VRG_Folder_0572

ATHENIAN ; PANATHENAIC

1.01

G. R. Edwards
4222 Spruce Street
Philadelphia, Pa., 19104

May 24, 1988

Dear Dr. Tzachou-Alexandris:

I am writing to you in connection with the eight Panathenaic amphorae of the archon Polemon (312/311 B.C.) which you excavated in 1966 as part of a deposit found at the corner of Achilles and Plataia street in Athens (Deltion 22 (1967), part B'1-chronica, p. 58 and pl. 73; Jiri Frel, Rev. Arch. 1972, p. 289, note 2).

I am very much interested in learning more about them in connection with a study I am preparing on the subject of Hellenistic and Roman Panathenaics. I now expect to be in Greece for a few weeks in the fall, probably in October. I hope that at that time I may come to see you. Perhaps at that time you would be so kind as to make it possible for me to see the amphorae? I would also very much like to discuss with you what the prospects may be for their publication, either by yourself or by some member of your archaeological service? If I may I should like to have photographs of them for reference in my catalogue.

It seems very important that this group of amphorae be published and I do hope that you can arrange for this. Other than these amphorae there are, I believe, only two small fragments of the archon Polemon known. Since his amphorae are the last with archon names they are especially important for the early phases of the amphorae of the Hellenistic period.

You do not know me, of course, though I have spent some years in Greece as a member of the staff of the Agora and of the Corinth excavations. I therefore include here a copy of my Curriculum Vitae. I also include a xerox copy of the article I published in Hesperia 26, 1957, on the Panathenaics found in the Agora excavations of the Hellenistic and Roman periods. I have been working for about a year now at Bryn Mawr with the thought of publishing a new, up-to-date catalogue to include the many more which have become available in these thirty years and to prepare a text on various aspects to accompany it.

I look forward very much to making your acquaintance and shall greatly appreciate anything you can do to facilitate my study.

Sincerely yours,

G. Roger Edwards

G. Roger Edwards

P.S. Virginia Grace of the Agora excavations has written me that she would like to be able to examine the four stamped amphora handles found in the deposit. I am sure that others associated with the Agora in its publications would be very interested in the red figure and black glaze pottery and in the terracotta figurines in this chronologically probably very important deposit.

(This is because it seems possible she has Pleistia of the earliest type found in La Pignia apotheke)

1.02

G. R. Edwards
4222 Spruce Street
Philadelphia, Pa., 19104
June 8, 1988

Dear Virginia:

Thank you for yours of May 11. The enclosure from E. Smithson on 3rd century archons was very welcome. I do try to keep track of them: they seem to have become more Protean in these latter days, is it not so? I passed on copies of the handout to Homer and to C. Habicht. The latter was especially appreciative since he had not known of Osborne's recent ideas. He wrote that he himself will have an article in Hesperia this year on the years 160/59 to 141/40 B.C.

I did attend the very first-class symposium in Washington May 27-28 (program enclosed). There I did meet Mme. Alexandri. I presented her with a letter outlining my interests in the deposit with 8 Panathenaics of Polemon of which I sent you xeroxes from the publications. I enclose a copy. In the postscript I mentioned your interest in the SAH's. She was very pleasant and cooperative. I believe she said she had assigned the publication to a member of her staff. So by now you should be free to get in touch with her about them. I am now expecting to come to Greece for a few weeks or a month, probably in October, to look into this deposit and the one of the 14 amphorae in Rhodes; also perhaps to negotiate with the Kerameikos. Frel estimated that about one quarter of the total there were Helenistic (evidently ca. 125). Write Papa X

The symposium was truly a great pleasure. The exhibit on the theme of the human figure in early Greek art, the pieces borrowed from Greece of course, was very absorbing and stimulating, especially the archaic marble sculpture. The most notable were the kouros from Mt. Ptoon, the Theseus and Antiope from the Eretria pediment, one of the relief bases from the Themistoklean wall (athletes playing hockey; chariot groups); an athlete victor stele from Sounion; and one of my great favorites, the so-called Marathon runner (really a Pyrrhic dancer, they say). Also 3 Acropolis korai looking more like submissive handmaidens than personalities; a very fragmentary but lovely female head; and a small male head retaining much color.

There is an excellent publication of the exhibit which may well be available in Greece also: The Human Figure in Early Greek Art Diana Buitron organized it largely, I believe, in cooperation with the Greek archaeological service. Of the speakers the stars were Alan Boeghold, J. Hurwit, Emily V., Dick Ni cholls, E. Touloupa, and Dyffri Williams. All were excellent but a number of the lectures would be better in reading: i.e. too closely reasoned for ready comprehension in verbal delivery.

I enclose also a copy of a handout which I sent recently to Turkey via Machteld to be distributed to pertinent excavators by ARIT in Ankara. I hope to gather in many more candidates for my catalogue. Do spread the word !

I talked on the phone with dear Jane a little while ago. In Maine, of course. She is apparently feeling much better now tho she did not seem her usual self yet.

Best greetings and thanks to Evelyn S. as well as to yourself -

Roger

should have written to her June 16.

ATHENIAN — PANATHENAIC

2.01

Athens, May 11, 1988

Dear Roger,

Nice to get quickly yours of May 4, and to hear how you are enjoying your pursuits. My better relations with M. Garlan began in the '60s I think when he came to the Stoa one day and said, crossly, "In my excavations in Thasos this summer, I found Thasian stamps of the kind you call "anciens" underneath the kind you call "récents"! I said that was nice, but I was not surprised. "No?" he said. "The French do not believe in your chronology." After that he was just cross at the previous excavators on Thasos, who never managed to distinguish stratification there, whereas of course I had just used Homer's (on the Pnyx as well as in the Agora,).

Last week we had here a colloquium presented by the Australian Archeological Institute, which has more or less existed for some years, but has taken on more growth lately. I did not manage to attend the lectures, but was glad to see Dick Greene, now, I think, in Sydney. There was one lecture which might concern you, by Michael Osborne, not originally an Australian, but now teaching at Melbourne, I think. He is redating some of the Athenian archons of the Hellenistic period. He says that in non-democratic periods in Athensian history, the cycles of secretaries are not to be used as evidence. I enclose a copy of a handout at his lecture, made for you by Evelyn Smithson who did. She tells me that Osborne publishe on the subject in 1985, but has now made revisions in his then dating, the handout being up to date.

But perhaps you don't go down into the 3rd century

Dr. Zervoudaki's researches and publications have been interrupted by a lot of administrative work, including a spell as Director of Antiquities or whatever the title is), from which she has been glad to escape more or less. She has an important deposit for me also in Rhodes, containing what seem to be the earliest stamped Rhodian amphoras combined with late red figure. The amphoras seem to precede those in the Kyrenia wreck.

Yours,

Virginia

ATHENIAN ARCHONS 268|7 — 228|7 (MJo 1988)

2.02

	268|7	PEITHIDEMOS	< X >		
	267|6	MENEKLES	XI		
(P)	266|5	NIKIAS	XII		
	265|4		[1]	PHANOMACHOS OR [—]	[-]
	264|3	DIOGNETOS	[2]		
	263|2		[3]	PHANOMACHOS OR [-]	[-]
(P)	262|1	ANTIPATROS	[4]		
				DEMOCRACY FALLS CYCLES DISREGARDED HENCEFORTH	
	261|0	ARRHENEIDES	[-]		
	260|59	EXACT ORDER UNCLEAR	[-]	[ANTIPHON [-]	
	259|8		[-]	THYMOCHARES [-]]	
(P)	258|7		[-]	EUBOULOS [-]	
	257|6		[-]	DIOGEITON X	
	256|5		[-]	ALKIBIADES [-]	
	255|4	PHILINDS	II		

	A		OR	B	
(P)	254|3	ATHENODOROS	X	ATHENODOROS	X
	253|2	PHILOSTRATOS	[-]	KLEOMACHOS	VI
	252|1	ANTIMACHOS	V	PHILOSTRATOS	[-]
	251|0	KLEOMACHOS	VI	ANTIMACHOS	V
(P)	250|49	PHANOSTRATOS	[-]	PHANOSTRATOS	[-]
	249|8	PHEIDOSTRATOS	[V|VI|VIII]	PHEIDOSTRATOS	[V|VI|VIII]
	248|7	KALLIMEDES	IV		
	247|6	THERSILOCHOS	VI		
(P)	246|5	POLYEUKTOS	VII		
	245|4	HIERON	VIII		
	244|3	DIOMEDON	XII		
	243|2	LYSIADES	[-]		
(P)	242|1	PHILONEOS	VI		
	241|0	THEOPHEMOS	[-]		
	240|39	KYDENOR	VI		
	239|8	EUAYKLEIDES	[-]		
(P)	238|7	LYSIAS	II/X/XI	← OUTBREAK of DEMETRIAN WAR	
	237|6	KIMON	[1]		
	236|5	EKPHANTOS	II		
	235|4	LYSANIAS	III		
(P)	234|3	[A]RISTION	[4]		
	233|2		[5] ?	LYKEAS [-]	ORDER UNCLEAR
	232|1		[6] ?	POLYSTRATOS [-]	
	231|0		[7] ?	[....]BIOS [-]	
(P)	230|29	JASON	[8] ?		
	229|8	HELIODOROS	IX		
	228|7	LEOCHARES	X	← DEMOCRACY of EUAYKLEIDES/MIKION	

(P) = GREAT PANATHENAIC YEAR

ATHENIAN : PANATH BENAIC 3.01

G. R. Edwards
4222 Spruce Street
Philadelphia, Pa., 19104

May 4, 1988

Dear Virginia:

Thank you so much for your very kind and helpful letter. Mail service must be improving: it arrived in only a week.

I was especially pleased to hear that Dr.Ios Zervoudaki is the person to whom I should apply for Benaki information. Because from her in addition I very much want to learn what she can tell me about a group of 14 panathenaics found in Rhodes all dated by inscriptions of the archon Demokleides, 316/15 B.C., according to Valavanis (1986). They were reported in Deltion 23, 1968, pt. 2,2, p. 436, with one neck fragment illustrated on pl. 403a. They were, according to Valavanis, given to her to publish. I devoutly hope she has or will, even tho it is 20 years. I have been trying to pull together as a preamble or jumping off place the 1ste archon panathenaics of the 320's and 3 teens (down to the end of those dated by archons with Polemon in 312/11). The quality of the neck she illustrates is indeed very high, extremely good for so late a date, if it is indeed Demokleides. I do want to get together all the information I can and get really good photographs also. The archon panathenaics as a whole, of the period in which I am interested, are very poorly illustrated in publications. It does seem to me important at that transitional time to give them their very valuable due.

In this connection I include three xeroxes concerned with another hoard of panathenaics, this time of Polemon, 4 years later.This may be of interest to you since it included 4 "sphraggies" (a term newly minted!). The deposit, whatever its character was, was reported in Deltion 22, 1967, p. 58, with one reverse illustrated along with a red figure bell krater. In this case the excavator was Olga Alexandri (now Tzakou-Alexandri). She reported only two panathenaics and made no mention of Polemon. However, Frel in Rev. Arch. 1972, p. 289, footnote 2, who went over the group himself , reported 8 of Polemon and suggests that the material was all rejects from a potter's shop. Thus not neccesarily all of one date. They could represent an accumulation over a period of time, of course. I expect to see Mme. Alexandri in Washington where she is to speak at a symposium in the National Gallery on May 28 so I will quiz her if I get a chance. These amphorae are also important to me since hitherto we have had of this final archon only fragments which include parts of his inscriptions.

I was delighted with your reference to Valavanis article in the BCH Supplement XIII. I have yet to catch up on all the wonderful journals and books in the Classical Seminar where I work in Bryn Mawr: it is to me Aladdin's cave! And I hadn't gone thru this publication before. The article is very good and I am especially grateful to him since I hadn't known about the Rhodian group of Demokleides. His points about commercial use were very good.I shall exercise due caution about the distribution of amphorae vis-a-vis victors. However, I do think he may have overdone it a bit in his enthusiasm. After all, the amphora per se was a symbol of the games or of victory down into the Roman period (representations on mosaics, coins, marble reliefs etc.) and if a victorious athlete didn't bring one home what else would he have to show for it all? On the other hand, perhaps, with Valavanis' thoughts in mind, we may look forward to numerous Panathenaic shipwrecks! Wouldn't that be jolly! About the 227 amphorae represented by fragments found on the Acropolis I don't think they all need be dedications. The amphorae were, after all, stored there at one point before distribution, I believe

Of course I was delighted also to see the whole issue of Supplement XIII. What a magnificent tribute it is to you! (I read the preface!). Just to think that all those

articles, all this lively interest in your subject is due to your life's work! You did it all yourself! You must be very gratified indeed and I do congratulate and admire most enthusiastically.

I do not know M. Empereur but I will write in a hopeful manner to see if he can facilitate good photographs from Alexandria. There probably are more pieces now than there were when Breccia wrote in 1911. The chances are[x] sometime myself before the opus is finished. We did have a delightful time there, all very vivid and memorable. Now that you are so mobile perhaps we could have a repeat!

Affectionately,

Roger

x. that I will want to pay a visit there

The Mabel-Machteld send-off was a wonderful occasion. A big crowd with lots of much admired old friends. Tomorrow night a lecture by Emily Vermeule at Princeton, the occasion being the inauguration of a new AIA lectureship named for Homer and Dorothy.

10.V.88

M. Osborne reading archives of Hell. period. (Says, can't go by searches.) Lecture at Australian inst. a few days ago.

Rev. Arch 1972, p. 289

Deposit with (acc. to Tod) 8 Panathenaics of Polemon, 312/311 BC

3,03

d (584 A et 589 B) : 5,8 cm × 10,2 cm ; coude droit d'Athéna (rehaut blanc), la manche de chiton et le châle retombant.

e (607 B) : 10 cm × 7 cm ; pied gauche d'Athéna (rehaut blanc), chaussée d'une sandale (lacets en vernis délayé), le rebord inférieur de sa robe (broderies en points blancs).

f (607 B) ; 2,5 cm × 4,5 cm ; rebord droit d'une figure drapée (Athéna ?).

g (603 et 604) : 11,6 cm × 11,4 cm ; rebord gauche d'un panneau.

h (589 A) : 3,5 cm × 1,8 cm ; rebord droit d'un panneau.

i (608) : 13,9 cm × 13,6 cm ; pied droit d'un athlète à droite (le pourtour incisé) ; dessous, un filet de vernis délayé.

j (584 B) : 5,1 cm × 4 cm ; pied droit d'un athlète (le pourtour incisé) ; dessous, un filet de vernis délayé.

Niké redevient le symbolon standard au dernier tiers du siècle (1). Le peu qui reste de la décoration figurée est très compatible avec les pièces tardives du groupe de Nikomachos (2). Un fragment du Céramique, d'une autre amphore, sans provenance déterminée, peut être attribué à la même main (la fig. 3, en haut à droite) :

(490) : 9,5 cm × 5 cm ; pied gauche d'un coureur, l'extrémité du talon gauche du coureur devant lui. L'attribution est basée sur l'identité des lignes incisées et sur le dessin de la cheville.

NEAICHMOS (320/19)

Trois pièces avec le nom de Neaichmos sont connues : les fragments d'une amphore à Leningrad (3) et deux tessons, l'un à Leningrad, l'autre à Oxford, University of Mississipi, autrefois dans la collection Robinson (4). Sur une autre amphore de Leningrad, le nom peut être restitué grâce au rare symbolon identique (5).
Voici un autre fragment, minuscule, du Céramique (fig. 4) :

4.

(184) : 4,5 cm × 4,7 cm ; limite du panneau à gauche, à droite de la colonne de gauche]EAI[. La forme du fragment confirme que la désignation du magistrat précédait son nom. Ceci, tout comme l'emplacement, correspond aux trois autres instances. L'intérêt serait minime, s'il n'y avait pas une circonstance : le fragment est de la même main que le premier fragment de Démokleidès dans le paragraphe suivant. L'attribution est confirmée par le

(1) *ABV* 415.9-11 (Hégésias, 324/3), 415.12 (Képhisodoros, 323/2), 416.13 (Archippos, 321/20) et les huit amphores de l'archonte Polemon ; cf. la note suivante.

(2) *ABV* 415 sq., 7 sqq. ; cf. aussi les huit amphores panathénaïques de l'archon Polemon (fragmentaires, l'orifice de quelques-unes a été limé) trouvées à Athènes (l'angle des rues Achille et Platéens) avec des vases à figures rouges très tardives et des vases noirs ; l'ensemble représente probablement des déchets d'un atelier de potier ; les panathénaïques sont de la même main, les avers correspondent aux Athénas du groupe de Nikomachos tardif (symbola : Niké), les revers représentent différentes compétitions. Le revers d'une panathénaïque et un cratère à figures rouges ont été reproduits dans le rapport préliminaire de la trouvaille par O. ALEXANDRI (*Delt.* 22 [1967], Chron. 58, pl. 73) qui a aimablement autorisé l'examen de ces pièces.

(3) *ABV* 416.14 ; *AA* (1913), 189.

(4) *CVA* Robinson 1, HE 33.2.

(5) *ABV* 416.17.

νὰ ἀντιμετωπίσουν τὸν ἐπερχόμενον κίνδυνον τῶν Μακεδόνων.

Εἰς τὸν μεταξὺ τοῦ τείχους καὶ προτειχίσματος χῶρον εἶχεν ἀνορυχθῆ, ἐντὸς τῆς κιμιλιᾶς, ἀγωγός, διαστάσεων 2 x 1 μ., ὅστις διήκει παραλλήλως πρὸς τὸ τεῖχος.

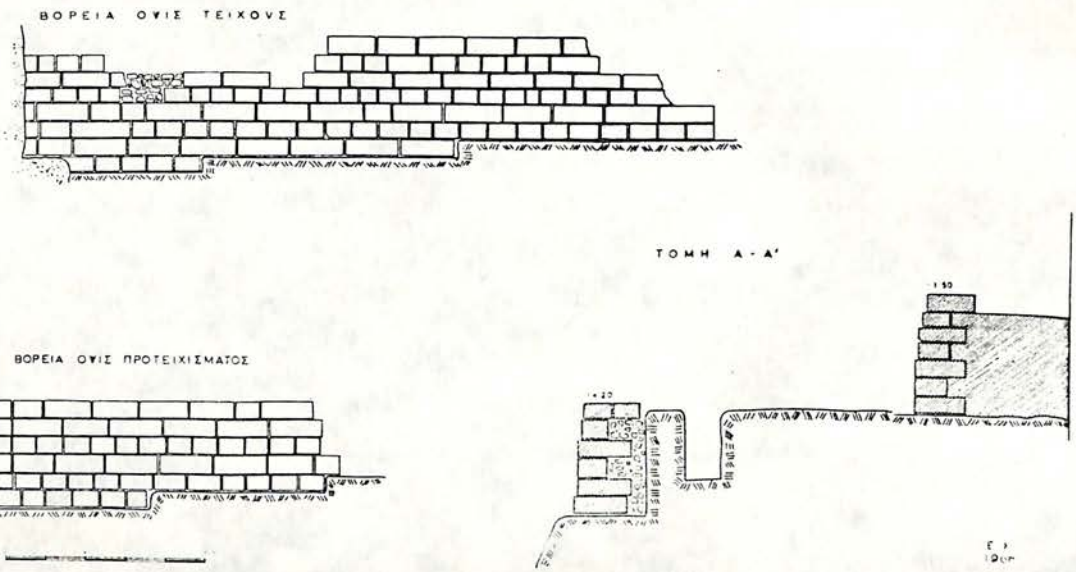
Ἐκ τῶν ἐπιχώσεων συνελέγησαν ὄστρακα χρονολογούμενα ἀπὸ τῶν γεωμετρικῶν μέχρι τῶν ἑλληνιστικῶν χρόνων, σφονδύλιον γεωμετρικόν, δύο σκύφοι καὶ ἓν ὄστρακον graffito.

Ὁδὸς Ἀρχιμήδους, ἔργα ΥΔΡΕΞ (Σχέδ. 1, 15)

Εἰς τὴν ὁδὸν Ἀρχιμήδους καὶ πρὸ τῆς οἰκίας ἀριθ. 25, ἀπεκαλύφθη ἐντὸς χάνδακος τῆς ΥΔΡΕΞ, πλάτ. 0,60 μ., τὴν 6-9-66 τὸ ἄκρον τοίχου, πλάτους 0,65 καὶ ὕψους 0,50 μ., κτίσματος ἐκ πωρίνων πλινθίδων. Ἡ κατεύθυνσις τοῦ τοίχου, ὁ ὁποῖος ἔκειτο εἰς βάθος 3.40 μ. ἀπὸ τοῦ καταστρώματος τῆς ὁδοῦ, ἦτο ἀπὸ Β. πρὸς Ν., ἀπεκαλύφθη δὲ οὗτος μόνον μέχρι μήκους 0,70 μ., τοῦ ὑπολοίπου συνεχιζομένου κάτωθεν τῆς ὁδοῦ.

Ἀχιλλέως καὶ Πλαταιῶν (Σχέδ. 1, 16)

Εἰς οἰκόπεδον κείμενον ἐπὶ τῶν ἀνωτέρω ὁδῶν ἰδιοκτησίας ἀδελφῶν Μπάρμπαρη, διαστ. 24 x 13 μ., παραπλεύρως τῆς Α. μεσοτοιχίας καὶ εἰς ἀπόστασιν 7 μ. ἀπὸ τῆς Ν. μεσοτοιχίας, ἀνευρέθη ὀρθογώνιος λάκκος, διαστ. 2.75 x 3.25 μ., λελαξευμένος ἐντὸς τῆς κιμιλιᾶς, τῆς ὁποίας ἡ στάθμη εὑρίσκετο 1.50 μ. ὑπὸ τὴν σύγχρονον ἐπιφάνειαν τοῦ ἐδάφους. Ἡ ἔρευνα διήρκεσεν ἀπὸ 4/18-6-66, ἀπέδωσε δὲ πλῆθος ὀστράκων, ἐξ ὧν συνεκολλήθησαν ἐννέα ἐρυθρόμορφοι κρατῆρες ρυθμοῦ Κέρτς (Πίν. 73 β), τέσσαρες μελαμβαφεῖς κρατῆρες, δύο παναθηναϊκοὶ ἀμφορεῖς (Πίν. 73 α), ἔνδεκα πινάκια μελαμβαφῆ, τρεῖς μελαμβαφεῖς κάνθαροι καὶ ἄλλα ἀγγεῖα. Ἐκ τοῦ ἀποθέτου ἐπίσης, συνελέγησαν θραύσματα εἰδωλίων, τέσσαρες ἐνσφράγιστοι λαβαὶ καὶ πέντε πήλιναι ἀγνῦθες.



Σχέδ. 17. Ὄψεις καὶ τομὴ τοῦ ἐπὶ τῶν ὁδῶν Ἀριστείδου καὶ Πεσμαζόγλου ἀποκαλυφθέντος τμήματος τοῦ τείχους τῆς πόλεως

Βασίλης 5 (Σχέδ. 1, 17)

Εἰς τὸ ἐπὶ τῆς ὁδοῦ Βασίλης 5 καὶ Φαίδρας διαμπερὲς οἰκόπεδον, διαστ. 20.60 x 11 μ., ἰδιοκτησίας Ε. Σταματάκη, ἀπεκαλύφθησαν τὰ λείψανα δύο δωματίων ἑλληνιστικῆς οἰκίας καὶ τμῆμα ρωμαϊκῆς δεξαμενῆς (Σχέδ. 18), ἡ ἀνασκαφὴ τῶν ὁποίων διήρκεσεν ἀπὸ 12/10-3/11/66.

Τοῦ ἀνατολικώτερον κειμένου τοίχου, ὅστις ἀπετέλει τὴν Δ. πλευρὰν τοῦ ἑνὸς τῶν δωματίων τῆς προαναφερθείσης οἰκίας, ἐσῴζετο τμῆμα, μήκ. 2.30 μ. καὶ ἡ πρὸς Δ. στροφή του· εἶχε πάχος 0,40 μ., διετηρεῖτο μέχρις ὕψους 0,84 μ., ἦτο ἐκτισμένος δι' ἀργῶν λίθων μικροῦ καὶ μεγάλου μεγέθους καὶ ἠδράζετο ἐπὶ τῆς κιμιλιᾶς εἰς βάθος 2.20 μ. ἀπὸ τοῦ καταστρώματος τῆς συγχρόνου

Ἀθῆναι. Ὁδὸς Ἀχιλλέως καὶ Πλαταιῶν: α. Παναθηναϊκὸς ἀμφορεύς, β. Ἐρυθρόμορφος κρατὴρ ρυθμοῦ Κέρτς

Ο. ΑΛΕΞΑΝΔΡΗ

ATHENIAN : PANATHENAIC

4.01

American School of Classical Studies
54 Swedias Street, Athens 106 76, Greece

April 26, 1988

Dear Roger,

It turns out that your Panathenaics are part of Mr. Benaki's collection that went to the National Museum. Maria suggested asking Miss Zervoudaki about them. She is in charge of the vases there, and is competent as well as a very good scholar. She called us back today, and said your pieces are there, and they do have National Museum numbers. So, write to her yourself, and tell her just what you need. Possibly some authorization for further publication? In any case, the inventory numbers; for these, you might send her a photocopy of the plates to be marked, or however you want to do it. Address her:

Dr. Ios Zervoudaki
Ephor of Antiquities
National Archaeological Museum
Tositsa Street 1
Athens
Greece

We don't know the zone number
Maybe somebody at Bryn Mawr does.
Sure to get there anyhow.

Mr. Benaki did not have permission to export these things, to the best of my knowledge. There may be some tactful way to handle that.

Your arrangement at Bryn Mawr sounds very good, and I am glad you are enjoying your work. For photographs in Alexandria, it used to be me, and now it is probably Jean-Yves Empereur. I forget if you know him. He is the Secretaire at the French School here. Possibly he knows where Frel is, which I do not. The fundraising dinner in New York did not have much to do with me, I fear.

I am grateful to you for your kindness to Emily, about which I had already heard.

Yours,

Cagi

A possible addition to your bibliography: P. Valavanis, in BCH Suppl.13, pp. 453-460.

A girl named Geneva Brinton has been in Athens, a great-granddaughter of the judge and his first wife, though named for the one we knew. Delightful girl.

ATHENIAN : PANATHENAIC

4.04

G. R. Edwards
4222 Spruce Street
Philadelphia, Pa., 19104

April 11, 1988

s which I am sure will evoke pleasant thoughts of our kindly
hi. Both are concerned with fragments of Panathenaics in his
them (Benachi A-F) are copied from a published plate from my
and a seventh (Benachi H), on the second sheet, is one which he
on the first sheet, Benachi G, a Hadra hydria in his collection.

some present importance about them: where are they now? I
eone knowledgable of your acquaintance could tell me? I have taken
llenistic Panathenaics again and have been working on bringing
o date for a year or so now. I am now launching forth on a final
gue. Present locations of all pieces are thus desirable.

ssion that Mr. Benachi was able to transfer a number of pieces
o Athens and that whatever he transferred may have come to rest
ewhere in Athens?): confirmation, if so, and present catalogue

know that I am enjoying the very generous hospitality of Bryn
thru the kindness of Gloria Pinney, Machteld and Bruni. The
ies I have ever experienced in all my career. Library,
privileges as well as all the other splendid perquisites such
and all. The work is going very well and business is booming:
mphorae of the period in 1987; over 200 now. I am most appreciative
Saturday the 16th of April, incidentally, there will occur here
of Mabel and Machteld who retire at the end of the present

ly while she was here. At the beginning she stayed for a few days
where I live) who was an old friend of hers in Russia (American,
e in Russia). During her brief stay at Bryn Mawr Peg and I
nce. She did appeal to me this time, though I had found her a
evious visit: a cute little old lady whom I would have enjoyed
as not to be.

om Mrs. Bober of the festivities in your honor in New York
resultant fund raising for the future of Stamphorae. You must indeed be
coming to know what being an eponymous heroine[x] feels like !

I hope my request will not seem burdensome. Tho I do trust there are, as ever,
willing hands to whom you can entrust it.

With my affectionate greetings -

Roger

P.S. 1. Would you perhaps know if there is anyone obliging to whom I could write
for photographs in the Alexandria Museum? I discovered that Breccia had

(OVER)

x = heroine!

21.IV.88 4.02

Lena Castadelon (competent and obliging)
at Benaki Museum

(Tel 361 2694)

Try Gr Ør
sof [illegible] [illegible]

22.IV She says they have not got these anything, nor yet the frags.

(2)

(23)

Κυρίου 3245220 18.IV.81

Το. 3214825 [4.03]

The term of Ἀρχιτέκτων [illegible]

240 BC [illegible]

ATHENIAN : PANATHENAIC

4.04

G. R. Edwards
4222 Spruce Street
Philadelphia, Pa., 19104

April 11, 1988

Dear Virginia:

I enclose two xeroxes which I am sure will evoke pleasant thoughts of our kindly old friend Mr. Benachi. Both are concerned with fragments of Panathenaics in his collection. Six of them (Benachi A-F) are copied from a published plate from my article of long ago and a seventh (Benachi H), on the second sheet, is one which he sent me later. Also on the first sheet, Benachi G, a Hadra hydria in his collection.

I have a question of some present importance about them: where are they now? I wonder if you or someone knowledgable of your acquaintance could tell me? I have taken up the subject of Hellenistic Panathenaics again and have been working on bringing our information up to date for a year or so now. I am now launching forth on a final or semi-final catalogue. Present locations of all pieces are thus desirable.

I have a vague impression that Mr. Benachi was able to transfer a number of pieces from his collection to Athens and that whatever he transferred may have come to rest in the Agora (or elsewhere in Athens?): confirmation, if so, and present catalogue numbers, I hope?

You may be pleased to know that I am enjoying the very generous hospitality of Bryn Mawr in this project thru the kindness of Gloria Pinney, Machteld and Bruni. The best research facilities I have ever experienced in all my career. Library, parking, and Wyndham privileges as well as all the other splendid perquisites such as excellent lectures and all. The work is going very well and business is booming: evidence for ca. 60 amphorae of the period in ~~1957~~ 1957; over 200 now. I am most appreciative of your alma mater. Saturday the 16th of April, incidentally, there will occur here a symposium in honor of Mabel and Machteld who retire at the end of the present academic year.

I saw a little of Emily while she was here. At the beginning she stayed for a few days with Peg Wettlin (near where I live) who was an old friend of hers in Russia (American, with 50 years residence in Russia). During her brief stay at Bryn Mawr Peg and I went out to see her once. She did appeal to me this time, though I had found her a bit formidable on a previous visit: a cute little old lady whom I would have enjoyed helping out. But it was not to be.

I hear good reports from Mrs. Bober of the festivities in your honor in New York and the resultant fund raising for the future of Stamphorae. You must indeed be coming to know what being an eponymous heroine feels like !

I hope my request will not seem burdensome. Tho I do trust there are, as ever, willing hands to whom you can entrust it.

With my affectionate greetings -

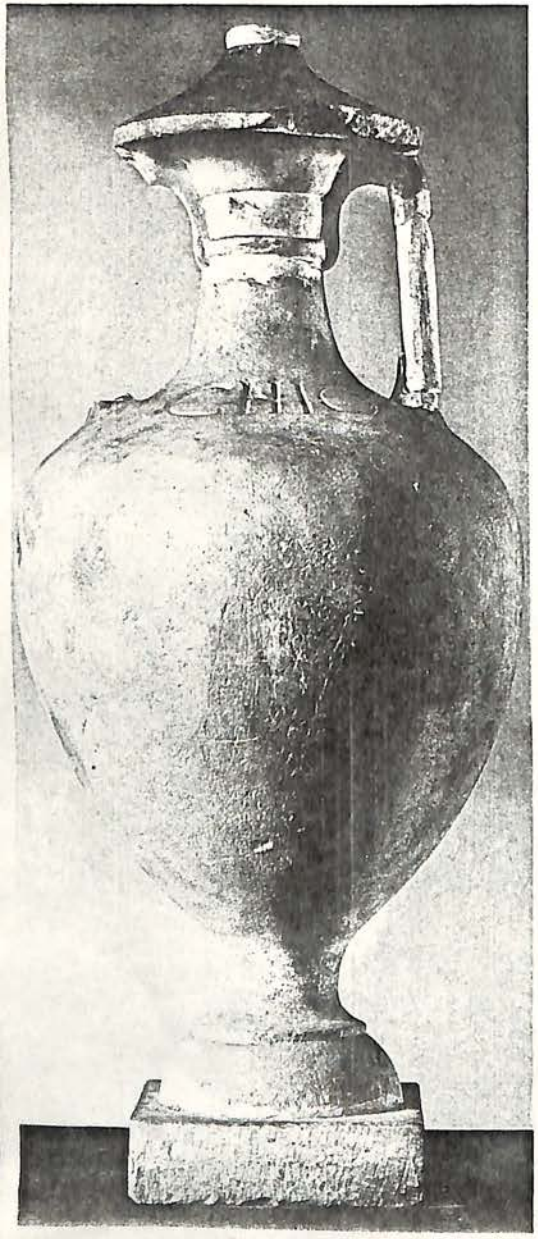
Roger

P.S. 1. Would you perhaps know if there is anyone obliging to whom I could write for photographs in the Alexandria Museum? I discovered that Breccia had (OVER)

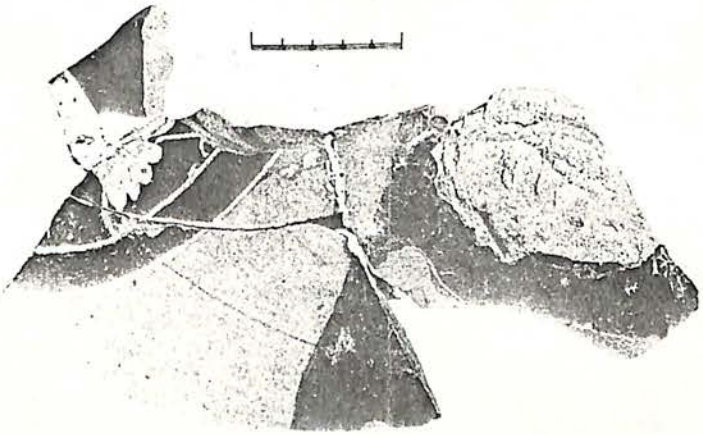
x = heroine!

mentioned in the text of his Greek and Latin Inscriptions book six fragments of some interest but totally without illustrations. Among them the first white ground lanes which I have found outside of Athens.

2. Do you happen to know the whereabouts of Jiri Frel? He left the Getty of course and the last report, some time back, said he was in Paris. I would like very much to get in touch with him.

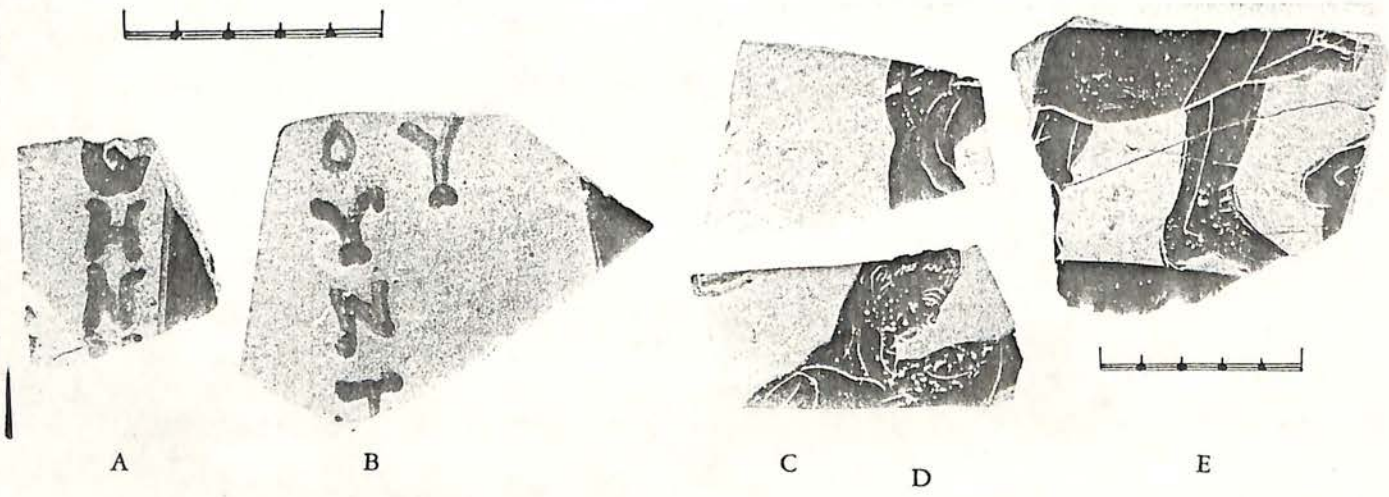


Roman Marble Amphora.
Philadelphia, University Museum MS 3447



F

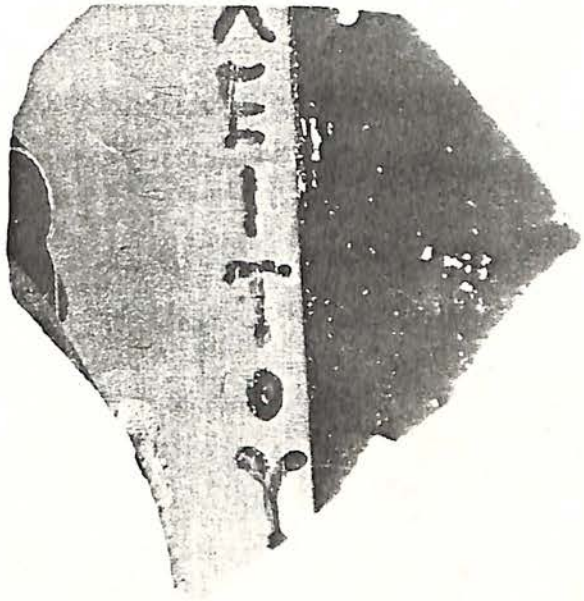
G. Hadra Hydria



A B C D E

Fragments of Amphorae. Benachi Collection, Alexandria

4.07



Benachi H

Unpublished

Fr. of Panathenaic amphora,
Hellenistic.
From Hadra or Naukratis
"about actual size"

Once Collection Lucas Benachi,
Alexandria, Egypt. (ca 1958)

JOHNSTON
JONES
corrected

With best wishes,

SGS AMPHORA

[5]

Reprinted from
THE ANNUAL OF
THE BRITISH SCHOOL OF ARCHAEOLOGY
AT ATHENS
VOLUME 73
1978

THE 'SOS' AMPHORA*

(PLATES 16–18)

I DISCUSS here some features of the type of storage amphora dubbed 'SOS', a large semi-decorated container in use from the later eighth to the first half of the sixth century B.C., and found at a large number of sites around the Mediterranean and beyond. In particular, the evidence of clay analyses carried out at the British School by Richard Jones will be adduced to confirm the Attic origin of the majority of these vases, while other centres of production will be reviewed. I also treat briefly the shape and decoration of the type and the inscriptions which the vases often carry. Other scholars are working on different aspects of the SOS amphora and I have therefore restricted my comments here; similarly, I do not treat at length material which is in course of publication, leaving closer discussion of dating especially to the excavators concerned.[1]

I. SOME UNPUBLISHED MATERIAL IN ENGLISH COLLECTIONS

1 University College London. Sherd from the shoulder of an amphora, presented to the museum by Mrs. Vronwy Hankey (PLATE 16a), maximum dimensions 21·3×11·7. I, FIG. 1(*a*). The wheel marks on the inside indicate a position high on the shoulder. Clay well prepared with a few large inclusions, some of which have spalled; biscuit pinkish buff. Surface worn with only scraps of dark glaze remaining, but enough to show that the vase was glazed on the wheel. A small dark inclusion taken from the right edge has been indentified as iron oxide.[2]

* Parts 1, 2, 4–7 of this article are wholly the responsibility of AWJ; part 3 is a joint production of AWJ and RJ.

Throughout, numbers in bold print refer to the samples listed in TABLE 1. In the catalogue entries in parts 1 and 2 the following abbreviations are used for measurements (all in cm.):

H	height	D	greatest diameter
Hl	height of lip, above ridge	Dl	diameter of lip
Hn	height of neck, below ridge	Df	diameter of foot

For sherds the width is given before the height. After dimensions there follows an indication of the neck decoration, the key to which is given on p. 135–6. Next comes mention of any inscription, I, followed by the suitable reference. 'Ridge' and 'band' refer respectively to the neck profile and the decoration of the shoulder. The dating 'early' 'middle' and 'late' apply to the periods 725–675, 675–625, 625–575 approximately. For the distinction applied here between SOS and 'à la brosse' amphorae see p. 121.

The following non-standard abbreviations are used:

Arch. Sic. S-O = P. Pelagatti and G. Voza (edd.), *Archeologia nella Sicilia Sud-orientale*.
GGP = J. N. Coldstream, *Greek Geometric Pottery*, London 1968.
LSAG = L. H. Jeffery, *The Local Scripts of Archaic Greece*, Oxford 1961.
Brann = E. Brann, *Hesperia* xxx (1961) 93 ff., 305 ff. (catalogue nos.).
Strøm = I. Strøm, *Problems concerning the origin and development of the Etruscan orientalizing style*, Odense 1971.
Villard, *BAM* = F. Villard, *Bull. Arch. Maroc.* iv (1960) 6 ff.
Young = R. S. Young, *Hesperia* suppl. ii, especially 210–1.

I am grateful to the Managing Committee of the British School and the Arts Faculty of University College, London for assisting me in this work. I am also indebted to many individuals, in particular: D. Adamesteanu, D. Akehurst, O. Alexandri, M. Almagro Gorbea, G. Buchner, A. Choremis, B. F. Cook, G. R. Edwards, M. Gras, P-G. Guzzo, A. Indice, M. H. Jameson, V. Karageorghis, E. Lattanzi, J. de Hoz Bravo, P. R. S. Moorey, I. Nikolaou, P. Pelagatti, E. Protonotariou-Deilaki, D. Ridgway, F. Roncalli, A. Sampson, T. L. Shear Jr., F. Willemsen, C. K. Williams III, I. Zervoudaki.

1 The most recent review of the SOS type, by Strøm, gives a fuller bibliography than I have selected here. The treatments by Brann, l.c. and *Agora* viii 32–3, Strøm, Villard, and Young are all sound and I have only a few chronological modifications to add to them. B. B. Shefton will be dealing with questions of the distribution of the amphorae and J-P. Descouedres the material from Eretria and associated matters. Excavation reports which will be of importance, especially for dating, are expected for Chalkis, Kition, Pithekoussai, Metaponto, Policoro and Kamarina; only preliminary notices of these finds could be cited below.

2 I am grateful to Dr. R. Seeley for having the piece examined.

The provenance of the sherd is Cerveteri, where it was found in 1947. Much suggests that it comes from an SOS amphora: the size of the vase, the thickness of the wall (1·1 to 1·3 cm.), the wheel-glazed surface, and more significantly, the clay analysis (TABLE 1) and the graffito inscription.

The retrograde inscription is likely to have begun in the vicinity of a handle on the right. The central letters require little comment; from pl. 16a it may appear that the *rho* is tailed (a rubbing or latex cast would give the same impression), but the 'tail' is not intentional, being wholly the result of surface damage. On the right edge a single stroke is preserved before the *mu*, from either a *kappa*, *nu*, *sigma*, *upsilon*, or *chi*, assuming an Attic script. *Sigma* is clearly the most likely candidate. On the left, the last well-preserved letter is a *mu* or *nu*, but the former is ruled out by the lack of space before the following letter; this in turn can only be a *theta* or *omicron*. Finally there is a diagonal stroke which could belong to a range of letters. Taking into consideration the fact that all parallel alphabetic inscriptions on 'SOS' amphorae from Cerveteri are genitive forms of personal names, with or without εἰμί (pp. 128–9), we may choose *omicron* for the penultimate letter, which leads to *sigma* for the last. The whole will then read Ϛμιφρονος, although the niceties of dotting may be contested.

The lettering is in bold, fairly neat strokes; the edges are ragged, more so on the left than the right, but the strokes end abruptly with no tendency to tail off. Some verticals fall away to the right, arguing a right-handed inscriber. The inscription was clearly cut after firing.

The sherd cannot be closely dated of itself, though the streakiness of the glaze points to a later date.

2 British Museum 1848.6-19.9, from Vulci (Canino; see *CIE* 2 p. 141). Beazley and Magi, *Raccolta Guglielmi* 50–1; *LSAG* 77, 10*d* and 374 (the inventory number wrongly transferred to 3). PLATE 17a, b, d and FIG. 2(*a*). H 68, Hn/l 6·5/6·5; D 52, Dl 22·5–23·3, Df 19. O,S,O. I, FIG. 1(*b*), (*c*), (*d*). Weight empty 17 kg.; capacity to rim 63·75 l., to base of neck 61·75 l.[3] Clay and biscuit typically Attic. Very slight ridge. Body streakily glazed, fired orange in patches, with one small contact mark at the greatest diameter.

On the shoulder on one side is an abandoned attempt to inscribe a name (FIG. 1(*b*); after cutting three letters the inscriber began a *rho* instead of an *omicron* and gave up, although it would not have been difficult to cover the error. We may also note that he gave the *rho* two loops, one big and one small. On the other side (FIG. 1(*c*)) there are two further attempts at the name, seemingly in different hands, with shorter verticals and a rather wider graver in the first attempt. It is interesting to note why this went wrong: after cutting the *nu* the inscriber began an *omicron*, but went on to complete it as a *sigma*; it would seem that he mistook the section of a circle which he had already cut for the upper part of a *sigma*, a possible hint of the use of more cursive letter forms—? on perishable materials—at such an early date (see also **21**, FIG. 7(*h*)). Below the third, successful attempt at Archon's name, there is a further enigmatic graffito (FIG. 1(*d*)), possibly abandoned because of lack of space since it runs right against the handle root.

The lettering seems later that that of **1**, with shorter verticals and larger rounded letters. **1** in turn seems epigraphically earlier than most of the pieces from Cerveteri, **2** more or less contemporary. On this evidence we may place **2** around 600 or a little after, and **1** in the later seventh century.

61 Ashmolean 1954.482, from Al Mina (MN 2–61). Rim sherd. (PLATE 17*c* and FIG. 2(*b*)).

[3] The vase was placed in a tank and water introduced both outside and inside to relieve pressure on the walls. Although this procedure would have kept to a minimum the amount of water absorbed by the walls from the inside we should none the less make some allowance for this in thinking of the capacity of the vase.

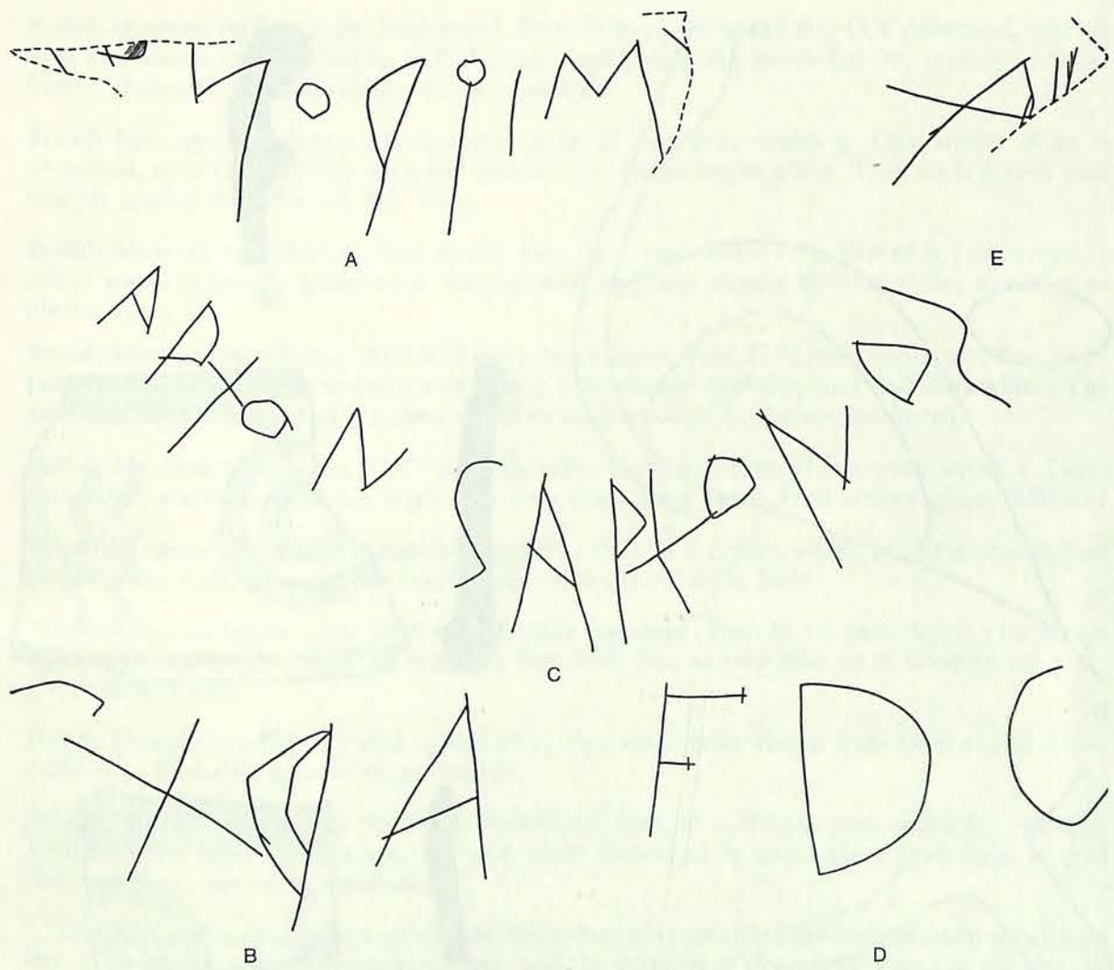


FIG. 1. Graffiti on shoulders of **1**(*a*) and **2**(*b–d*). Scale 1:2

Pres. H 8·5; Hl 3·7. Pale buff clay and slightly lustrous glaze. Prominent ridge, decorated with a row of dots.[4] Profile and decoration suggest a very early date, *c.* 730.

60 Ashmolean 1954.481[1], from Al Mina (level 5). Neck sherd. (PLATE 17*e* and FIG. 2(*c*))[5] Pres. H 8·5. .]Oa,Sb (reversed). Traces of handle attachment on right. Red and white inclusions in clay. The sherd is noteworthy because of the very clean breaks top and bottom, suggesting that lip, neck, and shoulder were thrown separately. The shoulder join is not easy to ascertain; it seems to have been at a very sharp angle to the neck. Late; the context is down towards the end of the seventh century (see Strøm 236).

[4] Despite this added frill to the decoration I have little doubt that this fragment comes from an SOS amphora; profile, size, and the rest of the decoration are sufficient to demonstrate that. It is unfortunate that it has no useful stratigraphic context.

[5] I owe the profile drawings of Ashmolean 1954.481[1] and [2] to Mrs. Pat Clarke.

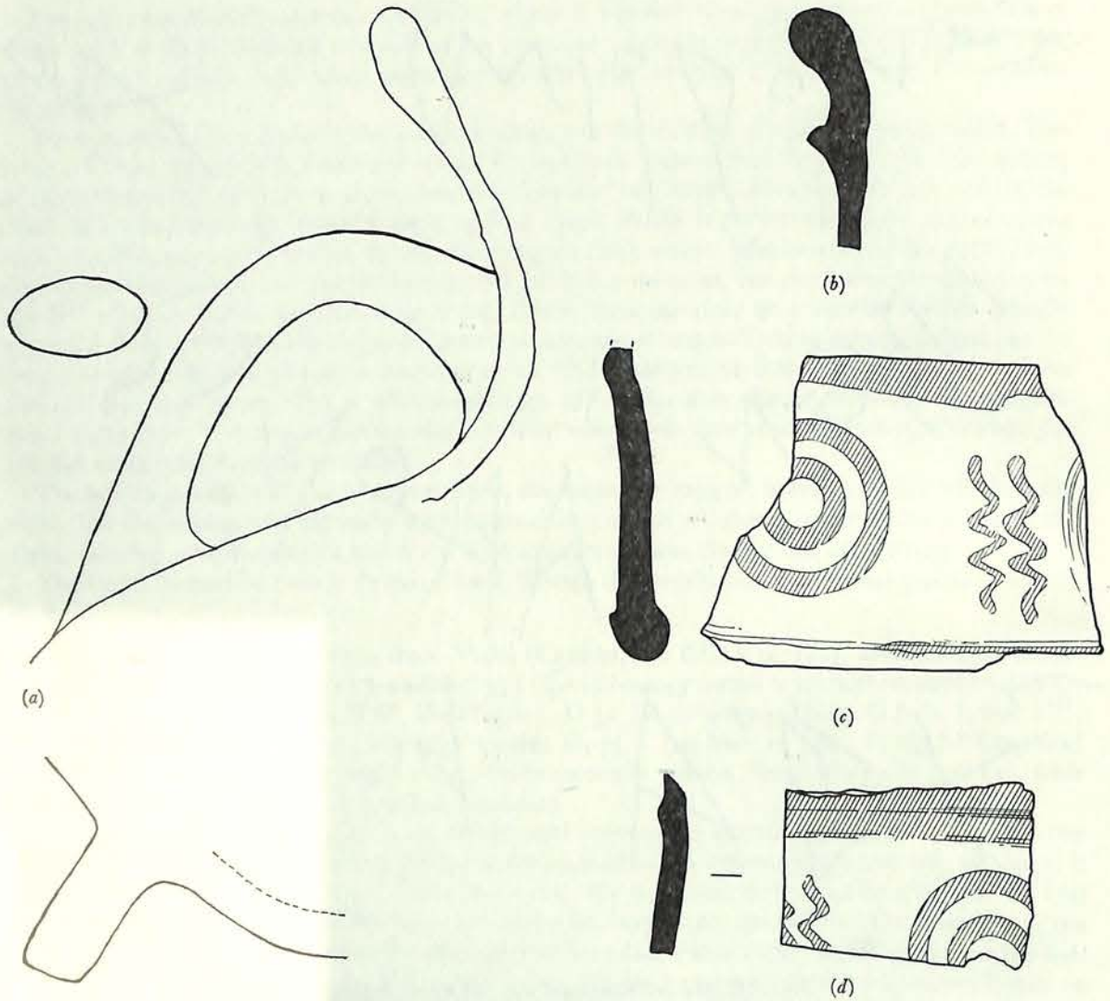


FIG. 2. Profiles of **2**(*a*), **61**(*b*), **60**(*c*) and Asmolean 1954.481[2] (*d*). Scale 0:0 1:2

Ashmolean 1954.481[2], from Al Mina (level 5). Neck sherd. (PLATE 17*e* and FIG. 2(*d*)). 7×5·5 Parts of Sa,O preserved. Slight ridge. Context as **60**.

Ashmolean 1956.507, from Al Mina. Wall sherd. (I, FIG. 1(*e*)). The fabric is not surely Attic.

The following pieces from Al Mina came to my attention too late for them to be illustrated here and to be included in the subsequent discussion:

British Museum 1968.3-25.87 (MN 8). Three joining sherds giving most of upper parts with spring of one handle. Hn/l 6·5/5·5, Dl 21·5. O,O. Slight ridge, flattened handle. Buff-tan clay with red and white inclusions; purplish brown glaze. Late, close to Agora P22734 (**73**); the piece cannot be as early as the level 8 (terminal date *c.* 720) which is ascribed to it.

