GALLEY SLAVES

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The expression "galley slave" has two distinct meanings. The student of antiquity, dealing with a slave society, automatically takes it in the sense of a human chattel who, as his assigned duty, helps man the rowing benches of a warship. In common parlance—and certainly in popular literature—a galley slave is something totally different: a criminal condemned to hard labor at the oar of a galley—a forçat, to use the convenient term coined by the French, who were partial to this form of penalty. The point of my paper is twofold: first, by tracing the use of slaves as rowers during the various periods of ancient history, to substantiate the view that they played no role, or but a negligible one, in the navies of the ancient world, a view that has never received comprehensive treatment and has recently been called into question; second, to reveal on the basis of some recently discovered evidence the one and only documented instance of a forçat—an exceptional case in that nation of exceptions, Ptolemaic Egypt.

THE USE OF SLAVES IN ANCIENT WARSHIPS

Until half a century ago it was commonly accepted that the great fleets of fifth century Athens and her enemies were in large part

¹ The strongest upholders of the view are W. L. Westermann, The Slave Systems of Greek and Roman Antiquity (Philadelphia 1955) 15–16, who asserts that slaves were used as rowers only at times of absolute emergency, and C. Starr, The Roman Imperial Navy² (Cambridge 1960) 68. Recently L. Wickert, "Die Flotte der römischen Kaiserzeit," Würzburger Jahrbücher für die Altertumswissenschaft 4 (1949–50) 100–25, esp. 105, and E. Sander, "Zur Rangordnung des römischen Heeres: Die Flotten," Historia 6 (1957) 347–67, esp. 347, have put slaves on the benches of Roman galleys, and the editors of PHib. II (see below, p. 40-41) on those of Ptolemaic galleys.

The use of slaves as rowers on ancient oared merchant ships is a totally different subject. Slaves were commonly used aboard ancient merchantmen; sometimes every

powered by slave rowers. Subsequent research has proven how mistaken this view is.2 The fleets of the fifth century B.C. consisted almost wholly of triremes. A trireme, driven by 170 oars each of which was handled by its own oarsman, required skill and teamwork that came only with long and arduous practice; 3 moreover, on this skill and teamwork depended the lives of all aboard and of the ship itself.⁴ This was no work for slaves. The Athenians, for example, were inordinately proud of their navy, a pride that extended, as unmistakable documentation shows, to the humble citizens citizens, not slaves—who pulled the oars.5 The fanfare that surrounded the use of slaves in the Battle of Arginusae is to the highest degree revealing: only when Athens was in extremis did she put slaves on the benches, and she made them free men after the battle.⁶ There is, to be sure, undeniable evidence of the presence of slaves on galleys at times other than emergencies, but this can be explained:7 these were not rowers but the personal attendants of the ships' officers or of the hoplites who served as marines,8 or, when galleys were employed, as they so often were, as troop transports, personal servants of the soldiers transported. Such slaves no doubt assisted at times in the

member of a crew, officers and even captain included, were slave. Cf., e.g., Dem. 33.8–10 and 34.10 for the fourth century B.C., and Dig. 4.9.7 pr.; 9.4.19.2; 14.1.1.4, 16, 21, 22 for the Roman period (I owe the references to the Digest to the kindness of Professor A. A. Schiller of Columbia University).

- ² The fundamental article is R. Sargent, "The Use of Slaves by the Athenians in Warfare. II: In Warfare by Sea," *CP* 22 (1927) 264-79 (cited hereafter as **Sargent**). M. Amit, "The Sailors of the Athenian Fleet," *Athenaeum* 40 (1962) 157-78 (repeated, with little change, as part of Chapter II of his *Athens and the Sea* [Brussels 1965]) simply reproduces Sargent with added verbiage and reduced documentation.
 - ³ Cf. L. Casson, The Ancient Mariners (New York 1959) 92-102.
- 4 The classic example is the episode described in Thuc. 2.91; cf. Casson (above, note 3) 104.
 - 5 Sargent 264-65, 268.
 - ⁶ Sargent 276–77.
- ⁷ Cf. Sargent 273-76. On French galleys in the days of Louis XIV, a captain had no less than eight servants aboard over and above his personal domestics, who themselves could number up to five; cf. P. Masson, Les galères de France (Annales de la Faculté des lettres d'Aix 20 [1937]) 239-40.
- ⁸ E.g. an Athenian trireme in the fifth century B.C. carried 10–14 hoplites and 4 archers as fighting personnel (Plut. *Them.* 14.1; Thuc. 2.23.2; the Troizen decree, lines 24–26, in the text as given by M. Jameson in *Historia* 12 [1963] 387). For slave attendants of hoplites, see Sargent, "The Use of Slaves by the Athenians in Warfare. I: In Warfare by Land," *CP* 22 (1927) 201–12, esp. 201–7.

