This book is one of the most interesting and innovative studies I have read in recent years. It analyses a unique characteristic of Hellenistic military history, viz. the development of big ships, large fleets, and naval (siege) artillery in the period between Alexander the Great and Octavian, with a crucial prelude during the preceding century. Whereas the \textit{tetetres} (‘four’) and \textit{penteres} (‘five’) were already invented around the end of the 5th century B.C., there was a spectacular evolution – from the ‘six’ to the ‘sixteen’ – within one generation after Alexander, resulting in a veritable arms race with the construction of increasingly larger warships and the elaboration of heavy and sophisticated artillery. After a peak about the middle of the 3rd century (including ‘twenties’ and ‘thirties’) and Philopator’s ‘forty’ as a final outburst of sumptuousness, the money and manpower-devouring ‘big ship phenomenon’ suffered an equally fast decay. After an ephemeral revival at the time of the battle of Actium (31 B.C.) (Antony’s fleet having 27 or 28 ships ranging from ‘sixes’ to ‘tens’), vessels larger than ‘sixes’ were no longer used. For many of the historical and technological aspects of these intriguing developments, the author, often refuting received opinions, offers his own, well-considered explanations.

The topic was addressed more than once in the course of the last century (p. 5 n. 6), the first time in its entirety by W.W. Tarn in his influential treatise \textit{Hellenistic Military and Naval Developments}, Cambridge 1930, Lecture III: ‘Siege Warfare and Naval Warfare’ (pp. 101–152). Also fundamental are the more recent works of L. Casson, esp. his \textit{Ships and Seamen in the Ancient World}, Baltimore 1995, Rev. edition, Chapter Six: ‘The Warships of the Hellenistic Age: 323–31 B.C.’ (pp. 97–142), with important ‘Addenda and Corrigenda’ (pp. 449–452), as well as those by J.S. Morrison, esp. his \textit{Greek and Roman Oared Warships} (with contributions by J.F. Coates), Oxford 1996.

The volume presently under review is the first of a new series sponsored by the Alexander S. Onassis Foundation set up in memory of Aristotle Onassis’s only son, who died in 1973 in an airplane crash before his 25th birthday. The title was inspired by that of chapter 11 in Casson’s widely celebrated work \textit{The Ancient Mariners, Seafarers and Sea Fighters of the Mediterranean in Ancient Times}, Princeton 1991, 2nd edition, pp. 127–142 (on p. 3 n. 1, mistakenly attributed to his \textit{Ships and Seamen} (ship)). The once popular maritime novel by the French adventurer and prolific writer Gustave Aimard (1818–1883), \textit{Les titans de la mer}, Paris (Amyot) 1873 = (Fayard) 1948, has nothing whatsoever to do with our subject.

William M. Murray (henceforth: WMM) is Mary and Gus Stathis Professor of Greek History at the University of South Florida. Inspired by his great predecessors, he combines a remarkable sense of history with a vast archaeological learn-
ing, a creative imagination with accurate technical knowledge. The exposition is clear and logically structured, the argumentation convincing and built up in a systematic way, the style succinct, the information up-to-date (cf. p. 48 n. 26, adding the most recently discovered rams). WMM’s practical approach is illustrated by the numerous drawings, sharp photographs (often his own, esp. of rams, the study of which is based on written, pictorial and various archaeological evidence including a few preserved authentic three-bladed waterline specimens), handy maps (showing all the required information, avoiding superfluous data), and several fascinating tables listing all kinds of useful information, from rams (pp. 48–52), small catapult balls (pp. 158–161) or siege operations (pp. 102–103) to warship casualties (pp. 167–168). Showing a particular interest in the sections on naval siege warfare in Book V of Philo of Byzantium’s relatively neglected Poliorketika (the engineer being a privileged contemporary eyewitness, who wrote this treatise ca. 240 B.C., under Ptolemy III), WMM dedicates a well-wrought chapter (4: pp. 129–142; cf. 200–202) as well as an appendix (E: pp. 283–301, with an annotated English translation of the relevant passages) to that work, linking it to the spectacular naval developments of the time. WMM offers interesting reconstructions of several naval battles and siege operations, such as the first siege of Tyre (332: pp. 95–99, when Alexander’s fleet was transformed into a ‘naval siege unit’), the battle of Salamis (Cyprus) (306: pp. 105–111, in fact part of a siege action and providing us with the «first clear description of a battle in which warships larger than ‘fives’ took part»), the siege of Rhodes (305–304: pp. 111–119, when large machines were mounted aboard warships and freighters), a series of clashes between 201 and 190 announcing the end of the big ship hype (pp. 209–225), and, of course, the battle of Actium (31: pp. 232–244, with a keen awareness of Augustan propaganda in Octavian’s distorted presentation). There are also detailed discussions on military and naval developments over a longer period, e.g. concerning Demetrius’s maritime empire (pp. 119–125) or the heyday of Ptolemaic thalassocracy under Ptolemy II and his immediate successors (pp. 188–207).