British Museum 1968.3-25.88. Neck sherd. Pres. H 8·5, pres. width 8·3. O,T preserved, with at least two bands below. Pinkish buff clay with red inclusions, much lighter, creamy surface; heavy, close-set ridging on inside. Early to middle.

British Museum 1970.8-27.1. Neck sherd. Pres. H 6·5, pres. width 9. One stroke of an S preserved, then O. Buff clay with red inclusions; orange-brown glaze. Thin-walled neck and sharply angled shoulder (cf. **60**). Late.

British Museum 1970.8-27.2. Neck sherd. Pres. H 7, pres. width 12·3. Part of Sc? preserved to left of traces of handle attachment. Orange-buff clay and streaky chesnut glaze; shoulder as above. Late.

British Museum 1970.8-27.3 (MN 8, Rm 8). Neck sherd. Pres. H 6, pres. width 9·7. Part of W preserved (quarter circle and scrap of spoke). Fine orange-buff clay and dull dark glaze. The profile is fairly straight and the piece could be early enough for the marked level.

British Museum 1970.8-27.4. (MN 6-7). Shoulder fragment. Pres. H 6·7, pres. width 5. Light curvature; reserved band 3·5 high with four thick lines on it. Dull umber glaze. Middle?

British Museum 1970.8-27.5. Shoulder fragment. Pres. H 8·1, pres. width 7·7. Fine orange-buff clay, streaky dark brown glaze. Single reserved band 0·7 high. Late.

British Museum 1970.8-27.6. (MN 8). Shoulder fragment. Pres. H 11, pres. width 11·2. From upper part of shoulder; reserved band 4·4 high with four narrow lines on it. Gingery tan clay, glaze worn. Early.

British Museum 1970.8-27.7 and 1970.8-28.1. Two small body sherds from large closed vases. Attic clay. Probably from SOS, undatable.

British Museum 1970.8-27.8 (MN 5-6). Neck sherd. Pres. H 7, Hn 5·4, pres. width 8. . .]Oa[. . Well polished light buff surface, red and white inclusions in clay; glaze fired light to mid chestnut. Late, probably before 600.

The chief points of interest here are the difficulties of reconciling the level marked on at least one of the sherds with its typological date, and the varieties of decoration found at the site, W and O,T in particular. The numbers of amphorae sent to Al Mina throughout the period of production (save the latest years?) may have been substantial.

2. THE MATERIAL

The following catalogue lists all SOS amphorae and fragments known to me; I make no claim to completeness in view of the immense task of collecting all the relevant sherds stored in the basements of the larger archaeological museums. I give basic details as explained in the introductory note and add other significant observations, but I intend the list to be supplementary to, not a replacement for previous publications. The listing within each area is roughly chronological.

Attica

Large numbers of vases and fragments have been found in Athens and at Phaleron.

The Agora

71 P23883. Brann R3; *Agora* viii 23. Vase. H 72; Hn/l 6/5. D 46 Dl 18·7; Df 16·5. Sa,O,Sa. Early; context into the early seventh century.

69 P21430. Brann P3; *Agora* viii 25. Neck. Hn/l 8/4; Dl *c.* 18. Sb,O,Sb. Striped handles. Early; context into early seventh century.

63 P10619. *Agora* viii 26. Neck. Hn/l 6·7/5·8. Dl 18·5. S,O,S. Middle; context down to mid-seventh century.

P7185. Young C127. Fragmentary vase. Pres. H 68; D 54. Sld,T,Sld. Upper part of inside of neck glazed. Lip offset, rather than a ridge between neck and lip. Middle.
P8374. Young C129. Lip frag. Hl 2·7. Sd?,[.],Sd.
P8375. Young C131. Neck frag. .]W[. . Some mica in the clay.
P8376. Young C130. Neck frag. .]W[. . The thin wavy vertical to the left of W may be accidental.
P8377. Young C132. Neck frag. .]W[. . Heavily ridged inside.
P8378. Young C128. Neck frag. .]T[. .
P8379. Young C133. Foot, slightly flaring. D 14.
P4664. Young B56; *Agora* xxi D4. Wall sherd. I, *Agora* loc. cit. Sherd used as label. Context seventh–sixth century ('seventh century', *Agora* loc. cit., seems rather the assumed date of the vase).

64 P12598. Agora viii 27. Neck and handle. Hn/l 6·3/5·7. Dl 24. Oa,Oa,Oa. Later; context down to *c.* 625.

66 P15096. *Agora* viii 33. Neck and shoulders. Hn/l 7/7. Dl 21. S,O,S, very carelessly painted. I, as *Agora* loc. cit. Ridge; flattened handles. Later.

70 P23464. Brann G37. Neck. Hl 5. Dl 21·3. Oa,Oa,Oa. Later; context towards end of seventh century.

72 P22733. Brann F40; *Agora* viii 24. Vase. H 65·5; Hn/l 5·5/5·5. D 50 Dl 22; 22; Df 16·5. Oa,Oa. Late; context down to *c.* 575.

73 P22734. Brann F42. Upper parts. Hn/l 6/6. Dl 23. O,O. Context as **72.**

74 P22735. Brann F41. Upper parts. Hn/l 7/5. Dl 25. O,O,O. I, as Brann. The flattened handles have a slight central ridge, just observable on **72** also. Context as **72.**

67 P17356. Brann H46. Neck and shoulders. Hn/l 7/5. Dl 23. Sa,O,Sa. I, *Hesperia* xxv (1956) 2–3. Late; context into sixth century.

68 P17400. Brann H45. Restored vase. Rest. H 66; Hn/l 8/5. Rest. D 50; Dl 22·5; Df 17. S,Oa,Sa. Context as **67.**

65 P14691. *Agora* viii 33; *Agora* xxi F7. Neck and shoulders. Hn+l 12·5. Rest. Dl 19. Sa,O,Sa. I, as *Agora* xxi loc. cit. Single band. Very late; context into second quarter, sixth century.

62 P666. *Agora* viii 28. Neck. Hn/l 5·5/6·5. S,Oa,S; one side has three-bar sigmas. Many white inclusions. Very late; context into first quarter, sixth century.

P9837. *Agora* viii 33. I, loc. cit.
P21700. *Agora* viii 33. I, loc. cit.

I have not seen the last two. I note also Brann's statement that Well G produced fragments of several other storage amphorae. Young, grave VI, 1 is a neck-amphora with SOS syntax (the body is wholly glazed, the handles striped). The excavations have also yielded 'à la brosse' amphorae, e.g. Young, grave II, 1 (P4599) and *Agora* xii 1501–2 (P4599 and P1253).

The Kerameikos

75 inv. 1298. *Kerameikos* V i pl. 38. Vase. H 67·5; Hn/l 8/5. D 43; Dl 17·5; Df 13·5. Sd,O,Sd. Early; tomb of LG Ib–II.

78 VD gr. 32. Lip and neck frag. Hl 4·4; Dl *c.* 16. Sd,O,Sd. Early.

82 (1940 südl. antidosis). Sherds of upper parts. Hl. 4·5. S,O,[S; although only of four bars the sigmas reach the bounding lines, top and bottom. I, a shoulder fragment preserves part of a single sign. Early.

76 inv. 1723. Vase, upper parts much restored. Rest. H 70·7; Hl *c.* 4. D 47; Df 14. O,O. Early to middle.

79 VD, neck fragment. Hn *c.* 7. Sc],O,Sc. Early or middle.

84 K59 (excavated by Gruben, 1959; at present on top of a display case in the museum).

H 73; Hn/l 6/5·6. D *c.* 45; Dl 22·5; Df 15·5. Sa,O,Sa. Middle.
SH. vase, much restored. H 66·3; Hn + l 11·5. D 47; Dl 21·3; Df 16. O,O. Middle.

77 VD gr. 8. Two non-joining frags. of shoulder and neck. Sa,Oa preserved on latter. Middle to late.

80 unnumbered. *LSAG* 77, 10*e*. Rest. H 67·5; Hn + l 11·5. D 48; Dl 21·5. Sa,O,S. I, FIG. 7*a*; under the *rho* is inscribed a single damaged letter, perhaps a *gamma* or *alpha*. Slight ridge. Late.

81 inv. 1932. Vase. H 65·5; Hn/l 6/6·5. D 44; Dl 20·5; Df 17·5. Oa,Oa. Very streakily glazed and fired red. Late.

83 K29. Vase, lip restored. Rest. H 67·5; Hn 7·5; D 43; Df 16·5. Sb,O,Sb (careless five-stroke S). I, to left of one handle, perhaps two signs, very difficult to read because of breaks and wear. Single band; very streaky glaze. Late.

Some pieces published under the title SOS do not seem to belong: *AM* lxxxi (1966) 14, 22, late fragments; the red lines on the foot are foreign to the type. Ibid. 15, 25, two vases, the upper parts lost; there is no band on the illustrated example, Beil. 18,5, and without the upper parts it is not possible to separate such late vases from the 'à la brosse' variety. Ibid. 115, 208, Beil. 65,3 (context late eighth century) is closely related to the SOS type, notably in its size (H 71·5; Dl 21·5) but the lip and neck profile is that of the normal neck-amphora.

Acropolis, south slope

1959–NAK 1105. *ADelt.* xxviii (1973) A 54 and pl. 40 *st.* Neck and lip sherd. Sd?,O[., the S carefully painted. Early to middle.

Trachones

AM lxxxviii (1973) 51 and pl. 21,2. Vase. H 66·8. D 48. Sa,O,Sa. Low set shoulder band. Early to middle; grave goods do not suggest closer dating than 700–650.

Athens, elsewhere

Odos Sapphous gr. XX, storeroom of 3rd Ephoria. Vase. H 71·5; D *c.* 45. O,T,O. No ridge. Late.

In the same storeroom are fragments of at least three further vases, none of the early period; one has Sb,Ta,Sb.

Phaleron

Seventeen vases, from graves of all periods, are reported from the cemetery in *ADelt.* ii (1916) 27–9. Significant information is only available for the following:

tomb 4. I, *iota*, *phi*, *ADelt.* loc. cit.

tomb. 47. *ADelt.* loc. cit. fig. 11; Young, *AJA* xlvi (1942) 25; Strøm 234. Vase. H 70; D 48; Dl 12. S,O,S. Early; context *c.* 700.

tomb 61. *ADelt.* loc. cit. fig. 12. H 63. D 39; Dl 13. Slb?,T?,Slb?—the whole worn and not clear in the photograph. Middle? No other grave goods are mentioned in *ADelt.* loc. cit. 21, *pace Thorikos* I 56.

Athens 14489. *AE* (1911) 248, fig. 7; PLATE 18*a*. H 70; Hn/l 6·6. D 46; Dl 19·2; Df 14·5. Sl,T,Sl. I, on shoulder, simple X. Red and white inclusions in clay. Striped handles. Middle. *AE* (1911) 248, fig. 6. No dimensions given. O,S,O. Early to middle.

The vase tomb 33,8 (Young *AJA* loc. cit. fig. 2—no dimensions given) is not of full SOS type, with a torus lip and very flat foot; neck undecorated, no shoulder band.

Thorikos

TC 63.82. *Thorikos* I 57, figs. 39–40. Lower part of vase. D *c.* 43; Df *c.* 16·5. No shoulder band. Early to middle.

Eleusis

tomb 58. *ADelt.* xxii (1967) B 122 and pl. 100*a*. Vase. H 66; D 42. S,T,S, the type of S not clear in the photograph. Very low 'shoulder' band. Early.

tomb 54. Ibid. Upper parts of vase, not illustrated.

Lambrino, *Les vases archaiques d'Histria* 136 n. 7, mentions a further piece in the museum at Eleusis.

Corinth

42 C40.321*a–b* (= CP2809). *Hesperia* xvii (1948) 227, D69; Strøm 235. Upper parts. Hn/l 6·5/5. D *c.* 49; Dl 22·4. S,Oa,S. I, on neck, an hour-glass sign tilted a little to the right. Slight ridge. Late; context down to end of seventh century.

98 C53.218. *Hesperia* xxv (1956) 372, 88; Strøm 235. Lip sherd; no ridge. Late; context 600–540.

Aegina

Berlin A50*a*. *CVA Berlin* 1 pl. 39,5. Neck fragment. Part of S preserved.
Berlin A50*b*. *CVA Berlin* 1 pl. 39,6. Neck fragment. Part of T preserved.

Halieis (Porto Cheli)

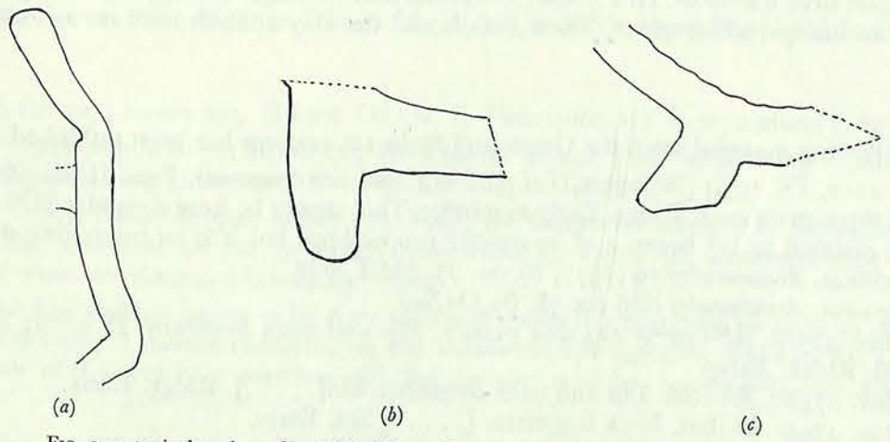
39 HP536. Fragmentary vase used for cremation burial. Hn/l 8/5·5. Dl 21. S,O,S. No ridge. Late.

40 HP298.*BCH* xc (1966) 788; Jameson, *Phoros* 71 n. 17. Upper parts. Hn/l 6/5·5. Dl 22·5. S,O,S. I, *BCH* l.c. on neck; also scrap of a letter preserved on shoulder. Slight ridge. Late.

HP471. Upper parts. Hn/l 7·5/4·5. Dl 22·5. O at handles, central motif lost. I, two short verticals on neck. Very similar to **40**. Late.

Chalkis

Potters' dumps excavated in recent years by A. Andreiomenou and A. Choremis have yielded large quantities of vases of the end of the Geometric period. Drinking vessels predominate, but there are also fragments of a large number of locally made SOS amphorae, perhaps some two hundred from Choremis' excavation.[6]



(*a*) (*b*) (*c*)

FIG. 3. *a*, typical neck profile of Chalkis amphora; *b*, foot of **87**; *c*, foot of **92**. Scale 1:2

Both profile and decoration of these Chalcidian amphorae are distinctive. The lip is low, at most 4 cm., of varying profile FIG. 3*a*; a notch rather than ridge separates the lip from the neck, which is normally slightly convex in profile. The handles are flat or flattened. Feet are flaring with a rounded inner contour; they vary from 14·3 to 18·7 in diameter, usually under 17, and from 2·5 to 3·75 in height. The fabric is very hard; the clay is pure of a reddish tan colour of

[6] *ADelt* xxvi (1971) B 252. I have not seen the one piece illustrated there, with Wch decoration, pl. 227*a* upper row, centre. No vases have yet been mended up sufficiently for the body shape to be assessed. The dating of the dumps, together with the presentation of the evidence for their interpretation as potters' waste tips, must be left to the excavators, but the vast majority of the material cannot date far from *c.* 700. For a description of Chalcidian fabric of this period see Boardman, *BSA* lii (1957) 2, although I cannot agree with his words 'rather soft in the break', since the hardness of firing of these vases is immediately apparent when drilling.

varying intensity; glaze is dull, often fired chestnut. The main variety of decoration can be seen in FIGS. 8(ε), 9(ε); long double zig-zags enclose a large triple set of rings around two very small central rings. The neck is always slipped cream and is usually glazed on the inside; however, necks plainly glazed on the outside are common. Handles are glazed or have three lines running down the outer face, on a slipped or reserved ground. There is normally a band on the shoulder, again either reserved or slipped, with four or five glaze lines on it; a few pieces have added white lines on a wholly glazed shoulder.

48 Upper parts of vase. Hn/l 6/3·5; Dl 18.

49 Neck of similar vase. Hn/l 6·3/3·2.

50 Similar neck. Hn/l 7/3·5; Dl 16. Glazed inside and out save for bands at top and bottom of neck.

51 Foot. D. 17·7. Streakily glazed outside.

52 Sherds of body. Fired light chestnut. Band 4·5 cm. high with seven lines on it.

53 Body sherd. Misfired or burnt. Slipped band.

54 Body sherd. Reserved band.

56 Body sherd. Five added white lines around shoulder.

57 Body sherd with handle root. Handle and band slipped.

55 Lip and neck fragment. Hl 2·5. Ob?,O? preserved. No ridge. Unslipped; softer paler fabric with red inclusions; glossy glaze. These details and the clay analysis indicate an Attic origin. Late.

Eretria

The following material from the Greek and Swiss excavations has been published:

Eretria v 21–2, FK 195.1 (Beilage 2, Taf. 5). Neck and rim fragment. Pres. H 7·9. Network of diagonal zig-zags on neck. Ridge. Early to middle. This cannot be from a regular SOS amphora (nor is it claimed to be) because of its smaller proportions, but it is an interesting derivative.
Rim fragment. *Archaeometry* 19 (1977) 85 no. 77. Sld,T,Sld?
Rim fragment. *Archaeometry* ibid no. 78. Sa,Oa,Sa?
Eretria inv. 4738a. *AE* (1975) 224 and pl.64γ. Lip and neck fragment. Dl *c.* 13; Hn *c.* 7·5. Sld,T,Sld. Ridge. Early.
Eretria inv. 4738b. *AE* ibid. Lip and neck fragment. Sld[. . . . .]. Ridge. Early.
Eretria inv. 4794. *AE* ibid. Neck fragment. [. . . . .] Sld. Early.

There is nothing in the description of these pieces (save the first) to indicate an origin other than Attic; the clay analyses published in *Archaeometry* support such an attribution and the description of the clay and the decoration of the others in no way opposes it.

Histria

B1445. Lambrino, *Les vases archaiques d'Histria* 132 ff. figs. 92–4. Fragmentary vase. Dl. given as 16. Sa,Oa,Sa. Late.

Oisymne

Kavalla, unpublished. Vase. I, on shoulder, two interlocking compass-drawn circles. Slight ridge. Late.

Other examples are reported, *ADelt.* xx(1965) B 449.

Amphipolis

A sherd found on Hill 133 is illustrated in Pritchett, *Studies in Greek Topography* I pl. 48,5. Part of O preserved.

Mikra Karaburun, Thessalonike

BCH xli–xliii (1917–19) 258. Neck of vase. S,Oa,S. Slight ridge. Late.

Pitane

Professor Akurgal informs me that there are late examples from his excavations.

Smyrna

BSA lix (1964) 43. Six sherds with graffiti. I, ibid. Presumably later or late; context from destruction levels.

Rhodes

inv. 12532. *Clara Rhodos* iv 352, tomb 205, from Kamiros. H 66; D 47; Dl 20. Sa,O,Sa. The drawing *Clara Rhodos* pl. VIII is most unreliable. There are three rectangular patches of irregular glazing around the shoulder, seemingly resulting from the positioning of some supports in the kiln. Late; context *c.* 600.

Clara Rhodos iii 120, tomb 86, from Ialysos. H 58. S,O,S. Single band. Now lost? Late.

Thera

Thera ii 64 fig. 221; Strøm 235. H 65·5. Oa,Oa. I, *Thera* ii loc. cit. Late; context *c.* 625–600.[7]

AM xxviii (1903) 207 Abb. 56; Strøm 235. Neck sherd. .]Oa,S. The clay is said to be micaceous. The dotted plastic ring at the base of the neck is unique. Late.

AM xxviii (1903) 206 Abb. 55*a*; Strøm 236. Vase; the foot seems restored in the photograph. H 65·5. Sa,Oa,Sa (the sigmas seemingly three-barred). Late; the accompanying 'Proto-corinthian' vases are discussed briefly by Strøm.

I take the first and last pieces to be Attic although doubt has been cast on such an origin by Hayes, *Tocra* i 139. I cannot comment on the unillustrated fragments, *AM* loc. cit. 2–5; the glazed inside of the neck of 2, together with the description of its clay do not seem Attic.

Al Mina

Ashmolean and London, fragments see p. 104–7 above.

Where? *JHS* lx (1940) 19 fig. 8*e*. Neck sherd. Part of Sa?,O preserved. Late; see Strøm 236.

Cyprus

Marmari

Nicosia inv. 1961/viii-18/2. *BCH* lxxxiv (1960) 279, 3. Vase. S,O,S. Single band. Late. PLATE 18*b*.

Kition

85 Wall sherd. 10·5 × 10·5. Early or middle, judging from quality of the glaze.

[7] It was found with an early rosette bowl; for the dating see Hayes, *Tocra* i 46 n. 3.

87 Area II 1974 AA14 280–300 cm. Fragment of foot. FIG. 3*b*. Hf *c.* 5; Df *c.* 15. Early.

For sherds of à la brosse amphorae see below p. 121.

Salamis

tomb 10, 15. *Kadmos* iv (1965) 150 ff.; *Salamis* ii 18, pl. 66; Strøm 234. Vase. H *c.* 70; D *c.* 50. O,O. I, as *Salamis* ii loc. cit. Middle; context seventh century; placed rather too early by Strøm.

95 tomb 4, fill. *Salamis* ii 3. Neck sherd, slightly concave. 5·8×4·4. Part of O preserved. Middle to late.

tomb 7, 17. *Salamis* ii 11. Two wall sherds, perhaps from same vase. 11·6×10·7 and 6·8×10. Perhaps middle, judging from glaze.

tomb 62, 6, dromos fill. *Salamis* ii 101. Wall fragment. 10·2×7·2. Part of band, with two lines at least, preserved at top edge. Middle?

92 tomb 10, 15A. *Kadmos* loc. cit.; *Salamis* ii 18, pl. 66; Strøm 236. Much of foot and body is preserved to add to fragments illustrated in *Salamis* ii. Df *c.* 14·5 Fig. 3*c*. I, as *Salamis* ii Fig. 7*b*. Single band. Late.

96 tomb 84, 13. *Salamis* ii 128, pl. 164. Upper parts lost. D 44·5. Df 16. Many large white inclusions. Handles were round. Wholly glazed save for lowest part of foot and neck. Later.

tomb 36, dromos fill. *Salamis* ii 66. I have not seen these sherds.

For sherds of à la brosse amphorae see below p. 122.

Chania

Greek–Swedish Expedition 70 P216, from the Castelli site.[8] Neck sherd of a large amphora Pres. H 8·9; pres. width 9·8. Fine red-tan clay with a few inclusions; creamy slip. There is a slight concavity in the profile towards the top of the sherd, below the lost lip. Two bands and part of a third are preserved at the bottom; above, O/W,T. Early, perhaps 725–700.

Analysis of the clay, as given in note 8, supports the conclusion drawn independently by Professor Coldstream and myself that the sherd is of Euboean and specifically Chalcidian origin. Yet there are points of difference with the SOS type known from Chalkis and Pithekoussai; the clay and slip are similar, but the wall thicker, the glaze a brighter chestnut red and the slightly concave profile contrasts with the convex neck profile found at Chalkis; the decoration too, as far as preserved, does not include the typical Chalcidian wheel and zig-zag motifs. These differences should not lead us to reject the indications of slip and fabric, but rather to assume that the *apothetis* material from Chalkis and the sherd **10** from Pithekoussai represent only one facet of Chalcidian production of large storage jars. While there is no proof preserved that the Chania sherd belongs to an SOS type amphora with glazed body, the large size of the neck and the syntax of the decoration point strongly in that direction.

[8] We are most grateful to the directors of GSE and M. Vlasaki for their very generous permission to include the sherd in this study. Knowledge of it came too late for full assimilation into the text (especially in section 6, on the type and origins of the decoration of Chalcidian SOS amphorae). Analysis has given the following result:

Al	Mg	Fe	Ti	Mn	Cr	Ca	Na	Ni
20·6	1·6	7·6	0·84	0·080	0·020	3·7	1·15	0·0115

Such a composition fits that of local LM IIIc ware quite well, but the clear difference in the colour of the fabric—it is not the buff of the local ware—means that the piece should be found a home elsewhere, and the composition is very close to the Chalkis range.

Tell Defenneh

3 British Museum 1888.2-8.59. *Tanis* ii pl. 24,9; *CVA* 8 II Dm pl. 10; Strøm 236. Neck. Dl *c.* 20·5. Sa,O,S, the sigmas with five or six strokes. Late.

British Museum 1888.2-8.60. *Tanis* ii 61, pl. 24,11; *LSAG* 77, 10*b*; pl. 17*f*. Two joining fragments from upper shoulder. Maximum width 27·5. I, on shoulder, as *Tanis* loc. cit.; brush-work on right of fragment indicates proximity of handle and that the start of the inscription is preserved. Rather thin walls (0·4–0·5). Single band largely preserved at lower edge. Late.

Corcyra

Kalligas excavations. Vase, upper parts lost. Body wholly glazed. Early to middle.

63/130. *ADelt* xviii (1963) B 159, pl. 192*β*; Strøm 235. H 71; Hn/l 8/6. D 48; Df 18; Dl 22. S,O,S (Sa,O,S on one side). I, compass-drawn circle by one handle, and central on shoulder FIG. 7(*c*). Many red and white inclusions. Slight ridge. Late; context Middle Corinthian.

Pithekoussai, Ischia

A substantial number of vases and fragments have been found in the excavations, both in the Necropolis, from the scarico Gosetti and the Mazzola habitation site.[9] All are being prepared for publication, and I restrict myself here to details of the vases and sherds from which samples were taken. Further discussion of the pieces that are labelled here 'non-Attic' will be found on pp. 127–8. The dating evidence is of prime importance, especially that of the tombs; the Mazzola site went out of use in the early seventh century, and for the scarico see on **12**.

Necropolis

7 tomb 398. Repaired vase. Pres. H 65·5; D 45·6. Sb,O,Sb. Context: the tomb was overlain by one containing EPC material, and in addition the vase had already been broken and repaired before deposition.

6 tomb 642. Fragmentary vase. Pres. H 71; D 45. Unique decoration, central solid glaze disc flanked by verticals with raised, hatched 'arms'. Striped handles. Context LG I–II.

5 tomb 429. H 64·8; D 44·2. Slc,T,Slc. I, a ragged X. Striped handles. Context LG II.

16 tomb 719. H 69; D 43·3. Four long, spaced zig-zags on each side of neck. Context LG II.

47 tomb 442. H 64·2; D 45·8. Slc,T,Slc. I, pentalpha, FIG. 7(*d*) Context LG II (the tomb cut into 168, which contained the Nestor cup). Striped handles.

46 sporadico, vase. Non-Attic. Sun-burst rosette on neck. Slim neck with slightly flaring simple rim; slim and low flaring foot. Very deep band on shoulder and belly.

9 sporadico, neck.

Mazzola site

8 69-C-1030. Neck. Hn/l 8/3·5; Dl 16·6. Sc,O/W,Sc. Heavily ridged inside; striped handles. Context LG I–II.

45 69 C-1031. Upper parts and fragments. Hn/l 9·5/4·5; Dl 18·5. Oc,Tb,Oc. I, FIG. 7(*e*), on belly. Striped handles; three bands at base of neck. Context LG I–II.

[9] The publication of most of the amphorae from the necropolis is forthcoming in G. Buchner and D. Ridgway, *Pithekoussai* i. The fullest of the fleeting references made to the Mazzola and scarico material to date is Buchner, *Atti xi Convegno Magna Grecia* 366.

Scarico Gosetti, Monte Vico

There are about twenty neck fragments from this deposit, in which early types with decoration Sc,T,Sc predominate. The numbers given here are temporary ones allocated by Professor Klein.

15 MV 07+09+13. Three joining fragments of lower neck and shoulder. Sc,T,Sc. Early.

12 MV 60. Lip fragment. Pres. H 6·7. Profile as of late amphorae—the only late SOS from Pithekoussai; the scarico contained other contemporary and later material.

10 MV 70. Neck sherd. PLATE 16*b* Hn 8. .],Wch,Sd. Hard orange red clay; cream slip. Top of inside of neck glazed. Chalcidian. Early.

11 MV 77. Neck sherd. PLATE 16*b* Slc,W,[. (eight-spoked wheel, hastily painted). Reddish tan clay; neck glazed inside. Non-Attic. Early.

13 MV 78. Neck and lip sherd. PLATE 16*b* Hl 3. [. . .],W. Slight lip. Hard fine buff fabric, thin-walled. Under edge of lip reserved. Non-Attic. Early.

14 MV 79. Neck and lip sherd. PLATE 16*b* Hl 3·4. No decoration preserved on extant area of neck. Sharp ridge and squat flat-topped lip. Glazed inside. Part of a letter (? *epsilon*) preserved on neck. Non-Attic. Early.

Cumae

Naples, tomba Artiaco. *ML* 13 261–2; Strøm 112–13, 148, fig. 74; Cl. Albore-Livadie, *Contributions à l'Étude de la Société et de la Colonisation Eubéennes* (Cahiers du Centre Jean Bérard 2) 54; Buchner ibid. 75. Vase. H 64. D *c.* 47; Dl *c.* 17. Sc,Oa,Sc. Rather misshapen. Early.[10]

Sybaris

29 St. 72.10725. *PdP* ibid.; *NSc* 1974 *suppl.* 133. Lip sherd. Top of S preserved. Late.

30 St. 72.11490. *NSc* ibid.; *PdP* xxviii (1973) 303. Upper parts. Hn/l 7/7. Dl 20·2. Sa,O,Sa. Slight ridge. Late.

31 St. 71.44197. *PdP* ibid. Lower part of vase. Many red inclusions. Late.

Policoro

For preliminary reports on the tomb finds see *Rend. Linc.* (1971) 643 and Adamesteanu, *Basilicata Antica* 112.

33 tomb 49. Vase. H 71; Hn/l 7·5/4·3. D 47; Df 14·8; Dl 19·8. S,O,Sa perhaps, but the neck is extremely worn. Foot flares slightly, but remains high. Earlier.

38 inv. 41156. Neck and lip sherd. Hn/l 5/4. .]Sa,Sa. Small ridge, slightly flattened, small handles. Middle; context 650–600.

Neck sherd in museum stratigraphic display. S,[. . .]. Early or middle.

Metapontum

Central Area

Sherds are mentioned among the finds from the excavation of temple D, *BdA* (1976) 40.

[10] Much has been written recently about the dating of the vase—see the references cited. It is a small misshapen thing, rather worse potted than the published Eleusis amphora; I would not care to put a more precise date on it than 725–690, probably before 700.

Incoronata

For preliminary reports on the excavations see *Arch. Stor. Cal. Luc.* xl (1972) 27 ff and Adamesteanu op. cit. 69.

35 27720. Vase, fragmentary. Hn/l 6/5. Df 14; Dl 15·7. Sld,T,Sld. Handles striped, earlier.

36 26788. Vase. H 65; Hn/l 6·3/4·7. D 46; Df 16; Dl 18. *Atti XII Conv. M.G.* (1972) pl. 19. Horizontal wavy line on neck. I, FIG 7*f*, part preserved by handles. Handles striped with horizontal bar at top. Early to middle.

22764 *Populi Anellenici in Basilicata* 19; *Arch. Stor. Cal. Luc.* loc. cit. 38; *Arch. Class.* xxv–xxvi (1973–4) 77 and pl. 19, 1 (upside-down). Fragment of shoulder? I, as *Arch. Class.* loc. cit. Early?[11]

Fuori tombe. Lower parts of vase. D *c.* 46; Df 13. Foot slightly flaring. Early to middle.

Saggio B. Greater part of vase. *Acme* xxix (1976) pl. 5, fig. 3. Sb?,O,Sb? Middle, context probably before 650.

There are further examples from more recent excavations.

Cozzo Presepe

P2461 Substantial fragments of ? one vase. Wavy line on neck. Striped handles. Early. (From the excavations of the British School at Rome. I am grateful to Miss J. du Plat Taylor and Dr. A. J. N. W. Prag for allowing me to mention it here.

Metauros

Vase. *Arch. Rep.* (1976–7) 62. I, retrograde API, said to be pre-firing. Late?
Vase. *Arch. Rep.* ibid. I, on handle, Fεργα. Late?

Lipari

Vases, presumably late, are reported by Bernabò Brea, *Ampurias* xv–xvi (1953–4) 204 and *Arch. Sic. S-O* 140.

Mylai

All these pieces published by Bernabò Brea and Cavalier, *Mylai* 59–60 and pl. 48.
tomb 68. Upper parts lost. Pres. H 52; D 36. Early?
tomb 70. Most of vase. Pres. H 58·3; Dl 17·2. Sb,O,Sb. I, pentalpha. Early to middle.
tomb 75. Upper parts lost. Pres. H 56; D 46·5. Middle?

Naxos

Vases are mentioned in *Arch. Sic. S-O* 140.

[11] In *Populi Anellenici* loc. cit. the sherd is described as 'frammento di argilla acroma', but the photograph in *Arch. Class.* clearly shows the remains of glaze. We may note the mention of local imitations at Metapontum, *BdA* (1976) 47.

Megara Hyblaea

A large amount of material, largely fragmentary, has been excavated at the site; at least 154 vases are mentioned in *Megara Hyblaea* II 94.[12] I mention only a selection here.

tomb 224. ΚΩΚΑΛΟΣ xxi (1975) 22, pl vi, 2. Vase. Early (context *c.* 700).
tomb 209. *Arch. Sic. S-O* 170, no. 483. Vase, restored. Hn/l *c.* 10/4. Sld,T,Sld. Early to middle.

18 *Megara Hyblaea* II 94, 7/10, pl. 81,7. Neck sherd. .],T,Sc. Middle to late.

19 *Megara Hyblaea* II 94, 7/9, pl. 81,5. Neck sherd. .],W,Sb, carelessly painted. Clay very soft, orange, without inclusions. Late.

20 7/18 (or 98?), unpublished. Neck and lip sherd. O,S preserved. Late.

17 unpublished body sherd with plentiful red inclusions. Late?
neck, unpublished. O,S,O. I, FIG. 7 (*g*) on neck. Late.

Syracuse

neck. *Arch. Sic. S-O* 78, no. 280. Hn+l *c.* 11; Dl 14·4. Sd,Ob,Sd. The decoration is close to the prevailing Chalcidian type. Early.

28 49659. Lip sherd. Part of S preserved. Prominent ridge. Early to middle.

26 13583. *NSc* (1895) 130–1, Fusco tomb 194. Upper parts of vase. Hn/l 7·5/6. S,Oa,S (first S three-barred). Many white inclusions. I, as *NSc* loc. cit., at top of shoulder. Late.
Fusco tomb 267. *AJA* lxii (1958) pl. 66, fig. 24; *Arch. Sic. S-O* 122 (profile); Strøm 235–6. Vase (now fragmentary). H 66. S,O,S (reversed three-bar S). I, *NSc* (1895) 142 and *AJA* loc. cit., on shoulder. Late; see Strøm for doubts on dating *c.* 650.[13]

Heloros

1959 excavations. *Arch. Sic. S-O* 121–2, no. 383. Vase. H 73. Sa,Oa,Sa. Earlier.
Orsi excavations. *ML* xlvii 236 fig. 10*b*. Neck sherd. O next to handle. Late?

Kamarina

Among the large number of amphorae of all types employed in the Rifriscolaro cemetery were fourteen SOS amphorae, *Arch. Sic. S-O* 139. These should all date after *c.* 600 in view of the foundation date for the colony of *c.* 598 (Dunbabin, *The Western Greeks* 436), and publication of this corpus of material will throw much light on the later history of the SOS type. I mention a selection here; all have a single band on the shoulder unless otherwise stated.

21 tomb 454. H 75; Hn/l 7/7·5; D 44·5; Df 17·3. I, on shoulder FIG. 7*h*. No ridge; no reserved band. S,O,S (three-bar S).

22 tomb 134. Lip lost. Pres. H 61. D 44; Df 16·5. O,O.

[12] We may note the local imitation of seventh-century date with well-spaced Sl,O,Sl,O,Sl on the neck, *MEFR* lxvii (1955) pl. iii*a*. The Attic vase mentioned in *AJA* lxx (1966) 361 is not yet published.

[13] There is also exhibited in Syracuse a half-size SOS from Giardini tomb 75 (plan of the excavations, *NSc* (1949) 201); decoration O1,O1, and single band on shoulder. It was found with fragments of an Attic BF volute-krater of *c.* 535–525.

23 tomb 301. H 68; Hn/l 8/6. D 43; Df 16·5. S,O,S. No ridge.

25 tomb 32. Lip lost. Pres. H 62·5. D 44; Df 16·5. Neck plain. Handles reserved. Perhaps all of outside of foot once glazed. I, on neck, *gamma* (Ionic), *upsilon*.
tomb 132. *Arch. Sic. S-O* 146, no. 434. H 70·5; Hl *c.* 8. Oa,Sa,Oa.
tomb 199. *Arch. Sic. S-O* 145–6, no. 433. Hl *c.* 6. S,Oa,S (five-bar S).
tomb 225. *Arch. Sic. S-O* 146, no. 435. H 66. Oa,Sa,Oa.

Gela

There are fragments of several vases stored in the museum at Gela.
Syracuse 21210, Borgo tomb 467. *ML* xvii 196–7; *ASA* (1959–60) 267–8; *LSAG* 77 10a; Strøm 235. Fragmentary vase. H at least 65. Sc,O,Sc. I, on shoulder, see in particular *ASA* loc. cit.; the omission of the *omicron* in the genitive termination seems likely to have been caused in the same way as on **1** above, p. 104. Middle to late.

27 Syracuse, unnumbered. *ML* xvii 210. Hn/l 6/6·3. D 52+; Dl 23·6. Sa,Oa,Sa. The width and flatness of the shoulders is noteworthy. Late.

Selinus

ΚΩΚΑΛΟΣ xxi (1975) 100. Sherds. Late; context after 628.

Vulci

See **2** (section 1)

58 Philadelphia MS 561. Dohan, *Italic Tomb-groups* 97–8; Strøm 236. H 68·3; D 44·4. S,O,S. I, as Dohan loc. cit. Single band. Late; context Middle Corinthian.

59 Philadelphia MS 562. Dohan ibid.; Strøm ibid. H 66·2; D 44·4. S,O,S. I, as Dohan l.c. Single band. Late; same tomb as **58**.

Further unpublished vases are mentioned by Strøm (236) and Cristofani *Arch. Class.* xvii (1965) 14 n. 40

Cerveteri

See **1** (section 1).

4 Vatican 20359. Pareti, *La Tomba Regolini-Galassi* no. 384. About twenty fragments of foot, body and shoulder. Df 13·6. I, perhaps part of an intentional graffito on one shoulder sherd. Tall, vertical foot. Early.[14]
Villa Giulia. *NSc* (1955) 59, fig. 16, tomb 5, 11. Vase. H 70. D *c.* 48. Slc,T,Slc. I, 'alcuni segni appartenenti al alfabeto greco arcaico'. Handles striped. Middle; context LPC? (hare-hunt aryballos).

[14] A poor photograph of one fragment in *RM* xxii (1907) 133, fig. 21, CXXVIII. The piece can only be dated by the early type of foot. One fragment is embedded in a lump of metal together with a bucchero kylix; Pareti noted this and took it as part of the burial in the right niche, which Strøm dates *c.* 625. She takes up the matter in n. 530, but does not bring the SOS fragment into consideration. One may speculate how and when the kylix and a single sherd of the amphora became engulfed in the molten metal, but the variety of possible answers precludes any sure reconstruction.

Cerveteri, antiquario. Monte Abatone tomb 4. Vase.[15] – Middle; *c.* 650, found with MPC skyphos and Rhodian bird bowls of *c.* 650.

Villa Giulia. *NSc* (1955) 62, tomb 6, 10. Neck and other sherds of two amphorae (one, ibid. fig. 5, Sa,O,S). Late; context *c.* 600–550.

Villa Giulia. *NSc* (1955) 62–3, tomb 6, 12. Shoulder of vase. I, *Arch. Class.* iv (1952) pl. lvii, 1; *LSAG* 77 10*h*; Guarducci, *Epigrafia Greca* iii 333. Late; context as above.

Louvre D33. Pottier, *Vases Antiques du Louvre* 36. H 74; Hn/l 5/7. D 44; Df 14·5; Dl 19. Neck decoration worn. I, *LSAG* lxxvii 10*c*; Guarduci loc. cit.; FIG 7(*j*). Ridge. Middle to late.

Louvre D34. Pottier ibid. H 70; Hn/l 6·3/5·7; D *c.* 50; Df 16·5; Dl 22. Sa,Oa,Sa. I, *LSAG* 77 10*f*; Guarducci loc. cit. Slight ridge; very streaky glaze with no certain reserved band. Late.

Louvre D35. Pottier ibid. Villard, *BAM* pl. 1*c.*; H 66; Hn/l 6·5/9·5. D 39; Df 16; Dl 19·5. Sa,O,Sa. I, FIG. 7(*k*) *LSAG* 77 10*g*; Guarducci loc. cit. Very tall echinus lip with no ridge. Single band. Late.

Louvre D36. H 70; Hn/l 5·5/5·5. D 42; Df 13·5; Dl 19·7. S,O,S. Slightly flaring foot; slight ridge. Middle.

Louvre D37. H 69; Hn/l 5·5/4·5; D 48; Df 15·5; Dl 19·7. Sa,O,Sa. Slight ridge. Middle to late.

Louvre D38. H 66; Hn/l 6/7·4; D 37; Df 15·5; Dl 19·7. S,O,S. I, FIG. 7(*l*), on shoulder. Single band. Cupped lip. Very late.

Louvre D39. Pottier ibid. H 60·5; Hn/l 7/5·3. D 36; Df 16·8; Dl 19·5. S,O,S. I, FIG. 7(*m*), hour-glass to right of handle, cross on shoulder further to right. Traces of red pigment under the foot may be modern and not an ancient *dipinto*. Both lip and foot flare more than usual. Late.

D36, D37, and D39 have holes punched through the base.

Spain

Toscanos, Malaga

Toscanos (*Madr. Forsch.* 6) 1023, pl. 38. Shoulder sherd. Early.

MDOG civ (1972) 26–7. Seven sherds, some clearly not of regular SOS type.

Madr. Mitt. xiii (1972) 143, pl. 24*l–n*. Body sherds, not surely of SOS, as recognized ibid.

43 TM 67/282+306. *Madr. Mitt.* ix (1968) 106–7 with n. 2*a*; *Madr. Mitt.* xi (1970) 102–9. Two joining neck sherds. Glazed. I, ibid. The glazed neck recalls the Chalcidian type, but neither the mica nor the reserved inside of the neck support such an attribution (and see the analysis below). Early.

AA 1978 249 Abb. 18. Two early lip fragments.

Guadalhorce, Malaga

Madr. Mitt. xvii (1976) 201. Sherd mentioned.

Huelva

44 *Huelva Arquelogica* ii 42–3, pl. 5, below. Wall sherd.

[15] The association of the amphora with the tomb is not made fully clear in the display in the museum. The skyphos is illustrated in Lerici, *Nuove Testimonianze dell'Arte e della Civiltà Etrusca* 34 (with wrong date).

Aljaraque

J. M. Blazquez, *Papelos del laboratoria de arqueologia de Valencia* xi (1975) 218 fig. 4, 138–9. Rim sherds. Context seventh century.[16]

Mogador, Morocco

Villard, *BAM*; A. Jodin, *Mogador* 53 ff., pls. xvii–xix. Sherds from several vases; few can be said with confidence to be from SOS rather than 'à la brosse' amphorae. One has part of the shoulder band preserved and is dated by Villard rather earlier than may be warranted by that fact alone. Two others preserve handle and part of neck, although the photographs do not reveal whether enough is preserved to have presented neck decoration had it existed.

Appendix

The 'à la brosse' amphora

The phrase 'à la brosse' has been used to describe the particularly streaky wheel-painted bodies of mainly sixth-century amphorae. I use it here, perhaps a little unhappily, to describe only those amphorae with cylindrical neck and rolled rim, as distinct from the late SOS themselves.[17] A more suitable appellation might be '1501 amphora' after *Agora* xii 1501 and **89** below. In certain cases it is not possible to judge whether a fragment is from a late SOS or an à la brosse amphora since only neck and lip differ.[18]

There is no doubt that such vases were made both at Athens and elsewhere from the late seventh or early sixth century onward, but my intention here is merely to present the results of analyses done on vases of this general type. All the pieces listed below have a squarish lip, reserved neck with no ridge, glazed lip and body.

86 Kition, area II bothros 6+6a 3287. FIG. 4(*a*). Shoulder, neck, and lip fragment made up of four. Hn/l 4·7/2·3; Dl 15. Lip rolled, hollow at centre; rather small flattened handles. Pale tan clay with many white inclusions and some mica.

88 Kition, area II Δ-Δ, E-E 14, 370–480 cm. Lip fragment. 9·7×5·1. Creamy buff surface, redder in biscuit, with white and dark inclusions.

89 Kition, area II bothros 6 1501. Fragment of neck and lip with spring of handle. Hn/l *c.*9/2·5. Dl 16·6. Pale buff clay with white and dark inclusions.

90 Kition, area II ΔΔ16, 400–20 cm. Wall fragment. 11·7×10·3. Pinkish buff clay with a little mica.

[16] I am grateful to Brian Shefton for this reference.

[17] There is much uncharted territory here and the analytical compass we offer can hardly be said to be adequately boxed. For most recent bibliography see *Tocra* ii 62, with references to the significant material from Histria, Marseilles, and Athens; further examples have been cited above, Kerameikos and Phaleron. An intact example akin to the best preserved Marseilles fragment, Villard, *La Céramique grecque de Marseilles* pl. 27, 1, and not far from the piece of uncertain origin, *Thera* ii fig. 221, is published by Lazarov, *Izvestia Varna* xxvi (1975) 128–9. It may be pertinent to add here the neck with a probably Attic inscription from Salamis, *Salamis* ii 231 and 275–7. The point is made in *Agora* xii 192 that the type develops little at Athens in the sixth century—a point which should be taken into consideration when trying to date the Wappenmünzen with amphorae on the obverse by typological criteria (Kraay, *Archaic and Classical Greek Coins* 56 ff.).

[18] On this criterion I have included in the lists above numerous pieces which do not demonstrably belong to SOS amphorae. Further fragments which should be taken into consideration as being on the SOS/à la brosse borderline (none of which I have seen) are: Stucchi, *Cirene 1957–1966* 166, fig. 188 (inscribed); *Tocra* ii 2265 (presumably upside down in the profile drawing; Ponsich, *Récherches archéologiques à Tanger et dans sa région* 185 (body sherd); the fragments from Marseilles taken as Attic rather than Ionian by Villard op. cit. 49. From the description and photographs the Marseilles fragments seem no less Attic than some of the pieces from Kition included here.

91 *Salamis* ii tomb 84, 16, pl. 164. FIG. 4(*b*). Vase, neck restored probably too high (*c.* 7·5 rather than 9·5). Hl 2·9. D 41, Df 14·7, Dl 17. Pale buff surface, darker orange-tan, even gingery biscuit with many large white inclusions. Reserved band 0·7–0·8 high. Round, reserved handles.

93 *Salamis* ii tomb 33, 11, from the dromos. Thirteen fragments of body. Fabric as **91**, with some red inclusions also. Extremely streaky glaze.

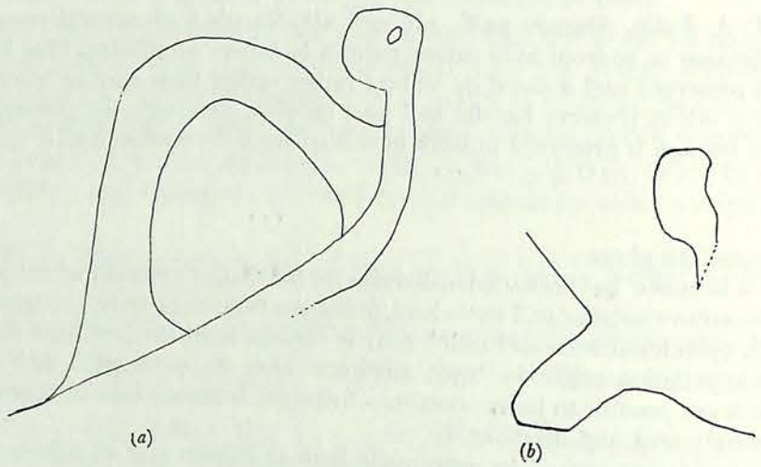


FIG. 4. *a*, neck of **86**; *b*, lip and foot of **91**. Scale 1:2

94 *Salamis* ii tomb 10, 15B, pl. 66. Fragmentary vase. Rather flaky orange-tan clay with white and dark inclusions.

It will be noted below that analysis of these samples showed that all could be Attic, with some doubt over **91** and **93**. The clay of these two is not typically Attic, but could perhaps just be taken as such; the presence of a reserved band on **91** may also be a sign of its being of Attic origin, but we cannot be sure that the feature was not copied elsewhere (see for example the sherd from Tocra cited in n. 18).

3. ANALYSES

Pottery analysis was carried out by Richard Jones in the Fitch laboratory at the British School. The samples, which were obtained by drilling with the use of a tungsten carbide drill head, were analysed by optical emission spectroscopy by the method described by Catling *et al.* (*BSA* lviii (1963) 95–101). The percentage concentration of nine elements in their oxide form was determined for each sample. The 98 samples include the following pieces which are not mentioned in the previous sections since they do not fall into the category of SOS amphorae:

24 Kamarina tomb 446. Amphora used for burial; H 62, D 39. Hard orange fabric, quite clean. Ovoid body with low and narrow flaring foot; cylinder neck with small rounded lip and slightly ridged flattened handles. Dull glaze overall except neck and outside of handles. Late.

32 Sibari, antiquario; amphora from Francavilla tomb 8. Early.

34 Policoro, tomb 26. Imitation of SOS, alluded to in *Rend. Linc.* (1971) 646. H 71·5, D 50, Dl 18·5. Roughly potted ovoid body with slight ring foot; neck and lip similar to those of early SOS; round handles. Worn, perhaps once wholly glazed (albeit streakily) save for neck. Early.

41 Porto Cheli HP 403. Upper part of amphora from cemetery. Sixth century.

97 Nicosia, Cyprus Museum, from Salamis; *Salamis* ii tomb 9, 10, pl. 58. Amphora, upper parts lost; flattened handles. Plain. Karageorghis suggests an East Greek origin, ibid. 15. Later.

The first four will be published fully by their excavators elsewhere.

The compositions of the samples are given individually in TABLE 1. The samples from the Agora and Kerameikos were considered sufficiently similar in composition for them to be combined to form an Athenian (or Attic) control group whose mean element concentrations and concentration ranges associated with an 80 per cent level of confidence are given in TABLE 2.

Initial inspection of the analytical data for those samples found outside Attica reveals a relatively clear distinction between those with an Attic type composition and the remainder. The distinguishing features of the Attic control group are high Mg, Cr, and Ni contents,[19] a result which confirms the results of earlier analyses of Athenian archaic and Hellenistic pottery.[20] Some discrepancies have been noted: the concentration ranges for Mn and Na in the SOS amphorae of the Attic control group are somewhat greater that those in the Attic decorated and black-glaze wares, and the mean Cr, Ca, and Ni contents of the former are higher than those of the latter. Conversely, the Fe and Ca concentration ranges are narrower in the SOS amphorae than in the decorated and black-glaze wares. There is no discernible change in composition in the clay used between the Late Geometric period and the sixth century.

The Chalkis samples (**48–54**, **56–7**) form a distinct group, and one that is satisfactorily consistent within itself. Diagnostic are low Mg, Cr, and Ni. The group characteristics are given in TABLE 2. Placed beside the previously acquired results for Chalcidian Geometric pottery the comparisons are close, although there is some discrepancy in Mg content.[21]

Place of manufacture of SOS amphorae can basically be assigned with reference to the graphs in FIGS. 5 and 6, in which the discriminating elements, Mg and Cr, Ni and Cr, are plotted against each other. Each sample is represented by its number except for the samples from Athens (circles) and Chalkis (squares). The latter group forms a good cluster in both graphs owing partly, it should be noted, to the small sample size, but the Athens group clusters less satisfactorily because of the wide spread in Cr content. Nevertheless, given the common function (Cr) in both graphs, it is satisfying to note that those samples which fall within the Athens cluster for Ni are also Athenian with respect to Mg. The majority of amphorae from outside Attica which have been taken to be Attic by reason of their fabric and decoration fall within the Attic limits. Taking the data from the two graphs together clarifies the position regarding those samples for which an Attic origin is dubious or less obvious. **35**, **91**, and **93** appear to have an extreme Attic composition with respect to Cr and Ni but are Attic with respect to Mg. **5** falls outside the Attic cluster with regard to Mg but is Attic for Cr and Ni. **16**, **43**, and particularly **45** lie at the other extreme of the Attic composition from **35**, **91**, and **93**; **16** and **43**, while Athenian for Mg, fall outside the Athens 80 per cent confidence ranges for Cr and Ni, but are within two standard deviations of the mean Cr and Ni contents for Athens; the Cr and Ni

[19] Reproducibility tests have indicated that the analytical precision with which these three elements may be measured is associated with standard deviations of 6, 14, and 10 per cent respectively.

[20] Boardman and Schweizer, *BSA* lxviii (1973) 270–1; Schweizer *apud* Prag *et al.*, *Archaeometry* xvi (1974) 168–70; using X-ray fluorescence analysis, Stern and Descoeudres, *Archaeometry* xix (1977) 73 ff.

[21] Boardman and Schweizer, loc. cit. 274, diagram X.

