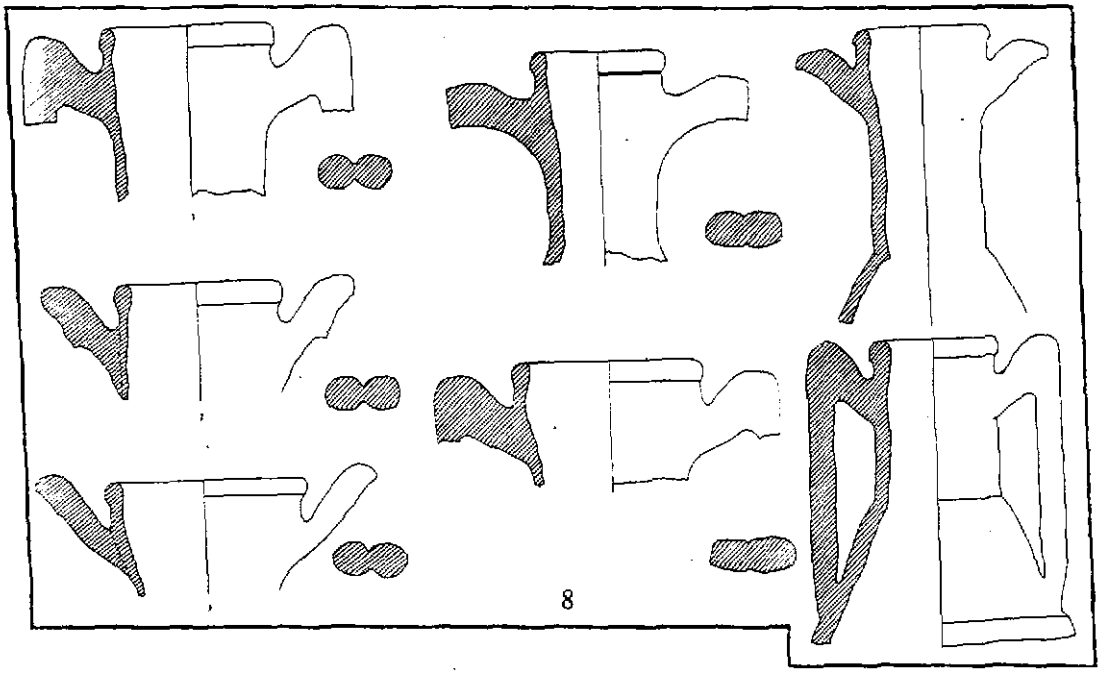
Fig. 7. Panella and Fano amphora groups 3 and 4 (scale 1:10).

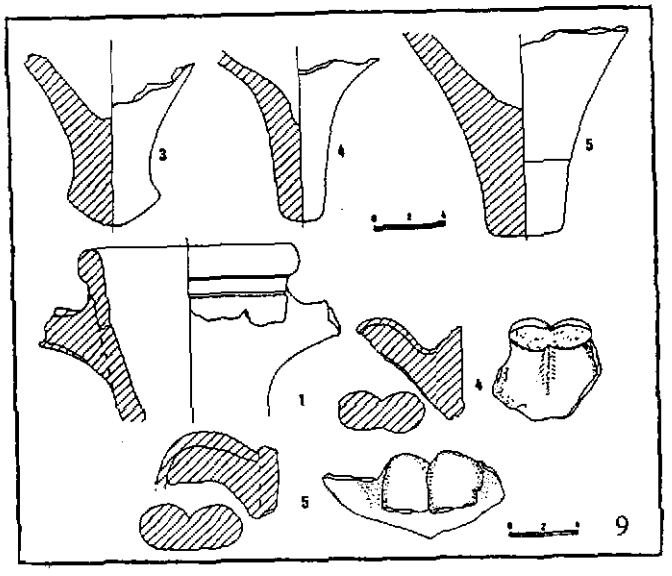


Gruppo 4. Pompei, n. 500.



Gruppo 4. Pompei, n. 1000 A.





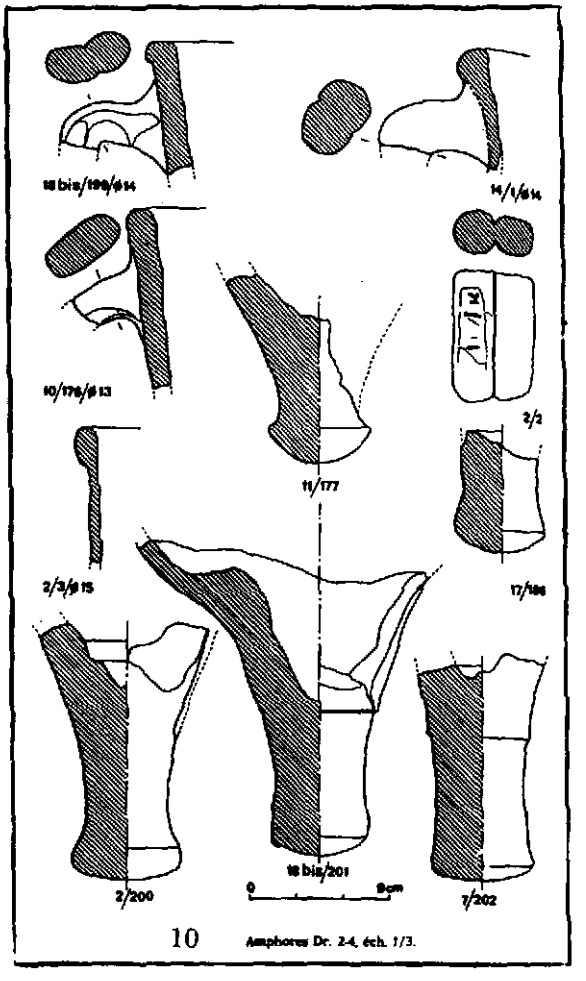


Fig. 8. Dressel 2-4 amphorae produced at Brignano Frascata (scale 1:2).
Fig. 9. Dressel 2-4 amphorae produced at Campacci.
Fig. 10. Dressel 2-4 amphorae produced at the Mondragone sites.