Through a number of specialized studies on ancient rams, the Battle of Actium, and Augustus’s Victory Monument at Nicopolis, all written over the last quarter-century, WMM had prepared himself very efficiently. A lively presentation of his investigations and wonderful career as a nautical archaeologist is given by David Meadows (May 9, 2012): https://rogueclassicism.com/2012/05/09/william-murray-looks-at-naval-warfare-in-the-ancient-mediterranean/

After an appealing introduction, seven chapters, basically following a chronological order, deal with different aspects of the ‘big ship phenomenon’. Six highly technical but easily readable appendices provide the connoisseur with a comprehensive and annotated catalogue of all the polyremes attested (App. A–D), a discussion of Philo’s Poliorketika V (App. E: cf. supra), as well as a list of selected testimonia for the different applications of Hellenistic naval artillery (App. F). A glossary (as in Casson), a chronological survey, an extended bibliography, an index of citations from ancient authors, and a general index complete the study. ‘Pièces de résistance’ are without any doubt chapters 2 and 3: ‘Frontal Ramming: Structural Considerations’ and ‘The Development of Naval Siege Warfare’ (pp.
The fruit of a multidisciplinary investigation, they concern two basic developments of the Hellenistic age intimately connected with the building of new ship types and essential to a proper understanding of WMM’s book.

For the trireme (whose 5th and 4th-century Athenian variant is best-known) WMM adheres to the ‘vertical theory’ (oarsmen on three superimposed levels, one rower per oar), endorsing the view of, among others, J.S. Morrison and R.T. Williams (Greek Oared Ships 900–322 B.C., Cambridge 1968). For the bigger classes he assumes a combination of the ‘horizontal’ and the ‘vertical’ solution, implying that from a ‘four’ onwards (obviously «two men pulling a[n]...oar at two different levels» [pp. 8, 255–256, 258–259], rejecting Casson’s thesis that ‘fours’ could be single-level galleys with four men on each oar) each oar was pulled by more than one oarsman, each time requiring more space and broader-beamed vessels. Thus a ‘ten’ would involve «five men pulling a single large oar at two different levels» (p. 8). While improving their impact, such a disposition considerably reduced the number of trained hands needed to row the warships.

WMM frequently uses the terms ‘big/large ship’ and ‘super-galley’. It is clear that by the former term he means ships larger than triremes (i.e. from the ‘four’ on) in general (see also infra; cf. p. 310, s.v. ‘polyremes’ [i.e. polyereis, a term conventionally used nowadays, but not appearing before the 6th century A.D. and avoided by WMM as much as possible: p. 3 with n. 2]), and by the latter a small number of (double-hulled) ships larger than Demetrius’s ‘sixteen’ (cf. Chapter 6, esp. p. 171), including Lysimachus’s extraordinary and intriguing Leontophoros (double ‘eight’ [a real catamaran with two separate hulls?]: pp. 171–178; probably built between 298 and 294 rather than in the 280s; a sketch, albeit tentative, would have been welcome) and the Ptolemaic ‘twenty’, ‘thirties’ and ‘forty’ (pp. 178–183). Still, we might have expected more clear-cut definitions, e.g. in the Glossary (pp. 307–310). There is also the expression ‘midsized polyremes’ (p. 163, referring to J.F. Coates), by which ships larger than ‘sevens’, as possessed by Demetrius at the time of Salamis (306: pp. 128–111), up to his later ‘sixteen’ (pp. 121, 124, 144; cf. p. 171), are apparently meant. At first glance, however, this tentative categorization does not seem to correspond to the arrangement of the annexes A–D. But in Chapter 7 ‘midsized polyremes’ (in the context of later sea battles, from the end of the 3rd century until Actium [31 B.C.]) are defined as ‘sixes’ to ‘tens’ (pp. 208, 210), which would seem to imply that ships of the rank between ‘11’ and ‘16’ are considered as ‘super’ here, were it not that such ships were no longer built in those days.