TABLE I. INDIVIDUAL RESULTS OF ANALYSIS OF SAMPLES 1–98

Sample	Location	% Al	Mg	Fe	Ti	Mn	Cr	Ca	Na	Ni
1	University College	19·3	5·3	10·6	0·92	0·115	0·103	8·6	1·23	0·058
2	London 1848.6-19.9	15·3	3·9	8·1	0·87	0·089	0·067	7·8	0·71	0·052
3	London 1888.2-8.59	12·7	4·1	8·4	0·69	0·093	0·075	4·8	1·5	0·044
4	Vatican 20359	19·4	5·8	11·0	1·07	0·125	0·105	11·4	1·15	0·062
5	Pithekoussai T429	21·0	2·3	9·3	1·01	0·081	0·076	2·5	0·47	0·047
6	Pithekoussai T642	13·3	3·2	7·4	0·70	0·105	0·073	5·8	0·57	0·046
7	Pithekoussai T398	13·2	3·0	8·8	0·78	0·096	0·064	9·0	0·84	0·059
8	Pithekoussai 69.C.1030	16·2	4·5	8·4	0·98	0·084	0·075	9·4	0·83	0·044
9	Pithekoussai spor.	12·0	0·9	5·8	0·59	0·080	0·016	4·3	1·2	0·009
10	Pithekoussai MV 70	16·2	1·3	4·8	0·69	0·082	0·005	11·3	0·83	0·007
11	Pithekoussai MV 77	19·1	1·6	7·3	0·77	0·099	0·019	6·4	1·75	0·013
12	Pithekoussai MV 60	12·8	3·7	11·9	0·82	0·082	0·068	8·7	0·81	0·058
13	Pithekoussai MV 78	23·0	1·9	9·1	0·95	0·088	0·025	6·2	1·35	0·015
14	Pithekoussai MV 79	15·4	1·8	6·2	0·76	0·049	0·030	6·0	1·2	0·013
15	Pithekoussai MV 07+	18·5	4·6	8·2	1·06	0·088	0·062	9·0	1·23	0·043
16	Pithekoussai T719	15·7	4·2	8·6	0·87	0·096	0·049	11·0	1·5	0·043
17	Megara H. unnum.	14·7	4·0	11·1	0·83	0·070	0·076	12·3	0·71	0·055
18	Megara H. 7-10	19·6	4·6	10·0	1·0	0·105	0·077	12·7	0·71	0·052
19	Megara H. 7-09	15·3	2·3	7·7	0·95	0·113	0·039	5·2	1·42	0·031
20	Megara H. 7-18	18·9	5·1	9·7	1·22	0·164	0·085	10·0	1·17	0·051
21	Kamarina T454	20·3	4·3	9·2	1·11	0·085	0·083	8·2	0·88	0·045
22	Kamarina T134	17·0	3·7	8·8	0·90	0·081	0·099	8·4	1·17	0·052
23	Kamarina T301	16·8	3·6	8·0	0·93	0·074	0·081	5·9	0·70	0·053
24	Kamarina T446	14·7	1·2	6·4	0·94	0·053	0·015	1·2	2·3	0·006
25	Kamarina T32	16·8	3·4	8·7	0·91	0·080	0·076	5·4	0·80	0·056
26	Syracuse 13583	16·5	3·3	6·8	0·83	0·049	0·070	8·2	0·85	0·045
27	Syracuse (fr. Gela)	16·7	3·8	7·3	0·92	0·073	0·085	8·2	0·88	0·052
28	Syracuse 49659	14·1	3·1	6·6	0·75	0·063	0·076	11·0	0·75	0·045
29	Sybaris 72.10725	18·1	4·5	8·0	0·87	0·093	0·081	10·2	0·90	0·052
30	Sybaris 72.11490	15·5	4·6	7·8	0·95	0·093	0·089	12·5	0·78	0·049
31	Sybaris 71.44197	18·7	3·5	7·4	0·90	0·057	0·076	6·5	0·42	0·057
32	Francavilla T8	12·5	0·7	5·9	0·69	0·070	0·012	3·7	2·1	0·006
33	Policoro T49	14·7	3·6	9·0	1·07	0·103	0·105	5·6	1·02	0·054
34	Policoro T26	24·5	3·0	8·8	0·89	0·096	0·024	12·8	1·26	0·012
35	Metaponto 27720	16·3	4·4	13·4	1·0	0·13	0·11	9·8	1·25	0·081
36	Metaponto 26788	16·5	4·8	7·1	0·83	0·104	0·080	12·8	0·69	0·046
37	Metaponto unnum.	14·5	4·2	7·2	0·99	0·091	0·102	10·7	0·85	0·050
38	Policoro 41156	19·1	4·0	8·7	0·90	0·074	0·082	7·6	0·80	0·038
40	Porto Cheli HP536	14·5	3·4	7·7	0·89	0·065	0·081	5·6	0·97	0·050
40	Porto Cheli HP298	17·1	4·3	10·2	1·03	0·077	0·103	10·1	1·15	0·055
41	Porto Cheli HP403	14·0	2·2	6·7	0·65	0·074	0·027	6·3	2·4	0·031
42	Corinth C40.321	13·6	3·7	7·9	0·84	0·065	0·076	7·4	1·02	0·047
43	Toscanos	17·4	3·3	9·0	0·81	0·087	0·055	7·9	2·45	0·037
44	Huelva	19·2	2·2	10·2	0·84	0·049	0·037	7·3	1·25	0·015
45	Pithekoussai 69.C.1031	14·5	3·1	6·8	0·85	0·072	0·051	4·2	0·72	0·033
46	Pithekoussai spor.	19·4	2·2	7·4	0·83	0·094	0·025	5·8	0·86	0·011
47	Pithekoussai T442	19·7	3·1	8·8	1·0	0·085	0·065	4·0	0·23	0·036
48	Chalkis	15·5	1·4	7·1	0·66	0·076	0·004	4·3	1·78	0·011
49	,,	19·1	1·5	7·4	0·87	0·068	0·021	6·1	1·66	0·015
50	,,	19·2	1·6	7·8	0·78	0·067	0·020	5·1	1·8	0·012
51	,,	19·1	2·0	8·7	0·82	0·096	0·022	5·6	1·63	0·015
52	,,	17·6	1·6	8·4	0·82	0·093	0·029	4·0	1·7	0·014
53	,,	18·5	1·8	7·5	0·78	0·090	0·019	6·0	1·58	0·012
54	,,	18·5	1·7	8·4	1·02	0·097	0·023	4·8	2·3	0·020
55	,,	17·9	4·7	7·8	0·95	0·076	0·071	11·1	0·87	0·043
56	,,	17·7	1·3	7·8	0·78	0·065	0·019	3·9	1·61	0·023
57	,,	18·7	1·7	8·7	0·79	0·085	0·024	5·3	2·0	0·014

TABLE I (*cont.*)

Sample	Location	% Al	Mg	Fe	Ti	Mn	Cr	Ca	Na	Ni
58	Philadelphia MS 561	16·6	4·3	9·5	1·0	0·083	0·129	6·4	1·25	0·054
59	Philadelphia MS 562	13·8	3·4	7·4	0·83	0·071	0·088	5·2	0·73	0·042
60	Ashmolean 54.481[1]	17·1	4·4	7·2	1·05	0·061	0·074	10·3	0·79	0·041
61	Ashmolean 54.482	18·1	5·3	9·2	1·0	0·079	0·089	12·4	1·5	0·049
62	Agora P666	17·3	3·9	9·1	0·88	0·075	0·104	11·8	0·45	0·070
63	Agora P10619	15·9	3·8	8·5	0·90	0·069	0·090	7·0	0·93	0·055
64	Agora P12598	15·5	3·2	7·4	0·93	0·158	0·086	7·7	1·04	0·051
65	Agora P14691	22·5	5·6	11·4	1·17	0·118	0·102	11·1	0·61	0·063
66	Agora P15096	17·7	3·4	8·3	0·95	0·077	0·072	6·7	0·83	0·044
67	Agora P17356	17·3	4·2	9·2	0·97	0·075	0·090	8·0	0·69	0·051
68	Agora P17400	18·3	4·8	11·1	1·04	0·13	0·143	10·0	1·2	0·066
69	Agora P21430	20·2	3·8	8·7	0·99	0·062	0·090	8·0	1·04	0·048
70	Agora P23464	17·4	4·7	11·4	1·07	0·091	0·135	6·0	0·88	0·076
71	Agora P23883	19·9	5·9	12·4	1·25	0·119	0·126	10·9	1·9	0·075
72	Agora P22733	17·6	4·6	9·9	0·94	0·145	0·073	9·6	1·08	0·048
73	Agora P22734	18·0	4·8	10·6	0·97	0·094	0·093	9·2	1·3	0·057
74	Agora P22735	13·6	3·8	9·3	0·88	0·11	0·098	5·0	1·28	0·065
75	Kerameikos 1298	22·5	4·4	11·3	1·15	0·083	0·10	9·4	2·2	0·058
76	Kerameikos 1723	18·5	3·8	9·1	0·86	0·087	0·070	8·9	1·26	0·036
77	Kerameikos VD gr.8	15·3	3·9	8·5	0·86	0·087	0·076	10·1	0·61	0·046
78	Kerameikos VD gr.32	13·0	3·6	7·6	0·68	0·075	0·060	9·7	0·68	0·033
79	Kerameikos VD unnum.	16·3	4·1	8·8	0·88	0·099	0·073	10·6	0·76	0·048
80	Kerameikos	20·4	4·2	9·3	0·89	0·087	0·118	12·6	1·15	0·057
81	Kerameikos 1932	17·1	4·3	10·0	0·96	0·098	0·090	4·9	0·73	0·068
82	Kerameikos 1940	17·4	3·1	8·1	0·94	0·053	0·081	4·1	1·24	0·051
83	Kerameikos K29	20·5	4·4	10·8	1·06	0·067	0·112	12·0	1·2	0·059
84	Kerameikos K59	15·2	3·8	10·5	0·98	0·079	0·096	8·3	1·55	0·052
85	Kition	16·5	4·7	11·5	0·88	0·12	0·10	9·9	1·02	0·060
86	,,	18·1	4·4	8·1	0·88	0·115	0·091	12·6	0·93	0·042
87	,,	19·1	4·9	9·7	1·0	0·122	0·10	13·5	1·26	0·055
88	,,	17·0	4·1	9·4	0·90	0·103	0·11	14·0	0·92	0·061
89	,,	17·0	5·0	11·6	0·87	0·116	0·128	7·0	0·88	0·060
90	,,	18·2	4·5	9·1	0·95	0·103	0·10	8·0	0·72	0·058
91	Salamis T84,16	16·0	5·5	12·9	0·85	0·126	0·128	9·3	1·26	0·080
92	Salamis T10,15A	14·0	1·2	8·8	0·76	0·136	0·030	6·9	2·9	0·020
93	Salamis T33,11	21·6	5·2	12·0	1·0	0·141	0·128	10·2	0·86	0·078
94	Salamis T10,15B	18·6	4·4	9·3	0·87	0·082	0·105	6·9	0·82	0·054
95	Salamis T4	19·5	5·2	10·1	0·95	0·092	0·10	12·0	1·06	0·056
96	Salamis T84,13	17·0	4·3	10·0	1·01	0·106	0·095	9·7	0·92	0·062
97	Salamis T9,10	21·0	1·8	8·8	0·79	0·113	0·026	5·6	1·48	0·016
98	Corinth C53.218	13·9	4·4	8·4	0·80	0·077	0·076	9·1	0·99	0·058

contents of **45** diverge from the Athens means by more than two standard deviations. These samples must be considered borderline Attic products; **19** lies too far outside the Athens cluster on both graphs to be considered Athenian.[22]

Samples **9, 10, 11, 13, 14, 19, 24, 32, 34, 41, 44, 46, 92,** and **97** are not Attic.[23] We may

[22] There are aspects of **19** which are not perhaps purely Attic: the clay is a full orange and the fabric very soft, while the decoration is hastily painted and of a rare type. As noted above, p. 122, the clay of **91** and **93** is not surely Attic and analysis underlines the doubt without ruling out an Athenian provenance.

[23] The difficulties posed by **92** should not be ignored and perhaps deserve more than a footnote. From all external evidence the piece seemed Attic enough to be included in the main catalogue and not the appendix on 'à la brosse' amphorae. The original sample, taken from the foot which was not published with the vase, gave results which were clearly not Attic; we decided to test a sample from the body of the vase, which was made available through the good

TABLE 2. CHARACTERISTICS OF ATHENS AND CHALKIS CONTROL GROUPS

		% Al	Mg	Fe	Ti	Mn	Cr	Ca	Na	Ni
(*a*)	Athens Agora 13 samples									
	Mean	17·8	4·35	9·8	1·0	0·102	0·10	8·5	1·0	0·059
	Std. dev.	2·2	0·81	1·48	0·11	0·031	0·022	2·1	0·37	0·011
(*b*)	Kerameikos 10 samples									
	Mean	17·6	4·0	9·4	0·93	0·082	0·088	9·1	1·1	0·051
	Std. dev.	2·9	0·41	1·2	0·13	0·014	0·019	2·7	0·49	0·011
(*c*)	Athens (a+b) 23 samples									
	Mean	17·7	4·2	9·6	0·97	0·093	0·095	8·8	1·1	0·056
	Std. dev.	2·5	0·68	1·36	0·12	0·026	0·021	2·4	0·42	0·011
	80% ranges	14·5–20·9	3·3–5·1	7·9–11·3	0·82–1·12	0·059–0·127	0·068–0·122	5·8–11·8	0·54–1·6	0·042–0·07
(*d*)	Chalkis 9 samples									
	Mean	18·2	1·6	8·0	0·81	0·082	0·020	5·0	1·8	0·015
	Std. dev.	1·2	0·22	0·59	0·10	0·013	0·007	0·82	0·23	0·004

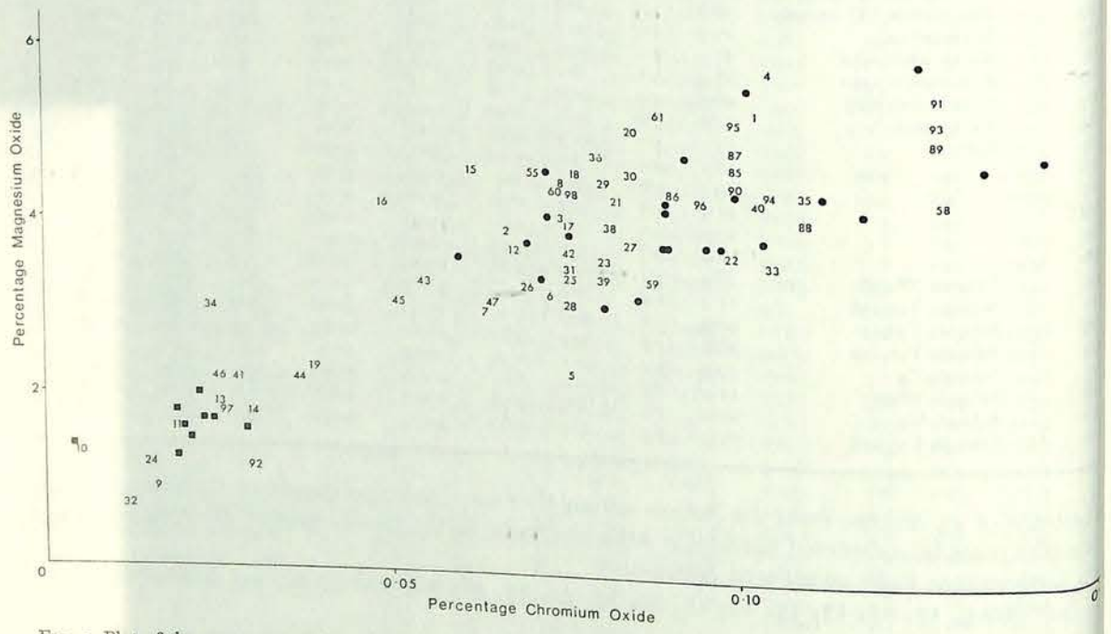


FIG. 5. Plot of the percentage Magnesium oxide against the percentage Chromium oxide of the Athens samples (●), the Chalkis samples (■), and the other amphorae (numbered)

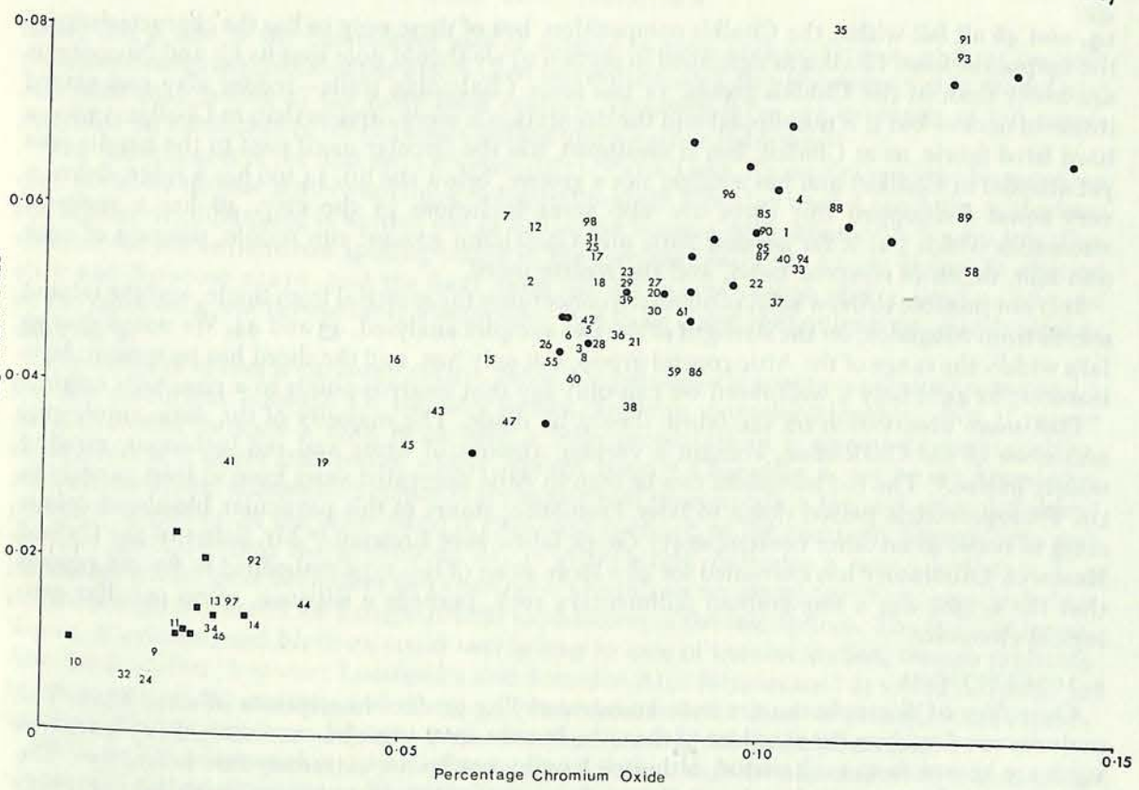


FIG. 6. Plot of the percentage Nickel oxide against the percentage Chromium oxide, as FIG. 5

note first that all the non-SOS vases fall into this group. Analytically **24, 32, 34, 41,** and **97** resemble the Chalkis group in composition, but there is nothing to support such an attribution on archaeological grounds; they are very diverse vases with no visible Chalcidian characteristics whatsoever. Analyses of South Italian clays so far made tend to show such 'Chalcidizing' results and it may well be that this method alone will not suffice to break down the material into individual local groups, although it would be valuable to have more analytical data for Pithekoussai in the form of analyses of carefully selected material.[24]

Our results concerning Pithekoussai can only contribute to the question of Euboean or local origins for a certain amount of the pottery.[25] Many of the amphorae are Attic, **5–8, 12, 15, 16, 45,** and **47,** although we have noted above the atypical composition of **5, 16,** and **45. 9–11, 13,**

offices of Dr. Karageorghis and Professor Buchholz. The result was:

Al	Mg	Fe	Ti	Mn	Cr	Ca	Na	Ni
21·7	1·8	7·4	0·84	0·084	0·018	4·7	1·45	0·012

amply confirming a non-Attic origin. Yet while the readings for the two samples are comparatively close in some of the elements, including the more diagnostic Mg and Ni, there are marked discrepancies in Al, Mn and to a lesser extent Cr. The Al variation may be due to the fact that the first sample **92** was drilled and the second chipped and ground, while variation in readings for Mn may be expected in the fabric of a large vase.

[24] I refer here mainly to David Ridgway's unpublished attempts to distinguish between local and Euboean fabrics at Pithekoussai (*Papers in Italian Archaeology*, I, *The Lancaster Seminar* (1978) 123). Elsewhere in southern Italy some deviation from the Chalcidian range is shown in Ca content (Boardman and Schweizer, loc. cit. 272), and high Ca is apparent in **34,** presumably made near Policoro, though not in **32,** presumably made near Sybaris.

[25] It is to be hoped that positive results will emerge from a programme of thin-sectioning of material from Pithekoussai, being carried out by G. Buchner and D. Ridgway at the British School at Rome.

14, and **46** all fall within the Chalkis composition, but of these only **10** has the characteristics of the amphorae from Chalkis as described in section 2; we should note that its Cr and Ni contents are lower than in the Chalkis group. **11** has some Chalcidian traits—redder clay and glazed inside of neck— but it is not slipped and the decoration is more careless than at Chalkis. **13** has a hard fired fabric, as at Chalkis, but is unslipped, has the circular motif next to the handle (not yet attested at Chalkis) and has a ridge, not a groove, below the lip. **14** too has a ridge, below a very squat flat-topped lip; there are also some inclusions in the clay. **46** has a series of anomalies which put it far beyond Attic and Chalcidian groups: rim profile, slimness of neck and foot, depth of reserved band, and the rosette motif.

It is not possible to draw solid conclusions concerning the material from Spain, and the related sherds from Mogador, on the strength of the two samples analysed, **43** and **44**. We noted that **43** falls within the range of the Attic control group, but only just, and the sherd has no typical Attic features; as **44** is only a wall sherd we can only say that analysis points to a non-Attic origin.

One more observation on the fabric should be made. The majority of the Attic amphorae, and none of the Chalcidian, contain a varying amount of white and red inclusions, ranging widely in size.[26] The red inclusions can be seen in Attic decorated vases from at least as early as the Protogeometric period down to later Protoattic; stones of this particular blood-red colour seem to occur in no other contemporary Greek fabric save Eretrian.[27] Mr. Salter of the Oxford Research Laboratory has examined for us a large stone of this type embedded in **60** and reports that the origin was a fine-grained sedimentary rock, perhaps a siltstone, of no peculiar geological character.

4. INSCRIPTIONS

Over fifty SOS amphorae are now known carrying graffito inscriptions of some kind. The majority are found on the shoulder of the vase, but the neck was also commonly used. Inscribed vases are known from each period, although lengthy graffiti are extremely rare before 650. The meaning of these marks has been discussed on a number of occasions, with no consensus emerging; I will not add any new interpretation here.[28]

Full names

Nine amphorae have full names inscribed on them in the genitive case.[29] In three instances at least εἰμί is added, enough to demonstrate that in all cases we are dealing with owner's inscriptions; this is one of the commonest uses of writing in high archaic Greece, at least on non-perishable materials. None of the pieces need be earlier than *c.* 625 (Syracuse 21210, from Gela) and most may belong to the early sixth century. However there are examples of full names inscribed on amphorae of other fabrics dating much earlier than this.[30]

The provenances of the nine are Cerveteri (five), Vulci, Gela, Kamarina, and the Kerameikos (one each). In no case is there anything to suggest that the alphabet used is not Attic, and where εἰμί is used the diphthong is written out in full in the normal Attic manner.[31] On no less than three of the pieces there are spelling errors in the termination of the name: *omicron* is omitted on **2** and Syracuse 21210, and the final *sigma* left out in one version of **21**; also one attempt at the name on **2** was prematurely abandoned. It is to be noted that at least two hands were at work on **2**.

The range of names is curiously varied. None is a particularly common personal name and a few are downright unusual. Of the new names, Smikron is unobjectionable, even if rare;[32] Archon should indicate a man of at least a little pretension in a seventh-century context, although it is a name that recurs widely enough later;[33] Charopios is not to my knowledge attested elsewhere, although its cognates are rather well represented in the archaic and classical period;[34] Smordon on the other hand is elsewhere confined to the northern Aegean area and we may speculate that the graffito on **21**, in Attic script, indicates a non-Athenian.[35] The remaining names have been discussed elsewhere. Overall an untidy picture emerges which does not encourage the search for a single precise explanation of the inscriptions. The familiar forms, Korax, Klopetion, and Myrmex could well belong to men of humble station, though probably Attic land-holders; but were Lasargades and Smordon Attic farmers too? It would be foolish to be dogmatic on the matter, and we should bear in mind the kind of changes that Solon's agrarian reforms may have brought to the face and faces of Attic small-holdings.

While such an explanation remains a possiblity, I believe that the alternative view, that these are traders' names, can still be upheld; it is objected that traders would not place their names as owners on the amphorae and that it is unlikely that there were many Attic merchants at this period, but both difficulties are obviated if we think of the marks as being applied by the Attic producers (and therefore in the local script), reserving the contents of the amphorae for traders of whatever nationality—'this is marked down for Smordon'. Here there seems to be some parallel to later traders' marks on decorated vases, although the εἰμί does raise some difficulties.

Abbreviations and symbols

Some of the fragmentary inscriptions may once have been full names (notably **65**), while there are a few abbreviated names which can be taken as having had the same connotation, for example Salamis tomb 10, 15, and 15A, Phaleron tomb 4, *Thera* ii 64 and perhaps Metaponto

[26] Such inclusions have been mentioned more frequently of late; *Kerameikos* vi 2, 144, *Eretria* v 22. We can single out from the mass of vases which display red inclusions a trio in the National Museum in Athens: 221, the early black-figure Siren olpe (Shefton–Arias–Hirmer pl. 21); 2226, late Protoattic sherd with fragmentary inscription (*BSA* xxxv (1934–5) pl. 54, f; Beazley, *AJA* xxxix (1935) 475, 1); 18772, fragment of plaque from Aegina, *c.* 700 (Jeffery, *LSAG* 110, pl. 16, 1; the drawing is misleading since it tends to dissimulate the scar by the crucial antepenultimate letter—*pi* or *gamma*; the start of a downstroke, giving a *pi*, seems just visible).

[27] Descoeudres mentions these inclusions with respect to three of his sub-groups of Eretrian fabric, 3d, 6c and to a lesser extent 9 (*Eretria* v 21–2); no pieces of the first two sub-groups are included in *Eretria* v and in *Archaeometry* xix (1977) l.c. only one of each is analysed, 26 and 76; purely on grounds of analysis 76 could well be Attic. However, there is on display in Eretria Museum a sherd from a large 'Dipylon' type amphora, from Papadimitriou's excavations, showing a warrior and (?) charioteer painted in the typical Eretrian white-on-glaze technique, and the fabric includes several red stones.

It is not easy to incorporate the results of the Eretrian analyses here, principally because the two elements which we have found most diagnostic, Cr and Ni, were not measured. Some distinction between Eretrian and Chalcidian fabric in the concentration of those elements that both programmes have in common is observable, but the ranges are not widely separated. Mg content is the most significant available with the mean figures of: Eretria 3·2; Athens 4·2 (SOS), 5·2 (Stern/Descoeudres); Chalkis 1·6 (SOS), 2·4 (Boardman/Schweizer). On available evidence none of the problem pieces from Pithekoussai seems to have an Eretrian origin.

[28] The various opinions held concerning the marks are summarized by Hoz Bravo, *Madr. Mitt.* xi (1970) 104 ff. and esp. n. 5.

[29] They are: **1, 2, 21, 80,** Syracuse 21210 (Gela), Villa Giulia (Cerveteri tomb 6, 12) and Louvre D33, D34, and D35.

[30] Unpublished sherds of an amphora of the LG I period from Pithekoussai (necropolis sporadico) of the same fabric as the vase cited in n. 38 below, and probably Leukandi, *Preliminary Report* fig. 78, which is in turn of similar dark brick-red coarse clay. See now *PdP* 33 (1978) 136.

[31] For examples in Attica and some from elsewhere see Hansen, *Glotta* liv (1976) 31–2 (with regard to his remarks concerning Nestor's cup, it should be noted that simple ἐμί is found on the Pithekoussai sherds mentioned in the previous note). While εἰμί is used occasionally in Euboea, Boeotia, and Sicily, it is far rarer in Ionia; to add to the examples cited by Hansen, there are six or seven εἰμί to place beside the overwhelming majority of ἐμί at Naukratis, one on a Chiot chalice from Aegina, Furtwängler, *Aegina* 456, no. 244, and *LSAG* 343, 29 from Miletus, and 372, 61c, from Borysthenes island. Ἐμί is found in Attica, but rarely: the Burgon amphora, sherds from the Acropolis, Graef-Langlotz ii 1369, 1370 and *Agora* xxi F 63 and F 65.

[32] The one Attic companion cited by Pape-Bennseler suffers from being a variant reading at *Dem.* xxi 182.

[33] Few examples are given by Pape-Bennseler, but they are well scattered.

[34] Perhaps he is rather Charopias, who has a namesake, Charopies, in the early fifth century at Styra, *IG* xii 9, 56 (432). Charopinos is a sixth-century Parian, *LSAG* 103, 4, while Charops can be found in Athens in the fourth century, *Bull. Ep.* (1950) 72a.

[35] For the north Aegean, but not necessarily non-Greek origins of the name see *Bull. Ep.* (1974) 142.

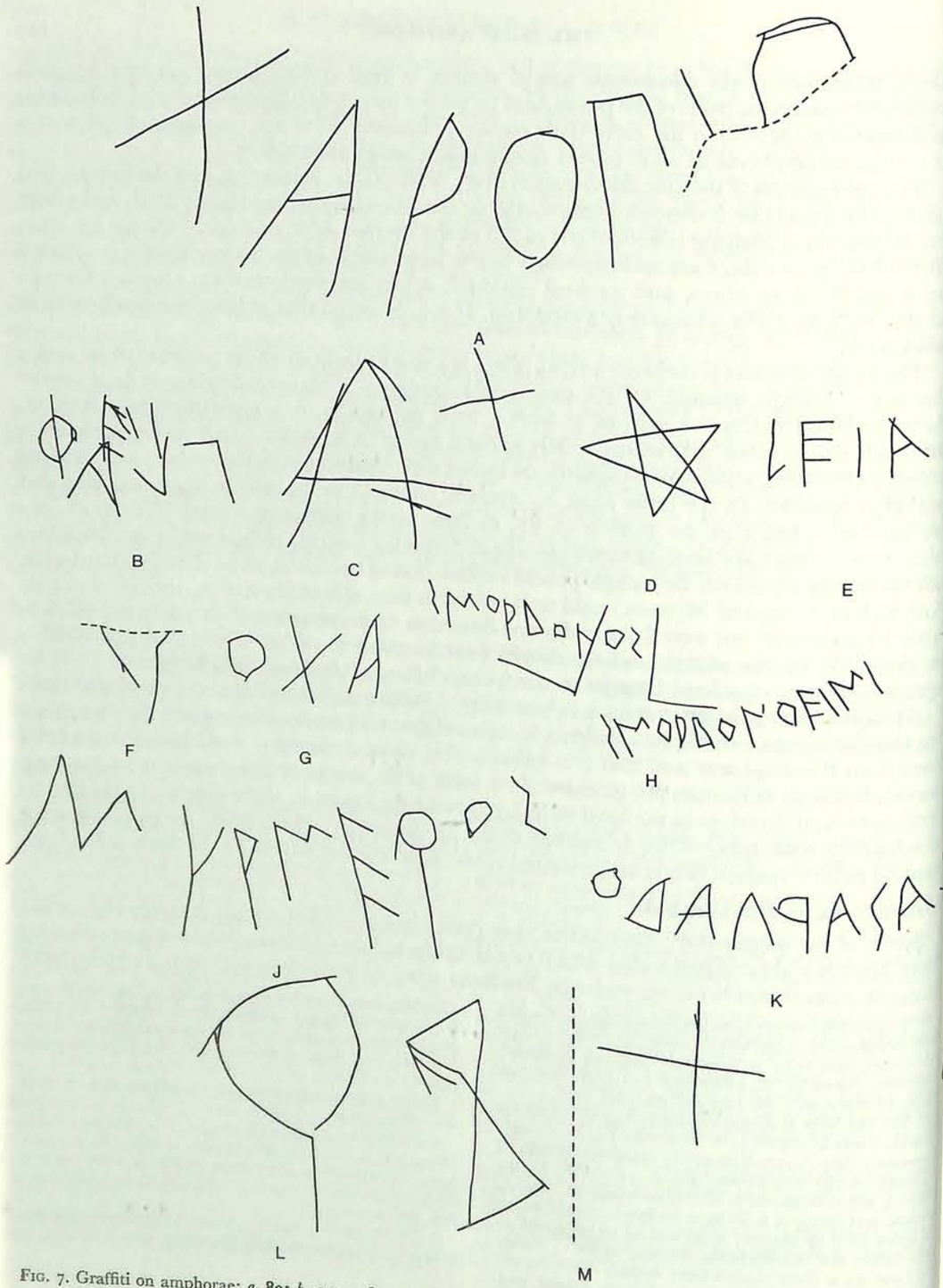


FIG. 7. Graffiti on amphorae: *a*, **80**; *b*, **92**; *c*, Corcyra 63/130; *d*, **47**; *e*, **45**; *f*, **36**; *g*, **17**; *h*, **21**; *j*, Louvre D33; *k*, Louvre D35; *l*, Louvre D38; *m*, Louvre D39. Scale 1:2

22714, if it is from an SOS. **43** is another possibility; I prefer to read the inscription as Greek rather than Phoenician. British Museum 1888.2-8.60, from Tell Defenneh, is more interesting; now that it seems likely that we have the beginning of the name preserved (p. 115), we should note that it is far more likely that Pet—is the start of an Egyptian name than a Greek one.[36] If only a few more letters had been cut we may have had the satisfaction of seeing that it was not cut in Attic script.

Many of the remaining graffiti are single letters or signs whose interpretation is extremely difficult; some of them appear as second graffiti on vases bearing full names. On the analogy of later amphorae we might have expected notations of content, capacity, or tare, but there is no graffito which is unequivocally numerical and certainly no pattern discernible among those which might possibly be considered numerical. A simple X is so commonly found on amphorae that in most cases it could not possibly be a number. Unit strokes appear once, on the late piece from Halieis, HP471; one of the sherds from Old Smyrna has a mark which could be taken as a pattern of unit strokes. Only in the case of Corcyra 63/130 (FIG. 7(*c*)) can a numerical interpretation be more seriously considered; here we have a *delta* followed by a cross, not surely in the same hand. It is tempting to think of 'ten choes', but I would not press such an interpretation without further material to support it. If we were to accept it it would constitute the earliest secure evidence for the acrophonic system of numerals.[37]

It is probable that many of the simple signs are used as substitutes for alphabetic owner's marks. X, pentalphas and hour-glass signs are obvious choices. There are of course difficulties in such an interpretation where the sign is accompanied by a further graffito indicating an owner's name. However it is quite possible for an amphora to have a full and complex life, as has been dramatically illustrated by the vase from Pithekoussai with a variety of Aramaic and Greek graffiti recently published.[38] Beside that example, it would be hazardous to analyse the double marks on SOS amphorae.

The rarity of repetition of marks on different amphorae should be stressed. Some simple signs recur, and chronologically it would be allowable to entertain the idea that **42**, Villa Giulia tomb 6,11 and Louvre D39 could have had their hour-glass sign cut by one person; likewise perhaps the compass drawn circles on the Oisymne vase and Corcyra 63/130 (though that on **74** may be earlier). The alphabetic marks on **58** and **59** are clearly a pair, as the vases are in all other respects, but other alphabetic inscriptions are singletons. If we were dealing exclusively with merchants' marks I would have expected a modicum of repetition in the sample which we have preserved.[39]

The bulk of the shorter graffiti could be Attic, but there may be a few exceptions. BM 1888.2-8.60 I have noted above. **25** presents a clear non-Attic *gamma*; it may be an Ionic trader's mark.[40] Three more enigmatic marks could possibly be Attic, but are more likely of local origin, **40, 45** and Megara Hyblaea, FIG. 7(*g*). While the simple hour-glass sign is a universal Greek possession

[36] The very frequency of names in Pet- in Egypt makes a Greek explanation unlikely. I would not wish to advance the possibility of Pet(rie), and would like to take the opportunity of at least querying the possibility of Bil(iotti) on the cup from Rhodes which I suggested in *BSA* lxx (1975) 164. Names in βιλλ . . . are reviewed by Robert, *Bull. Ep.* (1974) 142 and include an example from Iasos. In addition, I have very rarely come across any short graffiti which seem of doubtful authenticity.

[37] On early acrophonic numerals see *PdP* xxx (1975) 365–6. *Delta* is also found on Ashmolean 1956.507 and Salamis tomb 10, 15.

[38] Garbini, *PdP* 33 (1978) 143 ff. We also find one mark inscribed in part over another on **92** (FIG. 7(*b*)); I would read an original graffito ΦΕ (the following strokes are very faint, possibly accidental), over which has been cut part of the *alpha* of the retrograde mark, ΓΛΑ.

[39] It should be noted, however, that repetitions are not common among mercantile dipinti on Corinthian and early Attic BF vases; *Greece and Rome* xxi (1974) 141 and *BSA* lxx (1975) 149.

[40] See n. 38 for the probability that it was not inscribed early in the career of the vase.

its apparent use as a letter on **40** does cause some difficulty; I would consider it most likely that it was inscribed locally at Halieis, but can offer no plausible interpretation.

45 is a more interesting document, cut unusually on the belly of the vase, which in itself is sufficient to suggest some special significance. ΛΕΙΑ could be interpreted as 'booty' or 'smooth'; in the latter case the likelihood of a neuter plural seems remote and it is not easy to suggest a suitable feminine noun.[41] The ending would then not be full Ionic. On the other hand 'booty' would not have been cut on the vase at source and so should be in the local script and dialect, and once again the *alpha* termination is not full Ionic; it is questionable how far we should expect Ionic forms at Pithekoussai.[42] On balance 'booty' is the preferable interpretation, a nice glimpse into Chalcidian activities hinted at by Thucydides vi, 4. 6.

Like **40,** the Megara Hyblaea inscription, FIG. 7(*g*), is also cut on the neck. Supposing that the letters are an abbreviation of a single word, I find it hard to think of the central letter as 'blue' *chi*, nor does it give the appearance of an *upsilon* with accidentally long hastae. The vertical second upright of the *alpha* suggests that it should be read retrograde, but neither αχο- or αξο hold out much hope. Orthograde οξα- at least could yield words which could refer to wine or oil, but further speculation would be dangerous.[43]

I have no explanation for the curious second graffito on **2,** FIG. 1(*d*).

The graffiti reported on the vases from Metauros are both of interest; confirmation that the first is pre-firing would support the argument that many of the other graffiti refer to persons in Attica, though it would not prove whether they are traders or farmers. The second has the intriguing word, or abbreviation, Fεργα.

5. SHAPE AND DIMENSIONS

The evolution of the shape of SOS amphorae has been well outlined by earlier writers and sufficiently well illustrated by published profiles.[44] Since much important material is awaiting detailed publication, I will not attempt here to isolate niceties of development, but merely point out some salient chronological guidelines such as I have used here to date pieces not found in specific contexts.

The Attic SOS shape develops in the LG I period from that of the standard decorated amphora; the pedigree is clear in the symmetrical balloon body and the tall, straight or very slightly flaring foot. The general line of the vertical neck is similar, but there are significant differences here and in the handles, both of which can be explained on practical grounds. The handles are round, not the flattened or strap handles of the decorated amphorae; considerations of ease and frequency of transport probably governed this change, though it was not so necessary that round handles were also adopted at Chalkis. The characteristic neck profile incorporates a sharp moulding under a simple vertical lip; this feature is best explained as a

[41] The word does occur in a mercantile context, but clearly with reference to plain, i.e. unribbed, black-glaze vases, probably of the fourth century, Hackl, *Münchener Archäologische Studien dem Andenken Adolf Furtwänglers gewidmet* 56, no. 607.

[42] *Epsilon* after a vowel in the first declension is found in Tataie's inscription on the aryballos from Cumae, *LSAG* 240, 3. On the other hand on a fragment of a local (?) skyphos from Pithekoussai, Mazzola 70-C-1050, is the snatch]αιιανσφο.[to all appearances in the local script. From this evidence of the earliest period there would seem to appear a *non liquet* about the 'proper' Euboean usage.

[43] It would be controversial to introduce such a 'red' *xi* to Megara Hyblaea (or any neighbouring state) however; the 'blueness' of the Megarian script has been championed, with substantial new evidence, by Manni Piraino, ΚΩΚΑΛΟΣ xxi (1975) 121 ff.

[44] See Young, Brann, and Villard, *BAM* 11. cc. Young does not begin the series early enough, for the Pithekoussai and Kerameikos evidence points to its inception in the Attic LG Ib period; Brann terminates the series too early unless we interpret very broadly her words (*Agora* viii 32) 'except for a few late stragglers this series ceases at the end of the seventh century'; the material from Vulci and Kamarina at least belies this. Villard too assumes that the 'à la brosse' type replaced the SOS around 600 rather than overlapping it during the following years.

drip-ring to catch the contents that might dribble over the edge of the lip. In course of time this ridge disappears as a more cup-shaped mouth is adopted; a very similar progression is seen in the shape of the mouth of the sixth-century Attic lekythos and encourages the view that the SOS was primarily an oil container.[45]

The Chalcidian version of around 700 differs in an number of respects. The foot is lower and more flared, the body probably had a higher centre of gravity, the handles are flattened, the lip is thicker and the neck is slightly convex with a groove instead of a ridge (probably a functional alternative).[46] It would be difficult at present to point to the origin of these details of shape, severally or as a group, or to discuss the relationship of Attic and Chalcidian shapes.

Flattened handles and flaring foot appear on Attic amphorae in the course of the seventh century; the latter change seems to keep pace with general developments in the Kerameikos, while the former was surely influenced by the usage for decorated vases. Other changes occur in the neck profile, angling of handles and body shape.[47] The neck becomes more concave with a taller and more flaring lip which eventually becomes echinus- or calyx-mouthed on the latest vases (e.g. **58, 59**). By this time the neck ridge had disappeared, although it had been steadily losing prominence throughout the seventh century. The balloon shaped body also lasts into the seventh century, though it becomes fuller; there is a tendency to a higher, broader greatest diameter and a flatter shoulder. It would, however, be risky to hazard a date for a vase on the grounds of body shape alone, especially as vases from closely datable contexts in the middle part of the seventh century are so rare.

Towards the end of the century we find vases with a very flat and broad shoulder (e.g. **2, 27**). The ridge finally disappears after this stage when the body becomes less broad once again, although the shoulder remains flat and the lower body tends to fill out. The Kamarina and Vulci tombs demonstrate that such pieces were made some way into the sixth century, a view that finds corroboration in the SOS amphora carried by Dionysos on the François vase of *c.* 570. The 'à la brosse' version of the storage amphora was being produced at the same time at Athens, and it is this type that gives more to the shape of the Panathenaic amphora than the SOS.[48]

The dimensions of the amphorae vary substantially with little perceivable chronological pattern, save for the gradual widening of lip and foot diameters. Throughout, the height of the foot remains around 3 or 4 cm. and the neck plus lip height varies between 9 (**38**) and 16 cm. (Louvre D35), rarely straying from between 11 and 14 cm.; in the early period 14 is rarely reached, while later the lip takes up more of the whole, **68** being a striking exception.

Height varies from 58 cm. (reported for *Clara Rhodos* iii tomb 86) to 75 cm. (**21**). All those under 64 cm. are late, but **21** and others prove that not all later vases are smaller, and the early vases **47** and Cumae, tomba Artiaco are barely above this limit. The average height of nineteen

[45] The evolution of the lekythos at Athens is readily judged from Haspels, *Attic Black-figure Lekythoi* pls. 1–10. Vallet has argued for the use of the SOS as an oil container in a fundamental article, *Hommages à Grenier* 1558 ff.

[46] Such a convex bulge to the neck is typical of Chiot wine amphora of the sixth and later centuries, *BSA* xlix (1954) 169, V. Grace, *Amphoras and the Ancient Wine Trade* fig. 44, *Histria* ii pls. 52–3. Bulgy necks are rare earlier and one may ponder the possible connection of the Chalcidian amphorae with Cypro-archaic I oinochoai in this respect, e.g. *SCE* iv 2 fig. XXIX 13, XXXIV 16, *Ant. K.* x (1967) pl. 38,1.

[47] For profiles of Attic neck-amphorae of the seventh century see G. Mylonas, ὁ Πρωτοαττικὸς Ἀμφορεὺς τῆς Ἐλευσῖνος 9–16

[48] The early Panathenaic amphorae have round handles (with which we may compare **91**) and the neck and lip profile is far closer the 'à la brosse' than late SOS type; see *AJA* xlii (1938) 495 ff. There is no observable difference in size between late SOS and early 'à la brosse' amphorae.

It is a nice question whether the SOS was still being made at Athens at the time Kleitias painted the François vase, even nicer whether he intended it as a wine jar. On the first question it would be best to await the publication of the Kamarina material, on the second we are faced by the alleged Solonian prohibition of Attic wine exports. If Dionysos is carrying oil do we have a precocious use of the 'political' use of mythology at Athens by vase-painters, championed by Boardman (*RA* (1972) 57 ff.; *JHS* xcv (1975) 1 ff.)? See further p. 140.

complete vases for which I have good measurements is 68 cm. No more consistent pattern emerges from considering height less lip and neck.

Diameter is rather more stable, mostly between 43 and 49 cm., with anomalies occurring largely in the later period;[49] exceptionally small are the early Mylai tomb 68 (reported diameter 36) and Louvre D39, a late vase with the same diameter. As noted above broader diameters occur around the last quarter of the sixth century, although the very largest, Agora P7185, 54 cm., is a little earlier. The average diameter of the nineteen vases is 44·4 cm. There is no tendency for taller vases to be slimmer.

Such observations indicate that the capacity of these vases must vary substantially. As noted above, only one amphora has been tested for capacity, **2**; it holds 63·75 litres to the lip, 61·75 to the base of the neck. I have independently used several formulae to calculate the capacity of this and the other eighteen vases mentioned;[50] none have yielded a figure close to the actual measurement of **2**, and so I would be diffident about using them to draw any conclusions, although one certainty is that **2** is by far the largest of the group; full of oil it would have weighed in the region of 70 kg.[51]

There are several interesting questions raised by the examination of the capacity of the SOS amphora. It is clear that the SOS and à la brosse types gave rise to the Panathenaic amphora whose size remains more or less constant over a number of centuries, with an intended capacity of an Attic metretes of twelve choes.[52] Did the potters of SOS amphorae aim at a similar consistency or did they begin to do so at any particular point? If they did not achieve consistency was this the result of lack of expertise or lack of motivation, on their behalf or that of their patrons? Such questions seem pertinent since the SOS is the first Greek storage jar made and exported in numbers. Further, does the lack of notations of capacity or tare indicate that all transactions were taken on trust as being of one metretes, that the amphorae and contents were reweighed at each stage of transaction, that barter exchange only operated at one point—making weighing then and only then a simple matter, or that capacity and tare notations were not yet in use in Greece, or at any rate individualized without wider acceptance? This list can hardly be complete. Such matters can only be settled within a broader framework, but as the SOS bulks so large in the history of high archaic Greek trade I would like to open up one line of argument, that the potters did attempt some standardization, whatever subsequent checks were applied to their work.

[49] The diameters of 50 cm. or more that I have available are for: **2**, **27**, **68**, **72**, **74**, Agora P7185, Salamis tomb 10, 15 and Louvre D34.

[50] I have applied several formulae to **2** and others of the nineteen vases, all based on the kotyle size of 273 cc. used by Lang, *Agora* x 44, which in turn is very close to the chous size used by Grace, *Hesperia* xl (1971) 85. The formula $V=\frac{2}{3}$ r(internal)^2 × body height (i.e. less foot and neck) gives a range from 28,500 to 69,000 cc, or 104 to 253 kotylai for the nineteen vases; the two extreme examples stand rather apart (Louvre D39 and **2**), but discounting them the average capacity using this formula is 191 kotylai. A simpler formula is $V=14$ (more or less the neck diameter of most amphorae) $\times D\times$ height less foot; this gives virtually the same result for Louvre D39 and only 46,155 cc for **2**, with an average without these two of 146 kotylai. The formula adopted by Lang of $V=\frac{11}{14}\times(\frac{3}{4}D)^2\times$ height less foot (but note that the ^{2} is omitted, ibid. 59; correctly given in *Sov. Arch.* (1976) 3, 93) gives 72,370 cc, while the formula preferred in *Sov. Arch.* ibid., $V=\frac{11}{14}\times$ height less foot$\times$ $(\frac{1}{2}(D+\text{neck } D))^2$ gives 53,525. One further method of calculating the capacity of **2** which was tried was to cut out of cardboard a half-section of the vase (internal); the centre of gravity of the section was found and the distance from it to the vertical axis used as r in the formula $V=$ area of half-section $\times 2\pi r$; this gave $1{,}117\times 2\pi r$, $=1{,}117\times 2\pi\times 9{\cdot}85=69{,}095$ cc $=253$ kotylai. It is clear that the first and last of the methods gives the best results for **2**, especially when taking into consideration the fact that I may have overestimated the internal measurements of the vase; however, we still have to make allowance for the fact that a proportion, perhaps up to two litres of the 63,750 cc of water taken to fill **2** will have been absorbed by the walls. The most striking result is that none of the formulae are tolerably close to the actual measurement.

[51] The empty tare of 17 kg. (or a little less—the vase was still a little damp when weighed) plus 61–2 litres of oil at 920 gr. per litre.

[52] For capacities of Panathenaic amphorae see Edwards *apud Agora* x 39, n. 9 and *CVA Metropolitan Museum* 3 32 ff.

One of the rule-of-thumb methods which I have used to calculate possible capacity does not give an adequate figure in the case of **2**, but it is perhaps possible none the less that potters were using some such guideline, involving simple dimensions—maximum diameter, height, and neck diameter. Of the nineteen vases used the mean height, minus foot, is 64 cm., about two feet on some contemporary systems; the mean diameter is 44 cm., or 22 fingers, while the mean neck diameter is in the region of 14 cm. or 7 fingers. Multiplying these three measurements gives a cubic capacity of 144·4 Attic kotylai, just a shade more than an Attic metretes.[53] I can merely observe that 22 and 7 are numbers not unknown in the calculation of area and capacity of round objects, and without prejudicing other issues I would suggest the possibility that Attic potters from the later eighth century threw amphorae whose size was determined by their major dimensions involving the numbers 22 and 7.[54] I fully appreciate that it is dangerous to work from the mean measurements of a considerably divergent set, but hope that this suggestion may lead to further study and discussion.

6. DECORATION

Neck

The neck decoration of Attic SOS amphorae is in glaze on a reserved ground.[55] The number of bounding lines above and below varies, normally none, one or two not infrequent, and three attested.[56] The inside of the neck is almost always reserved, in contrast to the Chalcidian treatment.[57]

Key to abbreviations used in parts 1 and 2:

Circles

- O dot and two rings; FIG. 8(*a*)
- Oa two rings, no dot; FIG. 8(*b*)
- Ob four rings
- Oc three rings, central one with four spokes; FIG. 8(*c*)
- O/W two rings, central one with four spokes; FIG. 8(*d*)
- Och five rings (Chalcidian variety); FIG. 8(*e*)

Zig-zags

- S orthograde four-bar sigmas; FIG. 9(*a*)
- Sa retrograde four-bar sigmas; FIG. 9(*b*)
- Sb six-bar sigmas; FIG. 9(*c*)
- Sc more irregular wavy line; FIG. 9(*d*)
- Sd as Sc, but reaching bounding lines; FIG. 9(*e*)
- Sl, Sla, etc. same as above, but single, not double.

[53] $64\times44\times14=39{,}424\text{cc}=144{\cdot}4$ kotylai. Such calculations are of course based on near complete uncertainty over the size of the Attic foot in the eighth to seventh century (see further, section 7); I only intend the equations 64 cm. $=2$ feet and 44 cm. $=22$ fingers to be roughly approximate. No doubt other hypotheses could be shown to be acceptable if a different foot is used. Here 44 is probably excessive for the average internal diameter, but 64 too little for the average internal height, since the SOS has a deep base (V. Grace, *Hesperia* xl (1971) 72.

[54] Although the neck diameter scarcely seems of great relevance to such calculations it is used in formulae for calculating capacities propounded in antiquity (Hero, *Stereometrica* 21–5); for its application see also n. 50. If the potters were using some such rule of thumb method it does not of course imply any considerable mathematical acumen on their part, although it does suggest that a value for π was known in Athens at this date. It may have been a further aspect of the orientalizing period, although the computation involving 22 and 7 (or 11 and 14) does not seem attested earlier in the Near East; in the Egyptian Rhind papyrus we find $\frac{8^2}{9^2}$ (O. Neugebauer, *Vorlesungen über Geschichte der Antiken Mathematischen Wissenschaften* i 122 ff.).

[55] On one of the Phaleron vases the neck ornament is said to have been incised, *ADelt.* ii (1916) 29, tomb 37.

[56] Bands above the panel are rare on Attic amphorae: **55**, Eretria inv. 4738a and b, and Syracuse, *Arch. Sic. S-O* no. 280 are the only assured examples known to me. This feature seems to be the only one to suggest a non-Attic origin for the Eretria sherds, since both the other pieces are also anomalous, **55** in being the only Attic piece in the Chalkis deposit and having an unusual form of O decoration, and the Syracuse sherd with its elaborate Ob decoration and rather squat profile. Three lines below the panel are found on **45**; in this respect and in the forms of O and T used **45** is close to the two LG I vases cited at the end of n. 59.

[57] Agora P7185 is an exception.

W wheel, four spokes
Wa wheel, eight spokes
Wch wheel with 'hub' and 'tyre' (Chalcidian variety); FIG. 8(*f*)

Triangular motifs

T double outline, central cross; FIG. 10(*a*)
Ta single outline, central cross; FIG. 10(*b*)
Tb double outline, central cross with hatching; FIG. 10(*c*)

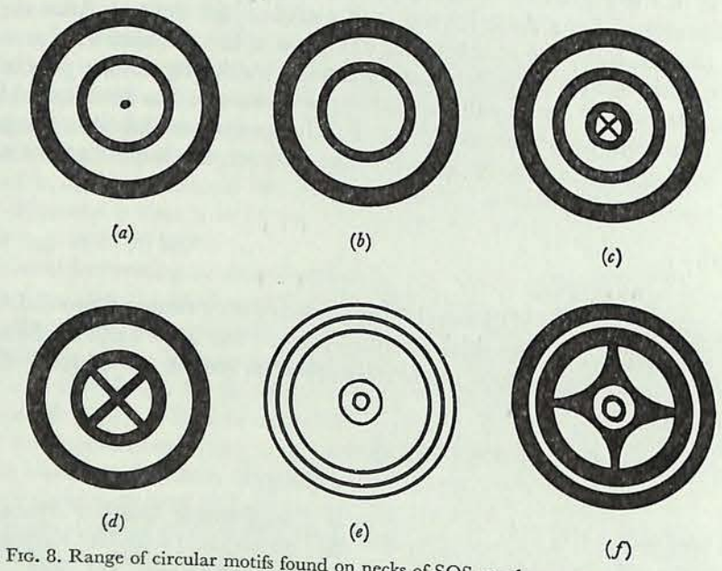


FIG. 8. Range of circular motifs found on necks of SOS amphorae. Scale approx. 1:2

Circles

The more complex forms appear only earlier, though **55** had something other than simple O or Oa. Oc and Od appear only on vases of the early group. The typical Chalcidian circular ornament, Och, is also more complex; it has no close parallel in contemporary Greek ornament and it may well have been borrowed from the Cypriot repertoire.[58] We might then suppose that Chalkis adopted the circular motif on the neck of its storage amphorae before Athens, where in the early period the triangular central motif was more common and the type of circle used was simpler and drawn from the Late Geometric stock of ornament.[59]

[58] Despite the ubiquity of concentric circles in Late Geometric ornament, the spacing of the Och type is not readily parallelled. Gjerstad rightly questions any close relationship between the Cypriot and Greek usage of concentric circle ornament (*SCE* iv 2, 301), but the closest parallels for this particular Chalcidian variety are found in the sets of mainly vertical circles on Cypro-geometric III and Cypro-archaic I flasks and oenochoai, e.g. *SCE* iv 2 figs. XIX, XXI–XXIII, XXV and more especially the Bichrome Red I vases fig. XLI; here I follow the dating for the start of CA I around 740 B.C. proposed by A. Dimitriou at the Mycenaean Seminar in London, June 1977 (see now *AA* 1978 12 ff.). Cypriot contacts with Euboea at this time are discussed in *Ant. K.* x (1967) 133 ff., to which we can add Coldstream's reallocation of the Cesnola group to Euboea (*BICS* xviii (1971) 1 ff.) although it has not been welcomed by all those working on particular Geometric schools (a selection of reactions: Buchner, *Atti xi Convegno Magna Grecia* 371–2; Walter-Karydi, *AA* (1972) 408 ff.; Descouedres, *Eretria* v 57 n. 344.)