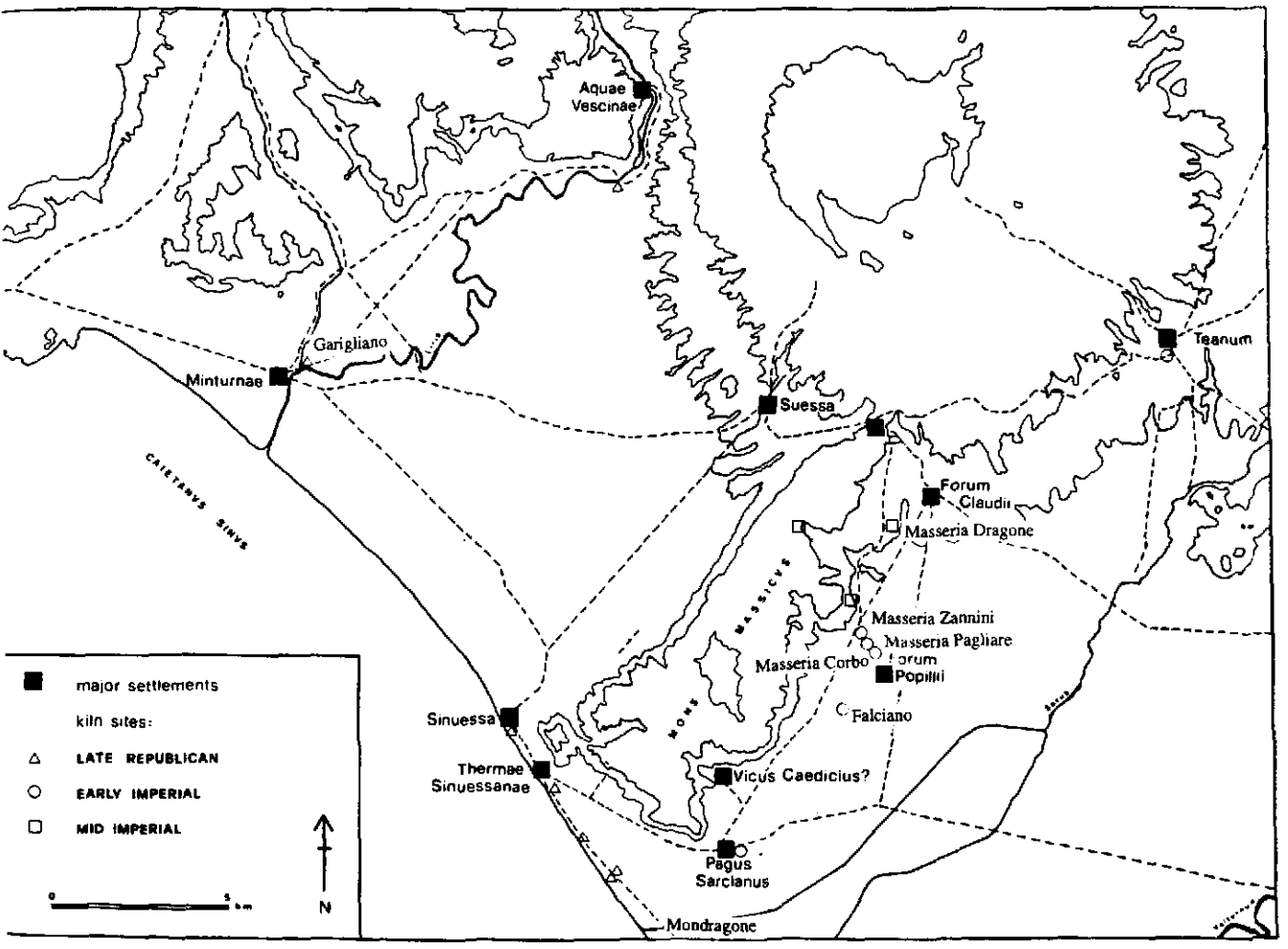
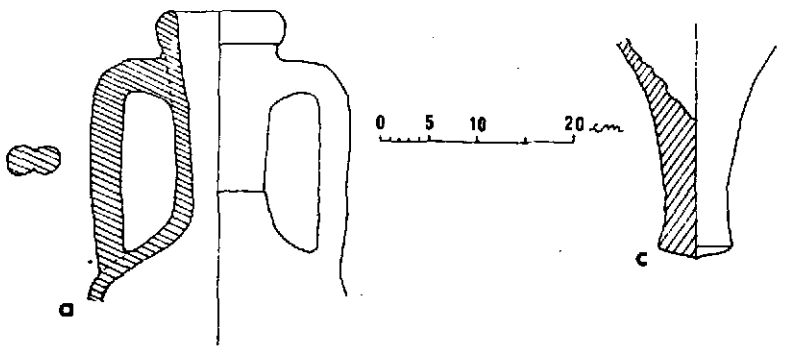


Fig. 11. Distribution of amphora kilns in northern Campania.

Fig. 12. Dressel 2-4 amphorae produced at Forlimpopoli.