rowing; the point is that they were in no sense regular members of the crew.9

When we move on to the fourth century B.C., the evidence is equally unambiguous: the trireme was still the standard warship, as always it needed skilled rowers, and skilled citizen rowers were in such short supply that navies had to turn to paid professionals, imported if need be. ¹⁰ As a matter of fact, the competition was so keen that Athens, Queen of the Seas, was being outbid by, and losing rowers to, such third-rate naval powers as Thasos or Maroneia. ¹¹ In a context such as this, slave rowers simply have no place.

 9 Two references need more discussion than Sargent (277–78) has given them, Thuc. 1.55.1 and IG π^2 1951.

Thucydides mentions that, in the naval battle in 432 B.C. between Corcyra and Corinth, the Corinthians sank 70 Corcyraean ships (1.54.2) and these yielded no less than 1000 prisoners (1.54.2) of whom 800 were slave (1.55.1; Thucydides' figure of 1000 must be a round number since the non-slave prisoners totalled 250). A. Gomme, A Historical Commentary on Thucydides, 1 (Oxford 1945) 196, suggests that the majority of the Corcyraean rowers must have been slave, though admitting in the same breath that this was contrary to Greek practice generally and, indeed, contrary to Corcyraean practice at other times, an admission that leaves little to be said for the suggestion. Westermann (above, note 1) 16 would have it that we are dealing here with another Arginusae, that the Corcyraeans, facing a dire emergency, put slaves at the oars. The Corcyraeans went into action with 110 ships (Thuc. 1.47.1); perhaps they manned every hull they could float, including their reserves, in which case they would perforce have taken desperate steps such as enrolling slaves. On the other hand, Thucydides makes particular mention of the large number of fighting men aboard (1.49.1), which may mean as many as 30 per ship (as at Salamis, Hdt. 7.184) or 40 (as at Lade, Hdt. 6.15), i.e. somewhere between 3300 and 4400 all told. Of a stricken trireme's crew, those most likely to survive were the officers, marines, and their attendants; stationed on the decks and gangways, all they had to do was jump clear. As a matter of fact, the slaves, with no armor to doff, were in the best position of all—which might explain how so many of them survived. Of the non-slave captives, almost 250 came from Corcyra's best families (Thuc. 1.55.1)—more likely a source of hoplites than rowers.

IG π² 1951 is a monument, the preserved portion of which lists the names of at least eight crews (cf. W. Pilz, *Phil. Woch.* 53 [1933] 732–34). Of the non-officer personnel, many, it can be shown, are slave. Now, though it is true that, as Pilz has pointed out, the slaves listed seem to belong to the ships' officers, the total number on each ship seems too great to allow us to explain them as attendants. The inscription obviously formed part of an impressive monument datable on the basis of letter forms to the end of the fifth or beginning of the fourth century B.C.—why not a monument to Arginusae, as A. Körte (among others) has argued (*Phil. Woch.* 53 [1932] 1027–32)? Pilz' observation would mean that the slaves were recruited through the ships' officers, which would be a natural procedure.

¹⁰ E.g. Dem. 50.7–13, 18; 51.6. Cf. T. R. Glover, From Pericles to Philip (London 1917) 328–31. See also the passage from Diodorus discussed in note 18 below.

¹¹ Dem. 50.14-16.