An alternative explanation would be to derive Och from Wch in spite of the overwhelming number of Och at present known; much depends on how short-lived the potters' dumps at Chalkis were and whether the sherd **10** is demonstrably earlier than them. If the wheel was the original motif it should have some more than purely decorative significance; dare one connect it with the type on early Chalcidian coins?

[59] Taking the preponderance of T at Pithekoussai and the general statement about the Phaleron material, *AE* (1911) 248, into account, the ratio of T to O at Athens in the early period seems roughly even; O on early pieces: **7, 8, 45, 71, 75, 78,** Phaleron tomb 47. More complex O motifs are found on some Attic LG I amphorae with neck decoration, e.g. *ADelt.* xxviii (1973) A pl. 16α–β, 26ζ, Dipylon grave XIII (the grave of the ivories), *JdI* xiv (1899) 191 fig. 48, and Athens NM 12895 from the Rousopoulos collection, an interesting vase since it has most characteristics of an SOS of the early period save its short body with striped decoration; the neck is ridged and the handles rounded, striped; the neck decoration is Ob,Tb,Ob, divided and framed by single long zig-zags.

[60] e.g. *ADelt.* xxviii (1973) A pls. 3*a*, 8*a*, and 21*a*; Dipylon grave X, *JdI* loc. cit. fig. 49. See also Young 211.

[61] Eight-spoked wheels at Athens, Boardman, *JHS* lxxxvii (1967) 3; it is more frequent unconnected to a chariot, as a shield blazon (Tölle, *Antike Welt* v (1974) 3, 29, fig. 10 various) and in particular as the core decoration in the LG II Concentric Circle group (*GGP* 74–5). The lack of significance in the normal SOS decoration is stated by Brann on F41.

[62] The many-stroke *sigma* is found sporadically throughout the Greek world in the seventh century, but only persists at Sparta. Four-bar *sigma* is a common enough alternative to three-bar at Athens in that century but becomes something of a rarity after. See *LSAG* 34 and 67, *BSA* lxviii (1973) 184 n. 11 and *Hesperia* suppl. xvi 44. **82** and Phaleron tomb 47 show that a definite four-bar version can be found on quite early SOS.

[63] The horizontal wavy line is too common a motif in the LG period for us to pin down its origin here.

On **10** the basic Chalcidian motif is changed into a finely painted wheel, Wch, and a similar though rougher type appears on the Chalkis sherd, *ADelt.* xxvi (1971) B pl. 227*a*. The Attic cartwheel type O/W is also early, of the eighth century. The painter may have been subconsciously influenced by thoughts of the transport of amphorae, but the usuage of wheel ornament in Geometric is too widespread to press the point (but see n. 58).

Most of the wheels with single circles, W, Wa, belong to a later period, with the exception of the sherds from Pithekoussai, **11** and **13.** However, such simple wheels are found decorating the necks of Late Geometric neck-amphorae.[60] The eight-spoked wheel, Wa, is found on Agora P8377, but is a rarity in Athens; on the companion pieces, P8375–6, we see thickened ends to the spokes, leaving us in no doubt as to the artist's intention.[61]

The sun-burst motif on the non-Attic **46** is so far unique, as is the solid disc on **6,** together with the flanking creatures.

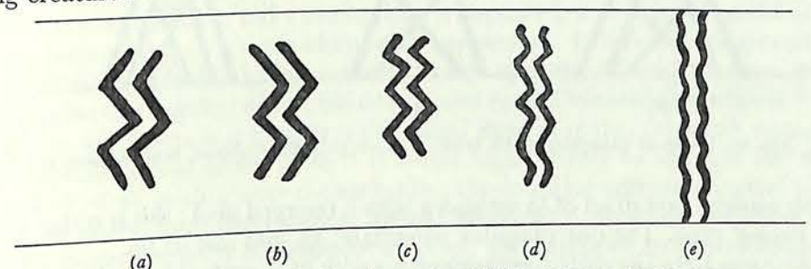


FIG. 9. Range of zig-zag motifs found on necks of SOS amphorae. Scale approx. 1:2

Zig-zags

They are of varying length and tidiness and the seemingly neat categories S–Sd blur the wide range of possibilities. The very long wavy lines, Sd, are confined to the early period, while the three-bar variety of S is always late (**21,** one side of **62,** Thera, *AM loc. cit.* Abb. 55*a* and Syracuse, Fusco tomb 267). Such a progression is consistent with the development of the letter *sigma* in Attica.[62] The direction of the more deliberate *sigmas* varies seemingly at random, though facing or opposed sets of *sigmas* (S,O,Sa; Sa,O,S) are relatively rare. Single zig-zags are far rarer than double, but can flank either triangular or circular motifs. As a central motif zig-zags are mostly late; exceptions are the Phaleron vase, *AE* loc. cit. fig. 6, and those vases on which the flanking ornament is also zig-zags (**16, 38**).

A horizontal wavy line is found on the early vases, **36,** Cozzo Presepe P2461 and the amphora from one of the more recently excavated tombs at Pithekoussai.[63]

Trianglular motifs

Ta and Tb are so far only attested on one amphora apiece, but T occurs quite as frequently as types of O on Attic amphorae of the early and middle periods. Various triangular forms of filling ornament are common on Protoattic vases down to the third quarter of the seventh century, about the same time as they disappear from SOS necks.[64] Late Geometric neck-amphorae with glazed bodies are known with the Ta and Tb varieties and also with a triple-outlined triangle on the neck.[65]

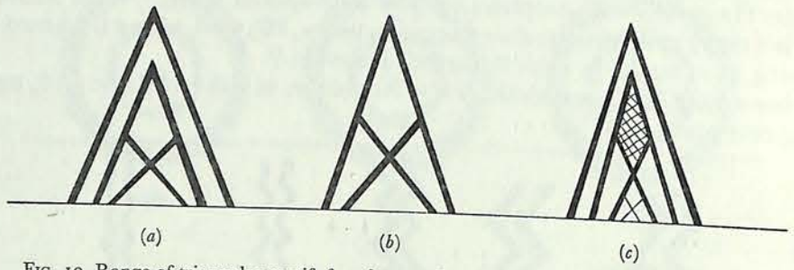


FIG. 10. Range of triangular motifs found on necks of SOS amphorae. Scale approx. 1:2

Other

There is no assured case of an SOS amphora with a reserved neck; this is rather the hallmark of the 'à la brosse' type. The one plausible candidate, **25,** has lost its lip.

We may note one Late Geometric neck-amphora with SOS syntax, from the south slope of the Akropolis, on which hour-glass filling ornament is found centrally between wheels and zig-zags.[66] The hour-glass is a favoured isolated motif on larger Corinthian vases, but is not yet attested on SOS except as a graffito.[67]

Lip

61 is unique in its row of dots on the edge of the lip, although the idea is also found on the later Theran fragment, *AM* loc. cit. Abb. 56, with its dotted neck-ring.

Handles

The handles of Attic SOS amphorae are usually glazed except on the inside; the following are known to have three glaze stripes down the outside: **5, 6, 8, 35, 36, 45, 47, 69,** Villa Giulia, tomb 5, 11 and Athens 14489 from Phaleron. The last is somewhat later that the others. Chalcidian amphorae normally have striped handles if they have decorated necks.

Shoulder

The reserved band on the shoulder of Attic amphorae is usually about 3 cm. high and carries three or four glaze lines, often merging into each other. It can be variously placed, often quite low on the belly in the early period, tending to be tighter under the handles later. The six lines on the band on Salamis tomb 10, 15 are unusual. One of the most consistent features of the

[64] The lozenge, which is the equivalent of T as filling ornament, dies out during the period of the Chimaera-and-Nettos painter; see Kübler, *Altattische Malerei* figs. 14, 18, and 72.

[65] Ta×3 on the amphora *ADelt.* xxiii (1968) B pl. 28; T×3 on Kerameikos inv. 3249, AM lxxxi (1966) Beil. 65,3; Tb on Athens NM 12895 (n. 59); T with triple outline and flanked by birds on *ADelt.* xxviii (1973) A pl. 24*a*.

[66] *ADelt.* xxviii (1973) A pl. 21*a*; it only differs from the SOS in the filling ornament and its wholly glazed body.

[67] Corinth: e.g. *Corinth* vii 1, 162; vii 2, An 248.

latest vases is the substitution of a single narrow band without added lines: **58, 59, 65, 83, 92,** all Kamarina vases save **21,** *Clara Rhodos* iii tomb 86, Cyprus from Marmari, BM 1888.2-8.60 from Tell Defenneh and Louvre D35 and D38.[68]

A wholly glazed body occurs sporadically: Corcyra unpublished, **76,** Phaleron tomb 61, Thorikos TC63.82, Istria B1445, and perhaps Mylai tomb 68, Louvre D34 and **21** in approximately chronological order.

Chalcidian amphorae normally have a broader band with more lines, slipped or reserved, or exceptionally in added white.

Hatched triangles and concentric circles were part of the Attic Geometric stock-in-trade and can be found on the neck of larger vases before the appearance of the SOS; it would therefore be fruitless to seek any particular motivation for their use on SOS necks. The more complex Chalcidian Och could well have been borrowed more directly from Cyprus, as suggested above. The vertical wavy line is rather more interesting; it appears first in forms Sc or Sd at Athens and Chalkis, only later taking on a more alphabetic appearance. It is only very sporadically found on Attic vases earlier than LG Ib when the SOS first appears, although it soon spreads to the necks of amphorae of a number of late Geometric and early Orientalizing schools.[69] On two LG IIa sub-Dipylon amphorae it is used as a simplified form of snake, curiously enough in panels composed of motifs typical of the SOS.[70] It seems highly likely to me that the zig-zag is an imitation dribble of oil, spilling over the neck-ring; the doubling and symmetrical placing of the motif results no doubt from the painters' artistic grounding. At much the same time a very similar dribble pattern appears on Rhodian lekythoi, also equipped with neck-rings and also in combination with concentric circles; here the Cypriot pedigree is very clear.[71]

Some combinations of neck decoration are worth noting. Most can be found on vases of each period, but T varieties do not last into the late period and O,S,O types are nearly all very late. There are, however, a number of fragments with O motifs beside the handle and the rest lost. Single zig-zags are largely confined to the early period and in most instances flank a T; moreover, the majority of Sl,T,Sl necks are on vases with striped handles and lines on the neck flanking the handles. This must be regarded as a distinct variety of SOS, but it is not wholly isolated since striped handles appear on vases with other neck decoration and one of the distinct group is considerably later than the rest.[72] The simple S,O,S appears on the neck of black-figure vases and on amphoriskoi after the SOS type ceased production.[73]

[68] The published photograph of **36,** from Incoronata, suggests it has a single band, although an early piece; in front of the vase itself, I was not sure whether or not there was a second band below the one given prominence in the photograph.

[69] Vertical wavy lines are found on the neck of an oenochoe of late MG date, Mylonas, Τὸ Δυτικὸν Νεκροταφεῖον τῆς Ἐλευσῖνος pl. 397, 867. Coldstream, *GGP* 195, has occasion to remark 'the vertical wavy lines are hardly to be expected before LG'. The most consistent users of them on the necks of amphorae are Euboeans, Boeotians, and islanders of the Cyclades, the earliest group being perhaps Delos group Aa which takes up the motif towards the end of Attic LG I (*GGP* 180). Certainly later is a squat neck-amphora, claimed to be Cycladic, with multiple O,Sc decoration on the neck: Boston 61.388, *Class. J.* lxix (1963) 193–4, fig. 3.

[70] Amphorae in Leiden and the Agora, Davison, *YaleClSt.* xvi figs. 99 and 100 (= *GGP* 55, 5–6), descendants of the Leiden amphora fig. 94 (= *GGP* 55, 1).

[71] On the Rhodian Kreis- und Wellenband aryballoi see Ridgway, 'The First Western Greeks', *Greeks, Celts and Romans* 15, with bibliography.

[72] Striped handles are found combined with O types of decoration on **6, 8, 45,** and **69.** The later member of the group with T is Athens 14489 (PLATE 18*a*); the rest are **5, 35, 47,** and Villa Giulia, Cerveteri tomb 5, 11; the Eretria sherds published in *AE* loc. cit. should also be included and are apparently all of the early period. Megara Hyblaea tomb 209 has the same Sl,T,Sl neck but has not got verticals beside the handles, nor, apparently, striped handles.

[73] Both types are discussed in Beazley and Magi, *Raccolta Guglielmi* 50–2; for the amphoriskoi see also *Agora* xii 155–6 and for BF amphorae Jackson, *East Greek influences on Attic vases* 71–2. A direct echo of the SOS decoration in Ionia (an area where few SOS have yet been found) is the Clazomenian amphora from Olbia with sphinx between wavy lines on one side of the neck, wavy lines on the other, *Olbia* (1964) 155 fig. 23. Less likely to have been influenced

7. CONCLUDING REMARKS

The SOS storage amphora began to be produced in the Athenian potters' quarters probably late in the LG IA period. Whether a variety was made quite as early at Chalkis, and if so which centre had priority, cannot be ascertained on available evidence. The majority of extant vases of the type were made at Athens, but many must also have been potted at Chalkis, at least in the late eighth and early seventh century; they were, however, not exported in any numbers. Similar containers were made at Eretria, but are not known to have been exported thence. It seems likely that imitations of the Attic type were made at Pithekoussai, while less immediate copies appear sporadically elsewhere. Exports of the Attic type have not as yet been found in large areas of mainland Greece, Asia Minor, Crete, and North Africa.

Attic amphorae throughout their long period of production are marked with a variety of graffiti largely of uncertain interpretation. There is no clear evidence that any are equivalent to later marks of guarantee, tare, price, etc.

Considerations on the organization of the oil trade from Attica to the rest of the Mediterranean in the eighth to sixth centuries are complicated by the varying size of the amphorae, not so striking that we must rule out the possibility of the SOS being or evolving as a standard container, but noticeable enough for us to be very cautious in talking of it as such. The difficulty becomes more sharply focused when we consider two of the reforms attributed to Solon, that of exports from Attica and that concerning Athenian weights and measures.[74]

With regard to Attic exports, we must conclude from the distribution of SOS amphorae that good quantities of olive oil were shipped from Attica during the seventh century; judging solely from the evidence of the amphorae this trade tailed off in the sixth century, at just the time when Solon is supposed to have stimulated it rather than other exports. Vallet takes more global aspects into consideration to explain the demise of Attic trade in oil with Etruria,[75] and we may suspect that local oil production was generally increasing in the Mediterranean area to the detriment of Attic exports; to offset this Attic potters turned rather to the production of decorated vases with a less immediate utilitarian destination.[76]

As for the reform of the system of weights and measures, it is now clear that Solon had nothing to do with Athenian coinage, and it is unlikely that he disturbed the mina weight.[77] The acceptibility of much of Aristotle's text is therefore undermined. A change in the linear measure at Athens has recently been mooted, but the evidence offered is curiously inadequate.[78] Capacity measures must in some sense be dependent on linear measures, but despite the fluctuating size of the SOS there is nothing to suggest that around 590 a change in capacity standard occurred.[79] The late SOS vary as much as earlier ones and from them is born the

from Athens are Chiot amphora with an O type motif on the neck, Lambrino op. cit. 139, *Actes xii Con. Int. Ét. Class.* 617, pl. 9, 2.

[74] Plut. *Solon* xxiv 1 and Ar. *Ath. Pol.* x.

[75] *Hommages à Grenier* 1560–1.

[76] A summary of Klein's thoughts on the same subject is in *AJA* lxxv (1971) 206.

[77] The basis of modern discussion of the reforms is Kraay's article in *Essays presented to E. S. G. Robinson* 1 ff.; most subsequent comment is listed by Rhodes, *Num. Chron.* 1975 1 ff. The evidence for a single Greek mina weight, with minor variations, remains a little scattered; see in particular Crawford, *Eirene* x (1972) 5–8 and supporting evidence added by Kroll, *Studies presented to George Hanfmann* 92 and Johnston, *Atti xvii Convegno Magna Grecia*.

[78] Gruben, *AA* (1972) 325–6. He postulates a pre- and post-Solonian Attic foot but can cite no actual use of either in Attica.

[79] Since *Ath. Pol.* does not tell us, there is no way we can say precisely what μέτρα Solon is supposed to have increased beyond the Pheidonian. However, since Man can measure all things, we may assume that both linear and capacity measures come under this heading. Μέτρον is regularly used in both senses from Homer to Aristotle and beyond, although, as we have seen, it is difficult to decide whether this meant that in 'Homer's day' of the later eighth century the metretes was arithmetically linked with the foot or finger measure. We can be more confident that such a correlation had been made by the 590s, and so if we can discern no change in the capacity measures then we may suspect that the linear measures were not changed either.

Panathenaic amphora of assured twelve-chous intended capacity. There is no perceivable support for the text of the *Ath. Pol.* from what archaeological evidence is available.

It is hoped that further work will clarify some of the problems left open here. More detailed examination of the 'à la brosse' type, backed up by clay analyses, should bring further precision to the ratio between Athenian and Ionic (and other) products in the sixth century; further material from the earlier levels of the Greek colonies in Asia Minor would be most welcome in this respect. Further progress in tackling some of the basic questions of trading transactions mentioned above must also depend on additional metrological studies on the SOS and all other early archaic amphora types.

ALAN JOHNSTON
R. E. JONES

ADDENDA

Athens. Agora P6095. *Hesperia* vi (1937) 123, fig. 66, 5. Early lip fragment.

Salamis, Cyprus. Seven fragments, one with a part-preserved alphabetic graffito; E. Gjerstad and others, *Greek Geometric and Archaic Pottery found in Cyprus* 10, 1–7. All late. Most of the pieces from Cyprus catalogued above are also included in the volume.

Al Mina. Cambridge, Museum of Classical Archaeology, AM12. Neck fragment. 7·7×9·2; Hn 7·8. . . . Oa,Ta . . . Two glaze bands below. Slight ridge. Early to middle (levels 5–6). The second example of Ta (p. 138).

Cavallino, near Lecce. *MEFR* lxxxix (1977) 543, 65. Foot fragment.

Metaponto. Numerous further fragments have been found at Incoronata, all of the early seventh century. Some may be Chalcidian.

Himera. *Himera* ii 292 and pl. 47, 6. Neck and lip fragment. Oa,Oa preserved. Later.

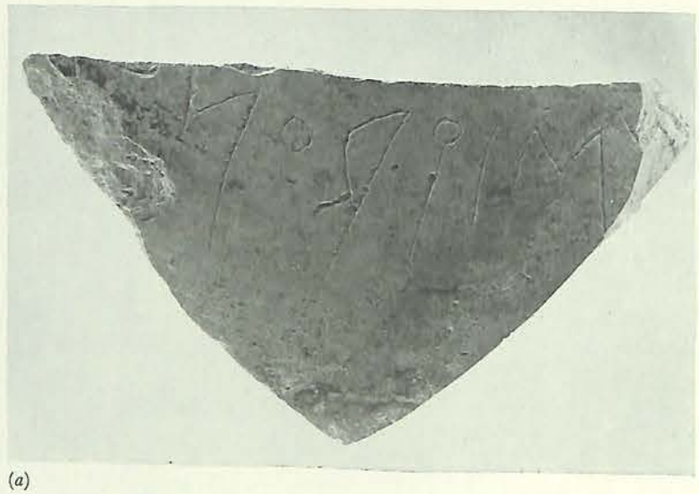
Cerveteri. Probably from Cerveteri are fragments in the Castellani collection in the Villa Giulia, to be published by Lisa Hannestad.

Note also the late descendant of SOS decoration on the neck of a presumably figured vase from Tell Defenneh, British Museum 1888.2–8.88 (*CVA* 8 pl. 101, 10).

Metauros (Rosarno). Late neck.

Otranto. Three fragments.

Pisa [*sic*]. Fragment.



(a)

14 13

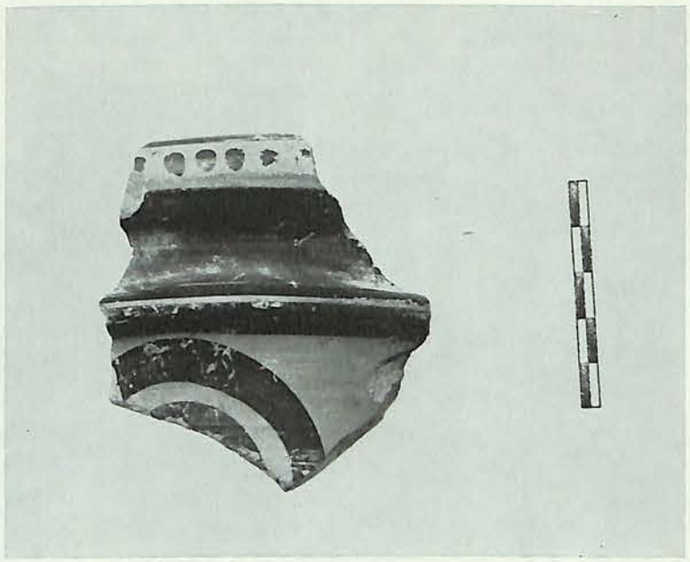
11 10

(b)

THE 'SOS' AMPHORA

(a) **1,** University College, London
(b) Sherds from Pithekoussai

(a)



(c)

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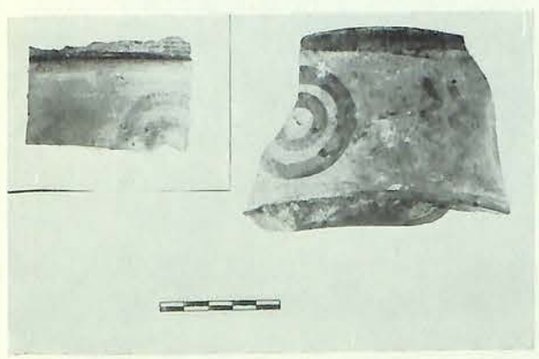
(d)



(e)

(f)

THE 'SOS' AMPHORA

(a), (b), (d), **2,** British Museum 1848.6–19.9 (c) **61,** Ashmolean 1954.482.
(e) Ashmolean 1954.481[2] and **60,** Ashmolean 1954.481[1] (f) British Museum 1888.2–8.60

(b)

(a)

THE 'SOS' AMPHORA

(a) British Museum 1848.6–19.9, (b) Nicosia inv. 1961/viii–18/2

UNIVERSITY PRESS
OXFORD, ENGLAND

ATTIC

28.II.79
6

SOS jars

a general survey has recently been done on the distribution and the provenance of SOS jars by Richard Jones and Alan Johnston to appear in BSA 1978

5.III.79 at ASCS

I had this information from a student, Mary Morris, who has been a student at Chapel Hill of S. Immerwahr, who thinks very highly of her. She came to see me several times, to see what might be made amphoras of 8th – 7th centuries. She wanted to work on the SOS, but gave it up because of the above-mentioned study. I mentioned the possibility of early Chian, but I think she is interested in the early history of Athens. She was defining her proposed studies at the ASCS – is applying for next year I think.

Sarah Morris?
Mary Moore?

ATTIC (1) MINIATURES

S. V. 59
Beazley
7.01

Attic

SOS Jars

etc.

Notes from E. Braun ms. on miniatures

ms. p. 144, under H 44 (P 17357)

On P 17357: H as rest 0.085, diam. 0.063
lower body + foot restored "after the
large jars of the same stage". The
thinness and flan of the rim show
it to be a late one.

Has Σ03 marking on neck.

"Ten amphoriskoi from the Delian Heraeum are clearly
derived from the oil jars, but glaze, form and base
of the neck marking show them to be of the 6th cent.
They are Chiusine & have child figures (Délos X,
nos. 572-582, pl. 43 = p. 162)."

"A group of early "Panathenaic" amphoriskoi (A.A. 1933,
pp. 20 ff., and figs. 16-17; Hesp. XIII, 1944, p. 41
and pl. 2, no. 1) have not only the shape, but
recognizable vestiges of the marking, . . . origin
. . . . with Boiotia or Attic . . . . connection
with the Attic oil jar (noticed by Pfuhl, Mal. Z,
p. 127) . . . ."

OVER

"Miniature Panathenaics" (Beazley) BSA XLI, 1945, p. 10)
for scented oil

"... Early amphoriskos whose derivation from the oil jar is doubtful, AJA XLVI, 1942, grave 32, no. 4, and fig. 21, p. 39."

"8th cent. bronze fibula covering 4 miniature ancestors of the oil jar: Kerameikos v. 1, Inv. 1311, pl. 144."

9.01

VOS

Met kinderst regards,
Maria F. Jongkees - Vos.

[8]

card made

Overdruk uit:

OUDHEIDKUNDIGE MEDEDELINGEN
UIT HET RIJKSMUSEUM VAN OUDHEDEN TE LEIDEN

62, 1981

SOME NOTES ON PANATHENAIC AMPHORAE

M. F. Vos

SOME NOTES ON PANATHENAIC AMPHORAE

M. F. Vos

The Restoration of Leiden PC 7 (J. P. M. Sloos and M. F. Vos)

Since the publication of CVA Leiden 1 the restorer of the Museum in Leiden, Mr. J. P. M. Sloos, has found time for a new restoration of the Panathenaic amphora PC 7[1] (pl. 11-13). As in the course of the restoration some unknown facts emerged, this seems to be a good opportunity to return to the vase once more.

The amphora is one of a group of 96 vases that were acquired for the Museum in 1839 at an auction in Rotterdam of Canino vases from Vulci. The acquisition was made possible by a generous gift from King Willem I. As is the case with many of the Canino vases, it had been restored in a rather hasty and careless way and with much plaster and repainting. During the recent restoration the vase was taken to pieces, all plaster and repainting were removed and the fragments were thoroughly cleaned. There remained 116 fragments including 14 small alien pieces coming from different vases and used to fill up small gaps by the Canino restorer. It also became evident that the first restorer had scraped the edges of a number of the fragments when, as a result of his working too hastily, he was not able to make them fit[2]. This gave problems when the vase was put together again, because now these scraped fragments no longer fitted properly and had fissures between them, see pl. 14 B. Gaps and missing fragments have been completed with plaster. The paintings have not been restored, but gaps in the black parts of the vase have been made black.

The most interesting fact that the recent restoration brought to light, was the existence of an ancient repair that had been completely concealed by the first restorer. The ancient fracture runs almost horizontally round the entire vase, at the level where the vase body reaches its widest point. The vase appears to have broken in two halves, with a small third piece below the handle to the left of side A. As usual, the ancient vase mender has drilled pairs of tiny holes on either side of the crack in order to wire the pieces. There are ten pairs of holes in all, four pairs in the black part below the handle to the left of side A (pl. 13), one pair in the skirt of Athena, two pairs in the black part below the handle to the right of side A, three pairs in side B — in the shoulder of the judge, and in the neck of each horse. Each time a thin groove has been cut into the vase wall between two corresponding holes, so that the wire or clamp lay sunk into the

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My thanks are due to Mrs. R. M. van Wengen-Shute who was so kind as to read the English text.

[1] See CVA Leiden 1, Pls. 46-47.

[2] Cf. J. V. Noble, The Techniques of Painted Attic Pottery (1966), p. 99.

thickness of the vase wall and could be completely concealed. But with the repair in the shoulder of the judge on B, something has gone wrong. During the drilling of the upper hole, a splinter of the vase wall has chipped off, making the hole useless. The vase mender has stopped his work on this place and there is no groove between the two holes here; obviously these two holes have not been wired (pl. 14 A). While the upper hole was being drilled in the horse on the left, again a splinter has sprung off and a different hole has been made, a little higher than the first one.

Many vases with ancient repairs have been preserved. The presence of repair work does not necessarily prove that the vase was "so highly prized" by its owner, as Noble suggests[3]. Mending pottery was a common practice all over the world from ancient times until the beginning of this century. It was a special craft, and still is in some far-away places. A recent article in the National Geographic[4] gives a picture of a modern china mender in Afghanistan drilling holes in a bowl with a bow drill. Afterwards he will glue and wire the pieces, in exactly the same way as the ancient menders did. In the foreground of the picture a whole series of broken teapots and bowls await repair. It is only because of high wages that the modern Western world has become a "throw-away-society", where it is cheaper to replace a still useful article than to have it repaired.

The metal used to wire the pieces together has in most cases disappeared, but sometimes a trace of bronze or lead has remained. Though lead would seem to be too soft and weak for the purpose, it was in fact used, Robinson[5] mentions that in Olynthus all ancient repairs had been made with lead. Was the lead perhaps alloyed with other metals? Bronze or copper seem more suited. The working procedure in antiquity will have been the same as in later times, first gluing the pieces, then wiring them, and finally filling up the cracks with pine pitch[6] or some other material to make the vase watertight.

As there always have been, everywhere, there were careful workers and negligent ones. The ancient mender of the amphora in Leiden worked with care: most holes have been drilled in black areas, the few holes in the painting are in places where they do little harm. But there are many instances where ancient repairs badly damage the painting while this could have been easily avoided. Even more barbarous (to our eyes, at least) are the cases where a gap in a vase has been filled with a painted fragment of a different vase[7]: here the usefulness of the vase was obviously of greater importance than its esthetic value. But there are also repairs showing the owner's high appreciation of the vase, e.g. a cup from Orvieto[8] where the broken stem has been repaired with lead covered with a sheet of gold, or two Attic cups from a Hallstatt tomb in Southern Germany[9], where the repairs have been hidden under thin golden ornaments.

When the vase in Leiden was taken to pieces, it appeared that the vase wall is not everywhere equally thick: one side of the vase is from top to bottom considerably thicker than the other side. The vase is also asymmetric, one side is more bulging than the other. Probably

[3] Cf. Noble, o.c. p. 94.
[4] National Geographic, Vol. 144, no. 5, November 1973, p. 658.
[5] D. M. Robinson, Excavations at Olynthus 13 (1950), p. 59 f. ad Salonica 34.267.
[6] Cf. Noble, o.c. p. 94.
[7] E.g. a r.f. stamnos by the Copenhagen Painter in the Vatican (ARV² 257, 13), repaired with a fragment of a cup by Douris (ARV² 432, 53), see JHS 71 (1951), p. 129 ff. and fig. 3.
[8] Studi Etruschi 30 (1962), p. 58 and fig. 23 b.
[9] CVA Stuttgart 1, Pl. 28, 1-3 and Pl. 36, 1.3.4.

the potter has not placed the vase exactly in the centre of the wheel. The differences in thickness of the vase wall may have caused tension when the vase was filled, and it may have been the cause of its breaking, but this did not happen immediately; the vase must have been in use for some period of time, for it is hardly probable that it was exported to Etruria in a mended condition.

The inside of the vase does not show any difference from the insides of other vases, and there is no trace of "deterioration" which, as Frel says[10], is a characteristic of all vases "that once contained oil".

The Graffito on Leiden PC 7

Under the foot of the vase is a graffito, pl. 14 C and fig. 1,1, which is rare with Panathenaic amphorae. A. W. Johnston in his excellent work on trademarks has collected only four other examples[11]: Toronto 350, Boulogne 441, Paris, Cab. Med. 244, and a vase foot in Munich which in all probability belonged to a Panathenaic amphora. The graffiti on Munich (fig. 1,2) and Toronto (fig. 1,3) are very similar to that on Leiden. The first part of all three inscriptions is an abbreviation of the word ἀρύστηρ (or the plural ἀρυστῆρες)[12] which according to Hesychius A 7561 is the equivalent of the word κοτύλη. Kotyle was used to refer to a special vase shape as well as to a liquid measure, and aryster had probably also both meanings[13]. The word was used almost exclusively by Greek authors from the eastern part of the Aegean world[14]. The complete word ἀρύστηρ or abbreviations of it, occur in several graffiti[15] on vases of different shape (amphora, hydria, oinochoe), and for that reason it seems unlikely that it is used in these cases in the sense of a particular vase shape, but rather in the sense of a liquid measure. If this is true, it seems logical to expect that the word aryster is followed by a number, and this is the case on the vases in Leiden, Munich and Toronto: ♀E, ΠΔ or ♀Δ[16] and ♀ resp., which stand for 95, 84 or 94 and 90 according to the "Milesian" alphabetical numerical system[17]. Under the foot of Boulogne 441 the number ♀B = 92 had been scratched[18] in the same numerical system and we may assume that here too, arysteres must be completed. The fifth vase with a graffito under the foot, Cab. Med. 244, stands apart, under the foot there is a series of twelve deltas, followed by

[10] J. Frel, Panathenaic Prize Amphoras (German Archaeological Institute Athens, Kerameikos Book No. 2, 1973), p. 9. Cf. also CVA New York, MMA 3, ad Pl. 40, no. 56.171.4.
[11] A. W. Johnston, Trademarks on Greek Vases (1979), p. 223, sub Type 4F.
[12] See Johnston o.c. p. 153, Type 2F, nos. 47-48 and p. 154, Type 4F, nos. 1-5.
[13] In a fragment by Alcaeus (ed. E. Diehl 70, 9; ed. Budé by A. Puech, 1960, no. 53, 9) aryster probably indicates a particular vase shape; in a fragment by Semonides (ed. Bergk no. 25; ed. Diehl no. 22) both senses are possible; in Herodotus, II.168 the word is used unmistakably in the sense of a liquid measure.
[14] By Alcaeus from Lesbos, Semonides from Samos, Herodotus from Halicarnassus, Hippocrates from Kos.
[15] Cf. note 12.
[16] The vase has been damaged in this spot and only part of the graffito remains, but in view of the other two vases ♀Δ seems more probable.
[17] Cf. W. Larfeld, Griechische Epigraphik (= I. von Müller, Handbuch I, 5, 1914), p. 293 ff., par. 186.
[18] See Johnston o.c. p. 247, Type 4F, note 3 "The latter is no longer extant and I know the mark only from Beazley's notes; he gives ♀B".

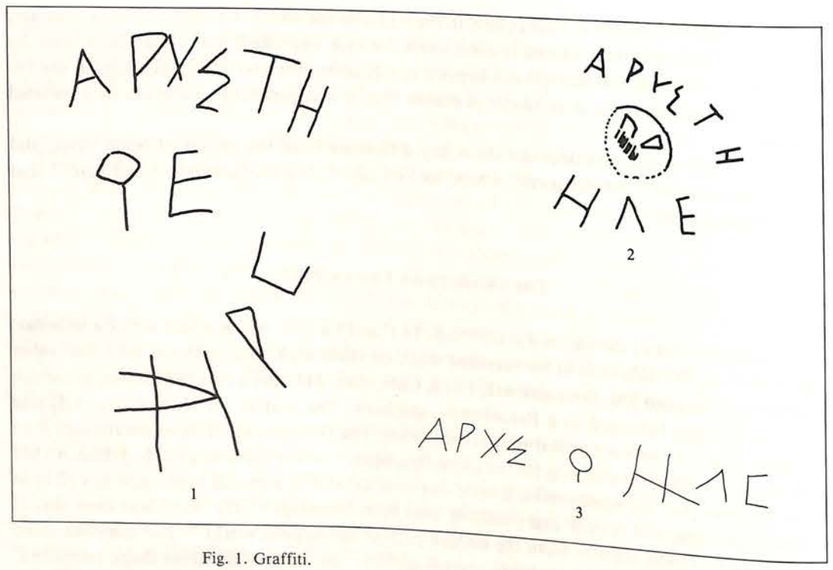

Fig. 1. Graffiti.

1 Graffito under the foot of Leiden PC 7 (1:1).
2 Graffito on Munich, Hackl 550 (after Hackl).
3 Graffito on Toronto 350 (after Robinson, Harcum, Iliffe).

three strokes[19], forming the number 123 according to the Attic numerical system[20]. I do not believe that in this case arysteres must be completed[21].

If the aryster "is the Ionic equivalent of the Attic kotyle measure" as Johnston assumes[22], the graffiti give the following capacities for the four vases (when a kotyle = 0.2736 liters, according to the generally accepted metrical equivalents of Hultsch[23]):

95 kotylai	(Leiden)	= 25.992 liters
94 (84) kotylai	(Munich)	= 25.7184 (22.9824) liters
90 kotylai	(Toronto)	= 24.6240 liters
92 kotylai	(Boulogne)	= 25.1712 liters

[19] See Johnston o.c., Fig. 13n.
[20] Larfeld o.c. p. 291-293, par. 185.
[21] Johnston o.c. p. 247, Type 4F, note 6 "...I assume that the figures quoted on Boulogne 441 and Cab. Med. 244 are also of arysteres".
[22] O.c. p. 224, sub Type 4F.
[23] F. Hultsch, Griechische und römische Metrologie (1882), p. 703.

or about two thirds of the normal capacity of a Panathenaic amphora, which stands at one metretes or 144 kotylai = 39.39 liters[24].

Graffiti were scratched on the vases later by the owner or by a merchant, *not* by the manufacturer of the vase. If he had wished to write a measure on his vases, he could have done so much better and more easily before firing by incision or with paint[25]. Neither used the Athenian officials who organised the Panathenaic Festival to mention the capacity under the prize-amphorae. In that case more amphorae would bear a graffito and to indicate the official character, there would have been a stamp or the letters ΔΕ (or δεμόσιον in full) as on official liquid measures[26]; moreover they would never have used the word aryster, nor this non-Attic numeral system. If the owner, the prize winner, wrote the graffito, the reason cannot have been that he found his prize-vase only two thirds filled; it is also impossible that he first used part of the contents and then sold the remaining two thirds, for nobody would buy an opened and already half-empty vase of oil. But it is equally unlikely that a merchant, having bought the empty vases after the oil had been used, refilled them to only two thirds of their capacity.

Johnston also puzzled over this problem, but he did not find an answer[27]. I think however, that there is a simple solution, if we make a different start. According to Johnston "Herodotus II.168.2 says that the ἀρύστηρ is the Ionic equivalent of the Attic kotyle measure ...", but Herodotus says no such thing. In the passage referred to, Herodotus describes the allowances of the body guard of the Egyptian king, and he says: "each man received a daily allowance of five minai of bread, two minai of beef and four arysteres of wine"[28], without any further explanation of the word aryster. The lexicon of Hesychius only states ἀρύστηρ = κοτύλη. The numbers in the four graffiti have been written in the Milesian system, a wide-spread system in the Greek world, but at this time (the time to which the four vases belong) not used at Athens[28a]. The word aryster belongs in the East Greek or Ionian sphere, it was not used at Athens. So why should the measure indicated by aryster necessarily fit into the Attic weight system? Numerous local weight standards were used in Greece, varying in the course of time, but the two principal ones were the Aeginetic and the Attic-Euboic standards. The Aeginetic standard was about 1½ times as large as the Attic (the exact ratio is 100 : 73). Connected with the weight system is the system of liquid measures, and here too, the Aeginetic standard is ca. 1½ times the Attic. The Aeginetic metretes is 54.56 liters to the Attic of 39.39 liters, and the Aeginetic kotyle[29] is 0.379 liters to the Attic of 0.2736 liters[30]. Starting from the Aeginetic kotyle, the four graffiti will give the following measures:

[24] G. von Brauchitsch, Die Panathenäischen Preisamphoren (1910), p. 160; M. Lang, BCH 76 (1952), p. 26, note 1; J. V. Noble, Techniques p. 13.
[25] Cf. M. Lang, Hesperia 25 (1956), p. 1, note 2.
[26] See M. Lang / M. Crosby, Weights, Measures and Tokens, The Athenian Agora X (1964), p. 57.
[27] Johnston o.c. p. 224.
[28] τούτοισι .... ἐδίδοτο ἐπ' ἡμέρῃ ἑκάστῃ, ὀπτοῦ σίτου σταθμὸς πέντε μνέαι ἑκάστῳ, κρεῶν βοέων δύο μνέαι, οἴνου τέσσερες ἀρυστῆρες.
[28a] At Athens, this system came into use only in the last century B.C., see Larfeld, o.c. p. 298.
[29] Cf. the words ounce, gallon, etc. which stand for different weights or measures when used in the U.S. or in Great Britain.
[30] See Hultsch o.c. p. 499 ff., and esp. p. 505-6.

95 kotylai (Leiden) = 36.005 liters
94 kotylai (Munich) = 35.626 liters
90 kotylai (Toronto) = 34.11 liters
92 kotylai (Boulogne) = 34.868 liters

The vase in Leiden has been put together from many fragments with some missing pieces restored in plaster and it is too weak to be filled with water, but we tried to measure the capacity with sawdust. The issue was a capacity of 35 to 36 liters when filled to the junction of neck and body. The correspondence with the measure mentioned in the graffito seems too great to be the result of mere coincidence.

On the vases in Leiden, Munich and Toronto, there follow three more signs which are again very similar to each other. The first sign is probably each time the letter H, followed by a Λ on Munich and Toronto and a P on Leiden, the last sign is an E on Munich, a ⊏ on Leiden and Toronto. When the first part of the inscription gives the capacity of the vase, the second part might be an indication of the prize. The last sign on Leiden and Toronto (⊏, the number 6)[31] seems indeed to point to a numeral, but I cannot make any sense of the last part of the three graffiti.

Because of the similarity of the graffiti on Leiden, Toronto and Munich and because the vases in Leiden and Toronto are contemporary and closely related in style[32], it seems plausible that all three vases at some time, not long after they had been manufactured, passed through the hands of the same man, probably a merchant.

The Undersized Prize-amphorae

Only very few Panathenaic amphorae have been measured for their capacity in recent time, and it is no easy task to measure the preserved vases, because their condition nearly always excludes the use of water. When using other filling material, one has to put up with inaccuracies. I know of only six vases (apart from the vase in Leiden) that have been measured[33]:

London B 130. Burgon amphora. ca. 566 B.C.
height 61.2 cm.
capacity as New York 14.130.12.

New York 14.130.12. Euphiletos painter. ca. 515 B.C.
height 62 cm., max. diam. 42 cm.
capacity 38.830 liters when filled to the neck
39.830 liters when filled to the brim.

[31] See Larfeld o.c. p. 293 ff.

[32] According to Beazley, ABV p. 407, the horse-race on Leiden PC 7 is imitated from the Eucharides Painter.

[33] See G. R. Edwards, Hesperia 26 (1957), p. 335, note 55; M. Lang, The Athenian Agora X, p. 59 and note 9; CVA New York, MMA 3, text ad Pl. 39 (no. 14.130.12) and Pl. 42 (no. 16.71).

New York 16.71. Kleophrades painter. 500-490 B.C.
height 63.5 cm., max. diam. 39.1 cm.
capacity 37.141 liters when filled to the neck
38.229 liters when filled to the brim.

Berlin 1833. Painter of Berlin 1833. 490-480 B.C.
height 65 cm.
capacity 39.007 liters when filled to the neck
39.983 liters when filled to the brim.

Leiden PC 7. Near the Painter of Berlin 1833. 490-480 B.C.
height 65.7-66.4 cm., max. diam. 39.8-41.3 cm.
capacity ca. 35-36 liters when filled to the neck
ca. 36-37 liters when filled to the junction neck/mouth.

Berlin 1832. Berlin painter. 480-470 B.C.
height 63 cm.
capacity 38.699 liters when filled to the neck
39.050 liters when filled to the brim.

London B 605. Kuban Group. ca. 400 B.C.
height 72.5 cm.
capacity 38.100 liters when filled to the junction neck/mouth.

The differences between the vases seem rather large to modern eyes, but the vases were hand-made and a small variation in the thickness of the wall, the diameter of the vase body, etc., may already cause considerable differences in capacity. However, if the vases were filled with a ladle (with the capacity of a kotyle, or if that was too small, a chous), the contents of the amphorae of the same year or the same Festival, will probably have been more or less equal; but as Greek weights and measures show variations from the standard and as the standards themselves also changed in the course of time, greater differences are possible between vases from different times.

The outer measurements of the Panathenaic amphorae[34] remain very constant during the sixth and the fifth century: the height ranges from 59.6 to 69 cm., with the greatest concentration between 62 and 64 cm., the maximum diameter (as far as it has been mentioned in the publications) is about 40 cm. In the fourth century the proportions of the vases change and the variation in height is greater, from 62 to 82 cm., but the greater height is caused by a higher foot and a taller neck, and though the later vases look more slender, the capacity of the vase body probably remains about the same. There are, however, a number of vases which are far below the normal size, with a height ranging from 44 to 56 cm. and a maximum diameter from 31 to 34 cm[35].

[34] I have collected the measurements of over 130 Panathenaic amphorae which bear the official inscription (Panathenaics without the inscription have not been taken into consideration), 94 from the sixth and fifth century B.C. and 38 from the fourth century B.C.

[35] If we adapt the formula of Hero used for determining the capacity of pithoi (Stereometrica II.26; see F. Hultsch, Metrologicorum Scriptorum Reliquiae, 1864-1866, p. 202 ff.; M. Lang, BCH 76, 1952, p. 18 ff.) to our panathenaic amphorae in the same way as Miss Lang (BCH 76, 1952, p. 26, note 1) has done, or if we use Miss Lang's revised formula, as mentioned in Agora X, p. 59, the undersized Panathenaics seem to have about half the capacity of the standard-size exemplars.

1. Geneva MF 150. Inst. Rom. Norvegiae, Acta 8 (1978), Pl. XI.
   Height 47.4 cm.
2. Sparta. Leagros Group. ABV 369,112.
   Height ca. 53 cm., diam. 34 cm.
3. Frankfurt ST V2. CVA Frankfurt 2, Pl. 41.
   Height 45 cm., diam. 30 cm.
4. Leningrad 4262. Group of Vatican G.23. ABV 406,4.
   "undersized" according to Beazley, as Brussels R 229.
5. Brussels R 229. Group of Vatican G.23. ABV 406,5.
   Height 44 cm.
6. Munich 1455. Painter of Berlin 1833. ABV 407,2.
   Height 53.5 cm.
7. London B 143. CVA British Museum 1, Pl. 5,2.
   Height 44 cm.
8. Compiègne 985. Group of Compiègne 985. ABV 410,1.
   Height 51.5 cm.
9. Naples RC 184. Achilles painter. ABV 409,3.
   Height 50 cm., diam. 32 cm.
10. Athens CC 757.
    Height 50 cm.
11. ex Robinson. Robinson Group. ABV 410,2.
    Height 53.4 cm., diam. 33.8 cm.
12. ex Robinson. Robinson Group. ABV 50,2.
    Height 50.2 cm., diam. 32.4 cm.
13. ex Robinson. Robinson Group. ABV 410,4.
    Height 53.4 cm., diam. 32 cm.
14. Leningrad 17295. Connected with the Robinson Group. ABV 410,2 below.
    Height 54 cm.
15. Athens CC 754. Cat. Collignon/Couve, Pl. 31.
    Height 55 cm.
16. Oxford 572 (1911.257). Asteios, 373-2 B.C. ABV 412,1 below.
    Height 56.3 cm., diam. 31 cm.
17. Alexandria 18239. Phrasikleides 371-0 B.C. ABV 412,2 below.
    Height 52 cm.

Up till now everyone appears to accept without hesitation these undersized prize-amphorae. It is, however, very strange that the Athenians so lightly changed the size of these vases, while otherwise they were strictly tradition-bound in respect to the Panathenaic amphorae. Not only do they keep for centuries the same old decoration-scheme (the goddess Athena on the obverse and a picture of the particular game on the reverse), but they also cling to the archaic representation of Athena and to the obsolete black-figure technique. It is therefore highly improbable that with respect to the size of the vases they would have deviated so easily from the standard size without a very good reason. A closer look at this problem would appear justified.

The Panathenaic amphorae filled with olive oil were given as prizes to the winners in the games at the Greater Panathenaea, which were held once every four years. Inscriptions from the third and second century[36] give lists of the various games held at the Festival and an inscription from the fourth century[37] mentions the numbers of amphorae for the first and second prizes. Through an ingenious calculation based on these inscriptions, Mommsen came to a total amount of 1300 prize-amphorae for each Festival[38].

Great popularity attached to the hippic games, especially after the Persian Wars, and the highest prize of the Games went to the victor in the chariot-races with full-grown horses: 140 amphorae[39]. Horse-races with small boys as jockeys as on Leiden PC 7 were also popular from the sixth century onward, many Panathenaic amphorae bear a representation of this game[40]. A bell-krater in Cambridge[41] has a picture of a winning jockey receiving his prize-amphora from Nike, see pl. 15. Pausanias mentions several statues of winning boy-jockeys in Olympia[42]. The winning horses were also famous, just as today, and they shared in the glory. On a Panathenaic amphora in Nauplia[43] the horse receives a fillet and Pausanias mentions several statues of horses, which are called by name[44].

The oil given as prize[45] came from the sacred olives, the Moriai, which were the property of the State. According to the Suidas[46], there were originally twelve Moriai, shoots of the holy olive tree on the Acropolis, which had been transplanted to the Academy. From the text of Aristotle, 'Αθ.πολ. 60.2, it becomes clear that in his time the Moriai were scattered all over Attica and from the next passage in the text, one can draw the conclusion, that it is no longer a matter of individual trees, but of an oil tax per oliveyard[47]. How much oil was collected yearly by the State is nowhere mentioned. Apart from the prizes for the Games this sacred oil was perhaps also used for some ritual purposes[48]; the rest was sold by the State, undoubtedly providing a nice source of revenue for the Treasury. No private citizen was allowed to sell this special Moriai-oil, except the winners in the Panathenaic Games[49].

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[36] CIA II 966-968 and 970.

[37] CIA II 965 (= IG² II, 2311).

[38] A. Mommsen, Feste der Stadt Athen (1898), p. 78, note 1. This number of 1300 amphorae has been generally accepted since then. The lowest estimate is 700 amphorae, see G. R. Edwards, Hesperia 26 (1957), p. 335, note 55; D. A. Amyx, Hesperia 27 (1958), p. 182.

[39] CIA II 965 (= IG² II, 2311).

[40] ABV 260,27; 369,114; 395,1-3; 407,1-2 below; 408,2; Para 127: Louvre F 274, Leningrad 1510 B; Para 176: Baltimore 48.2105; and on some late vases: ABV 413,1 above; and perhaps also ABV 414,1 above and 417,2.

[41] Cambridge, Fitzwilliam Museum 43.8 (ARV² 1164,47). The photograph has been kindly sent to me by the Fitzwilliam Museum and I want to express my thanks for the permission to reproduce it.

[42] Paus. VI.2.8, VI.12.1, VI.14.12.

[43] ABV 260, 27, by the Mastos Painter.

[44] Paus. VI.10.6, VI.13.9. See also Pindarus, Ol. I.18, where the horse Pherenikos (an appropriate name) of Hiero of Syracuse is praised. Other examples are mentioned by Beazley, Development p. 92, with notes 26-28.

[45] Pindarus, Nem. X.33-36: Aristotle, 'Αθ.πολ. 60.3; Suidas o.c.

[46] II.1, p. 881 (ed. Bernhardy 1853), cf. also Aristophanes, Nubes 1005.

[47] So also Mommsen, o.c. p. 79.

[48] Perhaps this oil was also used for the κόσμησις of the statues (see G. M. A. Richter, The Sculpture and Sculptors of the Greeks, rev. ed. 1957², p. 154-5).

[49] Scholion ad Pindarus, Nem. X.36: οὐκ ἔστι δὲ ἐξαγωγὴ ἐλαίου ἐξ 'Αθηνῶν, εἰ μὴ τοῖς νικῶσι. I follow the explanation of Mommsen o.c. p. 78, which seems to me better than the explanation of Boeckh, Staatshaushalt d.Ath.³ II 54, who suggests that the winners were allowed to export their prize-oil *taxfree*. See also K. Peters, Studien zu den Panathenäischen Preis amphoren (1942), p. 11-12.

The prizes of oil had a considerable value: the largest prize of 140 amphorae amounted to over 5000 liters of oil, but even a modest prize of 40 amphorae came to ca. 1500 liters of oil. If we accept the number of 1300 prize-amphorae per Festival this comes to a quantity of ca. 50.000 liters of oil and even with the lowest estimation of about 700 vases, it still comes to the considerable amount of ca. 27.000 liters[50]. In an inscription from the early fourth century[51], a price of 1½ obols is mentioned for three kotylai of oil. This gives for an amphora of 144 kotylai (= one metretes) the sum of twelve drachmes. The first prize of 140 amphorae, mentioned in the inscription from the same period[52] (early fourth century), comes to 1680 drachmes, the small prize of 40 amphorae to 480 drachmes. To get an idea of the buying power of these sums of money, we can look at some information about wages in this same period. The Erechtheum-accounts for 409-8 B.C. and the two following years mention a daily wage of one drachme for all artisans including the architect[53]. The same amount was given as pay to the Greek mercenaries in the army of Cyrus in 400 B.C.[54]. A reasonable income, since the remuneration of the Athenian citizen attending the Ecclesia was half a drachme a day in the early fourth century[55], and this must have covered the minimum cost of living. This makes it clear that the value of the prizes was very high and the total sum of money spent on the Panathenaic Festival was considerable. It seems therefore not unlikely that in times of war or financial stringency the Festival was held on a more moderate scale with reduced prizes, perhaps with amphorae of smaller size. If this hypothesis is correct, then we must look at the date of the undersized amphorae and see if, at that particular period of time, there may have been reasons for economizing.

1. The vase in Geneva is dated by Brandt[56] between the years 530-500, it seems to me to date from ca. 520 and I cannot find any explanation for its small size in the situation at Athens at the time.

2. The vase in Sparta belongs to the Leagros Group in the last decade of the sixth century and in this case there are reasons enough. It seems very unlikely that Hippias, after the murder on his brother Hipparchus during the Panathenaea[57] of 514 B.C., was eager to celebrate the next Panathenaea of 510 B.C. In 513-2 B.C. his adversaries attempted to overthrow his power, but failed. Another attempt followed with the help of the Spartans in 511-10 and failed again. The third expedition led by the Spartan king Cleomenes finally succeeded in the summer of 510 B.C. It seems almost impossible that the Games can have taken place in that disturbed summer[58]. The

[50] Olive trees generally give a good crop every other year, only old trees sometimes yield a good crop every year. The produce per tree varies from 100 to 200 kilos of olives, as Greek olive owners told me, that is 25 to 50 kilos of oil, as four kilos of fruit yield one kilo of oil.

[51] CIA II 631.

[52] CIA II 965 (= IG² II, 2311).

[53] IG² I, 373-4.

[54] Xenophon, An. I.3.21: 1½ Persian darics, which is the equivalent of ca. 30 drachmes, a month.

[55] Aristotle, Ἀθ.πολ. 41.

[56] Inst. Rom. Norvegiae, Acta 8 (1978), p. 1-23, J. Rasmus Brandt, Archaeologia Panathenaica I, Panathenaic prize-vases from the sixth century B.C., catalogue no. 83 and Pl. XI.

[57] Thucydides VI.56.

[58] Cf. J. Rasmus Brandt o.c. p. 20.

following years remained turbulent because of strife between the various parties. In 508-7 B.C. the Spartans invaded Attica and they did so again in 506 B.C. In this same year 506, the Athenians made war against the Boeotians and the Chalcidians. If the Panathenaea of 506 B.C. have taken place, there was every reason to keep the festivities on a moderate scale.

3-7. The vases 3-6 and perhaps 7[59] also, date from 480-470 B.C. and a connection with the second Persian War seems obvious. Whether the Panathenaea of 490 B.C. were celebrated is not known. The principal day of the Panathenaea falls on the 28th Hekatombaion and the battle of Marathon took place on the 17th or 18th day of the next month, Metageitnion, not three weeks later. At the time of the Festival, the Persians were about to land on Euboea, their first objective. Not a time for festivities, one would think.

In 486 and 482 B.C. nothing stood in the way of keeping the festival. In 478 B.C. however, though the Greeks had won the war and the Persians had left Greece a year earlier, there may have been problems with the oil supply.