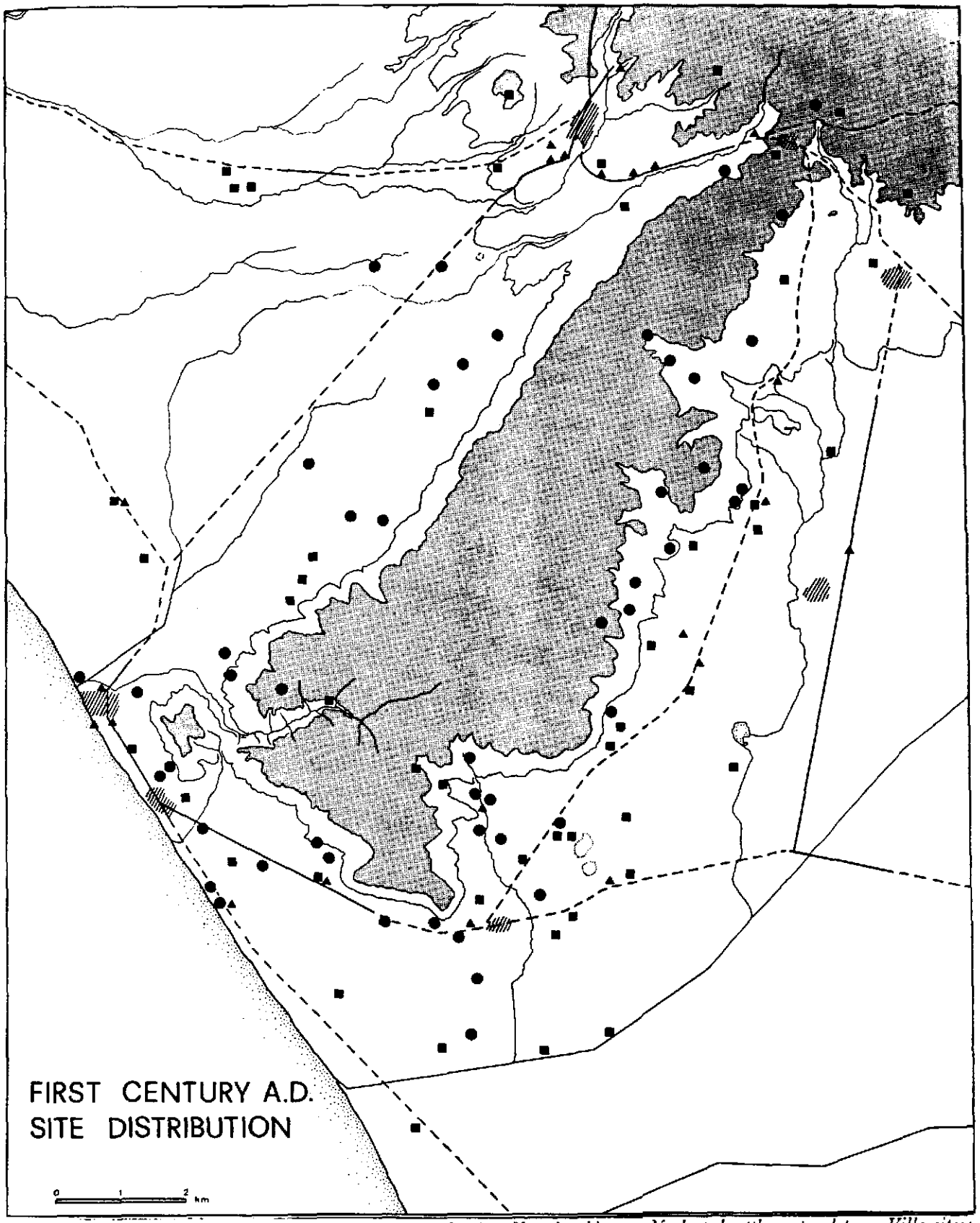


Fig. 13. *First century AD site distribution around the Massico. Key: hatching = Nucleated settlements; dots = Villa sites; squares = Farms/pottery scatters; triangles = Cemeteries/burials*