A turning point in the modern study of ancient rams was the discovery in 1980 of a completely intact three-bladed bronze waterline ram in Athlit (Israel), dating from the late 3rd or early 2nd century B.C. Cast for the Ptolemaic navy on the copper island of Cyprus during the reign of the fifth or sixth Ptolemy (i.e. between 204 and 164 B.C.), it was of a superior quality (‘aircraft grade’: pp. 35, 68), revealing an exceptionally advanced technology. In all probability it belonged to a ‘four’ (pp. 59–65), to which it was flawlessly applied, thus insuring both optimal striking power and resistance at a collision. No less essential to our knowledge are the sockets in the wall of Augustus’s Victory Monument at Nicopolis for the Battle of Actium, intensely explored since the late 1920s. Similar in shape to the Athlit ram, the Actian rams all belonged to warships ranging from ‘fours’ to ‘tens’.

The existence of two basic designs for rams (p. 66) definitely puts the dividing line separating small from big warships, contrary to Morrison’s opinion, between the ‘three’ and the ‘four’. Thus ‘fours’ were heavier, more powerful and more expensive than ‘threes’, even if ‘threes’ existed in many different local variants (pp. 57–59). In turn, ‘fives’ were bigger than ‘fours’, and so on.
Whereas according to the traditional view big ships were primarily built in order to facilitate grapple-and-board tactics, changing vessels into floating fortresses, it now seems that ramming tactics remained essential in Hellenistic naval warfare. Big ships were used for frontal ramming, i.e. «the deliberate head-on collision between two warships» (p. 17), whereas smaller warships were now «designed for speed and maneuverability» (p. 67).

The first 'fours' and 'fives' were designed by the Carthaginians and the Syracusans (Dionysius I) respectively (pp. 84 and 82). They originated about the turn of the 5th to the 4th century B.C. in the context of the Athenian expedition to Sicily (415-413) and the Carthaginians' growing pressure on the island. Topographical conditions in the constricted areas of the Corinthian Gulf and the harbor of Syracuse hampered maneuver-and-ram tactics, leaving the decision to frontal ramming by strong ships. The contemporaneous invention of catapults and rapid development of heavy and far-reaching artillery, in particular naval siege artillery (i.e. artillery used in the blockade and beleaguering of fortified harbors and coastal towns), caused by the growing importance of (naval) siege warfare in general, required ships much larger than the traditional 'threes'.

Barely half a century later, the king of the Sidonians – having always boasted the most prestigious squadron within the Persian navy (cf. AncSoc 1, 1970, pp. 1-8) – already possessed 'fives' (pp. 84, 261).

No longer was the fleet a unit operating on its own. More and more, naval and land forces were combined when fortified harbors were to be assaulted. At the core of the navy 'naval siege units' were created, comprising a wide array of vessels with often highly specialized personnel (p. 132). The same conditions would prevail in (early) Hellenistic times, when dominance at sea was primarily based on the control of coastal areas, cities and strongholds. Rather than the high seas, harbors became the normal scene of fleet clashes (p. 127). Key figures in the evolution after Dionysius I of Syracuse (405-361), whose reign can be seen as the starting point of a new era in naval warfare (p. 80), were Philip II of Macedon (359-336, starting virtually from scratch) and Alexander III the Great (336-323). Next were Antigonus Monophthalmus (320/306-301) and, even more, his son Demetrius Poliorcetes (306-286/285).