The oil from the Moriai[60] was collected every year by an archon nominated annually for this purpose. At the end of his term of office he was obliged to hand the oil over to the treasurers or ταμίαι who stored it in the Acropolis. At the time of the Panathenaea they measured it out to the ἀθλοθέται or games-stewards, who, in their turn, distributed it to the winners. The ten athlothetai were appointed for four years, and they had to take care, in cooperation with the Boule, of the making of the prize-amphorae[61]. We can only guess whether they gave this desirable commission to one or to several potter's workshops. In the fourth century the same family of potters seems to have received the commission over a period of time[62]. On two amphorae, both of Panathenaic shape, the first from the end of the sixth century, the other from a century later, there may be a representation of the athlothetai while they are busy transporting the prize-amphorae[63]. We do not know if the oil kept by the tamiai in the Acropolis until the time of the Games, was stored in casks, or if it was "bottled" annually. The latter seems more probable, because in the fourth century the amphorae bear the name of the archon during whose year of office the oil had been collected. Up till now no amphora has been found with the name of an archon of the year of the Panathenaea. The archon was appointed at the beginning of the Greek year, a few weeks before the Panathenaea, and his first collection of oil took place in the winter after the Festival, or 3½ years before the next Festival. Obviously this oil was no longer fresh and good enough for prize-oil. Most of the archon names refer to the last and the last but one years before the Games, i.e. oil of 1½ and ½ years old. Archon names of the third year before the Games (oil of 2½ years old) are rare[64].

It is thus possible that in the summer of 480 B.C. there was already a small stock of oil in the Acropolis for the Games of 478, but the greater part had still to be collected in the winters of

[59] As far as I can judge from the photograph in the CVA.

[60] See above p. 41.

[61] Aristotle, Ἀθ.πολ. 60,2; see also Mommsen o.c. p. 80 ff.

[62] The family to which Bakchios and Kittos belong, see Beazley, AJA 47 (1943), p. 456 and Development p. 97; T. B. L. Webster, Potter and Patron in Classical Athens (1972), p. 3.

[63] Athens, Acrop. 842 (ABV 369,119) and Athens, Agora P 10.554 (Hesperia 18, 1949, p. 306-7 and Pl. 74).

[64] E. N. Gardiner, JHS 32 (1912), p. 192; Peters, o.c. p. 7 ff.; Beazley, AJA 47 (1943), p. 461 and the lists given in ABV 412 ff.; Frel, RA 1972, p. 286, note 1.

480-79 and 479-78. After the battle of Thermopylae, the Persian army continued its way, devastating the countryside and in September 480 B.C. Athens and the Acropolis were burnt. If there was any oil stored in the Acropolis at that time, it will have been lost. After the battle of Salamis the Persian army withdrew to winter in Thessaly and the Athenians returned to Attica and began with the autumn ploughing[65]. Perhaps they also reaped the olives, where the trees had not been destroyed. In 479 B.C. the Persian army returned to Attica, Athens and the countryside were again laid waste[66]. Eventually stored oil in Athens certainly disappeared. Only the olive crop of the winter 479-78 comes into consideration for the prize-oil for the Games of 478. But the harvest must have been smaller than usual, for after two plundering expeditions during which the Persian army burnt and devastated the whole countryside of Attica, many trees must have been destroyed[67]. All public and private oil reserves had certainly disappeared during the war and it is probable that there was a shortage of oil that year, so that it had to be imported from other parts of Greece. Nor can there have been much money in the treasury for the Games in 478 B.C. The war had cost much money, not only for the army and the fleet, but the Council of the Areopagus had also distributed from the Treasury eight drachmae to each citizen at the time of the evacuation of Athens[68]. And as the citizens had lost most of their property, it was also impossible to refill the Treasury immediately by imposing special taxes. There was therefore good reason to reduce the prizes in 478 B.C.

If in 480 there were already a number of amphorae stored in the Acropolis, they will not have survived the Persian sack. In that case one might expect a relatively great number of fragments of Panathenaic amphorae by one painter, or from one workshop from ca. 480 B.C. to have been found on the Acropolis. This is indeed the case. A remarkably high number of fragments of Panathenaic amphorae by the Eucharides painter were found, more than by any other painter of Panathenaic amphorae[69]. Unfortunately the majority of these fragments comes from small Panathenaic amphorae without the prize-inscription, not from official prize-amphorae, and the hypothesis, though attractive, does not hold.

8-10. The vases 8[70] and 9 are placed by Beazley around 440 B.C. It is not easy to date these late black-figure vases exactly. Beazley changed his mind about the date of 9 in the course of time. Originally he placed the vase about 420 B.C., later he dated it much earlier, about 440, and finally he says "... 440 B.C. or even later"[71].

The Panathenaic festival was held in the years 446, 442, 438, 432 B.C. and I do not see any reason for economizing on the prizes for the games in those years. In 445 B.C. the Thirty Years Peace was concluded with Sparta, and Athens was prosperous in this time. The building activities on the Acropolis were in full swing and in 438 B.C. the newly built Parthenon was

[65] Herodotus, VIII.109.4, but see CAH IV (1960), p. 318.
[66] Herodotus, IX.2 f.
[67] Herodotus, VIII.142.3.
[68] CAH IV (1960), p. 303.
[69] ABV 396,9 and 11-20; Frel, AAA 2 (1969), p. 378 ff.
[70] Beazley in AJA 47 (1943), p. 450: "the date should be not much earlier than 440", see also Peters o.c. p. 93.
[71] Beazley, Vases Poland (1928), p. 8; AJA 47 (1943), p. 448; Development (1951), p. 95. No. 10 is placed by Peters, o.c. p. 93, close to the Achilles Painter.

dedicated at the same time as the colossal chryselephantine statue of Athena by Phidias. The dedication took place during the Panathenaea — certainly a reason for extra festivities in that year.

11-15. It is a very different case with the next five vases, 11-13 from ca. 430 B.C.[72], 14 from ca. 430-425 B.C.[73], and 15 from the last quarter of the century according to Peters[74]. The first four vases belong to the time of the Archidamian War. The Panathenaea fell in the years 430, 426, 422 B.C. and rather than Games with reduced prizes one would expect the festival not to be held at all during these catastrophic years.

Of the two parties at war, Athens had the supremacy at sea, but Sparta and her allies were superior on land. It was in Athens' interest to avoid a great battle with the Peloponnesian land-forces which far outnumbered them. For that reason Pericles persuaded the Athenians to evacuate and sacrifice the Attic countryside and to put all their confidence in their superior fleet[75]. The policy of Archidamus of Sparta, on the other hand, was to try to provoke the Athenians into a battle by invading Attica and ravaging their land[76]. No greater provocation was thinkable, than the destruction of the olivegroves.

Since the Persian Wars, more and more olive trees had been planted in Attica. The poor and stony soil was and is ill-suited to corn, but the olive tree thrives on it. For her corn supply Athens became more and more dependent on import. An olivegrove must be the dream of every farmer, for, once planted, the trees hardly need any care or tending. But it takes a long time before the tree begins to bear a full crop: only after ca. 20 years[77] (some even say 30-40 years) is the tree at its best.

One can imagine the torment of the farmers and landowners, cramped as they were within the city walls of Athens, when they saw their beautiful olive trees, their source of income, the heritage for their sons, being destroyed in front of their very eyes, without being allowed to do anything to protect their property[78].

It is not only possible, but also probable that the repeated invasions of the Peloponnesians (in 431, 430, 428, 427, 425 B.C.) caused a serious decrease in the oil supply soon after 431, and not, as Zimmern suggests[79], only after the occupation of Deceleia by the Spartans in 413 B.C.

Apart from a shortage of oil, financial problems may also have lead to a reduction in the prizes of the Games. Accounts show that in 426 B.C.[80] the state reserves have drastically diminished. After the disaster in Sicily, in 413 B.C., the situation is still more precarious: nearly all reserves have disappeared, except the 1000 talents set apart for emergencies. In 406 B.C. the

[72] Beazley, AJA 47 (1943), p. 453: "The three Robinson vases probably still belong to the thirties of the fifth century B.C.", and in Development p. 95 "... about 430".
[73] Beazley, AJA 47 (1943), p. 453: "a little later than the Robinson amphorae, between 430 and 425".
[74] Peters o.c. p. 96-7.
[75] Thucydides, I.143 and II.13; see also II.14-16.
[76] Thuc., II.11 and II.20.
[77] Cf. A. Zimmern, The Greek Commonwealth (1952[5]), p. 54, "40 to 60 years".
[78] Thuc., II.17 and esp. II.21.
[79] Zimmern, o.c. p. 429, note 1.
[80] IG[2] I, 324.

last reserves have gone and the Athenians begin to melt down the gold and silver plate and statues in the temples. Though in 410 the financial situation must have been very difficult, we know that in this year over five talents were borrowed for the Panathenaic festival[81]. In 406, however, there may well have been reason to cancel all festivities.

Finally there is the Plague. The epidemic first broke out in 430 B.C. and it continued during 430 and 429. In the winter of 427 B.C. the Plague again broke out and continued throughout 426. One third of the population was carried off by the disease. During the hot summer months the disease must have been at its worst and it is hard to believe that the Panathenaea of 430 and 426 B.C. were celebrated.

16-17. The last two vases of the group of undersized amphorae date from 373-2 and 371-0 B.C. and were made for the Panathenaea of 370 B.C.

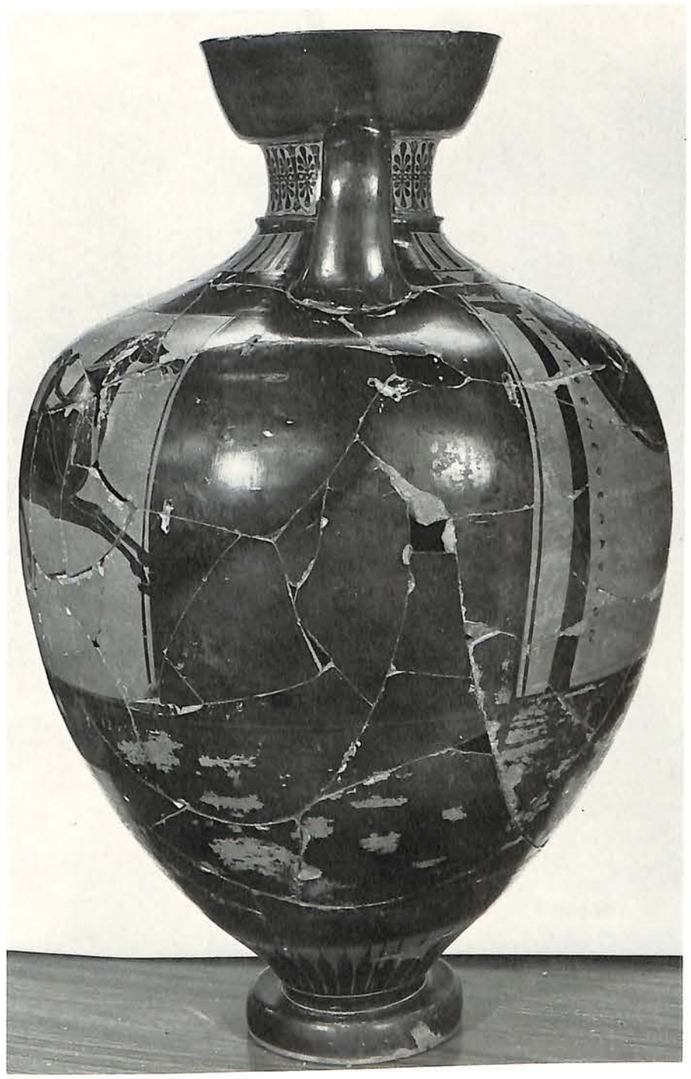
From 378-371 B.C. Athens and Sparta were again at war and at the end of the war, Athens was financially exhausted. Perhaps this was a reason to hold the Games in 370 B.C. on a moderate scale.

I cannot find any explanation for the reduced size of the numbers 1, 8 and 9 of the list given above, and I cannot be sure of the date of no. 10 and no. 15, because I do not know these two vases, but in the case of all the other undersized Panathenaic amphorae, there were severe circumstances (war, financial troubles, oil shortages, the Plague) which may have caused the Athenians to economize on the prizes for the Panathenaic Games.

[81] IG² I, 304.

Leiden PC 7, side A, after the restoration (with modern wire in the ancient holes).

Leiden PC 7, side B, after the restoration (with modern wire in the ancient holes).



Leiden PC 7, during the restoration.

B. Leiden PC 7, part of the inside during the restoration.

C. Leiden PC 7, graffito under the foot.

A. Leiden PC 7, detail of side B.

Bell-krater Cambridge, Fitzwilliam Museum 43.8.

28/vi/83

MBW borrowed the Vos Parathemic offprint
to lend to John Oakley

9.IV.84

So when is that Vos offprint
now ??

9.03

American School of Classical Studies
54 Swedias St.
0 Greece

9.02

Afz. M.F.Jongkees-Vos
A.van Ostadelaan 163-2
3583 AH Utrecht

1982

ATTIC PANATHENAIC

Dear Dr. Jongkees-Vos,

Thank you very much for sending me a copy of your article, "Some Notes on Panathenaic Amphorae", which will continue to be of much use and interest both to me and to various colleagues, including Professor Malcolm B. Wallace of the University of Toronto, who is making a study of amphora capacities. So far I have not had time for a real study of your text, but have much enjoyed the pictures.

You must have been sad, as I was, to hear of the death of Emilie Haspels. For me, she was a special friend, over many years and many vicissitudes.

I hope you are now well and enjoying work.

Yours sincerely

Virginia R. Grace

VRG/cz

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Yours sincerely

Virginia R. Grace

VRG/oz

I could not find an explanation for the reduced size of no.1 of the list on p.40. The vase is now published in CVA Geneva 2, pl.57,1.6.7, and it appears to be a normal-sized Panathenaic. The height of 47.4 cm. is the maximum preserved height without the (missing) mouth, neck and foot; the diameter is 42.5 cm. The date given in CVA Geneva is certainly too late, I think it is impossible to date the runners on side B much later than 520 B.C.

CORBETT
PANATHENAIC

Corbett

✓ with all good wishes
3.III.86 Taken by V.R. Grace
from Agora discards
[10]

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(1960)

BURGON. AMPHORA

says to Gnathon *ὡς μεγάλους ὁ Ἔρως ποιεῖ σοφιστάς*.[119] So *τέχνη περιττή* is remarked in the prologue as an attribute of the picture of Eros (Pr. 1). It is *τέχνη* which Daphnis and Chloe lack, and Philetas and Lykainion offer to provide.[120] The garden, proper dwelling-place of Eros, exhibits the perfect union of nature and art.[121] From the garden could be seen the open country and the sea with shepherds and sailors (iv 3.1). In the garden *τέτμητο καὶ διακέκριτο πάντα. . . ἐν μετεώρῳ δὲ οἱ κλάδοι συνέπιπτον . . . ἐδόκει μέντοι καὶ ἡ τούτων φύσις εἶναι τέχνης* (iv 2.2). And Longos gives us an epitome of the whole work when he opens his first Book with a description of Mitylene and the surrounding country—a city set in country by the sea, admitting the water into its precincts and adorning its waterways with architectural skill—*διείληπται γὰρ εὐρίποις ἐπεισρεούσης τῆς θαλάττης καὶ κεκόσμηται γεφύραις ξεστοῦ καὶ λευκοῦ λίθου* (i 1).

This mutual interpenetration of Country and Town, in their broadest sense, means that Longos is not, therefore, merely indulging in empty rhetorical paradox for its own sake, when he relies on the sophistication of his reader to form a just assessment of his praises of the unsophisticated countryman. He is giving an artistic unity to a single, though complex, concept, the nature of Eros; and can reasonably claim that in consequence his work becomes *ἀνάθημα μὲν Ἔρωτι . . . κτῆμα δὲ τερπνὸν πᾶσιν ἀνθρώποις*.

H. H. O. Chalk.

University of Glasgow.

[119] So too it is Chloe's *ἔπαινος* of Daphnis which is *ἔρωτος ἀρχή* (i 13.2). *Gnathon* is not, like Daphnis, a perfect embodiment of Eros. But as one of the creations of Eros he necessarily (but imperfectly, as we can see from the lack of success which Longos arranges for him) represents him. Hence he plans *λόγον καὶ ἐρωτικὸν καὶ μακρόν* (iv 13); he is *πᾶσαν ἐρωτικὴν μυθολογίαν πεπαιδευμένος*—but *ἐν τοῖς τῶν ἀσώτων συμποσίοις* (iv 17). He represents, in fact, what Eros becomes in the man whose initiation is perverted by coming exclusively from the Town and not at all from the Country.

[120] Chloe's first kiss is *ἀδίδακτον καὶ ἄτεχνον* (i 17); Daphnis and Chloe, separated in winter, *τέχνην ἐζήτουν δι' ἧς ἀλλήλους θεάσονται . . . καὶ τοιόνδε σόφισμα εὗρεν* (sc. *Δάφνις*) (iii 4); the meetings are repeated *ἐπ' ἄλλαις τέχναις* (iii 11). Lykainion *ἐπιτεχνᾶταί τι τοιόνδε* (iii 15) *cf.* iii 18.1 *διδάξαι τὴν τέχνην* 18.2 *ὑποστορέσασα ἐντεχνῶς*. Daphnis asks Philetas *μεταδοῦναι τῆς τέχνης* (ii 33.1). Also (i 11) note the unusual phrase *γῆς σεσοφισμένης* in connexion with the wolf-trap. *Cf.* n. 81 on *παιδεύω, διδάσκω*.

[121] *Cf.* Rohde's summary of the significance in philosophy and art of the garden as the proper setting for man's communion with nature (*Gr. Rom.*[2] 537 ff.).

THE BURGON AND BLACAS TOMBS

(PLATES I–VII)

THERE are in the British Museum two groups of Greek vases, from two burials, which may for convenience be called the Burgon and Blacas tombs, after their finders.[1] The present article gives the evidence for their discovery and an account of the individual vases; for those which have already been published in the *Catalogue of the Greek and Etruscan Vases in the British Museum* and in the *Corpus Vasorum*, I confine myself to major additions to the bibliography and to supplementary comment, while the unpublished pieces receive fuller treatment.

Thomas Burgon (1787–1858),[2] a Turkey merchant who lived in Smyrna till 1814 and returned to the Aegean on various occasions after that date, made good use of his opportunities for excavating and collecting antiquities; he was no dilettante but a knowledgeable and careful worker, and when his business failed in 1841 he and his collection found a refuge in the British Museum. His name has long been familiar to the student of Greek vases from the Burgon amphora, the earliest known Panathenaic amphora, which is conspicuous both for its own merits and for its importance for the chronology of black-figure vase-painting; very conveniently, the Burgon amphora came from the Burgon tomb, in which it was associated with six much smaller vases.

The amphora and the circumstances of its finding were discussed in an article by the Chevalier P. O. Bröndsted, entitled 'On Panathenaic Vases, and on the Holy Oil contained in them; with particular reference to some Vases of that description now in London'.[3] There are no illustrations to this article, or at least the copy which I have seen has none, but a French translation was made by Burgon's son, John William, under the title *Mémoire sur les vases Panathénaiques adressé en forme de lettre à M. W. R. Hamilton par le Chevr. P. O. Bröndsted et traduit de l'anglais par J. W. Burgon* (Paris, 1833); in what follows the two versions will be distinguished as *Mémoire* and *Panathenaic Vases*. The *Mémoire* has six plates,[4] one of them showing the small vases already mentioned, whose identification is therefore beyond all doubt. The detailed account of the discovery is given in a letter from Thomas Burgon to Bröndsted,[5] which deserves quoting at length:

'My dear Bröndsted,

In the course of our last conversation about my Athenian Prize Vase, you expressed a wish, that I should communicate to you, in writing, all the circumstances of its discovery, as well as the particulars of its contents and condition when first found; and knowing so well the great degree of interest which you take in everything that may assist in forming a correct opinion of this curious monument, I feel peculiar pleasure in giving you the following statement.

The Vase was found, in my presence, on the 16th May, 1813, in the course of an excavation which occupied about two months, on some waste ground outside the ancient wall of Athens, close to the Portae Acharnicae, about one hundred and sixty yards north-east of the modern gate called Gribos-kapesi. This ground is bounded on the east by the road

[1] The photographs in PLATES I to VII, taken by myself, are published by permission of the Trustees of the British Museum.

[2] See *Dictionary of National Biography*, Supplement i 335 f., under Burgon, John William.

[3] *Transactions of the Royal Society of Literature of the United Kingdom* (London, 1832) ii 102–35.

[4] I am much indebted to Dr Dietrich von Bothmer and Dr G. Roger Edwards for providing photostats of these plates.

[5] *Panathenaic Vases* 109 f.

leading to Thebes, and on the southern side by a chasm, forming the bed of the torrent. The exact position of the spot may be seen by referring to the "Plan of the Antiquities of Athens", among the plates illustrative of Lieutenant-Colonel Leake's interesting "Topography of Athens", published in 1821. The Vase in question was found about thirty yards north of the spot where the initial letter A (of the word Acharnicae) stands on the plan referred to.[6] That this ground had been anciently a cemetery, is proved by my having explored an area of near two hundred yards in circuit, and found there about forty-five well-defined tombs of various kinds. It was among these tombs that the Vase was discovered, deposited in the earth, about three feet below the surface, in a nearly upright position; and having a heavy rude slab, of schistus rock, about three inches thick, and twelve inches square, placed on its mouth. It retained its shape and position perfectly, after the earth was cleared away around it, although it was cracked all over in every direction, and was taken up in about forty pieces. . . .

On carefully examining the earth, to ascertain whether any thing had been deposited in the Vase, I found some remains of bones, which appeared to have been burnt, and also six earthen vessels. They consisted of three black two-handled cups of different sizes,—a small bottle-shaped vessel of yellow earth,—a pitcher-shaped vase with a handle,—and, lastly, a *Lekythus*, of inelegant form on which is painted, in very rude ancient style, a runner or dancer between two standing figures.

I might here close this narration; but as the recent discovery of so many Panathenaic prize-amphorae in Italy, with inscriptions analogous to that on mine, has given rise to discussions, in some of which the genuineness of my Vase (especially its inscription) has been called in question, it becomes necessary for me to state that I washed and joined the fragments myself, with the greatest care, at Athens. The Vase was never out of my possession, and has not been *restored*, in the Italian sense of the word; the inscription is, therefore, in every respect genuine, and is exactly as engraved, on a reduced scale, in the valuable work of our friend Millingen (Unedited Monuments, Series 1, Plate 1).

It is also to be observed that this Vase, when found, was complete. The fragment wanting on the neck of the Horses, was crumbled by the blow of a small pick-axe, at the first moment of its discovery. The larger and more unfortunate deficiency between the Charioteer and the Horses, was occasioned at the same instant by the labourer having detached, and carelessly thrown away, two or three of the fragments, while I was occupied in removing the earth; these pieces I could never succeed in recovering, although the most diligent search was made for them. In adverting to this misfortune, I must explain, that the labourer was under an impression that the amphora was not worth preserving,—as no painted vase had ever been discovered of so large a size, and previous experience had induced the common belief among the excavators, that thick and large vases were always of ordinary red earth and coarse fabric. It was, therefore, usual to disregard them, when any such were found, and they were consequently never washed or examined. In fact, I had myself imbibed this erroneous notion, and did not suspect this amphora to be painted, till, on scraping off the earth from one of the fragments, I saw the legs of the Horses. This circumstance alone led to its preservation; for the calcareous incrustation, which attaches itself to vases deposited so many centuries in the earth, had almost precluded the possibility of seeing its surface.

I have detailed all these particulars, in order to explain how it happened that, nineteen days before, I had found and thrown away (without washing) four amphorae, exactly similar to this in size and shape, each containing burnt bones and smaller vessels of various forms. These last were preserved and washed; and from a subsequent consideration and comparison of these objects, with those already described as having been found in my

[6] That is, East of Aeolus Street, about half-way between the National Bank and Sophocles Street.

Vase, I was led to the mortifying conclusion that four Panathenaic prize-amphorae had been destroyed, owing partly to the incrusted condition in which they were found, but principally to the erroneous notion just explained. This circumstance I shall never cease to regret, and only relate it to you, because it leads to the reasonable hope that future excavations at Athens may bring to light more of these interesting monuments. . . .

Hoping that this long letter may not be found too tedious, believe me to be my dear Bröndsted,

Yours very sincerely,

11, *Brunswick Square*, *November* 26*th*, 1831, THOS. BURGON.
To the Chevalier Bröndsted, etc. etc.'

The vases from the Burgon collection which are not in the published catalogues are given the numbers assigned to them in the manuscript list of his collection which is in the library of the Department of Greek and Roman Antiquities in the British Museum; to avoid confusion these numbers are preceded by the letters TB. They are marked on the vases in ink, and so is a second series which runs from 48 to 48 F; the list seems to have been drawn up in preparation for the sale of the collection to the British Museum, and the second series, 48, 48 A, etc., must refer to an earlier inventory, now lost, for item 834 in the manuscript reads, 'The Athenian Panathenaic amphora, 2 ft. high', while for 835–40 the entry is, '6 small cups and vases found in it No. 48'. These two notes also give additional evidence that all seven vases were found together.

(1) B 130. Panathenaic amphora. PLATES I and II. Height, 0·613 m. Maximum diameter of body, 0·423 m. Diameter of mouth, 0·204 m. Diameter of foot, 0·138 m. Maximum internal diameter at narrowest part of neck, 0·105 m. *Mémoire* pll. 1 and 5, no. 7. *ABV* 89, Burgon Group, no. 1. The vase is 569 in the old *Catalogue of the Greek and Etruscan Vases in the British Museum* by Birch and Newton (London, 1851), where a brief account of the discovery is given; it is also stated that the vase 'contained some remains of burnt bones and also a Lêkythos and five other small earthen vessels of various forms, see nos. 2603, 3039, 3047, 3050, 3056, infra', but the section of the catalogue which includes these numbers was never published and exists only in manuscript.

A, Athena. B, racing cart. The vase had not been completely freed from incrustation, and the joints were not well made, but Burgon had too much discrimination to emulate the Italian restorers of his time in filing down the projections left by faulty mending, so that no harm had been done. The photographs published here were taken after the vase had been cleaned and re-mended in June 1951. On the underside was written in ink, 'No. 48. Found May 16, 1813, Athens'; the writing was on a layer of incrustation, not on the body of the pot, and was therefore lost during cleaning.

(2) B 586. Attic black-figured lekythos. PLATE III. 1. Height, 0·146 m. Maximum diameter, 0·071 m. Small parts of the mouth and foot are restored. *Mémoire* pl. 5, no. 1. E. Haspels, *Attic Black-Figured Lekythoi* 195, Group of the little black-necked lekythoi, no. 13.

A running youth, nude save for a cloak over one arm, between two draped youths; all three hold spears or long staffs. Red is used for the youths' hair, their cloaks, and for dot-rosettes on their chitons. Two red lines run right round the vase beneath the picture, and there is a third line just above the foot; the moulding round the neck is red, and so is the top of the mouth. The glaze has fired orange-brown in most places, with occasional small patches of black; there is in fact a thick orange-brown layer, over which in some places a thin black layer has formed, the black being much more lustrous than the brown. Marked under the foot in ink, 'TB 835. No. 48 A. Athens 1813'.

(3) TB 836. Attic black-glazed olpe. PLATE III. 3. Height as preserved, 0·133 m. Maximum diameter, 0·071 m. *Mémoire* pl. 5, no. 2.

Almost all the rim is lost except for a little piece by the handle; some of the neck is also missing, and the handle and upper part of the body have been broken and mended. Two red lines run round the body just below the lower handle-root. The glaze has flaked a good deal and has fired grey and orange in places. Marked under the foot in ink, 'TB 48 B. Athens 1813'; we know from the illustration in *Mémoire* that the vase belonged to the tomb group, and it can be identified as 836 in the list by elimination.

Compare a vase from the Athenian Agora, *Hesperia* xxv (1956) pl. 18 g; it differs from ours in having no foot, but other examples found with it in the same well do have feet; other minor differences are the presence of a third red line round the body, lower down, and the unglazed handle.

(4) TB 837. Hand-made aryballos. PLATE III. 2. Height, 0·063 m. Maximum diameter, 0·056 m. *Mémoire* pl. 5, no. 5.

The neck and handle have been broken and mended; parts of the lip and neck are missing. The bottom is flattened to form a resting-surface. Unglazed; creamy-brown, micaceous clay, less friable than many examples of this class. Marked on the bottom in ink, 'TB 837. 48 C. Athens 1813'.

For similar vases from other graves in Athens, see *Hesperia* xx (1951) pls. 39.2, 42.4. On this class, 'Argive monochrome', see the discussion in *Hesperia* xxi (1952) 202 ff., with the bibliography in n. 45; C. M. Robertson in *BSA* xliii (1948) 44, 52–3, 76, 80; S. Weinberg, *Corinth* vii. pt. 1, 8.

(5) TB 838. Attic black-glazed skyphos of Corinthian type. PLATE III. 5. Height, 0·081 m. Maximum diameter, 0·119 m. *Mémoire* pl. 5, no. 3.

Broken and mended; part of one handle is restored, and a chip is missing from the foot. There are two red lines round the body just below the handles, and a third at the top of the reserved zone above the foot. The glaze has fired dark brown in places; the underside is reserved, with two glazed circles and a dot. Marked under the foot in ink, 'TB 838. No. 48 D. Athens 1813'. Compare *Hesperia* xxv (1956) pl. 18a.

In his letter to Bröndsted Burgon says explicitly that all the small vases were found inside the large one, but it will be observed that this skyphos is too big to go through the neck of the amphora. If it is placed right way up in the mouth of the amphora, its handles rest on the rim and the rest of the vase is unsupported; if a slab of stone a foot square and three inches thick were then placed on top, one would expect to find the handles and rim of the skyphos crushed, while the lower parts would be undamaged. In fact the breaks are clean, and the wall and base of the vase are broken into a number of pieces. From what is known of Burgon it is very unlikely that he was telling a deliberate lie; moreover, the vase is not out of keeping with its associates, as can be seen by the reference already given to a similar example from the Athenian Agora, so if it is a fraudulent addition, Burgon must have made an incredibly lucky choice, considering the state of knowledge of Attic black pottery in his day. If it had been thrown on the funeral pyre and then swept up with the ashes, the evidence of vases from other burials would lead us to expect that parts of it would be missing, and that adjacent fragments would show different degrees of discoloration; in fact it is almost complete, and uniform in colour. Possibly it was really found beside the amphora, not in it, and Burgon's memory played him false after twenty years, or it may have been deliberately broken at the time of the burial; a possibility that comes to mind is that no one considered the question of its size till the time came to put it in the amphora with the others.

(6) TB 839. Attic black-glazed skyphos of Corinthian type. PLATE III. 6. Height, 0·057 m. Maximum diameter, 0·075 m. *Mémoire* pl. 5, no. 4.

Broken and mended. There are two red lines round the body just below the handles, and a red band in the reserved zone above the foot. The underside is reserved, with two glazed circles and a dot. Marked under the foot in ink, 'TB 839. 48 E. Athens 1813'.

See *Hesperia* xxv (1956) pl. 18b for a similar vase, whose shape is only slightly different, with the comment on pp. 58–9: 'Rays are the normal decoration above the foot of "Corinthian" skyphoi and are found throughout the long history of the shape from the late seventh to the early fourth century B.C. Added red on the reserved band above the foot is confined to the early period and is hardly to be found after the middle of the sixth century.' The history of this type of skyphos does not in fact end in Attica till the latter part of the fourth century.

(7) TB 840. Attic black-glazed skyphos. PLATE III. 4. Height, 0·038 m. Maximum diameter, 0·063 m. *Mémoire* pl. 5, no. 6.

Undamaged except that one handle is missing and has been restored in plaster. The vase has no foot; the bottom is slightly concave, and it and the lowest part of the wall are reserved. The clay has fired grey-brown. Marked on the underside in ink, 'TB 840. 48 F. Athens 1813'.

By a careful analysis of details Langlotz established the position of the Burgon amphora in the development of black-figure painting, and there has been general acceptance of his conclusion that it is earlier than the work of Exekias and the Amasis Painter, about contemporary with the early work of Lydos, and rather later than the François vase; in absolute terms, some ten to twenty years before the middle of the sixth century.[7] The lekythos has been assigned by Miss Haspels to her Black-neck class, and nine other examples of this class were found in two graves at Rhitsona which Ure dated around or just after the middle of the sixth century.[8] Beazley accepts Ure's dating, and lists various vases

[7] Langlotz, *Zeitbestimmung* 9–11; Payne, *Necrocorinthia* 344 ff.; Beazley, *Development of Attic Black-Figure* 26, 38, 88–9.

[8] *ABL* 195, nos. 23–31, from Rhitsona, graves 49 and 50. In *BSA* xiv (1907–1908) 306, Ure says of these graves, 'The black-figure prevents us of course from thinking of a date very long before 550 B.C. There are other considerations which suggest a date little after it'; in *Sixth and Fifth Century Pottery from Rhitsona* 39, that they 'may be dated in the middle of the sixth century'.

which are related in style to the Black-neck lekythoi, among them a cup in Athens which is dated 'soon after 550 B.C.' by Bloesch, 'around 540' by Lullies;[9] to judge by the style, this cup and our lekythos are contemporary. On the other hand Miss Haspels and Beazley point out the similarities in make and drawing between the Black-neck class and a miniature amphora in New York;[10] the use of red on the amphora, the pose of the figures and their proportions, and the black and red tongues above the pictures suggest that it cannot be far distant in time from the early work of Lydos and his associates. It is therefore just possible that the lekythos was made a little before 550 B.C. In consequence the unfigured vases may be dated from their context to the second quarter of the sixth century or early in the third quarter. Examples similar to nos. 3, 5, and 6 were found in a well in the Athenian Agora together with figured pottery and other material of which the report says, 'The date of the deposit is the second quarter of the sixth century B.C., and there is nothing in it that need be later than the five-sixties'.[11] There is no real discrepancy between the evidence of the two groups of pottery; the little vases from the tomb could well be as early as, or even a little earlier than, the Burgon amphora, or as late as the lekythos. The lower dating would imply that the development of the skyphos and the olpe was rather slow in the middle of the sixth century; the idea is quite plausible, for the shapes are simple ones, and the production of plain pottery was not at that time the vigorous, expanding business of later days.

The dating of these black vases depends in the last resort on the figured pottery found with them; for the first half of the sixth century such finds are at present comparatively uncommon, so that one must allow for the possibility of being misled by the accidents of survival, and even if associated finds were plentiful, their chronology could only be established with the same degree of accuracy as the chronology of Attic black-figure, and no more. The dating of the figured vases is of course based on the study of style; starting from examples where there is no doubt which is earlier and which is later—as for instance the work of Lydos and of the Leagros group—it is possible to define the various stages between one group and the other, to distinguish more and less developed work by a single hand, and to place one artist in relation to his fellows.[12] These estimates of relative chronology are objective because they are based, not on one or two details, but on a whole number of features which all tell the same story and can often be reinforced by the evidence of the shape of the vases concerned. Sometimes the differences between the pieces are slight, and it may not be possible to decide whether they indicate a genuine separation in time or are simply the result of contemporary variations; where they are marked, it is safe to regard the works on which they appear as of different dates, but any attempt to express that difference as a definite number of years can be no more than an estimate. The situation cannot improve unless secure absolute dates can be fixed for a number of vases so that the degree of progress which took place over a given period can be defined beyond all doubt, and even then what is found to be true of one or two artists will not necessarily apply without qualification to all their contemporaries.[13] The most reliable fixed point in the sixth century is the Siphnian Treasury at Delphi, built shortly before 525 B.C.[14]

[9] Beazley in *Hesperia* xiii (1944) 57 speaks of two tombs at Rhitsona, nos. 49 and 50 'which from the rest of the contents must be dated, with Ure, shortly after the middle of the sixth century'. *ABV* 454 ff., in particular 456, no. 5. Lullies in *JdI* lxi–ii (1946–1947) pl. 9. 24 and p. 62. Bloesch, *Formen attischer Schalen* 3.

[10] *ABL* 27; *ABV* 455; *CVA* Gallatin Collection, pl. 35.1.

[11] *Hesperia* xxv (1956) 57.

[12] E.g. Langlotz, *Zeitbestimmung*, *passim*; Payne, *Necrocorinthia* 345–7.

[13] *Cf.* H. R. W. Smith, *University of California Publications in Classical Archaeology* i, no. 10, 272 n. 87; Beazley on the date and style of a vase by the Triptolemos Painter in *Charites: Studien zur Altertumswissenschaft* 138 f.

[14] The evidence is given by Langlotz, *op. cit.* 17–18. From the wording of Herodotus' account the treasury can only have been erected a few years before the Samian attack in 525 B.C.

KBW 9
SCALE 1:1

London B 130. The Burgon amphora

THE BURGON AND BLACAS TOMBS

London B 130. The Burgon amphora

THE BURGON AND BLACAS TOMBS

London. Other vases from the Burgon tomb

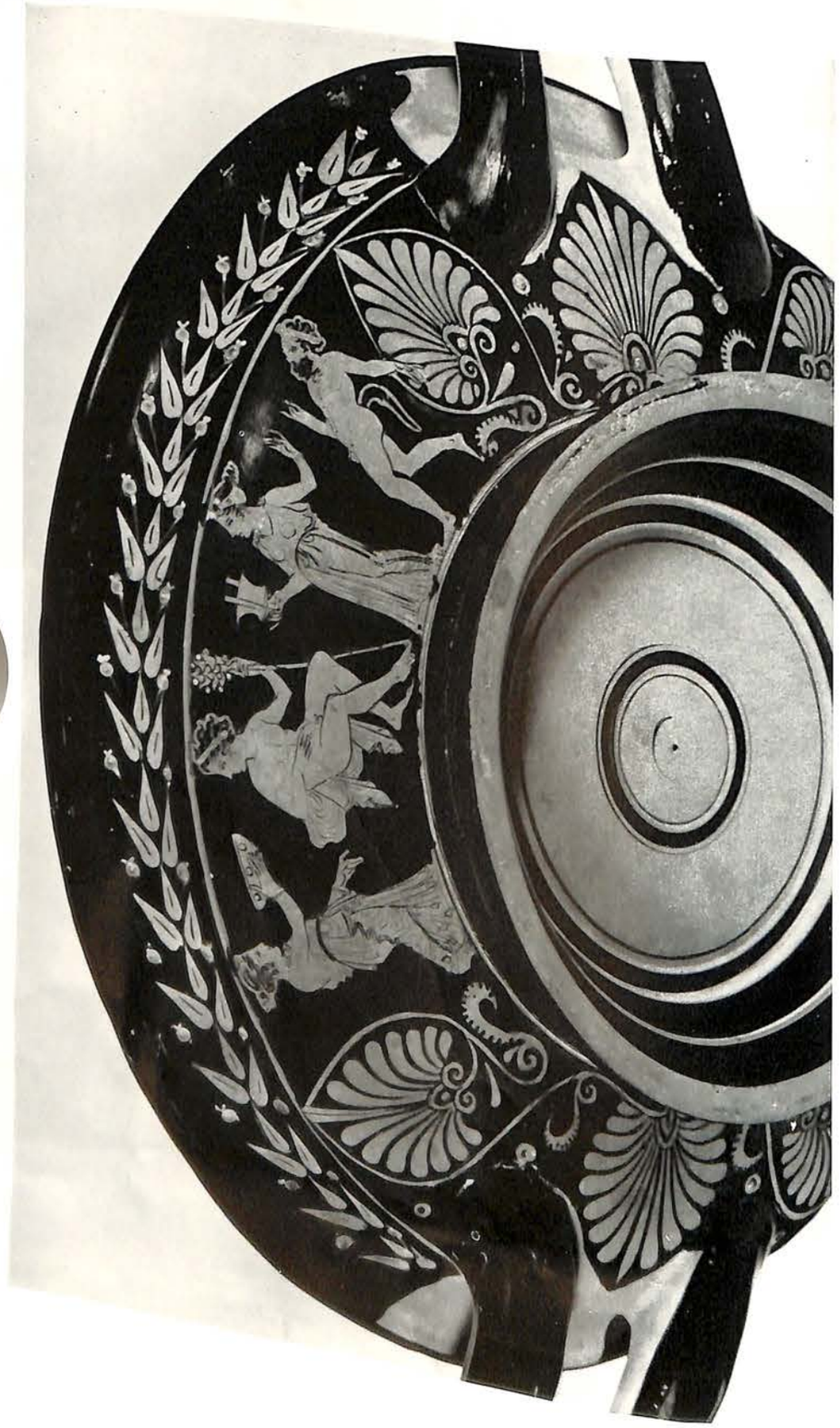
THE BURGON AND BLACAS TOMBS

London. Vases from the Blacas tomb

THE BURGON AND BLACAS TOMBS

London E 129

THE BURGON AND BLACAS TOMBS



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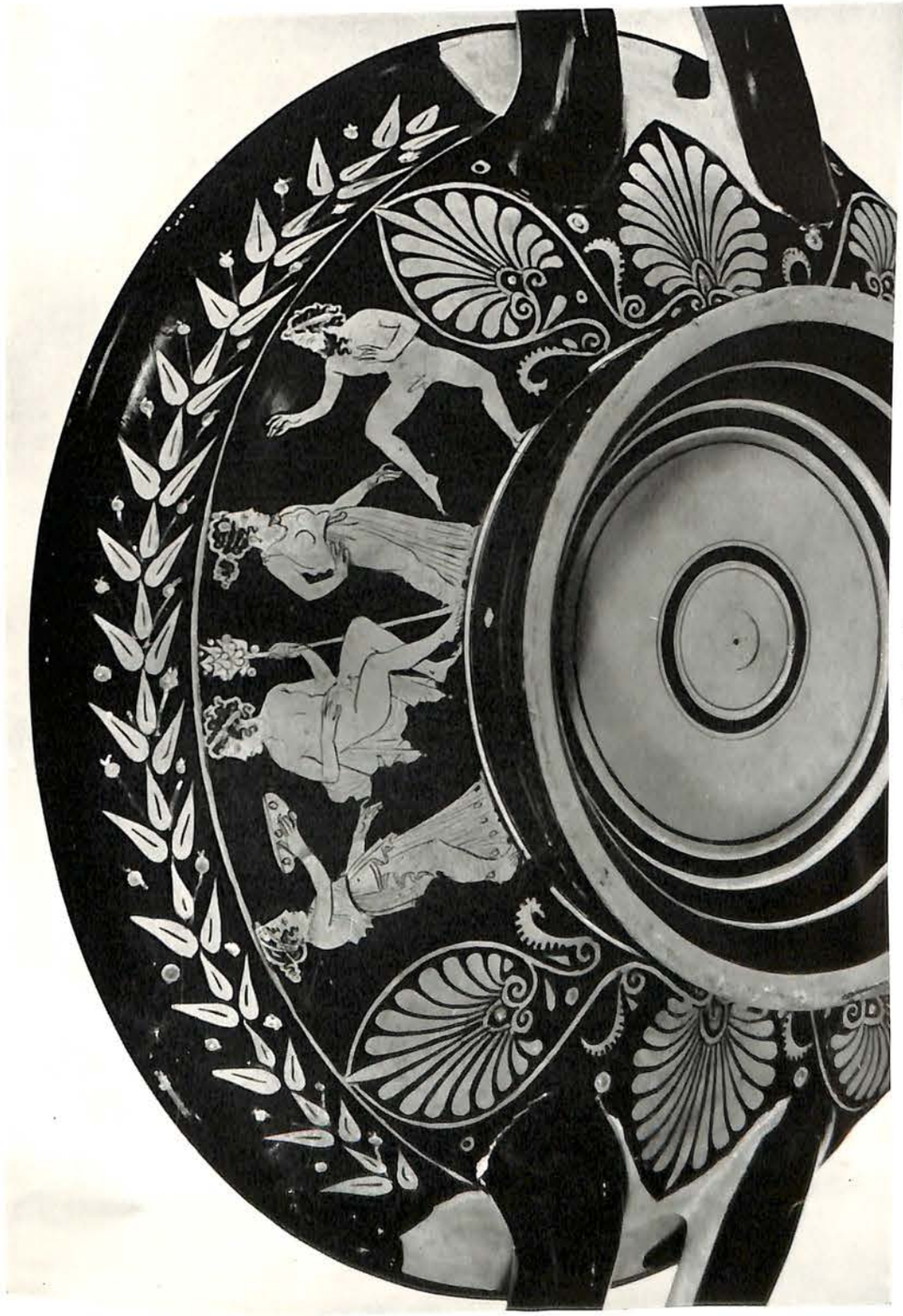

London E 129

2. Stele in London

1. Relief with a Gallus. Rome, Conservatori (Anderson 40112)

Langlotz has shown that in style, in the treatment of drapery, and in the proportions of the figures the sculptured frieze of the treasury shows the same degree of development as the work of the Andokides Painter, the earliest red-figure artist known to us, but apart from the difficulty of making exact comparisons between works in two very different media, it would be hazardous to assert that an Athenian vase-painter and sculptors from the Greek islands reached the same stage in the evolution of their respective arts at exactly the same time; here again there is inevitably an element of uncertainty. On the evidence so far considered it seems wisest, when suggesting absolute dates for Attic vases earlier than the middle of the sixth century, to allow a margin of at least ten years either way.

The relevance of this discussion to the Burgon tomb is that the tomb contained the earliest Panathenaic amphora which has survived;[15] naturally enough attempts have been made to connect it with the change made in the Panathenaic festival in 566 B.C. Langlotz argued that as this change consisted of the addition of an athletic contest to a meeting which already included chariot races, the Burgon amphora, with its racing cart, might be earlier, but that a Panathenaic amphora in Halle cannot antedate the change because it bears a picture of a foot race; he showed that in style and shape there is no great distance between the two vases, so that they cannot be many years apart and may even be contemporary.[16] In view of the uncertainties in the chronology of black-figure, the importance of his conclusions is so great as to justify a re-examination of the foundations on which they are based. Fortunately most of the ancient literary evidence has recently been set out and analysed by J. A. Davison; in what follows a knowledge of his discussion is presupposed.[17]

There are three points which may be relevant to our present purpose; that the Panathenaea was instituted in the archonship of Hippokleides; that the athletic contest was added to the festival in 566–5 B.C.; that Peisistratos established the Great Panathenaea, whereby the various contests were only held every fourth year and the festival as a whole was on a grander scale than in ordinary years. As Davison has pointed out,[18] there is no evidence to connect these three items with each other, apart from the fact that they all refer to changes made to the Panathenaea in the sixth century. The statement about Peisistratos occurs only in the scholiast on Aristeides, who gives no authority; we cannot judge the reliability of his information, but there is no good reason to reject it. As regards the origin of the festival, the ancient sources agree in ascribing it to the earliest times,[19] so it must surely have existed in some form before the sixth century. In addition the Marmor Parium says that at the first Panathenaea Erichthonios 'yoked a chariot and demonstrated the contest', and there is a somewhat fuller account which states that Erichthonios, the inventor of the horse and chariot, 'conducted the Panathenaic festival with care, driving his chariot and having beside him an escort with a small shield and on his head a helmet with a triple crest; and the so-called *apobates* is in imitation of him'.[20] This second passage makes no explicit mention of any race, and the most one can infer from it is that one event, for chariot

[15] In archaeology, as in fishing, little trust can be put in claims about 'the one that got away', but one cannot help thinking of the four vases which the unfortunate Burgon had discarded, and wondering what they were like.

[16] Langlotz, *op. cit.* 9; similarly Ashmole, *Transactions of the International Numismatic Conference*, London, June 30–July 6, 1936, 21 n. 2; Beazley, *Development* 88 ff.; von Brauchitsch, *Die Panathenäischen Preisamphoren* 76–9, while attempting to relate the Burgon amphora to the history of the festival, rejected the connexion with the change of 566 B.C. and assigned it to the earliest years of Peisistratos' tyranny.

[17] *JHS* lxxviii (1958) 23 ff., 'Notes on the Panathenaea'; hereafter referred to as Davison.

[18] Davison, 24 and 29.

[19] Davison, 23 ff.

[20] Marmor Parium, Ep. 10; *ἀφ' οὗ 'Εριχ]θόνιος Παναθηναίοις τοῖς πρώτοις γενομένοις ἅρμα ἔζευξε καὶ τὸν ἀγῶνα ἐδέικνυε. . . .* (Eratosthenes) *Kataster.* 13; *ἦγαγε δὲ* (*sc.* Erichthonios) *ἐπιμελῶς τὰ Παναθήναια, καὶ ἅμα ἡνιόχον* (*ἡνιοχῶν*? Michaelis; *ἡνίοχος* Mommsen) *ἔχων παραβάτην ἀσπίδιον ἔχοντα καὶ τριλοφίαν ἐπὶ τῆς κεφαλῆς· ἀπ' ἐκείνου δὲ κατὰ μίμησιν ὁ καλούμενος ἀποβάτης.*

and *apobates*, was thought to have originated when the festival was founded. The Marmor Parium is, however, direct evidence for the belief that ordinary chariot races formed part of the proceedings from a very early date, and it is surely hard to believe that if in reality they were first incorporated in the festival in the sixth century, their institution could be ascribed to mythical times; moreover, the ancient sources say nothing at all about chariot races when speaking of the changes made in the sixth century. We must therefore still accept the qualification that the Burgon amphora may belong to a year before the introduction of the athletic events, but even so the year 566 does not thereby lose its value as a fixed point, for the conclusions drawn from the amphora in Halle are unaffected.

As for the statement of Pherekydes which comes down to us at third hand in Marcellinus' *Life of Thucydides*, apart from the reservations so rightly expressed by Davison about its reliability,[21] there is the fact that in its existing form it says that the Panathenaea was established in the archonship of Hippokleides; we can only accept this account as it stands by rejecting the strong ancient tradition about the early origin of the festival. Alternatively, it might be claimed that Pherekydes' words have become distorted or curtailed in transmission; for example, some have supposed that the event which he placed in the archonship of Hippokleides was the institution of the Great Panathenaea, but even if this conjecture is accepted (and it is no more than a conjecture), on the present evidence it assigns the archonship of Hippokleides to the time of Peisistratos, and the names on the fragment of the archon list found in the Athenian Agora should make one hesitate to say that he could not have been archon under the tyranny.[22]

For the introduction of the athletic contest in 566–5 B.C., the sole authority is Eusebius.[23] Even if the three pieces of evidence do in fact refer to one event, a single reform whereby the Great Panathenaea, with the athletic contests, was instituted in the archonship of Hippokleides, the result is to date that archonship from the evidence of Eusebius; it in no way reinforces Eusebius' dating. The position would be different if we already had a complete archon list for the period, but as it is the reliability of Eusebius proves to be the important point for our inquiry, since his statement is the only piece of historical evidence for the date of the amphora in Halle, and so for the Burgon amphora. Our confidence in him is seriously undermined by the fact that for a later and more celebrated incident in the history of Athens in the sixth century the versions of his work which have survived are badly out; Jerome dates the murder of Hipparchos to 520–19, the Armenian version to 518. The source of the error is not known, but its presence means that the date 566 cannot be accepted without question; it may be correct, but it too may be several years out, and until further evidence is forthcoming there seems no way to decide. In consequence the same degree of error may be present in the absolute dates which have been deduced for the two early Panathenaic amphorae, and it is therefore necessary to allow for this possibility when working out the chronology of early Attic black-figure.

The second of the two tombs with which we have to deal was discovered by the Duc de Blacas; he was a close friend of Louis XVIII and his favourite minister in the first restoration, but he became so unpopular that Louis could not keep him in France and gave him various diplomatic appointments outside the country. He found some consolation in archaeology, and when he died in 1839 he left a considerable collection which was inherited and augmented by his son; the younger Duc died in 1866 and the collection was purchased from his heir by the British Museum, the negotiations being conducted by the Keeper of the newly created Department of Greek and Roman Antiquities, Charles Newton.

The evidence for the composition of the tomb-group comes from a manuscript catalogue of the Blacas collection which was made before it was purchased. The various objects

[21] Davison, 28.

[22] *Hesperia* viii (1939) 59 ff.

[23] Davison, 27.

are described in detail, so that their identification is certain; no. 51 is the Attic red-figured cup E 129 (*BMC* iii), and the account of it closes with these words, 'Ce qui donne à ce vase, déjà si curieux, encore un plus haut prix, c'est que M. le Duc de Blacas a trouvé dans le même tombeau les quatres vases suivants (52–55), tous ornés de sujets bachiques, s'expliquant les uns par les autres'. Of these vases 52 is F 90, 53 is F 156, 54 is F 129, and 55 is F 130 (*BMC* iv). In his *Guide to the Blacas Museum* (London, 1867) 20, Newton describes E 129 and says of it, 'This cup was found in a tomb at Nola by the elder Duc de Blacas', and he notes that F 90 was found with it; the discovery cannot have been later than 1839.

(1) E 129. Attic red-figured stemless cup. PLATES IV. 2, V–VII. Height to top of handle, 0·090 m. Maximum diameter, 0·247 m. The individual parts of the vase are quite well made, but the body has not been put squarely on the foot, so that there is a difference of 0·004 m. between the highest and lowest points on the rim. I, *JdI* xxv (1910) pl. 4, whence Metzger, *Les Représentations dans la Céramique Attique du IV Siècle* pl. 11; A, *JdI* xxv (1910) 130 fig. 1; B, *ibid.*, 129 fig. 1. *ARV* 873, Meleager Painter no. 42 (characterised as 'Early'). Metzger, 115 no. 11. I, Dionysos with Ariadne and Eros. A and B, Dionysos with satyr and maenads.

Metzger groups together several scenes, including the reverse of the Pronomos krater, as showing the abduction of Ariadne; 'Le jeune dieu imberbe entraîne sa nouvelle conquête dans une course rapide', but it is Ariadne who leads the way and guides the god's steps, his enthusiastic and experienced partner, not a raw initiate.

(2) F 90. Attic red-figured hydria. PLATE IV. 4. Height, 0·391 m. Maximum diameter, 0·265 m. *CVA* pls. 101.2, 102.1. Schefold, *Untersuchungen zu den Kertscher Vasen* 138. *ARV* 874: 'Related to the Meleager Painter'. Metzger, *op. cit.* 54, no. 37. Under the foot, graffito *ΥΔΡΙ*, perhaps to be understood as *ὑδρ(ία)* 1 rather than *ὑδρί(α)*. On the body, chariot drawn by Erotes in the presence of satyrs, maenads, seated women and other Erotes. The passenger in the chariot has a long chiton which reaches well down the calf, the bottom hem being hidden by the side of the chariot; as the Meleager Painter does not normally represent men wearing the long chiton, one might suppose the figure to be female; if so, it is surprising that although she is one of the two central figures she differs from all the other women in having no bracelets or necklace. The drawing of the chest is indeterminate and might serve for either sex, so the evidence is inconclusive. The left-hand winged figure in the top row has a necklace and bracelets, and is therefore female; she must be either Nike or Iris.

(3) F 156. Paestan red-figured hydria. PLATE IV. 5. Height, 0·377 m. Maximum diameter, 0·264 m. *BMC* iv pl. 5 (a drawing). *CVA* IV Ea pl. 3.4. *JHS* lv (1935) pl. 1. Main scene, satyrs and maenads; on the shoulder are two youths and two women, all seated.

The vase is discussed in detail in *JHS* lv (1935) 36 ff. by A. D. Trendall, who amplifies and corrects Walters' account; in his *Paestan Pottery* 11, Trendall groups this hydria with some other vases 'which, if not actually by the Dirce Painter himself, are at least closely allied to his style'. *BSR* xx (1952) 4, no. 27.