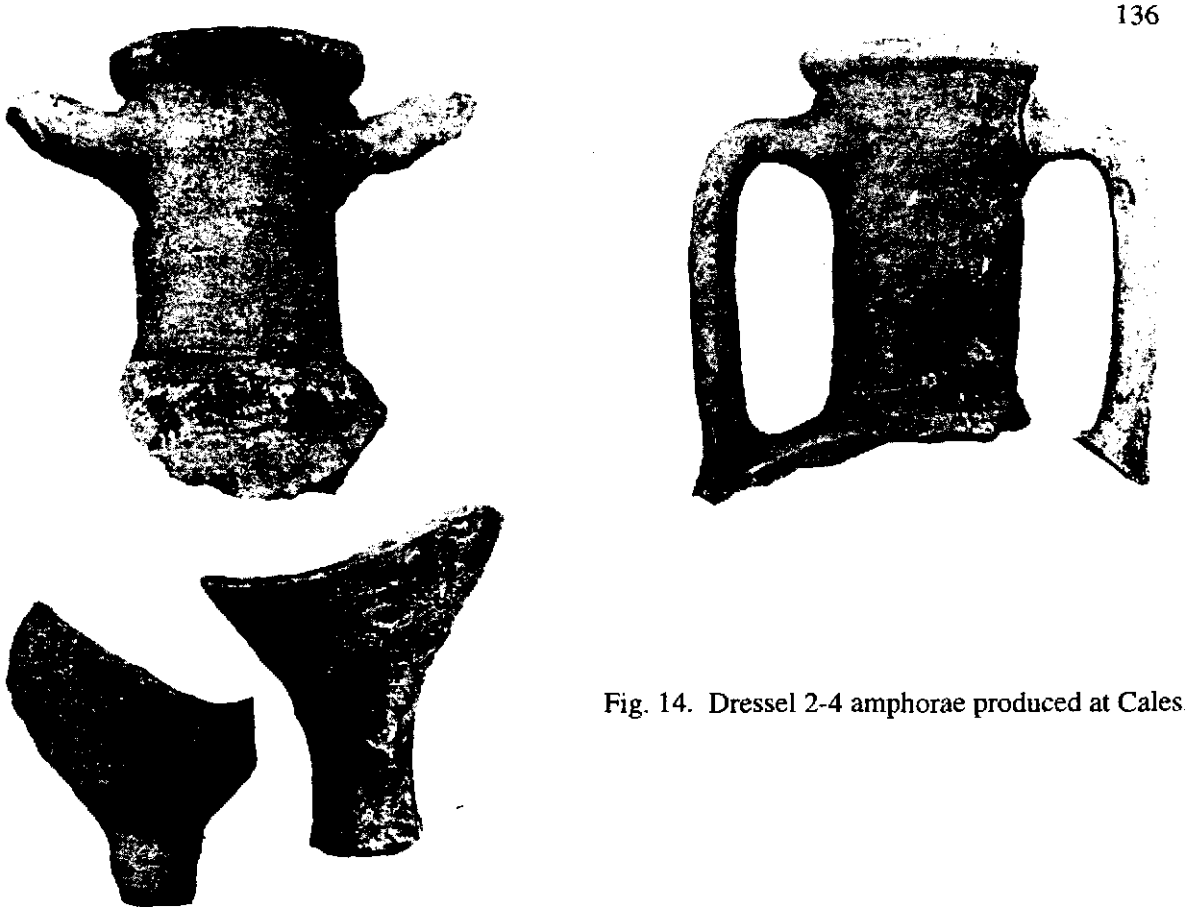


Fig. 14. Dressel 2-4 amphorae produced at Cales.

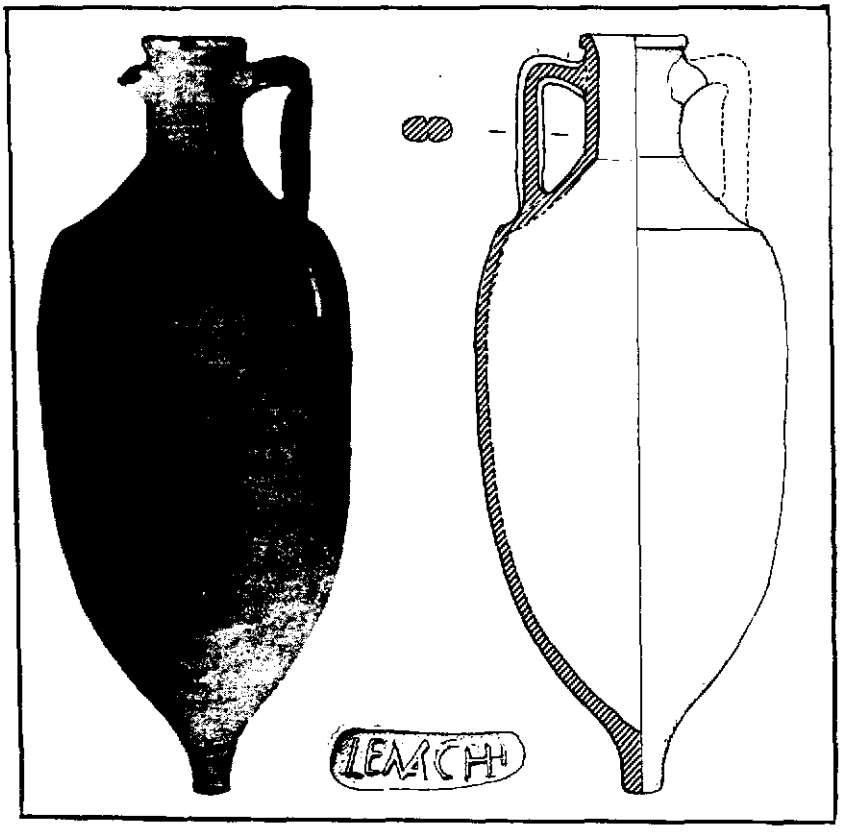
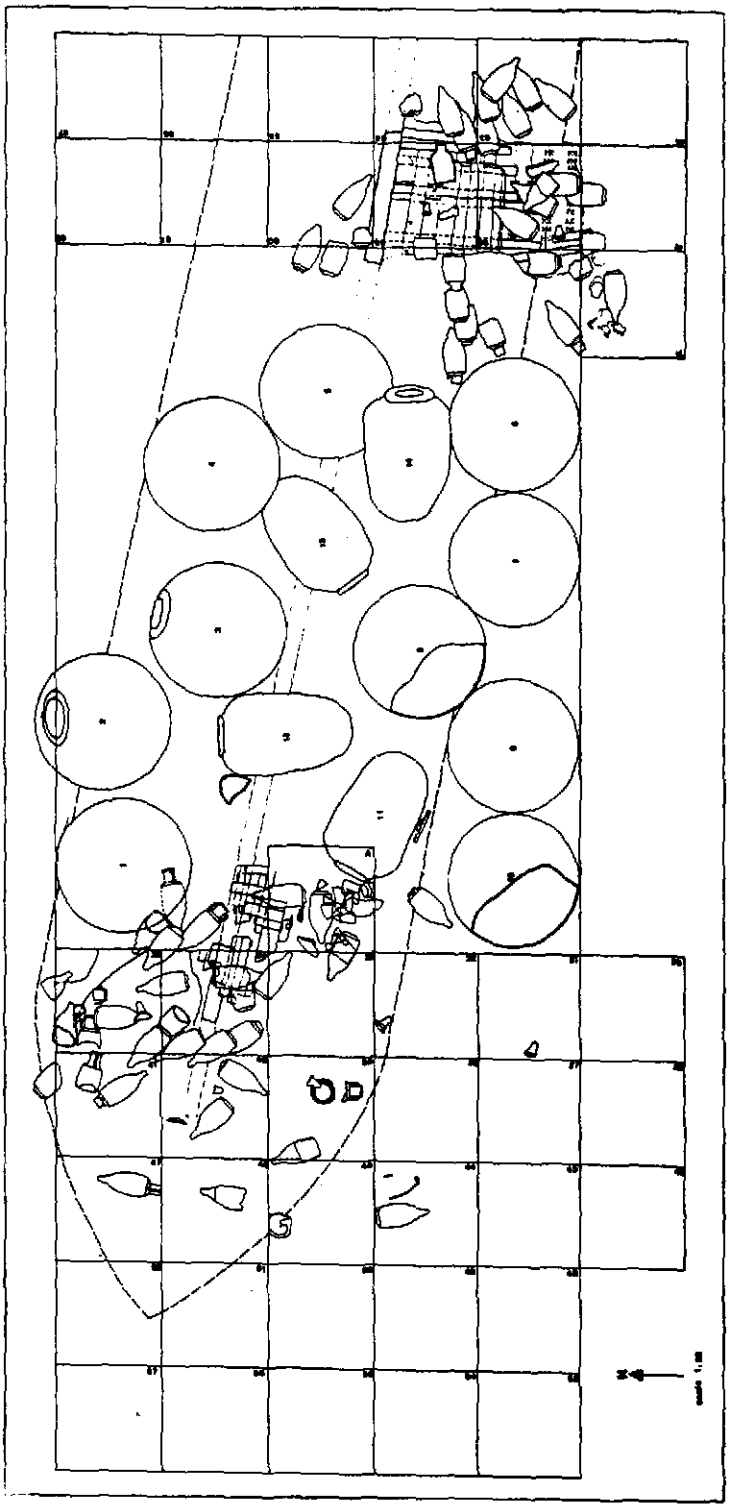