When we turn to the Hellenistic Age, we find that a change of some importance has occurred: quadriremes, quinqueremes, hexereis and even greater ships become common, while "fifteens," "sixteens," "eighteens," right up to Ptolemy Philopator's brobdingnagian "thirty" and "forty" serve as flagships. Whatever the exact meaning of such numbers may be, it is beyond debate that the new polyremes were propelled not as triremes, by one man to an oar, but as the galleys of the sixteenth to the eighteenth centuries, with sweeps manned by multiple rowers. This meant a significant reduction in the level of skill required: the stroke oars very likely still had to have an efficient squad but, on all the others, a trained man was needed only for the key position nearest the end of the loom; the remaining positions called for little more than muscle. The lubberly Romans during the First Punic War selected the quinquereme as their standard form of ship; very likely it was because they could make do with four hefty hayseeds for each skilled oarsman. 14

The change unquestionably eased the strain on the recruiting officers of the enormous fleets that now sailed the Aegean and eastern Mediterranean. Experienced hands were still a sine qua non for triremes,

¹² For the development of Hellenistic navies see W. W. Tarn, Hellenistic Military and Naval Developments (Cambridge 1930) 132–34, 142–43. Ptolemy's polyremes, first known only through mention in literature, have since turned up in papyri. The first occurrence, of a "nine" in the abbreviated form $\tau \dot{\eta} \nu \theta'$ (PCairo Zen. 59036 = Select Papyri II.410.21, 257 B.C.), was for so long the only one that the editor was not fully convinced he had read the abbreviation correctly, and it is still sometimes queried (e.g. W. Peremans and E. Van 't Dack, Prosopographia Ptolemaica V [Louvain 1963] No. 13800). But now we can add two more: Sammelb. 9780, mid-third B.C., is a letter from someone angling for the job of skeuophylax, guard of gear and stores, aboard a "nine" (this time spelled out in full), and PZen. Col. 63, 257 B.C., an account of miscellaneous expenditures, lists (recto, col. II, lines 2–3) a loan to the captain of a "ten" (also spelled out in full).

¹³ This was, for example, the way rowers were distributed in the French galleys of the seventeenth century; see G. La Roërie and J. Vivielle, *Navires et marins de la rame à l'hélice* (Paris 1930) 140-41.

¹⁴ I am convinced that at least the Roman quinquereme of the Punic Wars had five men to each oar. The naval powers of the seventeenth and eighteenth centuries, seeking a solution—like Rome—to the shortage of trained rowers, found it in the galley driven by sweeps, and one of the most preferred sizes was the five-man sweep; cf. La Roërie and Vivielle (above, note 13) 112-13; Masson (above, note 7) 202; R. C. Anderson, Oared Fighting Ships (London 1962) 67. The parallel, it seems to me, is more than coincidence.

and probably quadriremes,¹⁵ but the benches of the bigger ships could at least be filled out with unskilled labor. The Antigonids, of course, had the Greek population, including numerous maritime cities, to turn to, and the Seleucids, with their Greek towns and the Phoenician ports, were equally well off. The one nation that faced a problem was Egypt. The Ptolemies, having built the greatest navy in ancient history, had to man it with no maritime population available to them. They had but two alternatives, one of which was expensive and the other repugnant to their principles: either hire from outside, or draft their native subjects. They compromised as best they could: the indispensable skilled personnel they hired,¹⁶ and for muscle they conscripted the fellahin.¹⁷

We have no evidence for the make-up of the crews that rowed the Antigonid and Seleucid galleys. In view of the tradition sketched above, the more likely conclusion is that the rowers were free; in any event, the burden of proof rests on the historian who would have it otherwise.¹⁸ What of the Ptolemies? Did they, far worse off for

¹⁵ The Rhodians, for example, used quadriremes for delivering strokes that demanded the maximum in speed and maneuverability—in other words, exactly as the fifth century Athenians had used triremes (cf. Casson [above, note 3] 169–70). Perhaps on Rhodian quadriremes the thranite (top) oar, the most difficult to handle (for bonuses paid to thranite rowers, see Thuc. 6.31.3), had two men assigned to it; cf. Anderson (above, note 14) 23.

16 Cf. UPZ II.151.2-4 (259 B.C.): 'Αρεὺs . . . τριημιολίας μισθοφόρου ἐρέτης. As Wilcken explains in his note to the passage, a triêmiolia misthophoros was not a chartered warship, but one manned by mercenaries. The triêmiolia, a version of the trireme designed particularly for speed (cf. L. Casson, "Hemiolia and Triemiolia," JHS 78 [1958] 14–18), naturally required expert oarsmen. PGrenf. I.9 (cf. Berichtigungsliste I), third B.C., mentions mercenary crews, including oarsmen, on duty in the Red Sea. They probably manned the fast craft on anti-pirate patrol; on the endemic piracy in the Red Sea, see M. Rostovtzeff, The Social and Economic History of the Hellenistic World (Oxford 1941) 387–88, 924.