(4) F 129. Paestan red-figured skyphos of Attic type. PLATE IV. 3. Height, 0·220 m. Maximum diameter, 0·249 m. *CVA* IV Ea pl. 4.4. *JHS* lv (1935) 49 fig. 9, 38 fig. 1.2. A, two women. B, the same. The ivy-bough and wreath on A, the ivy-wreath and tambourine on B and the taenia in the field on each side surely indicate that these women are in fact maenads; note also that like the satyr on B of no. 5 and the seated woman in the Dionysiac scene on no. 3, the right-hand woman on B holds a pomegranate.

JHS lv (1935) 45–6, 52 no. 13. *Paestan Pottery* 11 no. 5, 12. *BSR* xx (1952) 4 no. 29. Assigned by Trendall to the same general group as no. 3.

(5) F 130. Paestan red-figured skyphos of Attic type. PLATE IV. 1. Height, 0·224 m. Maximum diameter, 0·248 m. *CVA* IV Ea pl. 4, 7. *JHS* lv (1935) 51 fig. 10. A, satyr chasing maenad. B, satyr and maenad.

JHS lv (1935) 45–6, 52 no. 14. *Paestan Pottery* 11 no. 6, 12. *BSR* xx (1952) 4 no. 30. Assigned by Trendall to the same general group as no. 3.

The earliest work of the Meleager Painter can be dated around 400 B.C. or very soon after;[24] for example, the hydria by him which has passed from the Hearst collection to the Metropolitan Museum in New York does not seem more advanced in shape than vases by the Meidias, Kadmos and Semele Painters,[25] and so can hardly be much later than them. The cup from the Blacas tomb is another of his early works; on the hydria, which is not by him but surely comes from the same workshop, the slap-dash drawing and the proportions

[24] The chronology of Attic red-figured pottery from the late fifth century onward is well discussed by Miss Talcott and Miss Philippaki in *Hesperia* Supplement x 7–11.

[25] *ARV* 872, 22; 831–2, 1; 805, 21 and 22; 851, 1.

and attitudes of many of the figures suggest a rather later date. The evidence of the shape points to the same conclusion; in such features as the comparative slenderness of the body and the height of the neck and foot, F 90 is closer to a hydria by the Erbach Painter than to the one by the Meleager Painter which has already been mentioned.[26] For these reasons it must be assigned to the first quarter of the fourth century. The three other vases from the tomb all belong to the same early Paestan group, which Professor Trendall puts in the second quarter of the century,[27] so they may be as much as thirty years later than the cup. It is interesting to note that the vases from another tomb in Campania, some of them in the British Museum, range in time from 490–80 B.C. to around 460 B.C.[28] Here too we have to do with imported vases, and the earliest ones in both groups are the best made; imports and things of good quality are often handled with care and so may be expected to last longer than ordinary products. These two instances are a further reminder of the dangers of laying too much stress on the evidence of isolated tomb-groups. In this connexion it is perhaps worth mentioning a tomb near Trebbia which was opened in the presence of Sir William Hamilton; unfortunately it has not so far been possible to identify all the objects from this burial, so they cannot be presented as a group. The tomb itself is illustrated in d'Hancarville's publication;[29] it contained a bell-krater by the Lykaon Painter,[30] of the third quarter of the fifth century, and the contents seem also to have included an Italiote black-glazed two-handled decanter which looks as if it belongs to the fourth century, and possibly also a Gnathia lekythos and jug.[31] If these objects are correctly identified, the Attic vase must have been almost a hundred years old at the time of the burial.

The two Paestan skyphoi from the Blacas tomb are almost identical in size, weight and capacity, as the following table shows:

	Height	*Maximum diameter*	*Weight*	*Capacity*
F 129	0·220 m.	0·249 m.	4 lb. 3 oz.	6 litres 330 c.c., or about $11\frac{1}{10}$ pints.
F 130	0·224 m.	0·249 m.	4 lb. 2 oz.	6 litres 380 c.c., or about $11\frac{1}{4}$ pints.

They are obviously a pair and were surely made by the same potter. Their size makes it unlikely that they were ever intended as drinking vessels, for they hold more than many small bell- and calyx-kraters; no doubt they were used for mixing.

Dionysiac subjects are of course extremely common on Greek vases of the fourth century, but not to the exclusion of all other themes, and the fact that all five vases from this tomb represent Dionysos or his followers is perhaps the result of deliberate choice, and not fortuitous. The pictures may simply reflect the convivial habits of their owner, but one cannot help recalling that in Greek belief there was a connexion between Dionysos and the world of the dead;[32] it is therefore just possible that these vases were selected as funeral furniture because the figures on them were felt to be appropriate to the grave.

British Museum.

P. E. CORBETT.

[26] I am indebted to Sir John Beazley for permission to quote this attribution from his unpublished *Paralipomena to ARV*. This hydria, too, has passed from the Hearst collection to the Metropolitan Museum, and I am grateful to Dr von Bothmer for the opportunity to study both vases and for photographs of them.

[27] A. D. Trendall, *Vasi Antichi del Vaticano* i 25.

[28] J. D. Beazley, 'The Brygos tomb near Capua', in *AJA* xlix (1945) 158.

[29] D'Hancarville, *Collection of Etruscan, Greek and Roman Antiquities from the Cabinet of the Honble. Wm. Hamilton* ii engraving on p. 57; an account of the discovery, iv 42–3.

[30] d'Hancarville, ii pl. 74; *ARV* 691 no. 8.

[31] d'Hancarville, iii pls. 32–3, 63.

[32] *BCH* lxviii–ix (1946) 296 ff., H. Metzger, 'Dionysos Chthonien'; *JdI* lxviii (1953) 38 ff.

UNWIN BROTHERS LIMITED, WOKING AND LONDON

PANATHENAIC 24.VII.80

11.01

Early Panathenaic

Burgon amphora

Cfield fig. 299 (from M. Moore)

2.VII.84

I have just succeeded in finding the picture of this object again, via The Dev. of BF.

KEEP THIS REF. IN FRONT

(The B. Panathenaic does not look very convincingly like any of the Attic ? oil jars, in "golden jar" (P 12760) and related, 9th lots earlier.)

24.I.80

11.02

New Panathenaics

MSTT tell me some, whole ones, found by Themelis in Eretria in recent years – ca 1974.– on exhibition in the N. Museum, upstairs with the pottery. Say 4 or 5, together on a stand. Maybe there are others in the storeroom from the same place. Those shown have different pictures and archons.

ISABELLE K. RAUBITSCHEK

THE HEARST HILLSBOROUGH VASES

Anläßlich der 90. Jahrestagung des Archäologischen Instituts von Amerika, die im Dezember 1969 in San Francisco abgehalten wird, haben Herr und Frau Randolph A. Hearst sich zur Ausstellung ihrer siebenundzwanzig zum größten Teil unveröffentlichten griechischen Vasen im Stanford University Museum bereiterklärt, die im Jahr 1962 mit größter Sorgfalt unter Beratung von Dietrich von Bothmer aus der ehemaligen Sammlung ihres Vaters, William Randolph Hearst, ausgewählt worden waren.

Diese konzentrierte Auswahl repräsentiert somit wichtige Epochen der griechischen Vasenmalerei mit vierzehn attischen schwarzfigurigen, sieben attischen rotfigurigen und sechs süditalischen Vasen.

Der Katalog wurde unter Mithilfe von Dietrich von Bothmer und T. B. L. Webster zusammengestellt.

Format 20 x 26 cm, etwa 100 Seiten englischer Text mit mehr als 100 Abbildungen, Leinen, DM 56,—.

VERLAG PHILIPP VON ZABERN · MAINZ/RHEIN

Erschienen im Herbst 1969

ISABELLE K. RAUBITSCHEK

THE HEARST HILLSBOROUGH VASES

THE HEARST HILLSBOROUGH VASES

To honor the ninetieth annual meeting of the Archaeological Institute of America, to be held in San Francisco on December 27-30, 1969, Mr. and Mrs. Randolph A. Hearst have generously loaned for exhibit at the Stanford University Museum their for the most part unpublished twenty-seven Greek Vases.

These had been judiciously selected in January, 1962 with the aid of Dietrich von Bothmer from the estate of the father, William Randolph Hearst.

The Randolph A. Hearst Collection is representative of the history of Greek vase painting as it contains fourteen Attic blackfigured vases, seven Attic red-figured vases, and six South Italian vases.

The catalogue has been prepared with the assistance and with the advise of Dietrich von Bothmer and T. B. L. Webster.

Size 20 x 26 cm., about 100 pages of English text with more than 100 illustrations, linen, DM 56,—.

Published Fall 1969

PHILIPP VON ZABERN · MAINZ/GERMANY

PANATH.

16. XI. 68

11.05

On Panathenaics

See Agora X, p. 59, with note 9

11.06

7.I.08

Panathenaic capacities

GRE to LT, 31.XII.57:

"Have just handed back the page proof of the Panathenaics to Lucy Shoe. It will seem strange . . . . temptation to add more to it. Have recently uncovered much data about capacity measurements compiled by various people in the 1829's and 1830's including August Boeckh, P. O. Brönsted, Burgon and "young Mr. Burgon". Dietrich is kindly cooperating in identifying the Panathenaics which they measured, and I much hope that when the pieces, their dates and measurements are all assembled that he and/or Mabel will do a modernized account."

(X) G. R. Edwards, "Panathenaics & Hell. Panathenaic Time," Hesp. 1957, pp. 320-349.

1607

PANATHENAIC CAPACITIES

(To Peter Corbett
Brit. Mus.)

July 25, 1957

Dear Peter,

You may possibly remember that when you were preparing your *Hesperia* 1960 article, we found among the uncatalogued stamped amphora handles a helpful parallel for your publication no.106, but that it vanished again into its heap of anonymity.

Moving here gave us an occasion to search again through the unnumbered, and I think the object of wh which I enclose a photograph, now become SS 14221, is probably what we wanted. In case you retain any interest in the matter, I send it to you.

The pots are looking nicer and nicer as Lucy lays them out in their glassed cabinets; you must come soon and see them.

I have been interested in news of your recent experiments in measuring Panathenaics, and should be grateful if you would make an extra carbon copy for for me the next time you issue a bulletins on the subject.

Yours,

11.08

STANDARDS

In re Panathenaics

From letters of P. Corbett, British Museum, to GRE, University Museum

"18th June, 1957

We began an attempt to measure the capacity of our intact Panathenaics, but have run into a difficulty. The laboratory solved the problem of avoiding damage ~~x~~ by tipping an amphora when full of water by standing it on a scale, and weighing it empty dry, full, and empty wet. Unfortunately the vase concerned was found in North Africa; its surface was much pitted, and as the water rose inside, the surface of the jar began to weep, with quite a strong flow in places. Worse still, a number of small flecks of glaze - already loosened no doubt by the formation of crystals, though still adhering - were forced away by the water percolating from the interior. Mercifully the picture was not affected, but as our other two intact Panathenaicx also have pitted surfaces, I dare not risk repeating the ~~perfrmmn~~ performance. If only the glaze were in good condition it would be another matter. As it is, we shall have to equip ourselves for dry measuring, and this may take a little time: small plastic balls are perhaps the best bet, but we will have to find out what is available, and at what price. Provided we can find a satisfactory medium we will at least be able to re-measure the one which we filled with water, and compare the results reached by the two methods."

"2nd July, 1957

"I have now the results for our ill-fated measuring of the Panathenaic amphora B. 605: it was filled to the level of the angle in the interior where the mouth springs out from the neck. Cubic capacity 8.4 gals (38.1 litres). In addition, the body of the amphora absorbed 3 lbs. of water (1.36 k). I have no word yet about finding some method of dry measuring for the others. One snag seems to be, who will pay for the quantity of small plastic balls that are the only satisfactory medium so far suggested.

Would you pass these figures on to Mabel Lang, as I had originally promised her I would have the measurements taken. If either you or she should want to use these figures in publication, it would be proper to put in a note of acknowledgment to the Laboratory of the British Museum for producing them."

Note: B 605 is a prize (i.e. inscribed ton Athenethen athlon) Panathenaic. Beazley, ABV, p. 411, assigned to the Kuban Group. In AJA, 1943, p. 453 Beazley says; "Susserott (pp. 69-72 and 205-206) has shown good reason for connecting the use of the Tyrant-slayers as shield device on London B 605 with the restoration of democracy at Athens, and assigns the vase to the year 403/2."

GRE

(copied by Guy)

Com into corresp with GRE & LT, 5.VII.57

11.09

30.XI.53

Panathenaic jars

Pf. von Brauchitsch, Die Panathenäischen Preisamphoren 1910, gives measurements of ht. : diam., quoted by M. Lang in note 22 (p. 26, note 1, as published) of her article (ms I know) on the Thasian *affiche*. Average ht. 63.3, average diam. .42 (four given, range from .40 to .45). She figures that the capacity would work out to one metrete (= 38.901 to 38.980) (her p. 4): "It seems right and fitting that the Panathenaic amphoras of the earliest fifty century should hold Solon's time the early fifty century does and have dimensions which are simple multiples of those of the clows."

Somewhere I am pretty sure there is a ref. to a Panathenaic as a measure.

Investigate in Bengly. The Deed. of Bf. (p. 116, note 4, on text p. 89).

And consider entries in the "Attic Stelai."

11.10

Note to Miss T. Grace:

In re Athenian stamped amphorai:

Suggest that someday when you come to contemplate these handles it might be worthwhile to get out the handles found in the Bouleuterion Plateia and vicinity (e.g., P 5909 - 10), and the amphora fragments from Beta Wells 15/Lambda Delta and Well to West of Tholos (Beta containers 72 to 92, passim, and 262-269, passim), and see if joins cannot be found.

Both wells seem to have been filled with material from a Tholos disaster (broken public measures, DEMOSIA tiles, inscription frr., etc.) and similar material was found in the Plateia.

Also contemplate catalogued amphorai from these wells in this connection: P 4422.⊗ It might, though I doubt it, be worthwhile to cast a glance at those from Well 33/KD: P 4392-93, 4395

(GRE)

⊗ The big "Menelaos"

30.IV.60 M. Lang has returned this paper. She says she has looked at these (etc.?) and there is nothing useful.

27.VI.56

11.11

V. FitzR. G.:

Whibley, L., ed., A Companion to Greek Studies, 1929 edition, p. 533, says:

> The contents of Panathenaic amphorae vary from 38.39 to 40.34 litres.

Have been unable to track down the source of this statement, which would be of interest to a number of us. Think we need to ~~xxxxxx~~ know which measures what and of what period.

Possibly the source is Viedebantt, O., either in

> Forschungen zur Metrologie des Altertums (Abh. d. phil.-hist. Klasse der k. Sachs. Gesell. d. Wissensch., XXXIV, iii, (1917))
>
> or in:
>
> Antike Gewichtsnormen und Munzfusse

Would you be willing to supply me with capacities of the undecorated amphorae of the shape related to the Panathenaics?

Gold $ P 20 36,

Bank $ 34,

R/

12.03

ient History,

D. 10.

1. 68

AJA 1958

Potter

me

by

f

ying

be

very glad to know since I am

12.016

C 15. Detail of a Late Geometric amphora. Attic, *c.* 700 B.C. ~~c2:3~~

Ashmolean Museum, Oxford

OXFORD 11-45 AM 25 AUG 1970 A

25 August 1970

Dear Miss Grace,

I had meant to drop you a line or two much earlier, but with one thing and another... I suppose, then, I have never properly thanked you for your help and advice last winter. Work on SOS amphorae has continued, if intermittently, (there are some fragments here at Oxford) and I found many new ones in Sicily. Eschia excavations were very successful - as you have probably heard from one source or another. I hope you and everyone else at the Agora are well - regards especially to Bill, Dinsmoor + Polly. (and the cats!)

Yours

Jeff K.

Engraved and printed by
Henry Stone & Son (Printers) Ltd., Banbury

Mail

5p

MISS VIRGINIA GRACE
% AGORA EXCAVATIONS
A. S. C. S.
SOUIDIAS 54
ATHENS 140

GREECE

J.
M. G. KLEIN

12.02

XI. 69

(please return to

Miss Virginia Grace)

2. Klein wrote to Hoffman

I wrote him on 18 December:

I said I was working on the problem and asked what progress, if any, he had made. Also offered to exchange bibliography if he was still interested.

SOS JARS

12.03

Dept. of Ancient History,

THE UNIVERSITY,

SHEFFIELD, 10.

TELEPHONE No. 78555

31. 1. 68

Dear Miss Grace,

Could you inform me if any work has been done by way of collecting a Corpus of "SOS" Attic amphorae, & studying their distribution? I would be very glad to know since I am

interested in the matter myself, and

have a student concerned with

early trade.

Yours sincerely,

R. J. Hopper.

E. Braun, Hesp. 1960, p. 143, under R 3; and esp. Hesp. 1961, p. 318, p. 338-9, under F 40-42, with bibliography

Agora VIII, pp. 32-34, under "Storage Jars"

With best wishes

13

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THE 'SOS' AMPHORA*

(PLATES 16–18)

I DISCUSS here some features of the type of storage amphora dubbed 'SOS', a large semi-decorated container in use from the later eighth to the first half of the sixth century B.C., and found at a large number of sites around the Mediterranean and beyond. In particular, the evidence of clay analyses carried out at the British School by Richard Jones will be adduced to confirm the Attic origin of the majority of these vases, while other centres of production will be reviewed. I also treat briefly the shape and decoration of the type and the inscriptions which the vases often carry. Other scholars are working on different aspects of the SOS amphora and I have therefore restricted my comments here; similarly, I do not treat at length material which is in course of publication, leaving closer discussion of dating especially to the excavators concerned.[1]

1. SOME UNPUBLISHED MATERIAL IN ENGLISH COLLECTIONS

1 University College London. Sherd from the shoulder of an amphora, presented to the museum by Mrs. Vronwy Hankey (PLATE 16a), maximum dimensions 21·3 × 11·7. I, FIG. 1(*a*). The wheel marks on the inside indicate a position high on the shoulder. Clay well prepared with a few large inclusions, some of which have spalled; biscuit pinkish buff. Surface worn with only scraps of dark glaze remaining, but enough to show that the vase was glazed on the wheel. A small dark inclusion taken from the right edge has been indentified as iron oxide.[2]

* Parts 1, 2, 4–7 of this article are wholly the responsibility of AWJ; part 3 is a joint production of AWJ and RJ.

Throughout, numbers in bold print refer to the samples listed in TABLE 1. In the catalogue entries in parts 1 and 2 the following abbreviations are used for measurements (all in cm.):

H	height	D	greatest diameter
Hl	height of lip, above ridge	Dl	diameter of lip
Hn	height of neck, below ridge	Df	diameter of foot

For sherds the width is given before the height. After dimensions there follows an indication of the neck decoration, the key to which is given on p. 135–6. Next comes mention of any inscription, I, followed by the suitable reference. 'Ridge' and 'band' refer respectively to the neck profile and the decoration of the shoulder. The dating 'early' 'middle' and 'late' apply to the periods 725–675, 675–625, 625–575 approximately. For the distinction applied here between SOS and 'à la brosse' amphorae see p. 121.

The following non-standard abbreviations are used:

Arch. Sic. S-O = P. Pelagatti and G. Voza (edd.), *Archeologia nella Sicilia Sud-orientale.*
GGP = J. N. Coldstream, *Greek Geometric Pottery*, London 1968.
LSAG = L. H. Jeffery, *The Local Scripts of Archaic Greece*, Oxford 1961.
Brann = E. Brann, *Hesperia* xxx (1961) 93 ff., 305 ff. (catalogue nos.).
Strøm = I. Strøm, *Problems concerning the origin and development of the Etruscan orientalizing style*, Odense 1971.
Villard, *BAM* = F. Villard, *Bull. Arch. Maroc.* iv (1960) 6 ff.
Young = R. S. Young, *Hesperia* suppl. ii, especially 210–1.

I am grateful to the Managing Committee of the British School and the Arts Faculty of University College, London for assisting me in this work. I am also indebted to many individuals, in particular: D. Adamesteanu, D. Akehurst, O. Alexandri, M. Almagro Gorbea, G. Buchner, A. Choremis, B. F. Cook, G. R. Edwards, M. Gras, P-G. Guzzo, A. Indice, M. H. Jameson, V. Karageorghis, E. Lattanzi, J. de Hoz Bravo, P. R. S. Moorey, I. Nikolaou, P. Pelagatti, E. Protonotariou-Deilaki, D. Ridgway, F. Roncalli, A. Sampson, T. L. Shear Jr., F. Willemsen, C. K. Williams III, I. Zervoudaki.

[1] The most recent review of the SOS type, by Strøm, gives a fuller bibliography than I have selected here. The treatments by Brann, l.c. and *Agora* viii 32–3, Strøm, Villard, and Young are all sound and I have only a few chronological modifications to add to them. B. B. Shefton will be dealing with questions of the distribution of the amphorae and J-P. Descouedres the material from Eretria and associated matters. Excavation reports which will be of importance, especially for dating, are expected for Chalkis, Kition, Pithekoussai, Metaponto, Policoro and Kamarina; only preliminary notices of these finds could be cited below.

[2] I am grateful to Dr. R. Seeley for having the piece examined.

The provenance of the sherd is Cerveteri, where it was found in 1947. Much suggests that it comes from an SOS amphora: the size of the vase, the thickness of the wall (1·1 to 1·3 cm.), the wheel-glazed surface, and more significantly, the clay analysis (TABLE 1) and the graffito inscription.

The retrograde inscription is likely to have begun in the vicinity of a handle on the right. The central letters require little comment; from pl. 16a it may appear that the *rho* is tailed (a rubbing or latex cast would give the same impression), but the 'tail' is not intentional, being wholly the result of surface damage. On the right edge a single stroke is preserved before the *mu*, from either a *kappa*, *nu*, *sigma*, *upsilon*, or *chi*, assuming an Attic script. *Sigma* is clearly the most likely candidate. On the left, the last well-preserved letter is a *mu* or *nu*, but the former is ruled out by the lack of space before the following letter; this in turn can only be a *theta* or *omicron*. Finally there is a diagonal stroke which could belong to a range of letters. Taking into consideration the fact that all parallel alphabetic inscriptions on 'SOS' amphorae from Cerveteri are genitive forms of personal names, with or without εἰμί (pp. 128–9), we may choose *omicron* for the penultimate letter, which leads to *sigma* for the last. The whole will then read Ϝμιφρονος, although the niceties of dotting may be contested.

The lettering is in bold, fairly neat strokes; the edges are ragged, more so on the left than the right, but the strokes end abruptly with no tendency to tail off. Some verticals fall away to the right, arguing a right-handed inscriber. The inscription was clearly cut after firing.

The sherd cannot be closely dated of itself, though the streakiness of the glaze points to a later date.

2 British Museum 1848.6-19.9, from Vulci (Canino; see *CIE* 2 p. 141). Beazley and Magi, *Raccolta Guglielmi* 50–1; *LSAG* 77, 10*d* and 374 (the inventory number wrongly transferred to 3). PLATE 17a, b, d and FIG. 2(*a*). H 68, Hn/l 6·5/6·5; D 52, Dl 22·5–23·3, Df 19. O,S,O. I, FIG. 1(*b*), (*c*), (*d*). Weight empty 17 kg.; capacity to rim 63·75 l., to base of neck 61·75 l.[3] Clay and biscuit typically Attic. Very slight ridge. Body streakily glazed, fired orange in patches, with one small contact mark at the greatest diameter.

On the shoulder on one side is an abandoned attempt to inscribe a name (FIG. 1(*b*); after cutting three letters the inscriber began a *rho* instead of an *omicron* and gave up, although it would not have been difficult to cover the error. We may also note that he gave the *rho* two loops, one big and one small. On the other side (FIG. 1(*c*)) there are two further attempts at the name, seemingly in different hands, with shorter verticals and a rather wider graver in the first attempt. It is interesting to note why this went wrong: after cutting the *nu* the inscriber began an *omicron*, but went on to complete it as a *sigma*; it would seem that he mistook the section of a circle which he had already cut for the upper part of a *sigma*, a possible hint of the use of more cursive letter forms—? on perishable materials—at such an early date (see also **21**, FIG. 7(*h*)). Below the third, successful attempt at Archon's name, there is a further enigmatic graffito (FIG. 1(*d*)), possibly abandoned because of lack of space since it runs right against the handle root.

The lettering seems later that that of **1**, with shorter verticals and larger rounded letters. **1** in turn seems epigraphically earlier than most of the pieces from Cerveteri, **2** more or less contemporary. On this evidence we may place **2** around 600 or a little after, and **1** in the later seventh century.

61 Ashmolean 1954.482, from Al Mina (MN 2–61). Rim sherd. (PLATE 17*c* and FIG. 2(*b*)).

[3] The vase was placed in a tank and water introduced both outside and inside to relieve pressure on the walls. Although this procedure would have kept to a minimum the amount of water absorbed by the walls from the inside we should none the less make some allowance for this in thinking of the capacity of the vase.

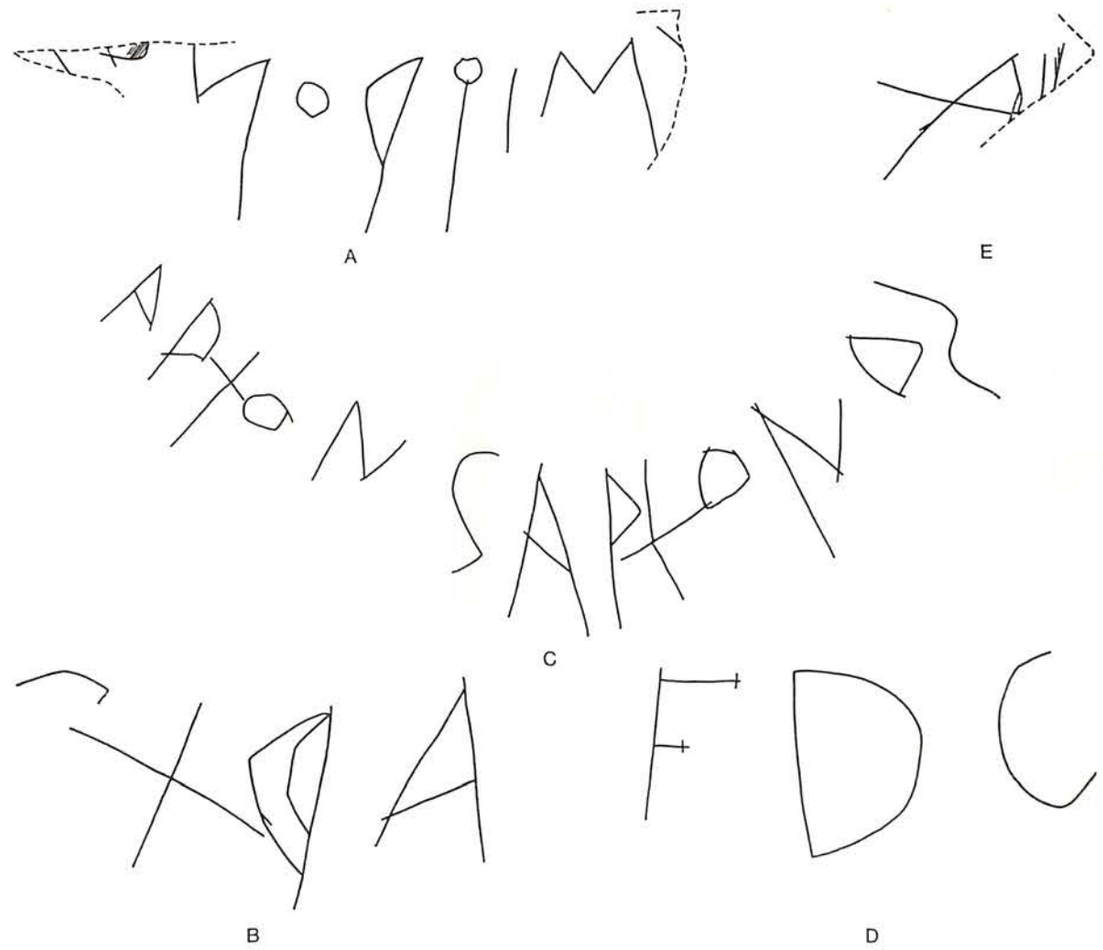

FIG. 1. Graffiti on shoulders of 1(*a*) and 2(*b–d*). Scale 1:2

Pres. H 8·5; Hl 3·7. Pale buff clay and slightly lustrous glaze. Prominent ridge, decorated with a row of dots.[4] Profile and decoration suggest a very early date, *c.* 730.

60 Ashmolean 1954.481[1], from Al Mina (level 5). Neck sherd. (PLATE 17*e* and FIG. 2(*c*))[5] Pres. H 8·5. .]Oa,Sb (reversed). Traces of handle attachment on right. Red and white inclusions in clay. The sherd is noteworthy because of the very clean breaks top and bottom, suggesting that lip, neck, and shoulder were thrown separately. The shoulder join is not easy to ascertain; it seems to have been at a very sharp angle to the neck. Late; the context is down towards the end of the seventh century (see Strøm 236).

[4] Despite this added frill to the decoration I have little doubt that this fragment comes from an SOS amphora; profile, size, and the rest of the decoration are sufficient to demonstrate that. It is unfortunate that it has no useful stratigraphic context.

[5] I owe the profile drawings of Ashmolean 1954.481[1] and [2] to Mrs. Pat Clarke.

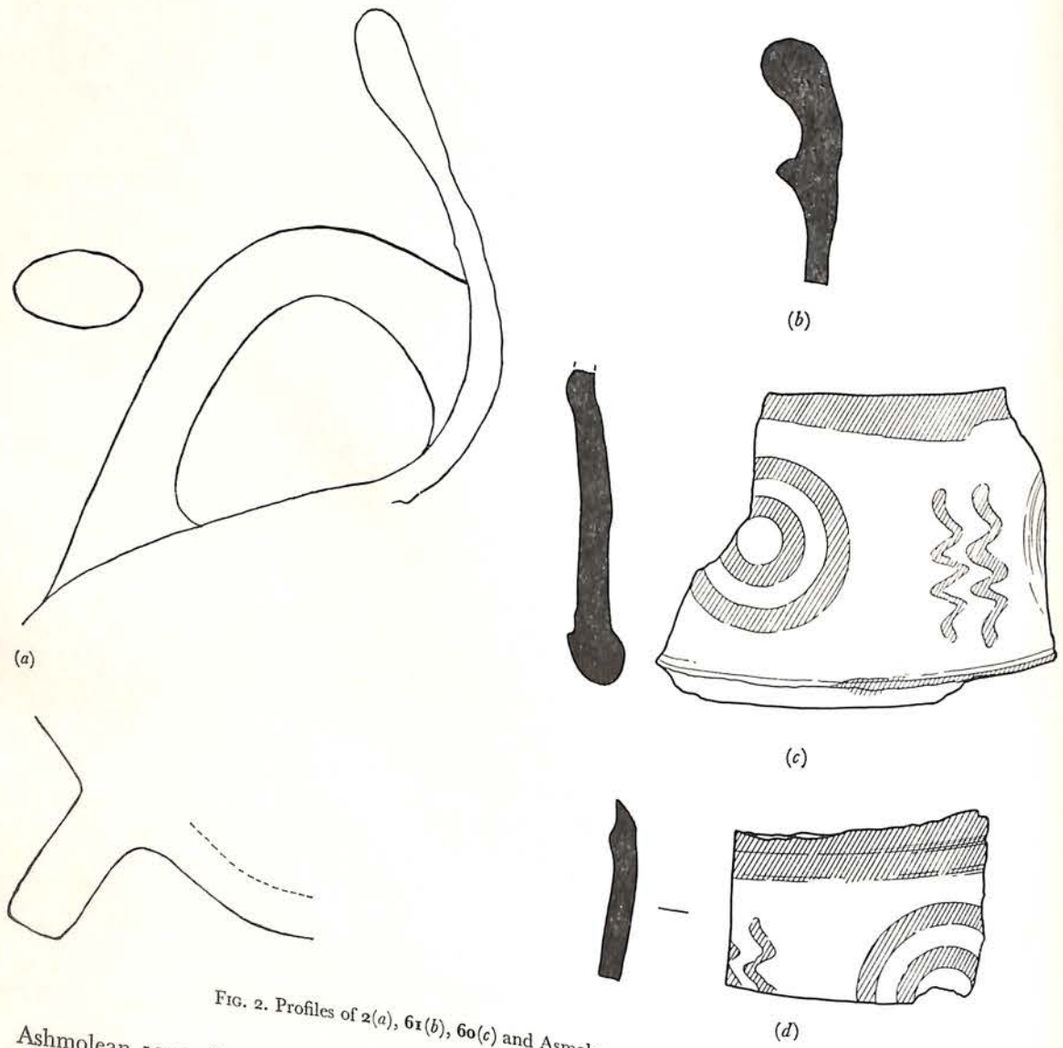

FIG. 2. Profiles of 2(*a*), 61(*b*), 60(*c*) and Asmolean 1954.481[2] (*d*). Scale 1:2

Ashmolean 1954.481[2], from Al Mina (level 5). Neck sherd. (PLATE 17*e* and FIG. 2(*d*)). 7×5·5 Parts of Sa,O preserved. Slight ridge. Context as **60**.

Ashmolean 1956.507, from Al Mina. Wall sherd. (I, FIG. 1(*e*)). The fabric is not surely Attic. The following pieces from Al Mina came to my attention too late for them to be illustrated here and to be included in the subsequent discussion:

British Museum 1968.3-25.87 (MN 8). Three joining sherds giving most of upper parts with spring of one handle. Hn/l 6·5/5·5, Dl 21·5. O,O. Slight ridge, flattened handle. Buff-tan clay with red and white inclusions; purplish brown glaze. Late, close to Agora P22734 (**73**); the piece cannot be as early as the level 8 (terminal date *c.* 720) which is ascribed to it.

British Museum 1968.3-25.88. Neck sherd. Pres. H 8·5, pres. width 8·3. O,T preserved, with at least two bands below. Pinkish buff clay with red inclusions, much lighter, creamy surface; heavy, close-set ridging on inside. Early to middle.

British Museum 1970.8-27.1. Neck sherd. Pres. H 6·5, pres. width 9. One stroke of an S preserved, then O. Buff clay with red inclusions; orange-brown glaze. Thin-walled neck and sharply angled shoulder (cf. **60**). Late.

British Museum 1970.8-27.2. Neck sherd. Pres. H 7, pres. width 12·3. Part of Sc? preserved to left of traces of handle attachment. Orange-buff clay and streaky chesnut glaze; shoulder as above. Late.

British Museum 1970.8-27.3 (MN 8, Rm 8). Neck sherd. Pres. H 6, pres. width 9·7. Part of W preserved (quarter circle and scrap of spoke). Fine orange-buff clay and dull dark glaze. The profile is fairly straight and the piece could be early enough for the marked level.

British Museum 1970.8-27.4. (MN 6-7). Shoulder fragment. Pres. H 6·7, pres. width 5. Light curvature; reserved band 3·5 high with four thick lines on it. Dull umber glaze. Middle?

British Museum 1970.8-27.5. Shoulder fragment. Pres. H 8·1, pres. width 7·7. Fine orange-buff clay, streaky dark brown glaze. Single reserved band 0·7 high. Late.

British Museum 1970.8-27.6. (MN 8). Shoulder fragment. Pres. H 11, pres. width 11·2. From upper part of shoulder; reserved band 4·4 high with four narrow lines on it. Gingery tan clay, glaze worn. Early.

British Museum 1970.8-27.7 and 1970.8-28.1. Two small body sherds from large closed vases. Attic clay. Probably from SOS, undatable.

British Museum 1970.8-27.8 (MN 5-6). Neck sherd. Pres. H 7, Hn 5·4, pres. width 8. . .]Oa[. . Well polished light buff surface, red and white inclusions in clay; glaze fired light to mid chestnut. Late, probably before 600.

The chief points of interest here are the difficulties of reconciling the level marked on at least one of the sherds with its typological date, and the varieties of decoration found at the site, W and O,T in particular. The numbers of amphorae sent to Al Mina throughout the period of production (save the latest years?) may have been substantial.

2. THE MATERIAL

The following catalogue lists all SOS amphorae and fragments known to me; I make no claim to completeness in view of the immense task of collecting all the relevant sherds stored in the basements of the larger archaeological museums. I give basic details as explained in the introductory note and add other significant observations, but I intend the list to be supplementary to, not a replacement for previous publications. The listing within each area is roughly chronological.

Attica

Large numbers of vases and fragments have been found in Athens and at Phaleron.

The Agora

71 P23883. Brann R3; *Agora* viii 23. Vase. H 72; Hn/l 6/5. D 46 Dl 18·7; Df 16·5. Sa,O,Sa. Early; context into the early seventh century.

69 P21430. Brann P3; *Agora* viii 25. Neck. Hn/l 8/4; Dl *c.* 18. Sb,O,Sb. Striped handles. Early; context into early seventh century.

63 P10619. *Agora* viii 26. Neck. Hn/l 6·7/5·8. Dl 18·5. S,O,S. Middle; context down to mid-seventh century.

P7185. Young C127. Fragmentary vase. Pres. H 68; D 54. Sld,T,Sld. Upper part of inside of neck glazed. Lip offset, rather than a ridge between neck and lip. Middle.
P8374. Young C129. Lip frag. Hl 2·7. Sd?,[.],Sd.
P8375. Young C131. Neck frag. .]W[. . Some mica in the clay.
P8376. Young C130. Neck frag. .]W[. . The thin wavy vertical to the left of W may be accidental.
P8377. Young C132. Neck frag. .]W[. . Heavily ridged inside.
P8378. Young C128. Neck frag. .]T[. .
P8379. Young C133. Foot, slightly flaring. D 14.
P4664. Young B56; *Agora* xxi D4. Wall sherd. I, *Agora* loc. cit. Sherd used as label. Context seventh–sixth century ('seventh century', *Agora* loc. cit., seems rather the assumed date of the vase).

64 P12598. Agora viii 27. Neck and handle. Hn/l 6·3/5·7. Dl 24. Oa,Oa,Oa. Later; context down to *c.* 625.

66 P15096. *Agora* viii 33. Neck and shoulders. Hn/l 7/7. Dl 21. S,O,S, very carelessly painted. I, as *Agora* loc. cit. Ridge; flattened handles. Later.

70 P23464. Brann G37. Neck. Hl 5. Dl 21·3. Oa,Oa,Oa. Later; context towards end of seventh century.

72 P22733. Brann F40; *Agora* viii 24. Vase. H 65·5; Hn/l 5·5/5·5. D 50 Dl 22; 22; Df 16·5. Oa,Oa. Late; context down to *c.* 575.

73 P22734. Brann F42. Upper parts. Hn/l 6/6. Dl 23. O,O. Context as **72**.

74 P22735. Brann F41. Upper parts. Hn/l 7/5. Dl 25. O,O,O. I, as Brann. The flattened handles have a slight central ridge, just observable on **72** also. Context as **72**.

67 P17356. Brann H46. Neck and shoulders. Hn/l 7/5. Dl 23. Sa,O,Sa. I, *Hesperia* xxv (1956) 2–3. Late; context into sixth century.

68 P17400. Brann H45. Restored vase. Rest. H 66; Hn/l 8/5. Rest. D 50; Dl 22·5; Df 17·. S,Oa,Sa. Context as **67**.

65 P14691. *Agora* viii 33; *Agora* xxi F7. Neck and shoulders. Hn+l 12·5. Rest. Dl 19. Sa,O,Sa. I, as *Agora* xxi loc. cit. Single band. Very late; context into second quarter, sixth century.

62 P666. *Agora* viii 28. Neck. Hn/l 5·5/6·5. S,Oa,S; one side has three-bar sigmas. Many white inclusions. Very late; context into first quarter, sixth century.
P9837. *Agora* viii 33. I, loc. cit.
P21700. *Agora* viii 33. I, loc. cit.

I have not seen the last two. I note also Brann's statement that Well G produced fragments of several other storage amphorae. Young, grave VI, 1 is a neck-amphora with SOS syntax (the body is wholly glazed, the handles striped). The excavations have also yielded 'à la brosse' amphorae, e.g. Young, grave II, 1 (P4599) and *Agora* xii 1501–2 (P4599 and P1253).

The Kerameikos

75 inv. 1298. *Kerameikos* V i pl. 38. Vase. H 67·5; Hn/l 8/5. D 43; Dl 17·5; Df 13·5. Sd,O,Sd. Early; tomb of LG Ib–II.

78 VD gr. 32. Lip and neck frag. Hl 4·4; Dl *c.* 16. Sd,O,Sd. Early.

82 (1940 südl. antidosis). Sherds of upper parts. Hl. 4·5. S,O,[S; although only of four bars the sigmas reach the bounding lines, top and bottom. I, a shoulder fragment preserves part of a single sign. Early.

76 inv. 1723. Vase, upper parts much restored. Rest. H 70·7; Hl *c.* 4. D 47; Df 14. O,O. Early to middle.

79 VD, neck fragment. Hn *c.* 7. Sc],O,Sc. Early or middle.

84 K59 (excavated by Gruben, 1959; at present on top of a display case in the museum). H 73; Hn/l 6/5·6. D *c.* 45; Dl 22·5; Df 15·5. Sa,O,Sa. Middle.
SH. vase, much restored. H 66·3; Hn + l 11·5. D 47; Dl 21·3; Df 16. O,O. Middle.

77 VD gr. 8. Two non-joining frags. of shoulder and neck. Sa,Oa preserved on latter. Middle to late.

80 unnumbered. *LSAG* 77, 10*e*. Rest. H 67·5; Hn + l 11·5. D 48; Dl 21·5. Sa,O,S. I, FIG. 7*a*; under the *rho* is inscribed a single damaged letter, perhaps a *gamma* or *alpha*. Slight ridge. Late.

81 inv. 1932. Vase. H 65·5; Hn/l 6/6·5. D 44; Dl 20·5; Df 17·5. Oa,Oa. Very streakily glazed and fired red. Late.

83 K29. Vase, lip restored. Rest. H 67·5; Hn 7·5; D 43; Df 16·5. Sb,O,Sb (careless five-stroke S). I, to left of one handle, perhaps two signs, very difficult to read because of breaks and wear. Single band; very streaky glaze. Late.

Some pieces published under the title SOS do not seem to belong: *AM* lxxxi (1966) 14, 22, late fragments; the red lines on the foot are foreign to the type. Ibid. 15, 25, two vases, the upper parts lost; there is no band on the illustrated example, Beil. 18,5, and without the upper parts it is not possible to separate such late vases from the 'à la brosse' variety. Ibid. 115, 208, Beil. 65,3 (context late eighth century) is closely related to the SOS type, notably in its size (H 71·5; Dl 21·5) but the lip and neck profile is that of the normal neck-amphora.

Acropolis, south slope

1959–NAK 1105. *ADelt.* xxviii (1973) A 54 and pl. 40 *st.* Neck and lip sherd. Sd?,O[., the S carefully painted. Early to middle.

Trachones

AM lxxxviii (1973) 51 and pl. 21,2. Vase. H 66·8. D 48. Sa,O,Sa. Low set shoulder band. Early to middle; grave goods do not suggest closer dating than 700–650.

Athens, elsewhere

Odos Sapphous gr. XX, storeroom of 3rd Ephoria. Vase. H 71·5; D *c.* 45. O,T,O. No ridge. Late.

In the same storeroom are fragments of at least three further vases, none of the early period; one has Sb,Ta,Sb.

Phaleron

Seventeen vases, from graves of all periods, are reported from the cemetery in *ADelt.* ii (1916) 27–9. Significant information is only available for the following:

tomb 4. I, *iota, phi, ADelt.* loc. cit.

tomb. 47. *ADelt.* loc. cit. fig. 11; Young, *AJA* xlvi (1942) 25; Strøm 234. Vase. H 70; D 48; Dl 12. S,O,S. Early; context *c.* 700.

tomb 61. *ADelt.* loc. cit. fig. 12. H 63. D 39; Dl 13. Slb?,T?,Slb?—the whole worn and not clear in the photograph. Middle? No other grave goods are mentioned in *ADelt.* loc. cit. 21, *pace Thorikos* I 56.

Athens 14489. *AE* (1911) 248, fig. 7; PLATE 18*a*. H 70; Hn/l 6·6. D 46; Dl 19·2; Df 14·5. Sl,T,Sl. I, on shoulder, simple X. Red and white inclusions in clay. Striped handles. Middle. *AE* (1911) 248, fig. 6. No dimensions given. O,S,O. Early to middle.

The vase tomb 33,8 (Young *AJA* loc. cit. fig. 2—no dimensions given) is not of full SOS type, with a torus lip and very flat foot; neck undecorated, no shoulder band.

Thorikos

TC 63.82. *Thorikos* I 57, figs. 39–40. Lower part of vase. D *c.* 43; Df *c.* 16·5. No shoulder band. Early to middle.

Eleusis

tomb 58. *ADelt.* xxii (1967) B 122 and pl. 100*a*. Vase. H 66; D 42. S,T,S, the type of S not clear in the photograph. Very low 'shoulder' band. Early.

tomb 54. Ibid. Upper parts of vase, not illustrated.

Lambrino, *Les vases archaiques d'Histria* 136 n. 7, mentions a further piece in the museum at Eleusis.

Corinth

42 C40.321*a–b* (= CP2809). *Hesperia* xvii (1948) 227, D69; Strøm 235. Upper parts. Hn/l 6·5/5. D *c.* 49; Dl 22·4. S,Oa,S. I, on neck, an hour-glass sign tilted a little to the right. Slight ridge. Late; context down to end of seventh century.

98 C53.218. *Hesperia* xxv (1956) 372, 88; Strøm 235. Lip sherd; no ridge. Late; context 600–540.

Aegina

Berlin A50*a*. *CVA Berlin* 1 pl. 39,5. Neck fragment. Part of S preserved.
Berlin A50*b*. *CVA Berlin* 1 pl. 39,6. Neck fragment. Part of T preserved.

Halieis (Porto Cheli)

39 HP536. Fragmentary vase used for cremation burial. Hn/l 8/5·5. Dl 21. S,O,S. No ridge. Late.

40 HP298.*BCH* xc (1966) 788; Jameson, *Phoros* 71 n. 17. Upper parts. Hn/l 6/5·5. Dl 22·5. S,O,S. I, *BCH* l.c. on neck; also scrap of a letter preserved on shoulder. Slight ridge. Late.

HP471. Upper parts. Hn/l 7·5/4·5. Dl 22·5. O at handles, central motif lost. I, two short verticals on neck. Very similar to **40.** Late.

Chalkis

Potters' dumps excavated in recent years by A. Andreiomenou and A. Choremis have yielded large quantities of vases of the end of the Geometric period. Drinking vessels predominate, but there are also fragments of a large number of locally made SOS amphorae, perhaps some two hundred from Choremis' excavation.[6]

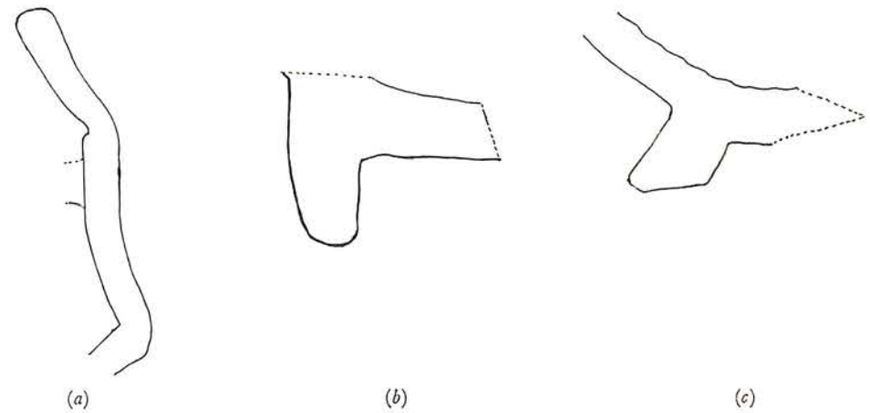

FIG. 3. *a*, typical neck profile of Chalkis amphora; *b*, foot of **87**; *c*, foot of **92**. Scale 1:2

Both profile and decoration of these Chalcidian amphorae are distinctive. The lip is low, at most 4 cm., of varying profile FIG. 3*a*; a notch rather than ridge separates the lip from the neck, which is normally slightly convex in profile. The handles are flat or flattened. Feet are flaring with a rounded inner contour; they vary from 14·3 to 18·7 in diameter, usually under 17, and from 2·5 to 3·75 in height. The fabric is very hard; the clay is pure of a reddish tan colour of

[6] *ADelt* xxvi (1971) B 252. I have not seen the one piece illustrated there, with Wch decoration, pl. 227*a* upper row, centre. No vases have yet been mended up sufficiently for the body shape to be assessed. The dating of the dumps, together with the presentation of the evidence for their interpretation as potters' waste tips, must be left to the excavators, but the vast majority of the material cannot date far from *c.* 700. For a description of Chalcidian fabric of this period see Boardman, *BSA* lii (1957) 2, although I cannot agree with his words 'rather soft in the break', since the hardness of firing of these vases is immediately apparent when drilling.

varying intensity; glaze is dull, often fired chestnut. The main variety of decoration can be seen in FIGS. 8(*e*), 9(*e*); long double zig-zags enclose a large triple set of rings around two very small central rings. The neck is always slipped cream and is usually glazed on the inside; however, necks plainly glazed on the outside are common. Handles are glazed or have three lines running down the outer face, on a slipped or reserved ground. There is normally a band on the shoulder, again either reserved or slipped, with four or five glaze lines on it; a few pieces have added white lines on a wholly glazed shoulder.

48 Upper parts of vase. Hn/l 6/3·5; Dl 18.

49 Neck of similar vase. Hn/l 6·3/3·2.

50 Similar neck. Hn/l 7/3·5; Dl 16. Glazed inside and out save for bands at top and bottom of neck.

51 Foot. D. 17·7. Streakily glazed outside.

52 Sherds of body. Fired light chestnut. Band 4·5 cm. high with seven lines on it.

53 Body sherd. Misfired or burnt. Slipped band.

54 Body sherd. Reserved band.

56 Body sherd. Five added white lines around shoulder.

57 Body sherd with handle root. Handle and band slipped.

55 Lip and neck fragment. Hl 2·5. Ob?,O? preserved. No ridge. Unslipped; softer paler fabric with red inclusions; glossy glaze. These details and the clay analysis indicate an Attic origin. Late.

Eretria

The following material from the Greek and Swiss excavations has been published:

Eretria v 21–2, FK 195.1 (Beilage 2, Taf. 5). Neck and rim fragment. Pres. H 7·9. Network of diagonal zig-zags on neck. Ridge. Early to middle. This cannot be from a regular SOS amphora (nor is it claimed to be) because of its smaller proportions, but it is an interesting derivative.

Rim fragment. *Archaeometry* 19 (1977) 85 no. 77. Sld,T,Sld?

Rim fragment. *Archaeometry* ibid no. 78. Sa,Oa,Sa?

Eretria inv. 4738a. *AE* (1975) 224 and pl.64 γ. Lip and neck fragment. Dl *c.* 13; Hn *c.* 7·5. Sld,T,Sld. Ridge. Early.

Eretria inv. 4738b. *AE* ibid. Lip and neck fragment. Sld[. . . .]. Ridge. Early.

Eretria inv. 4794. *AE* ibid. Neck fragment. [. . . .] Sld. Early.

There is nothing in the description of these pieces (save the first) to indicate an origin other than Attic; the clay analyses published in *Archaeometry* support such an attribution and the description of the clay and the decoration of the others in no way opposes it.

Histria

B1445. Lambrino, *Les vases archaiques d'Histria* 132 ff. figs. 92–4. Fragmentary vase. Dl. given as 16. Sa,Oa,Sa. Late.

Oisymne

Kavalla, unpublished. Vase. I, on shoulder, two interlocking compass-drawn circles. Slight ridge. Late.

Other examples are reported, *ADelt.* xx(1965) B 449.

Amphipolis

A sherd found on Hill 133 is illustrated in Pritchett, *Studies in Greek Topography* I pl. 48,5. Part of O preserved.

Mikra Karaburun, Thessalonike

BCH xli–xliii (1917–19) 258. Neck of vase. S,Oa,S. Slight ridge. Late.

Pitane

Professor Akurgal informs me that there are late examples from his excavations.

Smyrna

BSA lix (1964) 43. Six sherds with graffiti. I, ibid. Presumably later or late; context from destruction levels.

Rhodes

inv. 12532. *Clara Rhodos* iv 352, tomb 205, from Kamiros. H 66; D 47; Dl 20. Sa,O,Sa. The drawing *Clara Rhodos* pl. VIII is most unreliable. There are three rectangular patches of irregular glazing around the shoulder, seemingly resulting from the positioning of some supports in the kiln. Late; context *c.* 600.

Clara Rhodos iii 120, tomb 86, from Ialysos. H 58. S,O,S. Single band. Now lost? Late.

Thera

Thera ii 64 fig. 221; Strøm 235. H 65·5. Oa,Oa. I, *Thera* ii loc. cit. Late; context *c.* 625–600.[7]

AM xxviii (1903) 207 Abb. 56; Strøm 235. Neck sherd. .]Oa,S. The clay is said to be micaceous. The dotted plastic ring at the base of the neck is unique. Late.

AM xxviii (1903) 206 Abb. 55*a*; Strøm 236. Vase; the foot seems restored in the photograph. H 65·5. Sa,Oa,Sa (the sigmas seemingly three-barred). Late; the accompanying 'Proto-corinthian' vases are discussed briefly by Strøm.

I take the first and last pieces to be Attic although doubt has been cast on such an origin by Hayes, *Tocra* i 139. I cannot comment on the unillustrated fragments, *AM* loc. cit. 2–5; the glazed inside of the neck of 2, together with the description of its clay do not seem Attic.

Al Mina

Ashmolean and London, fragments see p. 104–7 above.

Where? *JHS* lx (1940) 19 fig. 8*e*. Neck sherd. Part of Sa?,O preserved. Late; see Strøm 236.

Cyprus

Marmari

Nicosia inv. 1961/viii-18/2. *BCH* lxxxiv (1960) 279, 3. Vase. S,O,S. Single band. Late. PLATE 18*b*.

Kition

85 Wall sherd. 10·5 × 10·5. Early or middle, judging from quality of the glaze.

[7] It was found with an early rosette bowl; for the dating see Hayes, *Tocra* i 46 n. 3.

87 Area II 1974 AA14 280–300 cm. Fragment of foot. FIG. 3*b*. Hf *c.* 5; Df *c.* 15. Early.

For sherds of à la brosse amphorae see below p. 121.

Salamis

tomb 10, 15. *Kadmos* iv (1965) 150 ff.; *Salamis* ii 18, pl. 66; Strøm 234. Vase. H *c.* 70; D *c.* 50. O,O. I, as *Salamis* ii loc. cit. Middle; context seventh century; placed rather too early by Strøm.

95 tomb 4, fill. *Salamis* ii 3. Neck sherd, slightly concave. 5·8×4·4. Part of O preserved. Middle to late.

tomb 7, 17. *Salamis* ii 11. Two wall sherds, perhaps from same vase. 11·6×10·7 and 6·8×10. Perhaps middle, judging from glaze.

tomb 62, 6, dromos fill. *Salamis* ii 101. Wall fragment. 10·2×7·2. Part of band, with two lines at least, preserved at top edge. Middle?

FIG **92** tomb 10, 15A. *Kadmos* loc. cit.; *Salamis* ii 18, pl. 66; Strøm 236. Much of foot and body is preserved to add to fragments illustrated in *Salamis* ii. Df *c.* 14·5 Fig. 3*c*. I, as *Salamis* ii Fig. 7*b*. Single band. Late.