Fig. 15. 'L.EVMACHI-type' Dressel 2-4.



Diano Marina. Plan du gisement (F. Pallarés, 1985). Le quadrillage est constitué de carrés de 1,50 m de côté.

Fig. 16. Plan of Diano Marina *dolia* and Dressel 2-4 shipwreck.

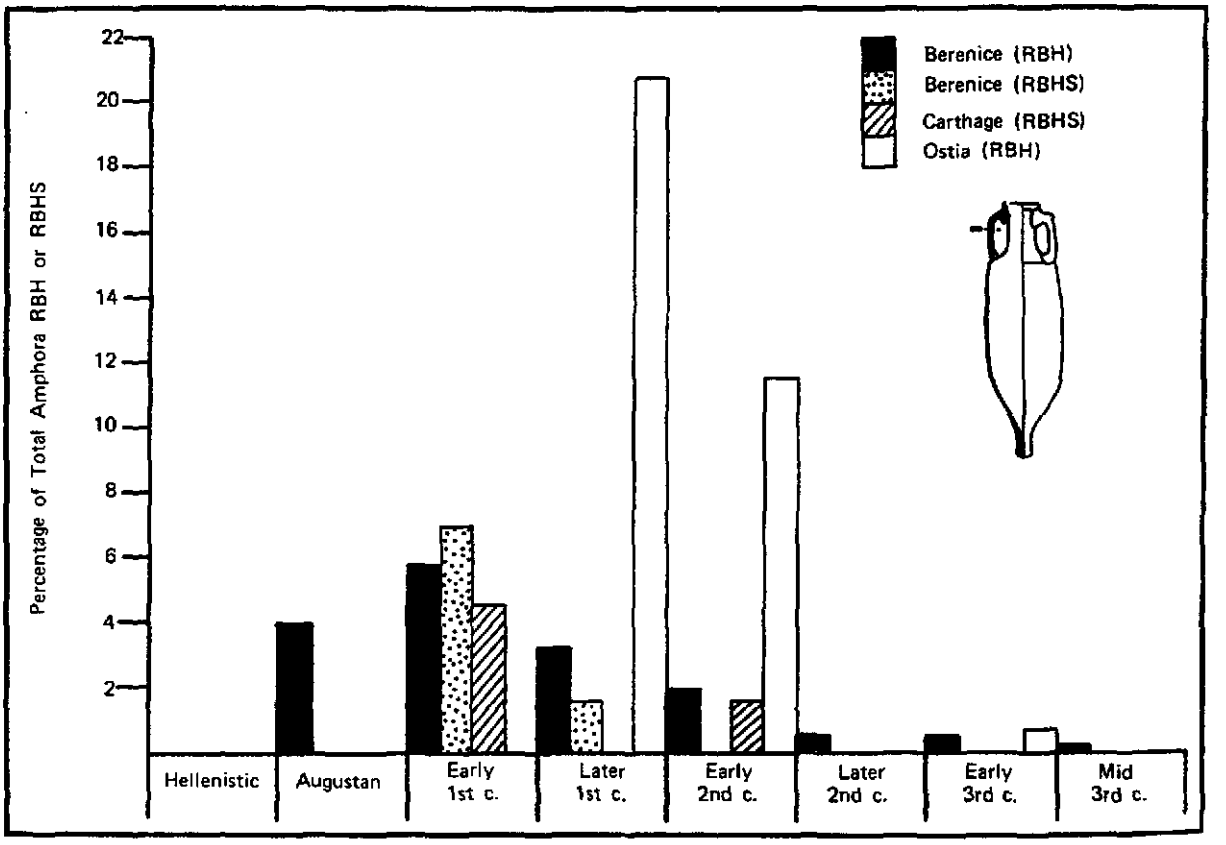


Fig. 17. Relative proportions over time of Campanian Dressel 2-4 amphorae at Berenice, Carthage, and Ostia.