17 For the later period the evidence usually offered is the passage in the Rosetta Stone (196 B.C.) that exempts temple slaves from $\sigma\dot{\nu}\lambda\lambda\eta\psi\iota_S$ εἰς τὴν ναυτείαν (Sammelb. 8299 [= OGI 90] 17), which those who cite it take to mean naval conscription. There is indirect but more secure evidence for the earlier period. E.g. Wilcken, Chr. 385.30–31 (mid-third B.C.) lists two natives who were exempted from compulsory labor on the dikes because they were τῶν εἰς τὸ ναυτικὸν κατακεχωρισμένων. PSI 502.24 (257/6 B.C.) refers to τἢ τῶν ναυτῶν ἀποστολἢ from upriver presumably to Alexandria, which smacks of the dispatch of a group of conscripts. PTeb. 703.215–22 (cf. Rostovtzeff's note to the passage) alludes to the desertion of sailors—surely unwilling conscripts rather than well-paid mercenaries.

¹⁸ W. Bauer, Die griechischen Privat- und Kriegsaltertümer (Müllers Handbuch 4.1.2,

naval personnel than their rivals, turn to slaves? As it happens, Egypt was the one locale where slavery played far smaller a role than anywhere else; most slaves there were the personal servants of the Greek upper stratum of society, 19 a source the Ptolemies were hardly likely to tap for service in the galleys. Yet, despite this, for long it was freely and uncritically asserted that their navy was largely manned by slaves.²⁰ Eventually, some writers, aware of the scanty support for such a view, expressed their doubts.²¹ Now, however, a recently published papyrus has given the old view a new lease on life. PHib. II.198, dating either to the mid-third century B.C. or toward the end of the same century,²² is a copy of a series of royal ordinances. One of these, addressed to the Nile police, concerns deserters from the navy. The police are enjoined (lines 86-90) to arrest το ψε να [ύ]τας τους τον χαρακτήρα $\tilde{\epsilon}$ χοντας κα[$\hat{\iota}$ τ]ους [άλλους τους] $\hat{\epsilon}$ κ τοῦ ναυτικοῦ, "sailors bearing the brand and all others from the fleet"; presumably any sailor found upriver from Alexandria was a deserter.²³ In her note to the passage the

Munich 1893) 418, states that Dionysius of Syracuse used slave rowers, citing as evidence "Diod. XIV 42 ff." Both the statement and the reference are misleading. Diodorus (14.58.1) mentions that Dionysius at one point freed slaves in Syracuse and manned 60 ships with them. He was using freedmen, not slaves.

- ¹⁹ Rostovtzeff (above, note 16) 321-22.
- ²⁰ Cf. F. Garofolo, "Sulle armate tolemaiche," Rendiconti della reale Accademia dei Lincei II (1902) 137-65, esp. 158; J. Lesquier, Les institutions militaires de l'Égypte sous les Lagides (Paris 1911) 256-57; Rostovtzeff in CAH VII (Cambridge and New York 1928) 118; Wilcken in note to UPZ II.151.2-4. The evidence Garofolo offered was beside the point, as Lesquier himself pointed out (257, note 3). Yet Lesquier's evidence boils down to the passage in the Rosetta Stone mentioned above (note 17), a passage that he, among others, takes to refer to the exemption of temple slaves from conscription into the navy (but see A. Bouché-Leclercq, Historie des Lagides 4 [Paris 1907] 7 and note 3). Lesquier reasoned that the exemption of one class of slave implied the liability of all others. But Egyptian slaves were not slaves in the usual sense; they were, in effect, the peasants of the temple estates (cf. Rostovtzeff [above, note 16] 322-23). Subsequent writers have been content to cite Lesquier.
- 21 Cf. C. Préaux, L'économie royale des Lagides (Brussels 1939) $259\,;$ Westermann (above, note 1) 37.
- ²² Though the first volume of the Hibeh papyri was published in 1906, Volume II did not appear until 1955. The editor (M.-T. Lenger) dates No. 198 to the end of Philadelphus and the beginning of Evergetes. W. Peremens, in his review (*Gnomon* 30 [1958] 590–94), suggests as a possibility the end of Evergetes and the beginning of Philopator, because of the unsettled conditions reflected in the document.
- 23 I have included the restoration τ]oùs [$\check{a}\lambda\lambda ovs \tau o \dot{v}s$] even though the editor is hesitant (note to 198.86 f.) about it: "(it) may give the sense, but it is likely that the class description was more precise." Perhaps, but not necessarily. The distinction may not