96 tomb 84, 13. *Salamis* ii 128, pl. 164. Upper parts lost. D 44·5. Df 16. Many large white inclusions. Handles were round. Wholly glazed save for lowest part of foot and neck. Later.

tomb 36, dromos fill. *Salamis* ii 66. I have not seen these sherds.

For sherds of à la brosse amphorae see below p. 122.

Chania

Greek–Swedish Expedition 70 P216, from the Castelli site.[8] Neck sherd of a large amphora Pres. H 8·9; pres. width 9·8. Fine red-tan clay with a few inclusions; creamy slip. There is a slight concavity in the profile towards the top of the sherd, below the lost lip. Two bands and part of a third are preserved at the bottom; above, O/W,T. Early, perhaps 725–700.

Analysis of the clay, as given in note 8, supports the conclusion drawn independently by Professor Coldstream and myself that the sherd is of Euboean and specifically Chalcidian origin. Yet there are points of difference with the SOS type known from Chalkis and Pithekoussai; the clay and slip are similar, but the wall thicker, the glaze a brighter chestnut red and the slightly concave profile contrasts with the convex neck profile found at Chalkis; the decoration too, as far as preserved, does not include the typical Chalcidian wheel and zig-zag motifs. These differences should not lead us to reject the indications of slip and fabric, but rather to assume that the *apothetis* material from Chalkis and the sherd **10** from Pithekoussai represent only one facet of Chalcidian production of large storage jars. While there is no proof preserved that the Chania sherd belongs to an SOS type amphora with glazed body, the large size of the neck and the syntax of the decoration point strongly in that direction.

[8] We are most grateful to the directors of GSE and M. Vlasaki for their very generous permission to include the sherd in this study. Knowledge of it came too late for full assimilation into the text (especially in section 6, on the type and origins of the decoration of Chalcidian SOS amphorae). Analysis has given the following result:

Al	Mg	Fe	Ti	Mn	Cr	Ca	Na	Ni
20·6	1·6	7·6	0·84	0·080	0·020	3·7	1·15	0·0115

Such a composition fits that of local LM IIIc ware quite well, but the clear difference in the colour of the fabric—it is not the buff of the local ware—means that the piece should be found a home elsewhere, and the composition is very close to the Chalkis range.

Tell Defenneh

3 British Museum 1888.2-8.59. *Tanis* ii pl. 24,9; *CVA* 8 II Dm pl. 10; Strøm 236. Neck. Dl *c.* 20·5. Sa,O,S, the sigmas with five or six strokes. Late.

British Museum 1888.2-8.60. *Tanis* ii 61, pl. 24,11; *LSAG* 77, 10*b*; pl. 17*f*. Two joining fragments from upper shoulder. Maximum width 27·5. I, on shoulder, as *Tanis* loc. cit.; brush-work on right of fragment indicates proximity of handle and that the start of the inscription is preserved. Rather thin walls (0·4–0·5). Single band largely preserved at lower edge. Late. PLATE

Corcyra

Kalligas excavations. Vase, upper parts lost. Body wholly glazed. Early to middle.

63/130. *ADelt* xviii (1963) B 159, pl. 192*β*; Strøm 235. H 71; Hn/l 8/6. D 48; Df 18; Dl 22. S,O,S (Sa,O,S on one side). I, compass-drawn circle by one handle, and central on shoulder FIG. 7(*c*). Many red and white inclusions. Slight ridge. Late; context Middle Corinthian.

Pithekoussai, Ischia

A substantial number of vases and fragments have been found in the excavations, both in the Necropolis, from the scarico Gosetti and the Mazzola habitation site.[9] All are being prepared for publication, and I restrict myself here to details of the vases and sherds from which samples were taken. Further discussion of the pieces that are labelled here 'non-Attic' will be found on pp. 127–8. The dating evidence is of prime importance, especially that of the tombs; the Mazzola site went out of use in the early seventh century, and for the scarico see on **12**.

Necropolis

7 tomb 398. Repaired vase. Pres. H 65·5; D 45·6. Sb,O,Sb. Context: the tomb was overlain by one containing EPC material, and in addition the vase had already been broken and repaired before deposition.

6 tomb 642. Fragmentary vase. Pres. H 71; D 45. Unique decoration, central solid glaze disc flanked by verticals with raised, hatched 'arms'. Striped handles. Context LG I–II.

5 tomb 429. H 64·8; D 44·2. Slc,T,Slc. I, a ragged X. Striped handles. Context LG II.

16 tomb 719. H 69; D 43·3. Four long, spaced zig-zags on each side of neck. Context LG II.

47 tomb 442. H 64·2; D 45·8. Slc,T,Slc. I, pentalpha, FIG. 7(*d*) Context LG II (the tomb cut into 168, which contained the Nestor cup). Striped handles.

46 sporadico, vase. Non-Attic. Sun-burst rosette on neck. Slim neck with slightly flaring simple rim; slim and low flaring foot. Very deep band on shoulder and belly.

9 sporadico, neck.

Mazzola site

8 69-C-1030. Neck. Hn/l 8/3·5; Dl 16·6. Sc,O/W,Sc. Heavily ridged inside; striped handles. Context LG I–II.

45 69 C-1031. Upper parts and fragments. Hn/l 9·5/4·5; Dl 18·5. Oc,Tb,Oc. I, FIG. 7(*e*), on belly. Striped handles; three bands at base of neck. Context LG I–II.

[9] The publication of most of the amphorae from the necropolis is forthcoming in G. Buchner and D. Ridgway, *Pithekoussai* i. The fullest of the fleeting references made to the Mazzola and scarico material to date is Buchner, *Atti xi Convegno Magna Grecia* 366.

Scarico Gosetti, Monte Vico

There are about twenty neck fragments from this deposit, in which early types with decoration Sc,T,Sc predominate. The numbers given here are temporary ones allocated by Professor Klein.

15 MV 07+09+13. Three joining fragments of lower neck and shoulder. Sc,T,Sc. Early.

12 MV 60. Lip fragment. Pres. H 6·7. Profile as of late amphorae—the only late SOS from Pithekoussai; the scarico contained other contemporary and later material.

10 MV 70. Neck sherd. PLATE 16*b* Hn 8. .],Wch,Sd. Hard orange red clay; cream slip. Top of inside of neck glazed. Chalcidian. Early.

11 MV 77. Neck sherd. PLATE 16*b* Slc,W,[. (eight-spoked wheel, hastily painted). Reddish tan clay; neck glazed inside. Non-Attic. Early.

13 MV 78. Neck and lip sherd. PLATE 16*b* Hl 3. [. . .],W. Slight lip. Hard fine buff fabric, thin-walled. Under edge of lip reserved. Non-Attic. Early.

14 MV 79. Neck and lip sherd. PLATE 16*b* Hl 3·4. No decoration preserved on extant area of neck. Sharp ridge and squat flat-topped lip. Glazed inside. Part of a letter (? *epsilon*) preserved on neck. Non-Attic. Early.

Cumae

Naples, tomba Artiaco. *ML* 13 261–2; Strøm 112–13, 148, fig. 74; Cl. Albore-Livadie, *Contributions à l'Étude de la Société et de la Colonisation Eubéennes* (Cahiers du Centre Jean Bérard 2) 54; Buchner ibid. 75. Vase. H 64. D *c.* 47; Dl *c.* 17. Sc,Oa,Sc. Rather misshapen. Early.[10]

Sybaris

29 St. 72.10725. *PdP* ibid.; *NSc* 1974 *suppl.* 133. Lip sherd. Top of S preserved. Late.

30 St. 72.11490. *NSc* ibid.; *PdP* xxviii (1973) 303. Upper parts. Hn/l 7/7. Dl 20·2. Sa,O,Sa. Slight ridge. Late.

31 St. 71.44197. *PdP* ibid. Lower part of vase. Many red inclusions. Late.

Policoro

For preliminary reports on the tomb finds see *Rend. Linc.* (1971) 643 and Adamesteanu, *Basilicata Antica* 112.

33 tomb 49. Vase. H 71; Hn/l 7·5/4·3. D 47; Df 14·8; Dl 19·8. S,O,Sa perhaps, but the neck is extremely worn. Foot flares slightly, but remains high. Earlier.

38 inv. 41156. Neck and lip sherd. Hn/l 5/4. .]Sa,Sa. Small ridge, slightly flattened, small handles. Middle; context 650–600.

Neck sherd in museum stratigraphic display. S,[. . .]. Early or middle.

Metapontum

Central Area

Sherds are mentioned among the finds from the excavation of temple D, *BdA* (1976) 40.

[10] Much has been written recently about the dating of the vase—see the references cited. It is a small misshapen thing, rather worse potted than the published Eleusis amphora; I would not care to put a more precise date on it than 725–690, probably before 700.

Incoronata

For preliminary reports on the excavations see *Arch. Stor. Cal. Luc.* xl (1972) 27 ff and Adamesteanu op. cit. 69.

35 27720. Vase, fragmentary. Hn/l 6/5. Df 14; Dl 15·7. Sld,T,Sld. Handles striped, earlier.

36 26788. Vase. H 65; Hn/l 6·3/4·7. D 46; Df 16; Dl 18. *Atti XII Conv. M.G.* (1972) pl. 19. Horizontal wavy line on neck. I, FIG 7*f*, part preserved by handles. Handles striped with horizontal bar at top. Early to middle.

22764 *Populi Anellenici in Basilicata* 19; *Arch. Stor. Cal. Luc.* loc. cit. 38; *Arch. Class.* xxv–xxvi (1973–4) 77 and pl. 19, 1 (upside-down). Fragment of shoulder? I, as *Arch. Class.* loc. cit. Early?[11]

Fuori tombe. Lower parts of vase. D *c.* 46; Df 13. Foot slightly flaring. Early to middle.

Saggio B. Greater part of vase. *Acme* xxix (1976) pl. 5, fig. 3. Sb?,O,Sb? Middle, context probably before 650.

There are further examples from more recent excavations.

Cozzo Presepe

P2461 Substantial fragments of ? one vase. Wavy line on neck. Striped handles. Early. (From the excavations of the British School at Rome. I am grateful to Miss J. du Plat Taylor and Dr. A. J. N. W. Prag for allowing me to mention it here.

Metauros

Vase. *Arch. Rep.* (1976–7) 62. I, retrograde API, said to be pre-firing. Late?

Vase. *Arch. Rep.* ibid. I, on handle, Fεργα. Late?

Lipari

Vases, presumably late, are reported by Bernabò Brea, *Ampurias* xv–xvi (1953–4) 204 and *Arch. Sic. S-O* 140.

Mylai

All these pieces published by Bernabò Brea and Cavalier, *Mylai* 59–60 and pl. 48.

tomb 68. Upper parts lost. Pres. H 52; D 36. Early?
tomb 70. Most of vase. Pres. H 58·3; Dl 17·2. Sb,O,Sb. I, pentalpha. Early to middle.
tomb 75. Upper parts lost. Pres. H 56; D 46·5. Middle?

Naxos

Vases are mentioned in *Arch. Sic. S-O* 140.

[11] In *Populi Anellenici* loc. cit. the sherd is described as 'frammento di argilla acroma', but the photograph in *Arch. Class.* clearly shows the remains of glaze. We may note the mention of local imitations at Metapontum, *BdA* (1976) 47.

Megara Hyblaea

A large amount of material, largely fragmentary, has been excavated at the site; at least 154 vases are mentioned in *Megara Hyblaea* II 94.[12] I mention only a selection here.

tomb 224. ΚΩΚΑΛΟΣ xxi (1975) 22, pl vi, 2. Vase. Early (context *c.* 700).

tomb 209. *Arch. Sic. S-O* 170, no. 483. Vase, restored. Hn/l *c.* 10/4. Sld,T,Sld. Early to middle.

18 *Megara Hyblaea* II 94, 7/10, pl. 81,7. Neck sherd. .],T,Sc. Middle to late.

19 *Megara Hyblaea* II 94, 7/9, pl. 81,5. Neck sherd. .],W,Sb, carelessly painted. Clay very soft, orange, without inclusions. Late.

20 7/18 (or 98?), unpublished. Neck and lip sherd. O,S preserved. Late.

17 unpublished body sherd with plentiful red inclusions. Late?

neck, unpublished. O,S,O. I, FIG. 7 (*g*) on neck. Late.

Syracuse

neck. *Arch. Sic. S-O* 78, no. 280. Hn+l *c.* 11; Dl 14·4. Sd,Ob,Sd. The decoration is close to the prevailing Chalcidian type. Early.

28 49659. Lip sherd. Part of S preserved. Prominent ridge. Early to middle.

26 13583. *NSc* (1895) 130–1, Fusco tomb 194. Upper parts of vase. Hn/l 7·5/6. S,Oa,S (first S three-barred). Many white inclusions. I, as *NSc* loc. cit., at top of shoulder. Late.

Fusco tomb 267. *AJA* lxii (1958) pl. 66, fig. 24; *Arch. Sic. S-O* 122 (profile); Strøm 235–6. Vase (now fragmentary). H 66. S,O,S (reversed three-bar S). I, *NSc* (1895) 142 and *AJA* loc. cit., on shoulder. Late; see Strøm for doubts on dating *c.* 650.[13]

Heloros

1959 excavations. *Arch. Sic. S-O* 121–2, no. 383. Vase. H 73. Sa,Oa,Sa. Earlier.

Orsi excavations. *ML* xlvii 236 fig. 10*b*. Neck sherd. O next to handle. Late?

Kamarina

Among the large number of amphorae of all types employed in the Rifriscolaro cemetery were fourteen SOS amphorae, *Arch. Sic. S-O* 139. These should all date after *c.* 600 in view of the foundation date for the colony of *c.* 598 (Dunbabin, *The Western Greeks* 436), and publication of this corpus of material will throw much light on the later history of the SOS type. I mention a selection here; all have a single band on the shoulder unless otherwise stated.

21 tomb 454. H 75; Hn/l 7/7·5; D 44·5; Df 17·3. I, on shoulder FIG. 7*h*. No ridge; no reserved band. S,O,S (three-bar S).

22 tomb 134. Lip lost. Pres. H 61. D 44; Df 16·5. O,O.

[12] We may note the local imitation of seventh-century from Giardini tomb 75 (plan of the excavations, *NSc* (1940) date with well-spaced Sl,O,Sl,O,Sl on the neck, *MEFR* 201); decoration O1,O1, and single band on shoulder. It lxvii (1955) pl. iiia. The Attic vase mentioned in *AJA* lxx was found with fragments of an Attic BF volute-krater of (1966) 361 is not yet published. *c.* 535–525.

[13] There is also exhibited in Syracuse a half-size SOS

23 tomb 301. H 68; Hn/l 8/6. D 43; Df 16·5. S,O,S. No ridge.

25 tomb 32. Lip lost. Pres. H 62·5. D 44; Df 16·5. Neck plain. Handles reserved. Perhaps all of outside of foot once glazed. I, on neck, *gamma* (Ionic), *upsilon*.

tomb 132. *Arch. Sic. S-O* 146, no. 434. H 70·5; Hl *c.* 8. Oa,Sa,Oa.

tomb 199. *Arch. Sic. S-O* 145–6, no. 433. Hl *c.* 6. S,Oa,S (five-bar S).

tomb 225. *Arch. Sic. S-O* 146, no. 435. H 66. Oa,Sa,Oa.

Gela

There are fragments of several vases stored in the museum at Gela.

Syracuse 21210, Borgo tomb 467. *ML* xvii 196–7; *ASA* (1959–60) 267–8; *LSAG* 77 10a; Strøm 235. Fragmentary vase. H at least 65. Sc,O,Sc. I, on shoulder, see in particular *ASA* loc. cit.; the omission of the *omicron* in the genitive termination seems likely to have been caused in the same way as on **1** above, p. 104. Middle to late.

27 Syracuse, unnumbered. *ML* xvii 210. Hn/l 6/6·3. D 52+; Dl 23·6. Sa,Oa,Sa. The width and flatness of the shoulders is noteworthy. Late.

Selinus

ΚΩΚΑΛΟΣ xxi (1975) 100. Sherds. Late; context after 628.

Vulci

See **2** (section 1)

58 Philadelphia MS 561. Dohan, *Italic Tomb-groups* 97–8; Strøm 236. H 68·3; D 44·4. S,O,S. I, as Dohan loc. cit. Single band. Late; context Middle Corinthian.

59 Philadelphia MS 562. Dohan ibid.; Strøm ibid. H 66·2; D 44·4. S,O,S. I, as Dohan l.c. Single band. Late; same tomb as **58.**

Further unpublished vases are mentioned by Strøm (236) and Cristofani *Arch. Class.* xvii (1965) 14 n. 40

Cerveteri

See **1** (section 1).

4 Vatican 20359. Pareti, *La Tomba Regolini-Galassi* no. 384. About twenty fragments of foot, body and shoulder. Df 13·6. I, perhaps part of an intentional graffito on one shoulder sherd. Tall, vertical foot. Early.[14]

Villa Giulia. *NSc* (1955) 59, fig. 16, tomb 5, 11. Vase. H 70. D *c.* 48. Slc,T,Slc. I, 'alcuni segni appartenenti al alfabeto greco arcaico'. Handles striped. Middle; context LPC? (hare-hunt aryballos).

[14] A poor photograph of one fragment in *RM* xxii (1907) 133, fig. 21, CXXVIII. The piece can only be dated by the early type of foot. One fragment is embedded in a lump of metal together with a bucchero kylix; Pareti noted this and took it as part of the burial in the right niche, which Strøm dates *c.* 625. She takes up the matter in n. 530, but does not bring the SOS fragment into consideration. One may speculate how and when the kylix and a single sherd of the amphora became engulfed in the molten metal, but the variety of possible answers precludes any sure reconstruction.

Cerveteri, antiquario. Monte Abatone tomb 4. Vase.[15] Middle; *c.* 650, found with MPC skyphos and Rhodian bird bowls of *c.* 650.

Villa Giulia. *NSc* (1955) 62, tomb 6, 10. Neck and other sherds of two amphorae (one, ibid. fig. 5, Sa,O,S). Late; context *c.* 600–550.

Villa Giulia. *NSc* (1955) 62–3, tomb 6, 12. Shoulder of vase. I, *Arch. Class.* iv (1952) pl. lvii, 1; *LSAG* 77 10*h*; Guarducci, *Epigrafia Greca* iii 333. Late; context as above.

Louvre D33. Pottier, *Vases Antiques du Louvre* 36. H 74; Hn/l 5/7. D 44; Df 14·5; Dl 19. Neck decoration worn. I, *LSAG* lxxvii 10*c*; Guarduci loc. cit.; FIG 7(*j*). Ridge. Middle to late.

Louvre D34. Pottier ibid. H 70; Hn/l 6·3/5·7; D *c.* 50; Df 16·5; Dl 22. Sa,Oa,Sa. I, *LSAG* 77 10*f*; Guarducci loc. cit. Slight ridge; very streaky glaze with no certain reserved band. Late.

Louvre D35. Pottier ibid. Villard, *BAM* pl. 1*c.*; H 66; Hn/l 6·5/9·5. D 39; Df 16; Dl 19·5. Sa,O,Sa. I, FIG. 7(*k*) *LSAG* 77 10*g*; Guarducci loc. cit. Very tall echinus lip with no ridge. Single band. Late.

Louvre D36. H 70; Hn/l 5·5/5·5. D 42; Df 13·5; Dl 19·7. S,O,S. Slightly flaring foot; slight ridge. Middle.

Louvre D37. H 69; Hn/l 5·5/4·5; D 48; Df 15·5; Dl 19·7. Sa,O,Sa. Slight ridge. Middle to late.

Louvre D38. H 66; Hn/l 6/7·4; D 37; Df 15·5; Dl 19·7. S,O,S. I, FIG. 7(*l*), on shoulder. Single band. Cupped lip. Very late.

Louvre D39. Pottier ibid. H 60·5; Hn/l 7/5·3. D 36; Df 16·8; Dl 19·5. S,O,S. I, FIG. 7(*m*), hour-glass to right of handle, cross on shoulder further to right. Traces of red pigment under the foot may be modern and not an ancient *dipinto*. Both lip and foot flare more than usual. Late.

D36, D37, and D39 have holes punched through the base.

Spain

Toscanos, Malaga

Toscanos (*Madr. Forsch.* 6) 1023, pl. 38. Shoulder sherd. Early.

MDOG civ (1972) 26–7. Seven sherds, some clearly not of regular SOS type.

43 TM 67/282+306. *Madr. Mitt.* ix (1968) 106–7 with n. 2*a*; *Madr. Mitt.* xi (1970) 102–9. Two joining neck sherds. Glazed. I, ibid. The glazed neck recalls the Chalcidian type, but neither the mica nor the reserved inside of the neck support such an attribution (and see the analysis below). Early.

AA 1978 249 Abb. 18. Two early lip fragments.

Guadalhorce, Malaga

Madr. Mitt. xvii (1976) 201. Sherd mentioned.

Huelva

44 *Huelva Arquelogica* ii 42–3, pl. 5, below. Wall sherd.

[15] The association of the amphora with the tomb is not made fully clear in the display in the museum. The skyphos is illustrated in Lerici, *Nuove Testimonianze dell'Arte e della Civiltà Etrusca* 34 (with wrong date).

Aljaraque

J. M. Blazquez, *Papelos del laboratoria de arqueologia de Valencia* xi (1975) 218 fig. 4, 138–9. Rim sherds. Context seventh century.[16]

Mogador, Morocco

Villard, *BAM*; A. Jodin, *Mogador* 53 ff., pls. xvii–xix. Sherds from several vases; few can be said with confidence to be from SOS rather than 'à la brosse' amphorae. One has part of the shoulder band preserved and is dated by Villard rather earlier than may be warranted by that fact alone. Two others preserve handle and part of neck, although the photographs do not reveal whether enough is preserved to have presented neck decoration had it existed.

Appendix

The 'à la brosse' amphora

The phrase 'à la brosse' has been used to describe the particularly streaky wheel-painted bodies of mainly sixth-century amphorae. I use it here, perhaps a little unhappily, to describe only those amphorae with cylindrical neck and rolled rim, as distinct from the late SOS themselves.[17] A more suitable appellation might be '1501 amphora' after *Agora* xii 1501 and **89** below. In certain cases it is not possible to judge whether a fragment is from a late SOS or an à la brosse amphora since only neck and lip differ.[18]

There is no doubt that such vases were made both at Athens and elsewhere from the late seventh or early sixth century onward, but my intention here is merely to present the results of analyses done on vases of this general type. All the pieces listed below have a squarish lip, reserved neck with no ridge, glazed lip and body.

86 Kition, area II bothros 6+6a 3287. FIG. 4(*a*). Shoulder, neck, and lip fragment made up of four. Hn/l 4·7/2·3; Dl 15. Lip rolled, hollow at centre; rather small flattened handles. Pale tan clay with many white inclusions and some mica.

88 Kition, area II Δ-Δ, E-E 14, 370–480 cm. Lip fragment. 9·7×5·1. Creamy buff surface, redder in biscuit, with white and dark inclusions.

89 Kition, area II bothros 6 1501. Fragment of neck and lip with spring of handle. Hn/l *c.*9/2·5. Dl 16·6. Pale buff clay with white and dark inclusions.

90 Kition, area II ΔΔ16, 400–20 cm. Wall fragment. 11·7×10·3. Pinkish buff clay with a little mica.

[16] I am grateful to Brian Shefton for this reference.

[17] There is much uncharted territory here and the analytical compass we offer can hardly be said to be adequately boxed. For most recent bibliography see *Tocra* ii 62, with references to the significant material from Histria, Marseilles, and Athens; further examples have been cited above, Kerameikos and Phaleron. An intact example akin to the best preserved Marseilles fragment, Villard, *La Céramique grecque de Marseilles* pl. 27, 1, and not far from the piece of uncertain origin, *Thera* ii fig. 221, is published by Lazarov, *Izvestia Varna* xxvi (1975) 128–9. It may be pertinent to add here the neck with a probably Attic inscription from Salamis, *Salamis* ii 231 and 275–7. The point is made in *Agora* xii 192 that the type develops little at Athens in the sixth century—a point which should be taken into consideration when trying to date the Wappenmünzen with amphorae on the obverse by typological criteria (Kraay, *Archaic and Classical Greek Coins* 56 ff.).

[18] On this criterion I have included in the lists above numerous pieces which do not demonstrably belong to SOS amphorae. Further fragments which should be taken into consideration as being on the SOS/à la brosse borderline (none of which I have seen) are: Stucchi, *Cirene 1957–1966* 166, fig. 188 (inscribed); *Tocra* ii 2265 (presumably upside down in the profile drawing; Ponsich, *Récherches archéologiques à Tanger et dans sa région* 185 (body sherd); the fragments from Marseilles taken as Attic rather than Ionian by Villard op. cit. 49. From the description and photographs the Marseilles fragments seem no less Attic than some of the pieces from Kition included here.

91 *Salamis* ii tomb 84, 16, pl. 164. FIG. 4(*b*). Vase, neck restored probably too high (*c.* 7·5 rather than 9·5). Hl 2·9. D 41, Df 14·7, Dl 17. Pale buff surface, darker orange-tan, even gingery biscuit with many large white inclusions. Reserved band 0·7–0·8 high. Round, reserved handles.

93 *Salamis* ii tomb 33, 11, from the dromos. Thirteen fragments of body. Fabric as **91**, with some red inclusions also. Extremely streaky glaze.

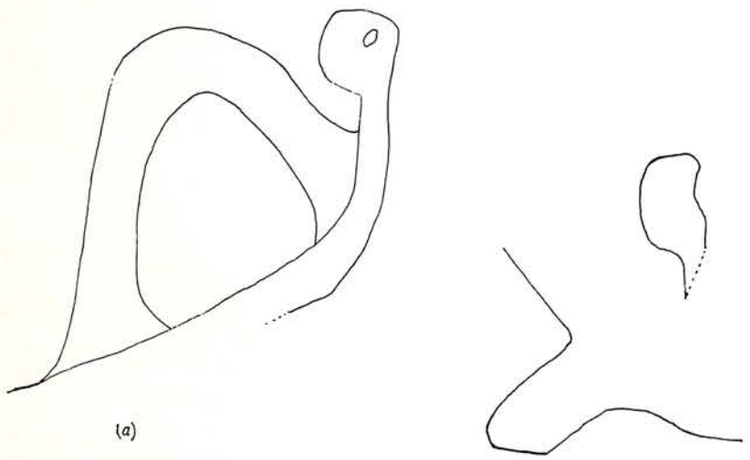

FIG. 4. *a*, neck of **86**; *b*, lip and foot of **91**. Scale 1:2

94 *Salamis* ii tomb 10, 15B, pl. 66. Fragmentary vase. Rather flaky orange-tan clay with white and dark inclusions.

It will be noted below that analysis of these samples showed that all could be Attic, with some doubt over **91** and **93**. The clay of these two is not typically Attic, but could perhaps just be taken as such; the presence of a reserved band on **91** may also be a sign of its being of Attic origin, but we cannot be sure that the feature was not copied elsewhere (see for example the sherd from Tocra cited in n. 18).

3. ANALYSES

Pottery analysis was carried out by Richard Jones in the Fitch laboratory at the British School. The samples, which were obtained by drilling with the use of a tungsten carbide drill head, were analysed by optical emission spectroscopy by the method described by Catling *et al.* (*BSA* lviii (1963) 95–101). The percentage concentration of nine elements in their oxide form was determined for each sample. The 98 samples include the following pieces which are not mentioned in the previous sections since they do not fall into the category of SOS amphorae:

24 Kamarina tomb 446. Amphora used for burial; H 62, D 39. Hard orange fabric, quite clean. Ovoid body with low and narrow flaring foot; cylinder neck with small rounded lip and slightly ridged flattened handles. Dull glaze overall except neck and outside of handles. Late.

32 Sibari, antiquario; amphora from Francavilla tomb 8. Early.

34 Policoro, tomb 26. Imitation of SOS, alluded to in *Rend. Linc.* (1971) 646. H 71·5, D 50, Dl 18·5. Roughly potted ovoid body with slight ring foot; neck and lip similar to those of early SOS; round handles. Worn, perhaps once wholly glazed (albeit streakily) save for neck. Early.

41 Porto Cheli HP 403. Upper part of amphora from cemetery. Sixth century.

97 Nicosia, Cyprus Museum, from Salamis; *Salamis* ii tomb 9, 10, pl. 58. Amphora, upper parts lost; flattened handles. Plain. Karageorghis suggests an East Greek origin, ibid. 15. Later.

The first four will be published fully by their excavators elsewhere.

The compositions of the samples are given individually in TABLE 1. The samples from the Agora and Kerameikos were considered sufficiently similar in composition for them to be combined to form an Athenian (or Attic) control group whose mean element concentrations and concentration ranges associated with an 80 per cent level of confidence are given in TABLE 2.

Initial inspection of the analytical data for those samples found outside Attica reveals a relatively clear distinction between those with an Attic type composition and the remainder. The distinguishing features of the Attic control group are high Mg, Cr, and Ni contents,[19] a result which confirms the results of earlier analyses of Athenian archaic and Hellenistic pottery.[20] Some discrepancies have been noted: the concentration ranges for Mn and Na in the SOS amphorae of the Attic control group are somewhat greater that those in the Attic decorated and black-glaze wares, and the mean Cr, Ca, and Ni contents of the former are higher than those of the latter. Conversely, the Fe and Ca concentration ranges are narrower in the SOS amphorae than in the decorated and black-glaze wares. There is no discernible change in composition in the clay used between the Late Geometric period and the sixth century.

The Chalkis samples (**48–54**, **56–7**) form a distinct group, and one that is satisfactorily consistent within itself. Diagnostic are low Mg, Cr, and Ni. The group characteristics are given in TABLE 2. Placed beside the previously acquired results for Chalcidian Geometric pottery the comparisons are close, although there is some discrepancy in Mg content.[21]

Place of manufacture of SOS amphorae can basically be assigned with reference to the graphs in FIGS. 5 and 6, in which the discriminating elements, Mg and Cr, Ni and Cr, are plotted against each other. Each sample is represented by its number except for the samples from Athens (circles) and Chalkis (squares). The latter group forms a good cluster in both graphs owing partly, it should be noted, to the small sample size, but the Athens group clusters less satisfactorily because of the wide spread in Cr content. Nevertheless, given the common function (Cr) in both graphs, it is satisfying to note that those samples which fall within the Athens cluster for Ni are also Athenian with respect to Mg. The majority of amphorae from outside Attica which have been taken to be Attic by reason of their fabric and decoration fall within the Attic limits. Taking the data from the two graphs together clarifies the position regarding those samples for which an Attic origin is dubious or less obvious. **35**, **91**, and **93** appear to have an extreme Attic composition with respect to Cr and Ni but are Attic with respect to Mg. **5** falls outside the Attic cluster with regard to Mg but is Attic for Cr and Ni. **16**, **43**, and particularly **45** lie at the other extreme of the Attic composition from **35**, **91**, and **93**; **16** and **43**, while Athenian for Mg, fall outside the Athens 80 per cent confidence ranges for Cr and Ni, but are within two standard deviations of the mean Cr and Ni contents for Athens; the Cr and Ni

[19] Reproducibility tests have indicated that the analytical precision with which these three elements may be measured is associated with standard deviations of 6, 14, and 10 per cent respectively.

[20] Boardman and Schweizer, *BSA* lxviii (1973) 270–1; Schweizer *apud* Prag *et al.*, *Archaeometry* xvi (1974) 168–70; using X-ray fluorescence analysis, Stern and Descoeudres, *Archaeometry* xix (1977) 73 ff.

[21] Boardman and Schweizer, loc. cit. 274, diagram X.

TABLE I. INDIVIDUAL RESULTS OF ANALYSIS OF SAMPLES 1–98

Sample	Location	% Al	Mg	Fe	Ti	Mn	Cr	Ca	Na	Ni
1	University College	19·3	5·3	10·6	0·92	0·115	0·103	8·6	1·23	0·058
2	London 1848.6-19.9	15·3	3·9	8·1	0·87	0·089	0·067	7·8	0·71	0·052
3	London 1888.2-8.59	12·7	4·1	8·4	0·69	0·093	0·075	4·8	1·5	0·044
4	Vatican 20359	19·4	5·8	11·0	1·07	0·125	0·105	11·4	1·15	0·062
5	Pithekoussai T429	21·0	2·3	9·3	1·01	0·081	0·076	2·5	0·47	0·047
6	Pithekoussai T642	13·3	3·2	7·4	0·70	0·105	0·073	5·8	0·57	0·046
7	Pithekoussai T398	13·2	3·0	8·8	0·78	0·096	0·064	9·0	0·84	0·059
8	Pithekoussai 69.C.1030	16·2	4·5	8·4	0·98	0·084	0·075	9·4	0·83	0·044
9	Pithekoussai spor.	12·0	0·9	5·8	0·59	0·080	0·016	4·3	1·2	0·009
10	Pithekoussai MV 70	16·2	1·3	4·8	0·69	0·082	0·005	11·3	0·83	0·007
11	Pithekoussai MV 77	19·1	1·6	7·3	0·77	0·099	0·019	6·4	1·75	0·013
12	Pithekoussai MV 60	12·8	3·7	11·9	0·82	0·082	0·068	8·7	0·81	0·058
13	Pithekoussai MV 78	23·0	1·9	9·1	0·95	0·088	0·025	6·2	1·35	0·015
14	Pithekoussai MV 79	15·4	1·8	6·2	0·76	0·049	0·030	6·0	1·2	0·013
15	Pithekoussai MV 07+	18·5	4·6	8·2	1·06	0·088	0·062	9·0	1·23	0·043
16	Pithekoussai T719	15·7	4·2	8·6	0·87	0·096	0·049	11·0	1·5	0·043
17	Megara H. unnum.	14·7	4·0	11·1	0·83	0·070	0·076	12·3	0·71	0·055
18	Megara H. 7-10	19·6	4·6	10·0	1·0	0·105	0·077	12·7	0·71	0·052
19	Megara H. 7-09	15·3	2·3	7·7	0·95	0·113	0·039	5·2	1·42	0·031
20	Megara H. 7-18	18·9	5·1	9·7	1·22	0·164	0·085	10·0	1·17	0·051
21	Kamarina T454	20·3	4·3	9·2	1·11	0·085	0·083	8·2	0·88	0·045
22	Kamarina T134	17·0	3·7	8·8	0·90	0·081	0·099	8·4	1·17	0·052
23	Kamarina T301	16·8	3·6	8·0	0·93	0·074	0·081	5·9	0·70	0·053
24	Kamarina T446	14·7	1·2	6·4	0·94	0·053	0·015	1·2	2·3	0·006
25	Kamarina T32	16·8	3·4	8·7	0·91	0·080	0·076	5·4	0·80	0·056
26	Syracuse 13583	16·5	3·3	6·8	0·83	0·049	0·070	8·2	0·85	0·045
27	Syracuse (fr. Gela)	16·7	3·8	7·3	0·92	0·073	0·085	8·2	0·88	0·052
28	Syracuse 49659	14·1	3·1	6·6	0·75	0·063	0·076	11·0	0·75	0·045
29	Sybaris 72.10725	18·1	4·5	8·0	0·87	0·093	0·081	10·2	0·90	0·052
30	Sybaris 72.11490	15·5	4·6	7·8	0·95	0·093	0·089	12·5	0·78	0·057
31	Sybaris 71.44197	18·7	3·5	7·4	0·90	0·057	0·076	6·5	0·42	0·006
32	Francavilla T8	12·5	0·7	5·9	0·69	0·070	0·012	3·7	2·1	0·054
33	Policoro T49	14·7	3·6	9·0	1·07	0·103	0·105	5·6	1·02	0·012
34	Policoro T26	24·5	3·0	8·8	0·89	0·096	0·024	12·8	1·26	0·081
35	Metaponto 27720	16·3	4·4	13·4	1·0	0·13	0·11	9·8	1·25	0·046
36	Metaponto 26788	16·5	4·8	7·1	0·83	0·104	0·080	12·8	0·69	0·050
37	Metaponto unnum.	14·5	4·2	7·2	0·99	0·091	0·102	10·7	0·85	0·038
38	Policoro 41156	19·1	4·0	8·7	0·90	0·074	0·082	7·6	0·80	0·050
40	Porto Cheli HP536	14·5	3·4	7·7	0·89	0·065	0·081	5·6	0·97	0·055
41	Porto Cheli HP298	17·1	4·3	10·2	1·03	0·077	0·103	10·1	1·15	0·031
42	Porto Cheli HP403	14·0	2·2	6·7	0·65	0·074	0·027	6·3	2·4	0·047
43	Corinth C40.321	13·6	3·7	7·9	0·84	0·065	0·076	7·4	1·02	0·037
44	Toscanos	17·4	3·3	9·0	0·81	0·087	0·055	7·9	2·45	0·015
45	Huelva	19·2	2·2	10·2	0·84	0·049	0·037	7·3	1·25	0·033
46	Pithekoussai 69.C.1031	14·5	3·1	6·8	0·85	0·072	0·051	4·2	0·72	0·011
47	Pithekoussai spor.	19·4	2·2	7·4	0·83	0·094	0·025	5·8	0·86	0·036
48	Pithekoussai T442	19·7	3·1	8·8	1·0	0·085	0·065	4·0	0·23	0·011
49	Chalkis	15·5	1·4	7·1	0·66	0·076	0·004	4·3	1·78	0·015
50	,,	19·1	1·5	7·4	0·87	0·068	0·021	6·1	1·66	0·012
51	,,	19·2	1·6	7·8	0·78	0·067	0·020	5·1	1·8	0·015
52	,,	19·1	2·0	8·7	0·82	0·096	0·022	5·6	1·63	0·014
53	,,	17·6	1·6	8·4	0·82	0·093	0·029	4·0	1·7	0·012
54	,,	18·5	1·8	7·5	0·78	0·090	0·019	6·0	1·58	0·020
55	,,	18·5	1·7	8·4	1·02	0·097	0·023	4·8	2·3	0·043
56	,,	17·9	4·7	7·8	0·95	0·076	0·071	11·1	0·87	0·025
57	,,	17·7	1·3	7·8	0·78	0·065	0·019	3·9	1·61	0·014
		18·7	1·7	8·7	0·79	0·085	0·024	5·3	2·0	

TABLE I (*cont.*)

Sample	Location	% Al	Mg	Fe	Ti	Mn	Cr	Ca	Na	Ni
58	Philadelphia MS 561	16·6	4·3	9·5	1·0	0·083	0·129	6·4	1·25	0·054
59	Philadelphia MS 562	13·8	3·4	7·4	0·83	0·071	0·088	5·2	0·73	0·042
60	Ashmolean 54.481[1]	17·1	4·4	7·2	1·05	0·061	0·074	10·3	0·79	0·041
61	Ashmolean 54.482	18·1	5·3	9·2	1·0	0·079	0·089	12·4	1·5	0·049
62	Agora P666	17·3	3·9	9·1	0·88	0·075	0·104	11·8	0·45	0·070
63	Agora P10619	15·9	3·8	8·5	0·90	0·069	0·090	7·0	0·93	0·055
64	Agora P12598	15·5	3·2	7·4	0·93	0·158	0·086	7·7	1·04	0·051
65	Agora P14691	22·5	5·6	11·4	1·17	0·118	0·102	11·1	0·61	0·063
66	Agora P15096	17·7	3·4	8·3	0·95	0·077	0·072	6·7	0·83	0·044
67	Agora P17356	17·3	4·2	9·2	0·97	0·075	0·090	8·0	0·69	0·051
68	Agora P17400	18·3	4·8	11·1	1·04	0·13	0·143	10·0	1·2	0·066
69	Agora P21430	20·2	3·8	8·7	0·99	0·062	0·090	8·0	1·04	0·048
70	Agora P23464	17·4	4·7	11·4	1·07	0·091	0·135	6·0	0·88	0·076
71	Agora P23883	19·9	5·9	12·4	1·25	0·119	0·126	10·9	1·9	0·075
72	Agora P22733	17·6	4·6	9·9	0·94	0·145	0·073	9·6	1·08	0·048
73	Agora P22734	18·0	4·8	10·6	0·97	0·094	0·093	9·2	1·3	0·057
74	Agora P22735	13·6	3·8	9·3	0·88	0·11	0·098	5·0	1·28	0·065
75	Kerameikos 1298	22·5	4·4	11·3	1·15	0·083	0·10	9·4	2·2	0·058
76	Kerameikos 1723	18·5	3·8	9·1	0·86	0·087	0·070	8·9	1·26	0·036
77	Kerameikos VD gr.8	15·3	3·9	8·5	0·86	0·087	0·076	10·1	0·61	0·046
78	Kerameikos VD gr.32	13·0	3·6	7·6	0·68	0·075	0·060	9·7	0·68	0·033
79	Kerameikos VD unnum.	16·3	4·1	8·8	0·88	0·099	0·073	10·6	0·76	0·048
80	Kerameikos	20·4	4·2	9·3	0·89	0·087	0·118	12·6	1·15	0·057
81	Kerameikos 1932	17·1	4·3	10·0	0·96	0·098	0·090	4·9	0·73	0·068
82	Kerameikos 1940	17·4	3·1	8·1	0·94	0·053	0·081	4·1	1·24	0·051
83	Kerameikos K29	20·5	4·4	10·8	1·06	0·067	0·112	12·0	1·2	0·059
84	Kerameikos K59	15·2	3·8	10·5	0·98	0·079	0·096	8·3	1·55	0·052
85	Kition	16·5	4·7	11·5	0·88	0·12	0·10	9·9	1·02	0·060
86	,,	18·1	4·4	8·1	0·88	0·115	0·091	12·6	0·93	0·042
87	,,	19·1	4·9	9·7	1·0	0·122	0·10	13·5	1·26	0·055
88	,,	17·0	4·1	9·4	0·90	0·103	0·11	14·0	0·92	0·061
89	,,	17·0	5·0	11·6	0·87	0·116	0·128	7·0	0·88	0·060
90	,,	18·2	4·5	9·1	0·95	0·103	0·10	8·0	0·72	0·058
91	,,	16·0	5·5	12·9	0·85	0·126	0·128	9·3	1·26	0·080
92	Salamis T84,16	14·0	1·2	8·8	0·76	0·136	0·030	6·9	2·9	0·020
93	Salamis T10,15A	21·6	5·2	12·0	1·0	0·141	0·128	10·2	0·86	0·078
94	Salamis T33,11	18·6	4·4	9·3	0·87	0·082	0·105	6·9	0·82	0·054
95	Salamis T10,15B	19·5	5·2	10·1	0·95	0·092	0·10	12·0	1·06	0·056
96	Salamis T4	17·0	4·3	10·0	1·01	0·106	0·095	9·7	0·92	0·062
97	Salamis T84,13	21·0	1·8	8·8	0·79	0·113	0·026	5·6	1·48	0·016
98	Corinth C53.218	13·9	4·4	8·4	0·80	0·077	0·076	9·1	0·99	0·058

contents of **45** diverge from the Athens means by more than two standard deviations. These samples must be considered borderline Attic products; **19** lies too far outside the Athens cluster on both graphs to be considered Athenian.[22]

Samples **9, 10, 11, 13, 14, 19, 24, 32, 34, 41, 44, 46, 92,** and **97** are not Attic.[23] We may

[22] There are aspects of **19** which are not perhaps purely Attic: the clay is a full orange and the fabric very soft, while the decoration is hastily painted and of a rare type. As noted above, p. 122, the clay of **91** and **93** is not surely Attic and analysis underlines the doubt without ruling out an Athenian provenance.

[23] The difficulties posed by **92** should not be ignored and perhaps deserve more than a footnote. From all external evidence the piece seemed Attic enough to be included in the main catalogue and not the appendix on 'à la brosse' amphorae. The original sample, taken from the foot which was not published with the vase, gave results which were clearly not Attic; we decided to test a sample from the body of the vase, which was made available through the good

TABLE 2. CHARACTERISTICS OF ATHENS AND CHALKIS CONTROL GROUPS

		% Al	Mg	Fe	Ti	Mn	Cr	Ca	Na	Ni
(*a*)	Athens Agora									
	13 samples									
	Mean	17·8	4·35	9·8	1·0	0·102	0·10	8·5	1·0	0·059
	Std. dev.	2·2	0·81	1·48	0·11	0·031	0·022	2·1	0·37	0·011
(*b*)	Kerameikos									
	10 samples									
	Mean	17·6	4·0	9·4	0·93	0·082	0·088	9·1	1·1	0·051
	Std. dev.	2·9	0·41	1·2	0·13	0·014	0·019	2·7	0·49	0·011
(*c*)	Athens (a+b)									
	23 samples									
	Mean	17·7	4·2	9·6	0·97	0·093	0·095	8·8	1·1	0·056
	Std. dev.	2·5	0·68	1·36	0·12	0·026	0·021	2·4	0·42	0·011
	80% ranges	14·5–20·9	3·3–5·1	7·9–11·3	0·82–1·12	0·059–0·127	0·068–0·122	5·8–11·8	0·54–1·6	0·042–0·0
(*d*)	Chalkis									
	9 samples									
	Mean	18·2	1·6	8·0	0·81	0·082	0·020	5·0	1·8	0·015
	Std. dev.	1·2	0·22	0·59	0·10	0·013	0·007	0·82	0·23	0·004

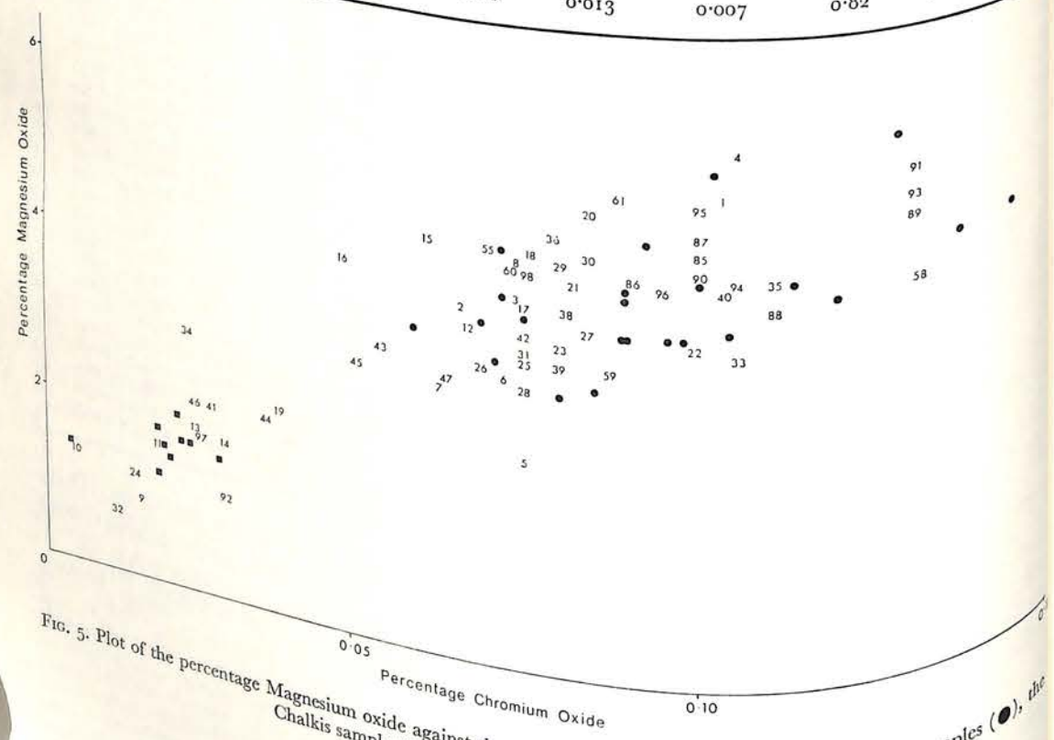

FIG. 5. Plot of the percentage Magnesium oxide against the percentage Chromium oxide of the Athens samples (●), the Chalkis samples (■), and the other amphorae (numbered)

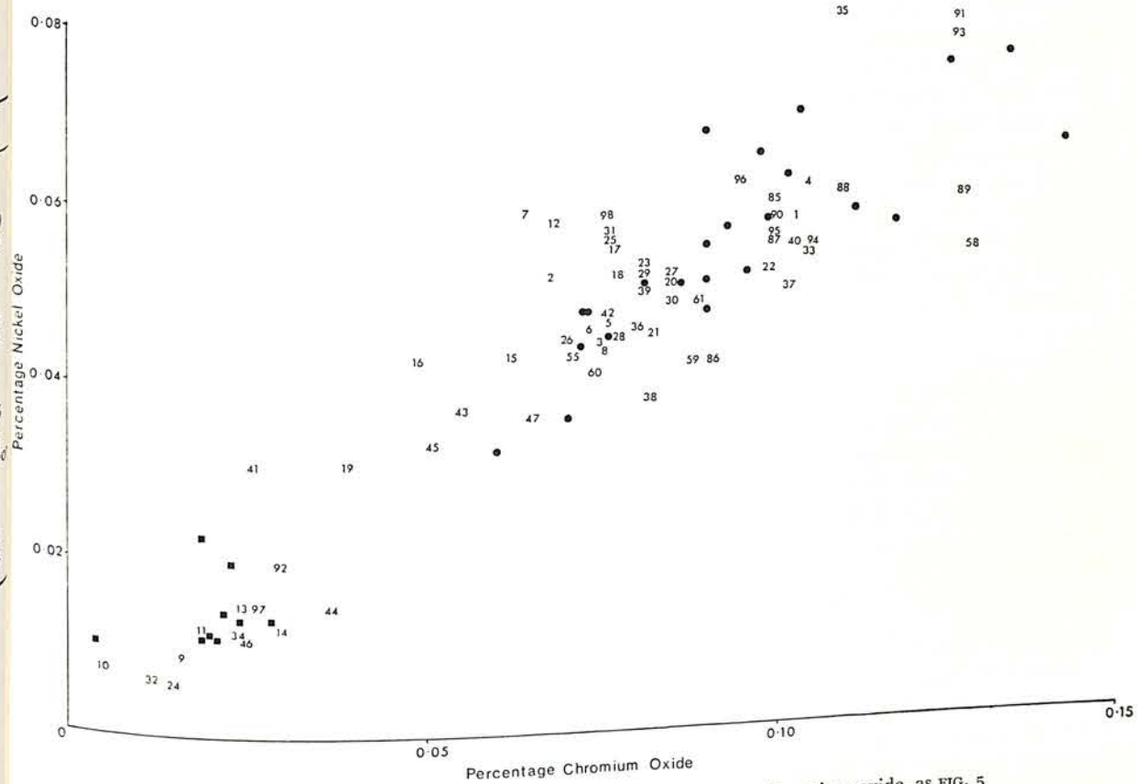

FIG. 6. Plot of the percentage Nickel oxide against the percentage Chromium oxide, as FIG. 5

note first that all the non-SOS vases fall into this group. Analytically **24, 32, 34, 41,** and **97** resemble the Chalkis group in composition, but there is nothing to support such an attribution on archaeological grounds; they are very diverse vases with no visible Chalcidian characteristics whatsoever. Analyses of South Italian clays so far made tend to show such 'Chalcidizing' results and it may well be that this method alone will not suffice to break down the material into individual local groups, although it would be valuable to have more analytical data for Pithekoussai in the form of analyses of carefully selected material.[24]

Our results concerning Pithekoussai can only contribute to the question of Euboean or local origins for a certain amount of the pottery.[25] Many of the amphorae are Attic, **5–8, 12, 15, 16, 45,** and **47,** although we have noted above the atypical composition of **5, 16,** and **45. 9–11, 13,**

offices of Dr. Karageorghis and Professor Buchholz. The result was:

Al	Mg	Fe	Ti	Mn	Cr	Ca	Na	Ni
21·7	1·8	7·4	0·84	0·084	0·018	4·7	1·45	0·012

amply confirming a non-Attic origin. Yet while the readings for the two samples are comparatively close in some of the elements, including the more diagnostic Mg and Ni, there are marked discrepancies in Al, Mn and to a lesser extent Cr. The Al variation may be due to the fact that the first sample **92** was drilled and the second chipped and ground, while variation in readings for Mn may be expected in the fabric of a large vase.

[24] I refer here mainly to David Ridgway's unpublished attempts to distinguish between local and Euboean fabrics at Pithekoussai (*Papers in Italian Archaeology*, I, *The Lancaster Seminar* (1978) 123). Elsewhere in southern Italy some deviation from the Chalcidian range is shown in Ca content (Boardman and Schweizer, loc. cit. 272), and high Ca is apparent in **34,** presumably made near Policoro, though not in **32,** presumably made near Sybaris.

[25] It is to be hoped that positive results will emerge from a programme of thin-sectioning of material from Pithekoussai, being carried out by G. Buchner and D. Ridgway at the British School at Rome.

14, and **46** all fall within the Chalkis composition, but of these only **10** has the characteristics of the amphorae from Chalkis as described in section 2; we should note that its Cr and Ni contents are lower than in the Chalkis group. **11** has some Chalcidian traits—redder clay and glazed inside of neck— but it is not slipped and the decoration is more careless than at Chalkis. **13** has a hard fired fabric, as at Chalkis, but is unslipped, has the circular motif next to the handle (not yet attested at Chalkis) and has a ridge, not a groove, below the lip. **14** too has a ridge, below a very squat flat-topped lip; there are also some inclusions in the clay. **46** has a series of anomalies which put it far beyond Attic and Chalcidian groups: rim profile, slimness of neck and foot, depth of reserved band, and the rosette motif.

It is not possible to draw solid conclusions concerning the material from Spain, and the related sherds from Mogador, on the strength of the two samples analysed, **43** and **44**. We noted that **43** falls within the range of the Attic control group, but only just, and the sherd has no typical Attic features; as **44** is only a wall sherd we can only say that analysis points to a non-Attic origin.

One more observation on the fabric should be made. The majority of the Attic amphorae, and none of the Chalcidian, contain a varying amount of white and red inclusions, ranging widely in size.[26] The red inclusions can be seen in Attic decorated vases from at least as early as the Protogeometric period down to later Protoattic; stones of this particular blood-red colour seem to occur in no other contemporary Greek fabric save Eretrian.[27] Mr. Salter of the Oxford Research Laboratory has examined for us a large stone of this type embedded in **60** and reports that the origin was a fine-grained sedimentary rock, perhaps a siltstone, of no peculiar geological character.

4. INSCRIPTIONS

Over fifty SOS amphorae are now known carrying graffito inscriptions of some kind. The majority are found on the shoulder of the vase, but the neck was also commonly used. Inscribed vases are known from each period, although lengthy graffiti are extremely rare before 650. The meaning of these marks has been discussed on a number of occasions, with no consensus emerging; I will not add any new interpretation here.[28]

Full names

Nine amphorae have full names inscribed on them in the genitive case.[29] In three instances at least εἰμί is added, enough to demonstrate that in all cases we are dealing with owner's inscriptions; this is one of the commonest uses of writing in high archaic Greece, at least on non-perishable materials. None of the pieces need be earlier than *c.* 625 (Syracuse 21210, from Gela) and most may belong to the early sixth century. However there are examples of full names inscribed on amphorae of other fabrics dating much earlier than this.[30]

The provenances of the nine are Cerveteri (five), Vulci, Gela, Kamarina, and the Kerameikos (one each). In no case is there anything to suggest that the alphabet used is not Attic, and where εἰμί is used the diphthong is written out in full in the normal Attic manner.[31] On no less than three of the pieces there are spelling errors in the termination of the name: *omicron* is omitted on **2** and Syracuse 21210, and the final *sigma* left out in one version of **21**; also one attempt at the name on **2** was prematurely abandoned. It is to be noted that at least two hands were at work on **2**.