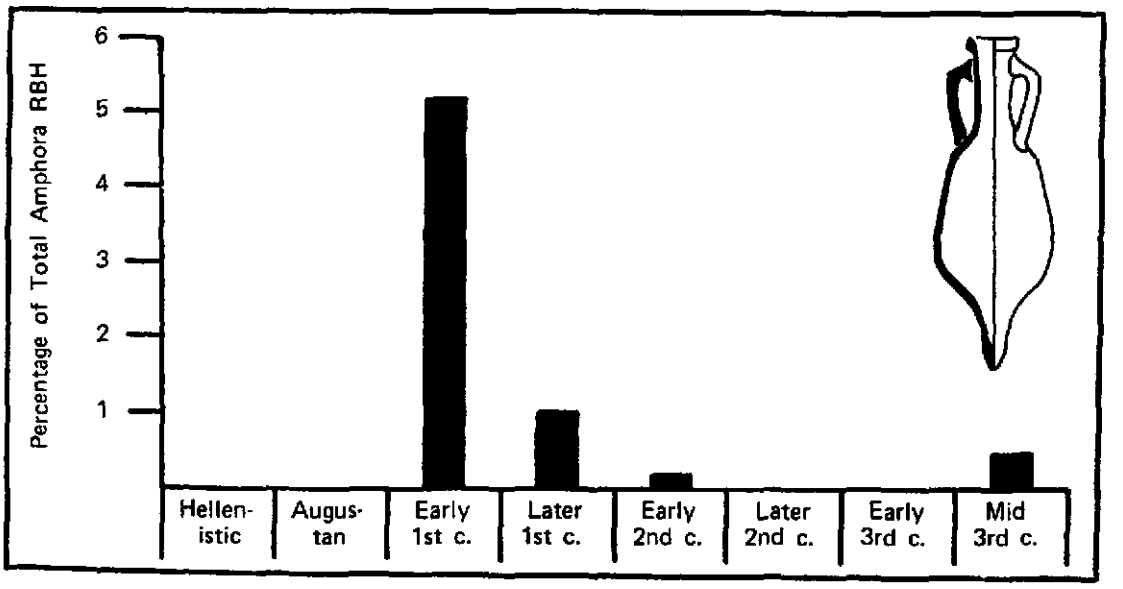


Fig. 18. Proportions over time of Dressel 6 amphorae at Berenice.

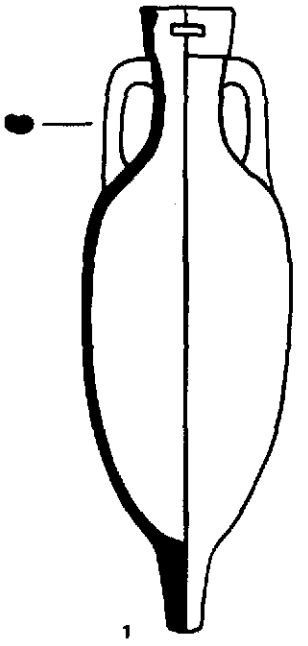
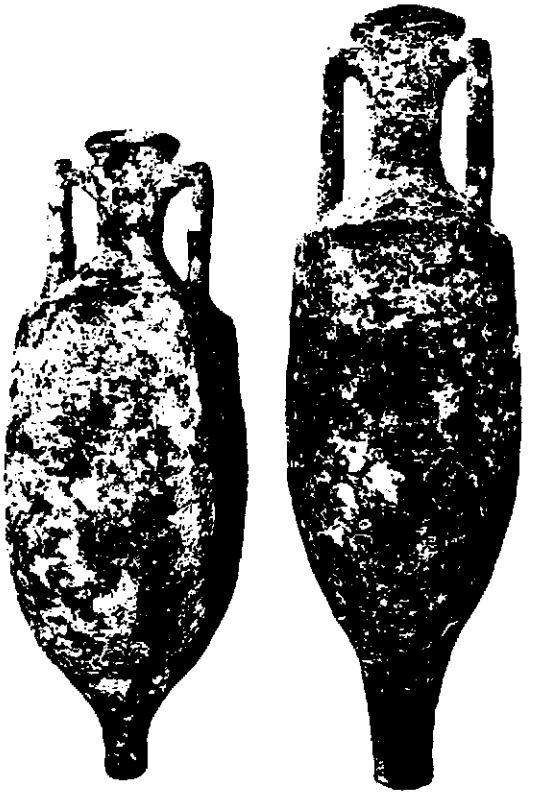


Fig. 19. Pascual 1 amphora, from kiln at Sant Boi (scale 3:4).

Fig. 20. Tarraconensian Dressel 2-4 amphorae, from shipwrecks at Sud-Lavezzi 3 (Dressel 3) and Petit Congloué (Dressel 2) (scale 1:10).