editor, citing parallels from Pharaonic times, asserts that such branded persons "will be either slaves, prisoners of war, or impressed criminals," and of the three alternatives she votes for slaves.²⁴ Yet are these the only alternatives or, indeed, likely alternatives? We have seen above that there is no other evidence for the use of slaves, and we shall see below that there is evidence only for the very limited use of impressed criminals. And prisoners of war were certainly not all branded; as a matter of fact, there is a case on record of one who was elevated to a cleruchy.25 I would suggest a totally different explanation. We know that one of the common purposes of marking a face was to identify runaway slaves; 26 why not runaway rowers as well? Could not the branded sailors referred to in the papyrus be second-offenders, conscripts who had deserted once before but been recaptured and on recapture were given an immediately identifiable mark to discourage them from another try? Either this explanation, or one like it, is preferable to assuming a practice in the Ptolemaic navy for which there is no other grounds of support and which is not consonant with the general picture of slavery in Ptolemaic Egypt.

The Hellenistic Age, then, provides us with no certain proof of the use of slaves as rowers. Moving on to the time of the Roman Empire, we find that the path of scholarship has been very like the one it followed in dealing with the Classical Age. Older writers unhesitatingly assert that Rome filled her galleys with slaves; subsequent research has corrected this view.²⁷ Sextus Pompey, who could ill afford to be choosy, used fugitives of all sorts, including slaves,²⁸ but these had become free volunteers when they took their seats on his benches.

have been naval at all but one drawn for the benefit of the police: those with a brand the police could apprehend on sight, and no slips need be tolerated; for any others, who would take some sleuthing, some margin for error would be in order.

²⁴ The only evidence cited (note to 198.86 f.) is Lesquier (cf. note 20 above).

²⁵ Wilcken, Chr. 334 (244/3 B.C.); cf. R. Taubenschlag, The Law of Greco-Roman Egypt (New York 1944) 53 and note 22.

²⁶ Ar. Aves 760; Schol. to Aeschines 2.83; Luc. Tim. 17.

²⁷ The fundamental work is Starr's (above, note I) Chapter V. Starr's stand has been seconded by Westermann (above, note I) and by S. Panciera in "Sulla pretesa esclusione dei cittadini romani dalle flotte italiche nei primi due secoli dell' impero," *Rendiconti della Accademia nazionale dei Lincei* 19 (1964) 316–28, esp. 326, against the assertions (undocumented) of Wickert and Sander (above, note I).

²⁸ App. BC 2.103. Cf. Dio Cassius 49.1.

Augustus, scraping the bottom of the manpower barrel for his show-down with Sextus, enlisted slaves—but gave them their freedom before putting them to the oars.²⁹ From then on the picture is consistent: the rowers that drove the Imperial fleets were, to be sure, provincials rather than citizens, but all of them were free men.³⁰

The next chapter in Mediterranean naval history was written by the Byzantine and Arab navies. The Byzantine fleet, the successor of Imperial Rome's, carried on the Roman tradition and used only free rowers, who for the most part were hired.31 For the Arab navy we are fortunate enough to have valuable information about recruiting practices preserved in certain papyri of the early eighth century. These show that the Arab government met the problem of rowers much as the Ptolemies had-it filled the benches by drafting its Christian subjects.³² The system does not seem to have been oppressively harsh. The obligation could be met by a cash payment, with which the government could hire a substitute, instead of personal service, and those who actually served were paid a money wage according to a regular scale.³³ In short, under normal circumstances the galley crews of this age included no slaves, no more than had those who rowed on the same waters for the preceding millennium and a half.

THE USE OF "FORÇATS" IN ANCIENT WARSHIPS

On 22 January 1443, Charles VII of France gave Jacques Coeur, a canny French shipping magnate who had a private fighting flotilla all

²⁹ Suet. Aug. 16.

³⁰ Starr (above, note 1) 71.

³¹ See H. Ahrweiler, Byzance et la mer: la marine de guerre, la politique, et les institutions maritimes de Byzance aux vii^e-xv^e siècles (Paris 1966), Appendix 1: "Les équipages," esp. p. 405.