The range of names is curiously varied. None is a particularly common personal name and a few are downright unusual. Of the new names, Smikron is unobjectionable, even if rare;[32] Archon should indicate a man of at least a little pretension in a seventh-century context, although it is a name that recurs widely enough later;[33] Charopios is not to my knowledge attested elsewhere, although its cognates are rather well represented in the archaic and classical period;[34] Smordon on the other hand is elsewhere confined to the northern Aegean area and we may speculate that the graffito on **21**, in Attic script, indicates a non-Athenian.[35] The remaining names have been discussed elsewhere. Overall an untidy picture emerges which does not encourage the search for a single precise explanation of the inscriptions. The familiar forms, Korax, Klopetion, and Myrmex could well belong to men of humble station, though probably Attic land-holders; but were Lasargades and Smordon Attic farmers too? It would be foolish to be dogmatic on the matter, and we should bear in mind the kind of changes that Solon's agrarian reforms may have brought to the face and faces of Attic small-holdings.

While such an explanation remains a possiblity, I believe that the alternative view, that these are traders' names, can still be upheld; it is objected that traders would not place their names as owners on the amphorae and that it is unlikely that there were many Attic merchants at this period, but both difficulties are obviated if we think of the marks as being applied by the Attic producers (and therefore in the local script), reserving the contents of the amphorae for traders of whatever nationality—'this is marked down for Smordon'. Here there seems to be some parallel to later traders' marks on decorated vases, although the εἰμί does raise some difficulties.

Abbreviations and symbols

Some of the fragmentary inscriptions may once have been full names (notably **65**), while there are a few abbreviated names which can be taken as having had the same connotation, for example Salamis tomb 10, 15, and 15A, Phaleron tomb 4, *Thera* ii 64 and perhaps Metaponto

[26] Such inclusions have been mentioned more frequently of late; *Kerameikos* vi 2, 144, *Eretria* v 22. We can single out from the mass of vases which display red inclusions a trio in the National Museum in Athens: 221, the early black-figure Siren olpe (Shefton–Arias–Hirmer pl. 21); 2226, late Protoattic sherd with fragmentary inscription (*BSA* xxxv (1934–5) pl. 54, f; Beazley, *AJA* xxxix (1935) 475, 1); 18772, fragment of plaque from Aegina, *c.* 700 (Jeffery, *LSAG* 110, pl. 16, 1; the drawing is misleading since it tends to dissimulate the scar by the crucial antepenultimate letter—*pi* or *gamma*; the start of a downstroke, giving a *pi*, seems just visible).

[27] Descoeudres mentions these inclusions with respect to three of his sub-groups of Eretrian fabric, 3d, 6c and to a lesser extent 9 (*Eretria* v 21–2); no pieces of the first two sub-groups are included in *Eretria* v and in *Archaeometry* xix (1977) l.c. only one of each is analysed, 26 and 76; purely on grounds of analysis 76 could well be Attic. However, there is on display in Eretria Museum a sherd from a large 'Dipylon' type amphora, from Papadimitriou's excavations, showing a warrior and (?) charioteer painted in the typical Eretrian white-on-glaze technique, and the fabric includes several red stones.

It is not easy to incorporate the results of the Eretrian analyses here, principally because the two elements which we have found most diagnostic, Cr and Ni, were not measured. Some distinction between Eretrian and Chalcidian fabric in the concentration of those elements that both programmes have in common is observable, but the ranges are not widely separated. Mg content is the most significant available with the mean figures of: Eretria 3·2; Athens 4·2 (SOS), 5·2 (Stern/Descoeudres); Chalkis 1·6 (SOS), 2·4 (Boardman/Schweizer). On available evidence none of the problem pieces from Pithekoussai seems to have an Eretrian origin.

[28] The various opinions held concerning the marks are summarized by Hoz Bravo, *Madr. Mitt.* xi (1970) 104 ff. and esp. n. 5.

[29] They are: **1, 2, 21, 80,** Syracuse 21210 (Gela), Villa Giulia (Cerveteri tomb 6, 12) and Louvre D33, D34, and D35.

[30] Unpublished sherds of an amphora of the LG I period from Pithekoussai (necropolis sporadico) of the same fabric as the vase cited in n. 38 below, and probably Leukandi, *Preliminary Report* fig. 78, which is in turn of similar dark brick-red coarse clay. See now *PdP* 33 (1978) 136.

[31] For examples in Attica and some from elsewhere see Hansen, *Glotta* liv (1976) 31–2 (with regard to his remarks concerning Nestor's cup, it should be noted that simple ἐμί is found on the Pithekoussai sherds mentioned in the previous note). While εἰμί is used occasionally in Euboea, Boeotia, and Sicily, it is far rarer in Ionia; to add to the examples cited by Hansen, there are six or seven εἰμί to place beside the overwhelming majority of ἐμί at Naukratis, one on a Chiot chalice from Aegina, Furtwängler, *Aegina* 456, no. 244, and *LSAG* 343, 29 from Miletus, and 372, 61c, from Borysthenes island. Ἐμί is found in Attica, but rarely: the Burgon amphora, sherds from the Acropolis, Graef-Langlotz ii 1369, 1370 and *Agora* xxi F 63 and F 65.

[32] The one Attic companion cited by Pape-Bennseler suffers from being a variant reading at *Dem.* xxi 182.

[33] Few examples are given by Pape-Bennseler, but they are well scattered.

[34] Perhaps he is rather Charopias, who has a namesake, Charopies, in the early fifth century at Styra, *IG* xii 9, 56 (432). Charopinos is a sixth-century Parian, *LSAG* 103, 4, while Charops can be found in Athens in the fourth century, *Bull. Ep.* (1950) 72a.

[35] For the north Aegean, but not necessarily non-Greek origins of the name see *Bull. Ep.* (1974) 142.

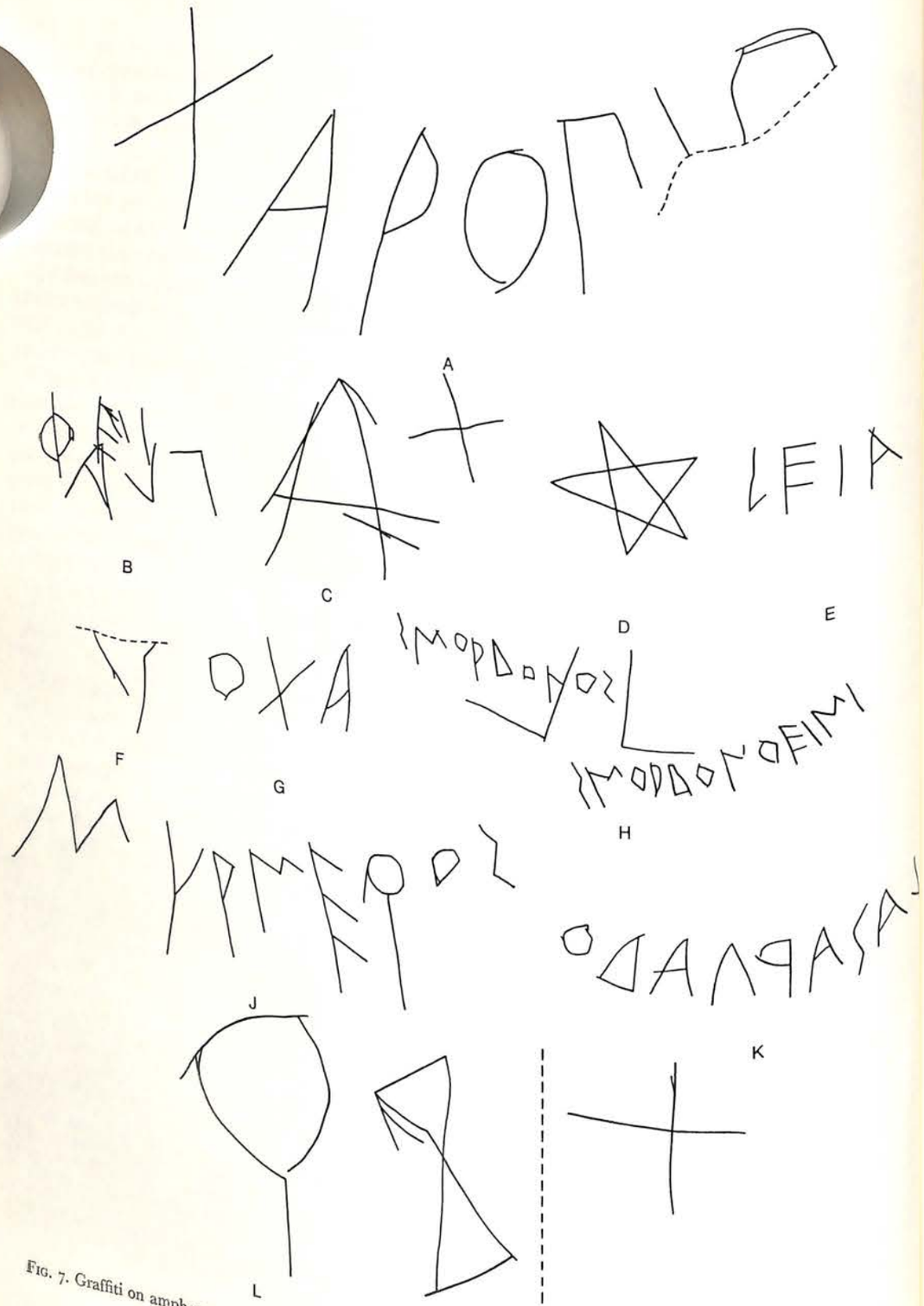

FIG. 7. Graffiti on amphorae: *a*, **80**; *b*, **92**; *c*, Corcyra 63/130; *d*, **47**; *e*, **45**; *f*, **36**; *g*, **17**; *h*, **21**; *j*, Louvre D33; *k*, Louvre D35; *l*, Louvre D38; *m*, Louvre D39. Scale 1:2

22714, if it is from an SOS. **43** is another possibility; I prefer to read the inscription as Greek rather than Phoenician. British Museum 1888.2-8.60, from Tell Defenneh, is more interesting; now that it seems likely that we have the beginning of the name preserved (p. 115), we should note that it is far more likely that Pet—is the start of an Egyptian name than a Greek one.[36] If only a few more letters had been cut we may have had the satisfaction of seeing that it was not cut in Attic script.

Many of the remaining graffiti are single letters or signs whose interpretation is extremely difficult; some of them appear as second graffiti on vases bearing full names. On the analogy of later amphorae we might have expected notations of content, capacity, or tare, but there is no graffito which is unequivocally numerical and certainly no pattern discernible among those which might possibly be considered numerical. A simple X is so commonly found on amphorae that in most cases it could not possibly be a number. Unit strokes appear once, on the late piece from Halieis, HP471; one of the sherds from Old Smyrna has a mark which could be taken as a pattern of unit strokes. Only in the case of Corcyra 63/130 (FIG. 7(*c*)) can a numerical interpretation be more seriously considered; here we have a *delta* followed by a cross, not surely in the same hand. It is tempting to think of 'ten choes', but I would not press such an interpretation without further material to support it. If we were to accept it it would constitute the earliest secure evidence for the acrophonic system of numerals.[37]

It is probable that many of the simple signs are used as substitutes for alphabetic owner's marks. X, pentalphas and hour-glass signs are obvious choices. There are of course difficulties in such an interpretation where the sign is accompanied by a further graffito indicating an owner's name. However it is quite possible for an amphora to have a full and complex life, as has been dramatically illustrated by the vase from Pithekoussai with a variety of Aramaic and Greek graffiti recently published.[38] Beside that example, it would be hazardous to analyse the double marks on SOS amphorae.

The rarity of repetition of marks on different amphorae should be stressed. Some simple signs recur, and chronologically it would be allowable to entertain the idea that **42**, Villa Giulia tomb 6,11 and Louvre D39 could have had their hour-glass sign cut by one person; likewise perhaps the compass drawn circles on the Oisymne vase and Corcyra 63/130 (though that on **74** may be earlier). The alphabetic marks on **58** and **59** are clearly a pair, as the vases are in all other respects, but other alphabetic inscriptions are singletons. If we were dealing exclusively with merchants' marks I would have expected a modicum of repetition in the sample which we have preserved.[39]

The bulk of the shorter graffiti could be Attic, but there may be a few exceptions. BM 1888.2-8.60 I have noted above. **25** presents a clear non-Attic *gamma*; it may be an Ionic trader's mark.[40] Three more enigmatic marks could possibly be Attic, but are more likely of local origin, **40**, **45** and Megara Hyblaea, FIG. 7(*g*). While the simple hour-glass sign is a universal Greek possession

[36] The very frequency of names in Pet- in Egypt makes a Greek explanation unlikely. I would not wish to advance the possibility of Pet(rie), and would like to take the opportunity of at least querying the possibility of Bil(iotti) on the cup from Rhodes which I suggested in *BSA* lxx (1975) 164. Names in βιλλ . . . are reviewed by Robert, *Bull. Ep.* (1974) 142 and include an example from Iasos. In addition, I have very rarely come across any short graffiti which seem of doubtful authenticity.

[37] On early acrophonic numerals see *PdP* xxx (1975) 365–6. *Delta* is also found on Ashmolean 1956.507 and Salamis tomb 10, 15.

[38] Garbini, *PdP* 33 (1978) 143 ff. We also find one mark inscribed in part over another on **92** (FIG. 7(*b*)); I would read an original graffito ΦΕ (the following strokes are very faint, possibly accidental), over which has been cut part of the *alpha* of the retrograde mark, ΓΛΑ.

[39] It should be noted, however, that repetitions are not common among mercantile dipinti on Corinthian and early Attic BF vases; *Greece and Rome* xxi (1974) 141 and *BSA* lxx (1975) 149.

[40] See n. 38 for the probability that it was not inscribed early in the career of the vase.

its apparent use as a letter on **40** does cause some difficulty; I would consider it most likely that it was inscribed locally at Halieis, but can offer no plausible interpretation.

45 is a more interesting document, cut unusually on the belly of the vase, which in itself is sufficient to suggest some special significance. ΛΕΙΑ could be interpreted as 'booty' or 'smooth'; in the latter case the likelihood of a neuter plural seems remote and it is not easy to suggest a suitable feminine noun.[41] The ending would then not be full Ionic. On the other hand 'booty' would not have been cut on the vase at source and so should be in the local script and dialect, and once again the *alpha* termination is not full Ionic; it is questionable how far we should expect Ionic forms at Pithekoussai.[42] On balance 'booty' is the preferable interpretation, a nice glimpse into Chalcidian activities hinted at by Thucydides vi, 4. 6.

Like **40**, the Megara Hyblaea inscription, FIG. 7(*g*), is also cut on the neck. Supposing that the letters are an abbreviation of a single word, I find it hard to think of the central letter as 'blue' *chi*, nor does it give the appearance of an *upsilon* with accidentally long hastae. The vertical second upright of the *alpha* suggests that it should be read retrograde, but neither αχο- or αξο hold out much hope. Orthograde οξα- at least could yield words which could refer to wine or oil, but further speculation would be dangerous.[43]

I have no explanation for the curious second graffito on **2**, FIG. 1(*d*).

The graffiti reported on the vases from Metauros are both of interest; confirmation that the first is pre-firing would support the argument that many of the other graffiti refer to persons in Attica, though it would not prove whether they are traders or farmers. The second has the intriguing word, or abbreviation, Fεργα.

5. SHAPE AND DIMENSIONS

The evolution of the shape of SOS amphorae has been well outlined by earlier writers and sufficiently well illustrated by published profiles.[44] Since much important material is awaiting detailed publication, I will not attempt here to isolate niceties of development, but merely point out some salient chronological guidelines such as I have used here to date pieces not found in specific contexts.

The Attic SOS shape develops in the LG I period from that of the standard decorated amphora; the pedigree is clear in the symmetrical balloon body and the tall, straight or very slightly flaring foot. The general line of the vertical neck is similar, but there are significant differences here and in the handles, both of which can be explained on practical grounds. The handles are round, not the flattened or strap handles of the decorated amphorae; considerations of ease and frequency of transport probably governed this change, though it was not so necessary that round handles were also adopted at Chalkis. The characteristic neck profile incorporates a sharp moulding under a simple vertical lip; this feature is best explained as a

[41] The word does occur in a mercantile context, but clearly with reference to plain, i.e. unribbed, black-glaze vases, probably of the fourth century, Hackl, *Münchener Archäologische Studien dem Andenken Adolf Furtwänglers gewidmet* 56, no. 607.

[42] *Epsilon* after a vowel in the first declension is found in Tataie's inscription on the aryballos from Cumae, *LSAG* 240, 3. On the other hand on a fragment of a local (?) skyphos from Pithekoussai, Mazzola 70-C-1050, is the snatch]αιεναφο.[to all appearances in the local script. From this evidence of the earliest period there would seem to appear a *non liquet* about the 'proper' Euboean usage.

[43] It would be controversial to introduce such a 'red' *xi* to Megara Hyblaea (or any neighbouring state) however; the 'blueness' of the Megarian script has been championed, with substantial new evidence, by Manni Piraino, ΚΩΚΑΛΟΣ xxi (1975) 121 ff.

[44] See Young, Brann, and Villard, *BAM* 11, cc. Young does not begin the series early enough, for the Pithekoussai and Kerameikos evidence points to its inception in the Attic LG Ib period; Brann terminates the series too early unless we interpret very broadly her words (*Agora* viii 32) 'except for a few late stragglers this series ceases at the end of the seventh century'; the material from Vulci and Kamarina at least belies this. Villard too assumes that the 'à la brosse' type replaced the SOS around 600 rather than overlapping it during the following years.

drip-ring to catch the contents that might dribble over the edge of the lip. In course of time this ridge disappears as a more cup-shaped mouth is adopted; a very similar progression is seen in the shape of the mouth of the sixth-century Attic lekythos and encourages the view that the SOS was primarily an oil container.[45]

The Chalcidian version of around 700 differs in an number of respects. The foot is lower and more flared, the body probably had a higher centre of gravity, the handles are flattened, the lip is thicker and the neck is slightly convex with a groove instead of a ridge (probably a functional alternative).[46] It would be difficult at present to point to the origin of these details of shape, severally or as a group, or to discuss the relationship of Attic and Chalcidian shapes.

Flattened handles and flaring foot appear on Attic amphorae in the course of the seventh century; the latter change seems to keep pace with general developments in the Kerameikos, while the former was surely influenced by the usage for decorated vases. Other changes occur in the neck profile, angling of handles and body shape.[47] The neck becomes more concave with a taller and more flaring lip which eventually becomes echinus- or calyx-mouthed on the latest vases (e.g. **58**, **59**). By this time the neck ridge had disappeared, although it had been steadily losing prominence throughout the seventh century. The balloon shaped body also lasts into the seventh century, though it becomes fuller; there is a tendency to a higher, broader greatest diameter and a flatter shoulder. It would, however, be risky to hazard a date for a vase on the grounds of body shape alone, especially as vases from closely datable contexts in the middle part of the seventh century are so rare.

Towards the end of the century we find vases with a very flat and broad shoulder (e.g. **2**, **27**). The ridge finally disappears after this stage when the body becomes less broad once again, although the shoulder remains flat and the lower body tends to fill out. The Kamarina and Vulci tombs demonstrate that such pieces were made some way into the sixth century, a view that finds corroboration in the SOS amphora carried by Dionysos on the François vase of *c.* 570. The 'à la brosse' version of the storage amphora was being produced at the same time at Athens, and it is this type that gives more to the shape of the Panathenaic amphora than the SOS.[48]

The dimensions of the amphorae vary substantially with little perceivable chronological pattern, save for the gradual widening of lip and foot diameters. Throughout, the height of the foot remains around 3 or 4 cm. and the neck plus lip height varies between 9 (**38**) and 16 cm. (Louvre D35), rarely straying from between 11 and 14 cm.; in the early period 14 is rarely reached, while later the lip takes up more of the whole, **68** being a striking exception.

Height varies from 58 cm. (reported for *Clara Rhodos* iii tomb 86) to 75 cm. (**21**). All those under 64 cm. are late, but **21** and others prove that not all later vases are smaller, and the early vases **47** and Cumae, tomba Artiaco are barely above this limit. The average height of nineteen

[45] The evolution of the lekythos at Athens is readily judged from Haspels, *Attic Black-figure Lekythoi* pls. 1–10. Vallet has argued for the use of the SOS as an oil container in a fundamental article, *Hommages à Grenier* 1558 ff.

[46] Such a convex bulge to the neck is typical of Chiot wine amphora of the sixth and later centuries, *BSA* xlix (1954) 169, V. Grace, *Amphoras and the Ancient Wine Trade* fig. 44, *Histria* ii pls. 52–3. Bulgy necks are rare earlier and one may ponder the possible connection of the Chalcidian amphorae with Cypro-archaic I oinochoai in this respect, e.g. *SCE* iv 2 fig. XXIX 13, XXXIV 16, *Ant. K.* x (1967) pl. 38,1.

[47] For profiles of Attic neck-amphorae of the seventh century see G. Mylonas, ὁ Πρωτοαττικὸς Ἀμφορεὺς τῆς Ἐλευσῖνος 9–16

[48] The early Panathenaic amphorae have round handles (with which we may compare **91**) and the neck and lip profile is far closer the 'à la brosse' than late SOS type; see *AJA* xlii (1938) 495 ff. There is no observable difference in size between late SOS and early 'à la brosse' amphorae.

It is a nice question whether the SOS was still being made at Athens at the time Kleitias painted the François vase, even nicer whether he intended it as a wine jar. On the first question it would be best to await the publication of the Kamarina material, on the second we are faced by the alleged Solonian prohibition of Attic wine exports. If Dionysos is carrying oil do we have a precocious use of the 'political' use of mythology at Athens by vase-painters, championed by Boardman (*RA* (1972) 57 ff.; *JHS* xcv (1975) 1 ff.)? See further p. 140.

complete vases for which I have good measurements is 68 cm. No more consistent pattern emerges from considering height less lip and neck.

Diameter is rather more stable, mostly between 43 and 49 cm., with anomalies occurring largely in the later period;[49] exceptionally small are the early Mylai tomb 68 (reported diameter 36) and Louvre D39, a late vase with the same diameter. As noted above broader diameters occur around the last quarter of the sixth century, although the very largest, Agora P7185, 54 cm., is a little earlier. The average diameter of the nineteen vases is 44·4 cm. There is no tendency for taller vases to be slimmer.

Such observations indicate that the capacity of these vases must vary substantially. As noted above, only one amphora has been tested for capacity, **2**; it holds 63·75 litres to the lip, 61·75 to the base of the neck. I have independently used several formulae to calculate the capacity of this and the other eighteen vases mentioned;[50] none have yielded a figure close to the actual measurement of **2**, and so I would be diffident about using them to draw any conclusions, although one certainty is that **2** is by far the largest of the group; full of oil it would have weighed in the region of 70 kg.[51]

There are several interesting questions raised by the examination of the capacity of the SOS amphora. It is clear that the SOS and à la brosse types gave rise to the Panathenaic amphora whose size remains more or less constant over a number of centuries, with an intended capacity of an Attic metretes of twelve choes.[52] Did the potters of SOS amphorae aim at a similar consistency or did they begin to do so at any particular point? If they did not achieve consistency was this the result of lack of expertise or lack of motivation, on their behalf or that of their patrons? Such questions seem pertinent since the SOS is the first Greek storage jar made and exported in numbers. Further, does the lack of notations of capacity or tare indicate that all transactions were taken on trust as being of one metretes, that the amphorae and contents were reweighed at each stage of transaction, that barter exchange only operated at one point—making weighing then and only then a simple matter, or that capacity and tare notations were not yet in use in Greece, or at any rate individualized without wider acceptance? This list can hardly be complete. Such matters can only be settled within a broader framework, but as the SOS bulks so large in the history of high archaic Greek trade I would like to open up one line of argument, that the potters did attempt some standardization, whatever subsequent checks were applied to their work.

[49] The diameters of 50 cm. or more that I have available are for: **2, 27, 68, 72, 74,** Agora P7185, Salamis tomb 10, 15 and Louvre D34.

[50] I have applied several formulae to **2** and others of the nineteen vases, all based on the kotyle size of 273 cc. used by Lang, *Agora* x 44, which in turn is very close to the chous size used by Grace, *Hesperia* xl (1971) 85. The formula $V = \frac{2}{3}$ r(internal)^2 × body height (i.e. less foot and neck) gives a range from 28,500 to 69,000 cc, or 104 to 253 kotylai for the nineteen vases; the two extreme examples stand rather apart (Louvre D39 and **2**), but discounting them the average capacity using this formula is 191 kotylai. A simpler formula is $V = 14$ (more or less the neck diameter of the same result for Louvre D39 and only 46,155 cc for **2**, with an average without these two of 146 kotylai. The most amphorae) × D × height less foot; this gives virtually formula adopted by Lang of $V = \frac{11}{14} \times (\frac{3}{4}D)^2 \times$ height less foot × foot (but note that the ^{2} is omitted, ibid. 59; correctly given in *Sov. Arch.* (1976) 3, 93) gives 72,370 cc, while the formula preferred in *Sov. Arch.* ibid., $V = \frac{11}{14} \times$ height less foot × ($\frac{1}{2}(D+$neck $D)$)^2 gives 53,525. One further method of calculating the capacity of **2** which was tried was to cut out of cardboard a half-section of the vase (internal); the centre of gravity of the section was found and the distance from it to the vertical axis used as r in the formula $V =$ area of half-section × $2\pi r$; this gave $1{,}117 \times 2\pi r$, $= 1{,}117 \times 2\pi \times 9{\cdot}85 = 69{,}095$ cc $= 253$ kotylai. It is clear that the first and last of the methods gives the best results for **2**, especially when taking into consideration the fact that I may have overestimated the internal measurements of the vase; however, we still have to make allowance for the fact that a proportion, perhaps up to two litres of the 63,750 cc of water taken to fill **2** will have been absorbed by the walls. The most striking result is that none of the formulae are tolerably close to the actual measurement.

[51] The empty tare of 17 kg. (or a little less—the vase was still a little damp when weighed) plus 61–2 litres of oil at 920 gr. per litre.

[52] For capacities of Panathenaic amphorae see Edwards *apud Agora* x 39, n. 9 and *CVA Metropolitan Museum* 3 32 ff.

One of the rule-of-thumb methods which I have used to calculate possible capacity does not give an adequate figure in the case of **2**, but it is perhaps possible none the less that potters were using some such guideline, involving simple dimensions—maximum diameter, height, and neck diameter. Of the nineteen vases used the mean height, minus foot, is 64 cm., about two feet on some contemporary systems; the mean diameter is 44 cm., or 22 fingers, while the mean neck diameter is in the region of 14 cm. or 7 fingers. Multiplying these three measurements gives a cubic capacity of 144·4 Attic kotylai, just a shade more than an Attic metretes.[53] I can merely observe that 22 and 7 are numbers not unknown in the calculation of area and capacity of round objects, and without prejudicing other issues I would suggest the possibility that Attic potters from the later eighth century threw amphorae whose size was determined by their major dimensions involving the numbers 22 and 7.[54] I fully appreciate that it is dangerous to work from the mean measurements of a considerably divergent set, but hope that this suggestion may lead to further study and discussion.

6. Decoration

Neck

The neck decoration of Attic SOS amphorae is in glaze on a reserved ground.[55] The number of bounding lines above and below varies, normally none, one or two not infrequent, and three attested.[56] The inside of the neck is almost always reserved, in contrast to the Chalcidian treatment.[57]

Key to abbreviations used in parts 1 and 2:

Circles

O
Oa dot and two rings; FIG. 8(*a*)
Ob two rings, no dot; FIG. 8(*b*)
Oc four rings
three rings, central one with four spokes; FIG. 8(*c*)
O/W two rings, central one with four spokes; FIG. 8(*d*)
Och five rings (Chalcidian variety); FIG. 8(*e*)

Zig-zags

S orthograde four-bar sigmas; FIG. 9(*a*)
Sa retrograde four-bar sigmas; FIG. 9(*b*)
Sb six-bar sigmas; FIG. 9(*c*)
Sc more irregular wavy line; FIG. 9(*d*)
Sd as Sc, but reaching bounding lines; FIG. 9(*e*)
Sl, Sla, etc. same as above, but single, not double.

[53] $64 \times 44 \times 14 = 39{,}424$cc $= 144{\cdot}4$ kotylai. Such calculations are of course based on near complete uncertainty over the size of the Attic foot in the eighth to seventh century (see further, section 7); I only intend the equations 64 cm. $=$ 2 feet and 44 cm. $=$ 22 fingers to be roughly approximate. No doubt other hypotheses could be shown to be acceptable if a different foot is used. Here 44 is probably excessive for the average internal diameter, but 64 too little for the average internal height, since the SOS has a deep base (V. Grace, *Hesperia* xl (1971) 72.

[54] Although the neck diameter scarcely seems of great relevance to such calculations it is used in formulae for calculating capacities propounded in antiquity (Hero, *Stereometrica* 21–5); for its application see also n. 50. If the potters were using some such rule of thumb method it does not of course imply any considerable mathematical acumen on their part, although it does suggest that a value for π was known in Athens at this date. It may have been a further aspect of the orientalizing period, although the computation involving 22 and 7 (or 11 and 14) does not seem attested earlier in the Near East; in the Egyptian Rhind papyrus we find $\frac{8^2}{9^2}$ (O. Neugebauer, *Vorlesungen über Geschichte der Antiken Mathematischen Wissenschaften* i 122 ff.).

[55] On one of the Phaleron vases the neck ornament is said to have been incised, *ADelt.* ii (1916) 29, tomb 37.

[56] Bands above the panel are rare on Attic amphorae: 55, Eretria inv. 4738a and b, and Syracuse, *Arch. Sic. S-O* no. 280 are the only assured examples known to me. This feature seems to be the only one to suggest a non-Attic origin for the Eretria sherds, since both the other pieces are also anomalous, 55 in being the only Attic piece in the Chalkis deposit and having an unusual form of O decoration, and the Syracuse sherd with its elaborate Ob decoration and rather squat profile. Three lines below the panel are found on 45; in this respect and in the forms of O and T used 45 is close to the two LG I vases cited at the end of n. 59.

[57] Agora P7185 is an exception.

W wheel, four spokes
Wa wheel, eight spokes
Wch wheel with 'hub' and 'tyre' (Chalcidian variety); FIG. 8(*f*)

Triangular motifs

T double outline, central cross; FIG. 10(*a*)
Ta single outline, central cross; FIG. 10(*b*)
Tb double outline, central cross with hatching; FIG. 10(*c*)

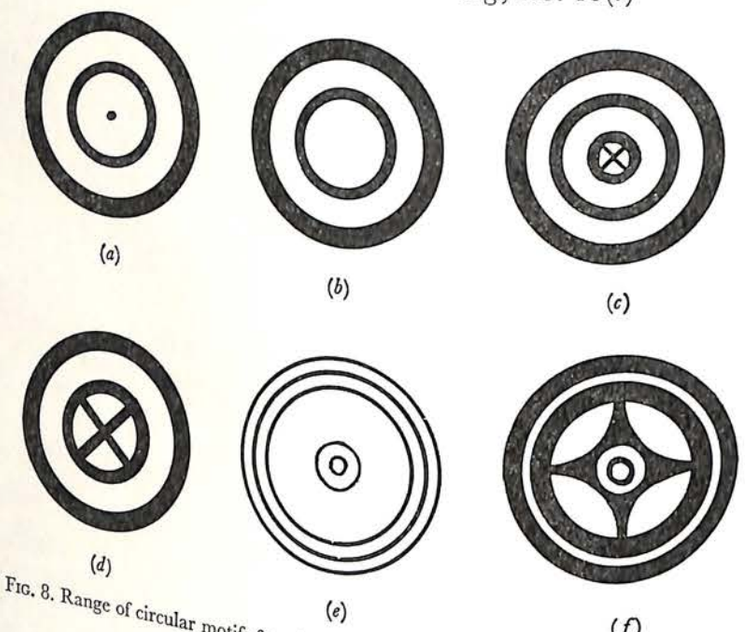

FIG. 8. Range of circular motifs found on necks of SOS amphorae. Scale approx. 1:2

Circles

The more complex forms appear only earlier, though **55** had something other than simple *O* or Oa. Oc and Od appear only on vases of the early group. The typical Chalcidian circular ornament, Och, is also more complex; it has no close parallel in contemporary Greek ornament and it may well have been borrowed from the Cypriot repertoire.[58] We might then suppose that Chalkis adopted the circular motif on the neck of its storage amphorae before Athens, where in the early period the triangular central motif was more common and the type of circle used was simpler and drawn from the Late Geometric stock of ornament.[59]

[58] Despite the ubiquity of concentric circles in Late Geometric ornament, the spacing of the Och type is not readily paralleled. Gjerstad rightly questions any close relationship between the Cypriot and Greek usage of concentric circle ornament (*SCE* iv 2, 301), but the closest parallels for this particular Chalcidian variety are found in the sets of mainly vertical circles on Cypro-geometric III and Cypro-archaic I flasks and oenochoai, e.g. *SCE* iv 2 figs. XIX, XXI–XXIII, XXV and more especially the Bichrome Red I vases fig. XLI; here I follow the dating for the start of CA I around 740 B.C. proposed by A. Dimitriou at the Mycenaean Seminar in London, June 1977 (see now *AA* 1978 12 ff.). Cypriot contacts with Euboea at this time are discussed in *Ant. K.* x (1967) 133 ff., to which we can add Coldstream's reallocation of the Cesnola group to Euboea (*BICS* xviii (1971) 1 ff.) although it has not been welcomed by all those working on particular Geometric schools (a selection of reactions: Buchner, *Atti xi Convegno Magna Grecia* 371–2; Walter-Karydi, *AA* (1972) 408 ff.; Descouedres, *Eretria* v 57 n. 344.)

An alternative explanation would be to derive Och from Wch in spite of the overwhelming number of Och at present known; much depends on how short-lived the potters' dumps at Chalkis were and whether the sherd **10** is demonstrably earlier than them. If the wheel was the original motif it should have some more than purely decorative significance; dare one connect it with the type on early Chalcidian coins?

[59] Taking the preponderance of T at Pithekoussai and the general statement about the Phaleron material, *AE* (1911) 248, into account, the ratio of T to O at Athens in the early period seems roughly even; O on early pieces: **7, 8, 45, 71, 75, 78,** Phaleron tomb 47. More complex O motifs are found on some Attic LG I amphorae with neck decoration, e.g. *ADelt.* xxviii (1973) A pl. 16α–β, 26ζ, Dipylon grave XIII (the grave of the ivories), *JdI* xiv (1899) 191 fig. 48, and Athens NM 12895 from the Rousopoulos collection, an interesting vase since it has most characteristics of an SOS of the early period save its short body with striped decoration; the neck is ridged and the handles rounded, striped; the neck decoration is Ob,Tb,Ob, divided and framed by single long zig-zags.

[60] e.g. *ADelt.* xxviii (1973) A pls. 3*a*, 8*a*, and 21*a*; Dipylon grave X, *JdI* loc. cit. fig. 49. See also Young 211.

[61] Eight-spoked wheels at Athens, Boardman, *JHS* lxxxvii (1967) 3; it is more frequent unconnected to a chariot, as a shield blazon (Tölle, *Antike Welt* v (1974) 3, 29, fig. 10 various) and in particular as the core decoration in the LG II Concentric Circle group (*GGP* 74–5). The lack of significance in the normal SOS decoration is stated by Brann on F41.

[62] The many-stroke *sigma* is found sporadically throughout the Greek world in the seventh century, but only persists at Sparta. Four-bar *sigma* is a common enough alternative to three-bar at Athens in that century but becomes something of a rarity after. See *LSAG* 34 and 67, *BSA* lxviii (1973) 184 n. 11 and *Hesperia* suppl. xvi 44. **82** and Phaleron tomb 47 show that a definite four-bar version can be found on quite early SOS.

[63] The horizontal wavy line is too common a motif in the LG period for us to pin down its origin here.

On **10** the basic Chalcidian motif is changed into a finely painted wheel, Wch, and a similar though rougher type appears on the Chalkis sherd, *ADelt.* xxvi (1971) B pl. 227*a*. The Attic cartwheel type O/W is also early, of the eighth century. The painter may have been subconsciously influenced by thoughts of the transport of amphorae, but the usuage of wheel ornament in Geometric is too widespread to press the point (but see n. 58).

Most of the wheels with single circles, W, Wa, belong to a later period, with the exception of the sherds from Pithekoussai, **11** and **13.** However, such simple wheels are found decorating the necks of Late Geometric neck-amphorae.[60] The eight-spoked wheel, Wa, is found on Agora P8377, but is a rarity in Athens; on the companion pieces, P8375–6, we see thickened ends to the spokes, leaving us in no doubt as to the artist's intention.[61]

The sun-burst motif on the non-Attic **46** is so far unique, as is the solid disc on **6,** together with the flanking creatures.

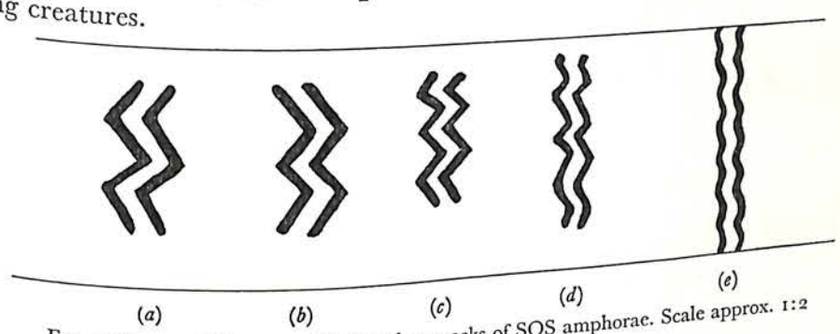

FIG. 9. Range of zig-zag motifs found on necks of SOS amphorae. Scale approx. 1:2

Zig-zags

They are of varying length and tidiness and the seemingly neat categories S–Sd blur the wide range of possibilities. The very long wavy lines, Sd, are confined to the early period, while the three-bar variety of S is always late (**21,** one side of **62,** Thera, *AM loc. cit.* Abb. 55*a* and Syracuse, Fusco tomb 267). Such a progression is consistent with the development of the letter *sigma* in Attica.[62] The direction of the more deliberate *sigmas* varies seemingly at random, though facing or opposed sets of *sigmas* (S,O,Sa; Sa,O,S) are relatively rare. Single zig-zags are far rarer than double, but can flank either triangular or circular motifs. As a central motif zig-zags are mostly late; exceptions are the Phaleron vase, *AE* loc. cit. fig. 6, and those vases on which the flanking ornament is also zig-zags (**16, 38**).

A horizontal wavy line is found on the early vases, **36,** Cozzo Presepe P2461 and the amphora from one of the more recently excavated tombs at Pithekoussai.[63]

Triangular motifs

Ta and Tb are so far only attested on one amphora apiece, but T occurs quite as frequently as types of O on Attic amphorae of the early and middle periods. Various triangular forms of filling ornament are common on Protoattic vases down to the third quarter of the seventh century, about the same time as they disappear from SOS necks.[64] Late Geometric neck-amphorae with glazed bodies are known with the Ta and Tb varieties and also with a triple-outlined triangle on the neck.[65]

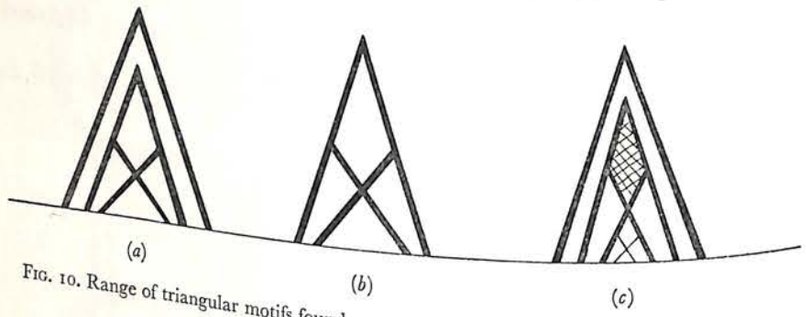

FIG. 10. Range of triangular motifs found on necks of SOS amphorae. Scale approx. 1:2

Other

There is no assured case of an SOS amphora with a reserved neck; this is rather the hallmark of the 'à la brosse' type. The one plausible candidate, **25**, has lost its lip.

We may note one Late Geometric neck-amphora with SOS syntax, from the south slope of the Akropolis, on which hour-glass filling ornament is found centrally between wheels and zig-zags.[66] The hour-glass is a favoured isolated motif on larger Corinthian vases, but is not yet attested on SOS except as a graffito.[67]

Lip

61 is unique in its row of dots on the edge of the lip, although the idea is also found on the later Theran fragment, *AM* loc. cit. Abb. 56, with its dotted neck-ring.

Handles

The handles of Attic SOS amphorae are usually glazed except on the inside; the following are known to have three glaze stripes down the outside: **5, 6, 8, 35, 36, 45, 47, 69,** Villa Giulia, tomb 5, 11 and Athens 14489 from Phaleron. The last is somewhat later that the others. Chalcidian amphorae normally have striped handles if they have decorated necks.

Shoulder

The reserved band on the shoulder of Attic amphorae is usually about 3 cm. high and carries three or four glaze lines, often merging into each other. It can be variously placed, often quite low on the belly in the early period, tending to be tighter under the handles later. The six lines on the band on Salamis tomb 10, 15 are unusual. One of the most consistent features of the

[64] The lozenge, which is the equivalent of T as filling ornament, dies out during the period of the Chimaera-and-Nettos painter; see Kübler, *Altattische Malerei* figs. 14, 18, and 72.

[65] Ta×3 on the amphora *ADelt.* xxiii (1968) B pl. 28; T×3 on Kerameikos inv. 3249, AM lxxxi (1966) Beil. 65,3; Tb on Athens NM 12895 (n. 59); T with triple outline and flanked by birds on *ADelt.* xxviii (1973) A pl. 24*a*.

[66] *ADelt.* xxviii (1973) A pl. 21*a*; it only differs from the SOS in the filling ornament and its wholly glazed body.

[67] Corinth: e.g. *Corinth* vii 1, 162; vii 2, An 248.

latest vases is the substitution of a single narrow band without added lines: **58, 59, 65, 83, 92,** all Kamarina vases save **21,** *Clara Rhodos* iii tomb 86, Cyprus from Marmari, BM 1888.2-8.60 from Tell Defenneh and Louvre D35 and D38.[68]

A wholly glazed body occurs sporadically: Corcyra unpublished, **76,** Phaleron tomb 61, Thorikos TC63.82, Istria B1445, and perhaps Mylai tomb 68, Louvre D34 and **21** in approximately chronological order.

Chalcidian amphorae normally have a broader band with more lines, slipped or reserved, or exceptionally in added white.

Hatched triangles and concentric circles were part of the Attic Geometric stock-in-trade and can be found on the neck of larger vases before the appearance of the SOS; it would therefore be fruitless to seek any particular motivation for their use on SOS necks. The more complex Chalcidian Och could well have been borrowed more directly from Cyprus, as suggested above. The vertical wavy line is rather more interesting; it appears first in forms Sc or Sd at Athens and Chalkis, only later taking on a more alphabetic appearance. It is only very sporadically found on Attic vases earlier than LG Ib when the SOS first appears, although it soon spreads to the necks of amphorae of a number of late Geometric and early Orientalizing schools.[69] On two LG IIa sub-Dipylon amphorae it is used as a simplified form of snake, curiously enough in panels composed of motifs typical of the SOS.[70] It seems highly likely to me that the zig-zag is an imitation dribble of oil, spilling over the neck-ring; the doubling and symmetrical placing of the motif results no doubt from the painters' artistic grounding. At much the same time a very similar dribble pattern appears on Rhodian lekythoi, also equipped with neck-rings and also in combination with concentric circles; here the Cypriot pedigree is very clear.[71]

Some combinations of neck decoration are worth noting. Most can be found on vases of each period, but T varieties do not last into the late period and O,S,O types are nearly all very late. There are, however, a number of fragments with O motifs beside the handle and the rest lost. Single zig-zags are largely confined to the early period and in most instances flank a T; moreover, the majority of Sl,T,Sl necks are on vases with striped handles and lines on the neck flanking the handles. This must be regarded as a distinct variety of SOS, but it is not wholly isolated since striped handles appear on vases with other neck decoration and one of the distinct group is considerably later than the rest.[72] The simple S,O,S appears on the neck of black-figure vases and on amphoriskoi after the SOS type ceased production.[73]

[68] The published photograph of **36,** from Incoronata, suggests it has a single band, although an early piece; in front of the vase itself, I was not sure whether or not there was a second band below the one given prominence in the photograph.

[69] Vertical wavy lines are found on the neck of an oenochoe of late MG date, Mylonas, Τὸ Δυτικὸν Νεκροταφεῖον τῆς Ἐλευσῖνος pl. 397, 867. Coldstream, *GGP* 195, has occasion to remark 'the vertical wavy lines are hardly to be expected before LG'. The most consistent users of them on the necks of amphorae are Euboeans, Boeotians, and islanders of the Cyclades, the earliest group being perhaps Delos group Aa which takes up the motif towards the end of Attic LG I (*GGP* 180). Certainly later is a squat neck-amphora, claimed to be Cycladic, with multiple O,Sc decoration on the neck: Boston 61.388, *Class. J.* lxix (1963) 193–4, fig. 3.

[70] Amphorae in Leiden and the Agora, Davison, *YaleClSt.* xvi figs. 99 and 100 (= *GGP* 55, 5–6), descendants of the Leiden amphora fig. 94 (= *GGP* 55, 1).

[71] On the Rhodian Kreis- und Wellenband aryballoi see Ridgway, 'The First Western Greeks', *Greeks, Celts and Romans* 15, with bibliography.

[72] Striped handles are found combined with O types of decoration on **6, 8, 45,** and **69.** The later member of the group with T is Athens 14489 (PLATE 18*a*); the rest are **5, 35, 47,** and Villa Giulia, Cerveteri tomb 5, 11; the Eretria sherds published in *AE* loc. cit. should also be included and are apparently all of the early period. Megara Hyblaea tomb 209 has the same Sl,T,Sl neck but has not got verticals beside the handles, nor, apparently, striped handles.

[73] Both types are discussed in Beazley and Magi, *Raccolta Guglielmi* 50–2; for the amphoriskoi see also *Agora* xii 155–6 and for BF amphorae Jackson, *East Greek influences on Attic vases* 71–2. A direct echo of the SOS decoration in Ionia (an area where few SOS have yet been found) is the Clazomenian amphora from Olbia with sphinx between wavy lines on one side of the neck, wavy lines on the other, *Olbia* (1964) 155 fig. 23. Less likely to have been influenced

7. CONCLUDING REMARKS

The SOS storage amphora began to be produced in the Athenian potters' quarters probably late in the LG Ia period. Whether a variety was made quite as early at Chalkis, and if so which centre had priority, cannot be ascertained on available evidence. The majority of extant vases of the type were made at Athens, but many must also have been potted at Chalkis, at least in the late eighth and early seventh century; they were, however, not exported in any numbers. Similar containers were made at Eretria, but are not known to have been exported thence. It seems likely that imitations of the Attic type were made at Pithekoussai, while less immediate copies appear sporadically elsewhere. Exports of the Attic type have not as yet been found in large areas of mainland Greece, Asia Minor, Crete, and North Africa.

Attic amphorae throughout their long period of production are marked with a variety of graffiti largely of uncertain interpretation. There is no clear evidence that any are equivalent to later marks of guarantee, tare, price, etc.

Considerations on the organization of the oil trade from Attica to the rest of the Mediterranean in the eighth to sixth centuries are complicated by the varying size of the amphorae, not so striking that we must rule out the possibility of the SOS being or evolving as a standard container, but noticeable enough for us to be very cautious in talking of it as such. The difficulty becomes more sharply focused when we consider two of the reforms attributed to Solon, that of exports from Attica and that concerning Athenian weights and measures.[74]

With regard to Attic exports, we must conclude from the distribution of SOS amphorae that good quantities of olive oil were shipped from Attica during the seventh century; judging solely from the evidence of the amphorae this trade tailed off in the sixth century, at just the time when Solon is supposed to have stimulated it rather than other exports. Vallet takes more global aspects into consideration to explain the demise of Attic trade in oil with Etruria,[75] and we may suspect that local oil production was generally increasing in the Mediterranean area to the detriment of Attic exports; to offset this Attic potters turned rather to the production of decorated vases with a less immediate utilitarian destination.[76]

As for the reform of the system of weights and measures, it is now clear that Solon had nothing to do with Athenian coinage, and it is unlikely that he disturbed the mina weight.[77] The acceptibility of much of Aristotle's text is therefore undermined. A change in the linear measure at Athens has recently been mooted, but the evidence offered is curiously inadequate.[78] Capacity measures must in some sense be dependent on linear measures, but despite the fluctuating size of the SOS there is nothing to suggest that around 590 a change in capacity standard occurred.[79] The late SOS vary as much as earlier ones and from them is born the post-Solonian Attic foot but can cite no actual use of either in Attica.

from Athens are Chiot amphora with an O type motif on the neck, Lambrino op. cit. 139, *Actes xii Con. Int. Ét. Class.* 617, pl. 9, 2.

[74] Plut. *Solon* xxiv 1 and Ar. *Ath. Pol.* x.

[75] *Hommages à Grenier* 1560–1.

[76] A summary of Klein's thoughts on the same subject is in *AJA* lxxv (1971) 206.

[77] The basis of modern discussion of the reforms is Kraay's article in *Essays presented to E. S. G. Robinson* 1 ff.; most subsequent comment is listed by Rhodes, *Num. Chron.* 1975 1 ff. The evidence for a single Greek mina weight, with minor variations, remains a little scattered; see in particular Crawford, *Eirene* x (1972) 5–8 and supporting evidence added by Kroll, *Studies presented to George Hanfmann* 92 and Johnston, *Atti xvii Convegno Magna Grecia*.

[78] Gruben, *AA* (1972) 325–6. He postulates a pre- and

[79] Since *Ath. Pol.* does not tell us, there is no way we can say precisely what μέτρα Solon is supposed to have increased beyond the Pheidonian. However, since Man can measure all things, we may assume that both linear and capacity measures come under this heading. Μέτρον is regularly used in both senses from Homer to Aristotle and beyond, although, as we have seen, it is difficult to decide whether this meant that in 'Homer's day' of the later eighth century the metretes was arithmetically linked with the foot or finger measure. We can be more confident that such a correlation had been made by the 590s, and so if we can discern no change in the capacity measures then we may suspect that the linear measures were not changed either.

Panathenaic amphora of assured twelve-chous intended capacity. There is no perceivable support for the text of the *Ath. Pol.* from what archaeological evidence is available.

It is hoped that further work will clarify some of the problems left open here. More detailed examination of the 'à la brosse' type, backed up by clay analyses, should bring further precision to the ratio between Athenian and Ionic (and other) products in the sixth century; further material from the earlier levels of the Greek colonies in Asia Minor would be most welcome in this respect. Further progress in tackling some of the basic questions of trading transactions mentioned above must also depend on additional metrological studies on the SOS and all other early archaic amphora types.

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R. E. JONES

ADDENDA

Athens. Agora P6095. *Hesperia* vi (1937) 123, fig. 66, 5. Early lip fragment.

Salamis, Cyprus. Seven fragments, one with a part-preserved alphabetic graffito; E. Gjerstad and others, *Greek Geometric and Archaic Pottery found in Cyprus* 10, 1–7. All late. Most of the pieces from Cyprus catalogued above are also included in the volume.

Al Mina. Cambridge, Museum of Classical Archaeology, AM12. Neck fragment. 7·7×9·2; Hn 7·8. . . . Oa,Ta . . . Two glaze bands below. Slight ridge. Early to middle (levels 5–6). The second example of Ta (p. 138).

Cavallino, near Lecce. *MEFR* lxxxix (1977) 543, 65. Foot fragment.

Metaponto. Numerous further fragments have been found at Incoronata, all of the early seventh century. Some may be Chalcidian.

Himera. *Himera* ii 292 and pl. 47, 6. Neck and lip fragment. Oa,Oa preserved. Later.

Cerveteri. Probably from Cerveteri are fragments in the Castellani collection in the Villa Giulia, to be published by Lisa Hannestad.

Note also the late descendant of SOS decoration on the neck of a presumably figured vase from Tell Defennch, British Museum 1888.2–8.88 (*CVA* 8 pl. 101, 10).

Metauros (Rosarno). Late neck.

Otranto. Three fragments.

Pisa [*sic*]. Fragment.

(*a*)

14

13

11

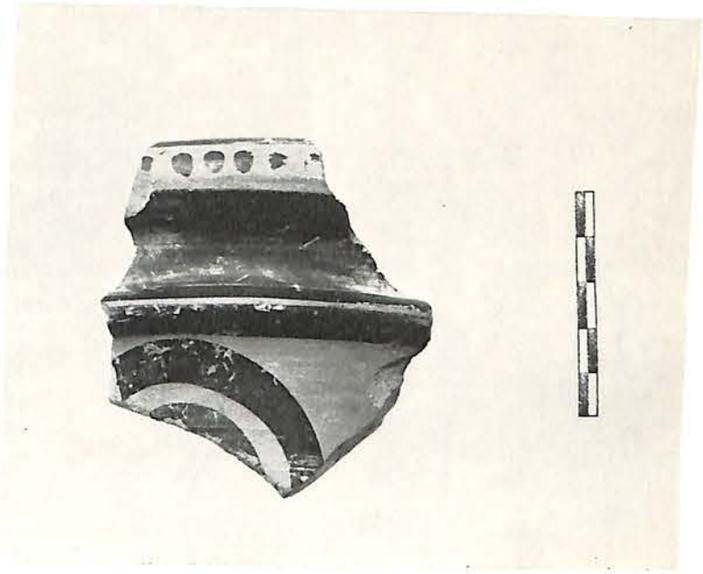
10

(*b*)

THE 'SOS' AMPHORA

(*a*) **1,** University College, London
(*b*) Sherds from Pithekoussai

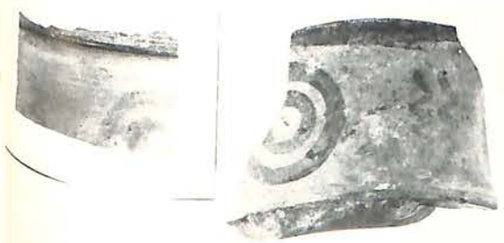
(*a*)



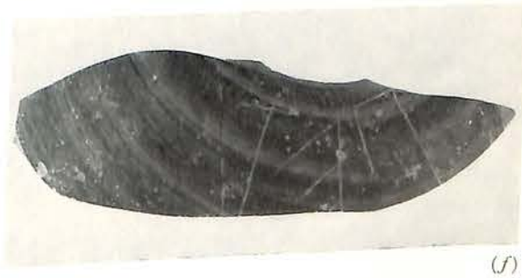
(*c*)

(*b*)

(*d*)



(*e*)



(*f*)

THE 'SOS' AMPHORA

(*a*), (*b*), (*d*), **2,** British Museum 1848.6–19.9 (*c*) **61,** Ashmolean 1954.482.
(*e*) Ashmolean 1954.481[2] and **60,** Ashmolean 1954.481[1] (*f*) British Museum 1888.2–8.60

(a)

(b)

THE 'SOS' AMPHORA
(a) British Museum 1848.6–19.9. (b) Nicosia inv. 1961/viii–18/2

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HOBBLE GROUP
LONDON B 608
(ASV. 417.1)

PANATHI. A
HOBBLE GROUP A
LONDON B 608 A
(MON. I. PL 47.6)
ASV. P. 417. 1

ATTIC : SOS, PANATHENAIC