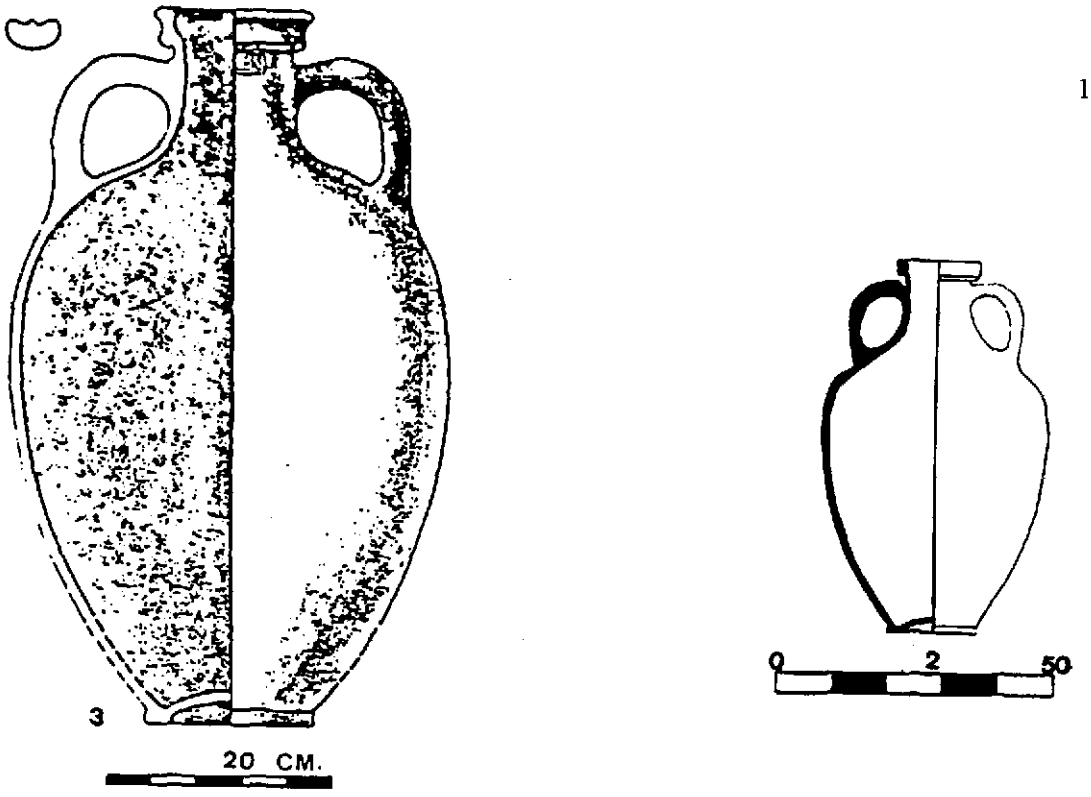
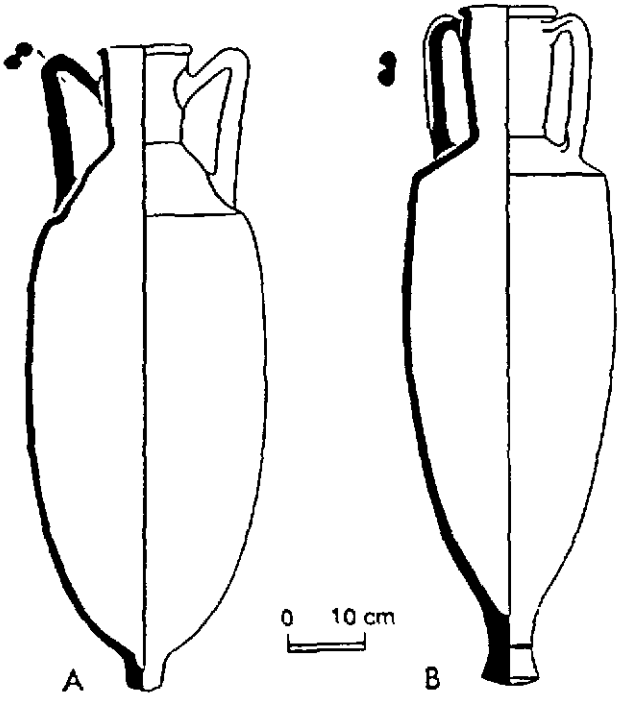


Fig. 21. Oberaden 74 amphorae, from Oberaden (left, after Loeschcke) and Ensérune (right, after Beltrán Lloris).

Fig. 22. Dressel 2-4 amphorae produced at Lyons: A. 'Coan type', B. 'Italic' type.



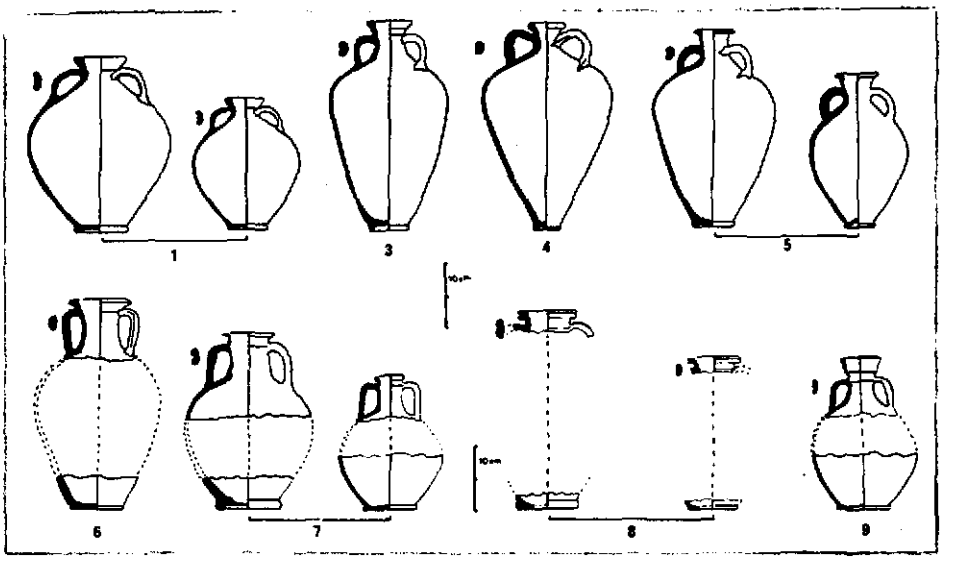


Fig. 23. Gaulish flat-bottomed amphorae.