³² PLond. IV, Introd. xxxi-xxxv.

³³ H. I. Bell, "Two Official Letters of the Arab Period," JEA 12 (1926) 265-81. In the second of the two letters, dated 710 A.D., the Arab governor of Egypt for some reason demands personal service instead of an equivalent in cash. The practice of allowing such payments must have been taken over by the Arabs from the later Roman Empire; cf. PGrenf. II.80-82, dated 400-402 A.D., three letters dealing with the fulfilling of an hereditary leiturgy to pull an oar on the state barge by the payment of money for a substitute. For the evidence for payment of wages to Arab crews, see PLond. IV, Introd. xxxi.

his own, the right to impress "personnes oiseuses, vagabonds et autres caïmans" for his crews.³⁴ To navies bedeviled by a growing shortage of skilled rowers, the act was a veritable signpost to the way to solve their problem: from then on, the vicious practice of putting victims of the law at the oars spread like the plague. By 1550 even Venice, the last to hold out because of stubborn pride in her tradition, centuries old, of using citizen rowers, had given in.³⁵

Was Jacques Coeur the first in history to use *forçats*? Were they never employed in the ancient world?

Since we have seen how unwilling the ancients were to turn to slave rowers, their use of condemned criminals would seem *a fortiori* most unlikely. Despite this, it has been asserted, on very dubious grounds, that this was Ptolemaic practice.³⁶ Thanks to the very same papyrus discussed above, *PHib*. II.198, we can now incontrovertibly document one instance—but only one.

The decree in this payrus that instructs the Nile police to be on the lookout for naval personnel also spells out (lines 90–91) what will happen if they are derelict in their duty: $\hat{\epsilon} \hat{\alpha} \nu \delta \hat{\epsilon} \mu \hat{\eta} \hat{\epsilon} \pi \alpha \nu \alpha \gamma \hat{\alpha} \gamma \omega [\sigma] \iota \nu \hat{\epsilon} \xi \epsilon \lambda \epsilon \gamma \chi \theta \hat{\epsilon} \nu \tau \epsilon s \ \alpha [\hat{\nu} \tau \hat{\nu} \hat{\iota}] \ \hat{\alpha} \pi o \sigma \tau \epsilon \lambda \lambda \hat{\epsilon} \sigma \theta \omega \sigma \alpha \nu \ \hat{\epsilon} \pi \hat{\iota} \ \tau \hat{\alpha} s \ \nu \alpha \hat{\nu} \hat{\varsigma}$. "If (the police) do not arrest (the deserters) and are convicted of this, they are themselves to be sent to the ships."

The penalty, so far as we know, is unparalleled in Ptolemaic law.³⁷ Was it chosen because such a punishment so very neatly fitted the crime? Or could other offenses totally unconnected with the navy also end up with condemnation to the galleys? So far—despite the careless assertions to the contrary mentioned above—*PHib*. II.198 remains the sole instance attested.

³⁴ Cf. Masson (above, note 7) 80-81.

³⁵ See Admiral L. Fincati, *Le triremi* (Rome 1881) 29–41, who reproduces verbatim some of the arguments, pro and con, put forth in debate in 1539 as to whether Venice should follow the practice of all her rivals and use *forçats*.

³⁶ E.g. Lesquier, *loc. cit.* (above, note 20). Lesquier seems to have taken as evidence the presence of naval personnel in mines and quarries, assuming that only *forçats* would have been put on such assignments. A better explanation is that the sailors were there to handle the barging away of the quarried material and the debris; cf. Préaux (above, note 21) 247.

³⁷ As Taubenschlag puts it in his review of *PHib*. II (Journal of Juristic Papyrology 9–10 [1955–56] 545): "a completely original sanction in Ptolemaic penal law."

In any event, whether or not the Ptolemies carried on the practice on a large scale, no other ancient nation had recourse to it. Leg irons, the whip, galleys that were floating concentration camps—all this belongs to the world of the sixteenth to the eighteenth century and to no earlier age.³⁸

³⁸ To the bibliography in notes 1 and 27 should now be added *D. Kienast, Untersuchungen zu den Kriegsflotten der römischen Kaiserzeit = Antiquitas, Reihe 1: Abh. zur alten Geschichte*, Bd. 13 (Bonn 1966) 11, 14, 25.