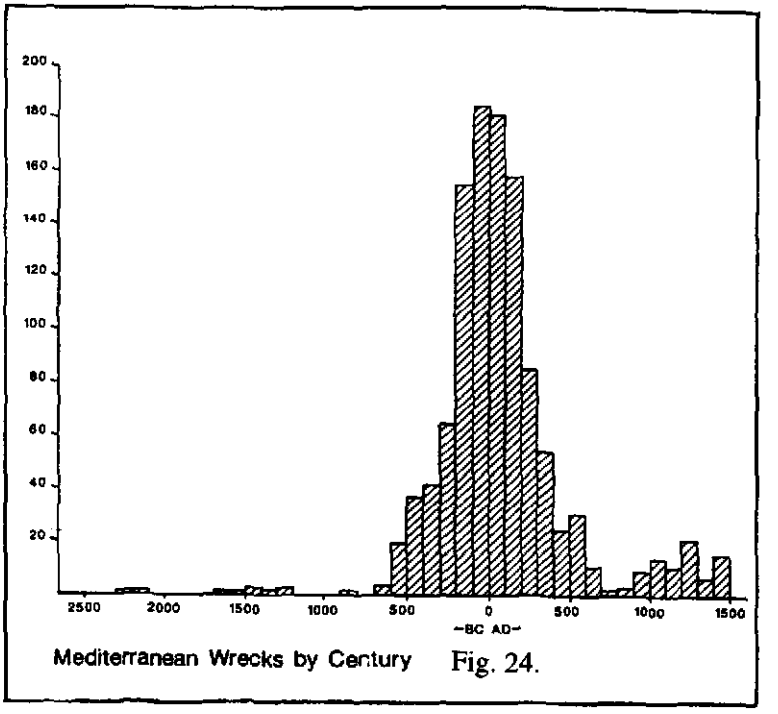
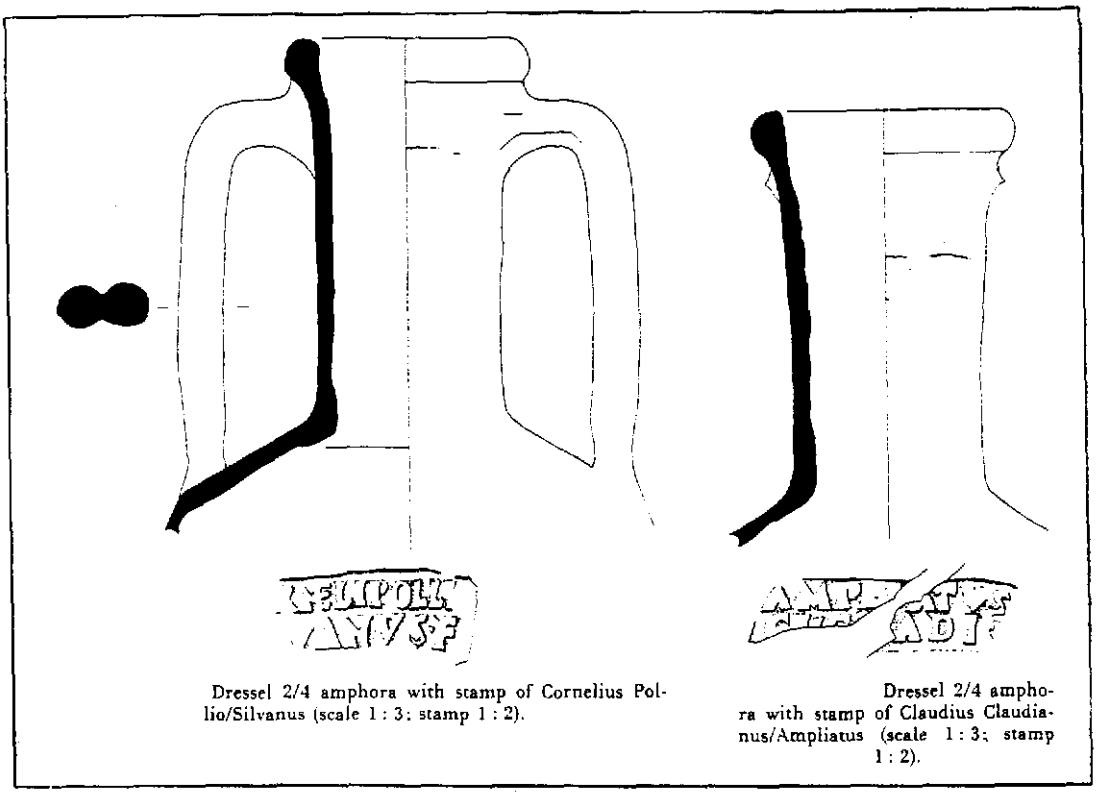


Fig. 24.



Dressel 2/4 amphora with stamp of Cornelius Pollio/Silvanus (scale 1 : 3; stamp 1 : 2).

Dressel 2/4 amphora with stamp of Claudius Claudianus/Ampliatus (scale 1 : 3; stamp 1 : 2).

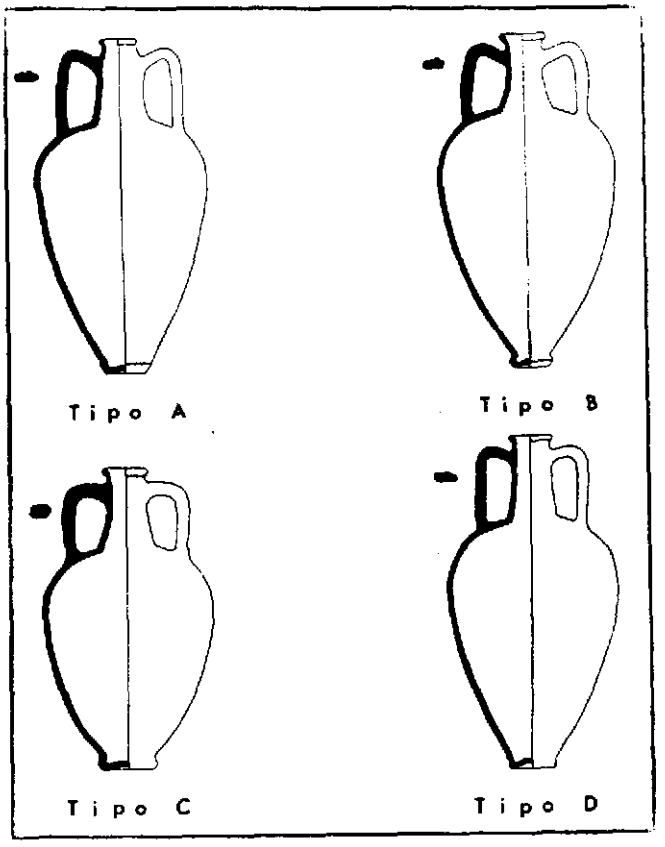


Fig. 25. Late Dressel 2-4 amphorae from Villa Site 10 on the Via Gabina.

Fig. 26. Flat-based amphorae produced at Forlimpopoli.

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