According to WMM it is questionable whether Alexander effectively had ships larger than 'fives'. If some sources mention 'sevens' and 'tens', they may reflect unfilled plans (p. 100). He properly underlines Demetrius's 'primary role' in accelerating the big ship phenomenon (p. 127). Between Salamis (306) and Ipsos (301) the king acquired an 'eleven' and a 'thirteen', to be followed, up to his downfall (286/285), by a 'fifteen' and a 'sixteen', «the largest single-hulled galleys ever built» (p. 176; cf. p. 184: «the largest practical size for a single-hull warship with multiple-man oars»). The construction of such large ships was perhaps induced by a desire to overcome problems like those he had faced in Rhodes (p. 127), and possibly to counter Lysimachus's huge Leontophoros as well (and not the other way around: p. 176). There were also plans for a huge fleet of 500 warships (if that number is reliable: p. 123 n. 110).

Of particular interest, though less accessible to the general reader, is Chapter 5 on 'big ships, boarding, and catapults' (pp. 143-170), examining the use of catapults (two types, one shooting arrows, the other projecting stones) on big ships. There are a few pages on possible catapult balls (made from river cobbles) from the Battle of Actium (pp. 151-154), in the underwater-discovery of which (1994) WMM was involved. Catapults were intro-
duced during the first years of the 4th century B.C., about the same time as the big ships and in the same regions (Sicily, Carthage). During the first siege of Tyre (312) catapults were fixed on large warships. Contrary to the received opinion WMM thinks that, rather than against enemy ships or their crews and marines, they were primarily (yet not exclusively) used against harbor fortifications etc. Nor did big catapults on ships replace the use of rams. Still, boarding of enemy ships and combat on deck, though less important than generally thought and often avoided (p. 168), did sometimes occur with the help of catapults.

The real culmination took place under Ptolemy II and III (285/282–246 and 246–222), kings who «amassed the largest fleet of big ships ever built» (p. 171). Like the Leontophoros before, and Ptolemy IV Philopator’s giant ‘forty’ (rowed at three levels) at the end of the century (for its historical background and the message of hope and self-confidence it was conveying, rather than being a mere showpiece, see pp. 203–205), the second Ptolemy’s ‘twenty’ and two ‘thirties’ were large double-hull warships, resistant to wave action, not primarily intended as assault platforms in the context of siege warfare (see esp. pp. 182–184), the psychological impact of which can barely be overestimated (cf. pp. 89 and 118–119). Counting no less than 95 vessels in the range from ‘six’ to ‘thirty’, that navy was much more impressive than the fleet which would be amassed by Cleopatra and Antony two centuries later.

WMM endorses J. Grainger’s suggestion that among the 4000 ships «sent to the islands etc.» (Athen. V 203D) there were several hundreds of ‘fives’ (p. 188 n. 52). The exorbitant funding needed for the Ptolemaic navy’s maintenance (pp. 189–191) could only be worked up with the resources of the possessions outside Egypt and the fertile Nile valley. In the long run, the Egyptian people’s merciless exploitation would undermine the state’s moral authority and result in the collapse of the Ptolemaic system. «It was Philadelphus, not Philopator, who bankrupted Egypt», was E.G. Turner’s astonishing conclusion (CAH VII 1 [1984], p. 159). Even if we accept that the early Ptolemies had the basic ambition to establish their dominance over the whole empire of Alexander (see now different articles to that extent in Studia Hellenistica 43, 2013), it is a fact that, especially in the 3rd century (including the reign of Ptolemy IV Philopator [p. 194], though the decay had already set in [pp. 202–203] see the latter’s partial ‘rehabilitation’ by W. Huss, Untersuchungen zur Aussenpolitik Ptolemaios’ IV. MünchBeitr. 69, 1976, esp. pp. 265–270; cf. L. Lefebvre, ENIM 2, 2009, pp. 91–101), their kingdom had an essentially maritime character chiefly relying on a network of «allied cities and garrisoned fortifications at strategic points around the shores of the eastern Mediterranean» (pp. 191–192). These bases are conveniently mapped (Map 6.1, p. 192) and tabulated, with specific attention to garrisoned and naval bases (Table 6.3, pp. 195–196). Their wide geographical range as well as the need to respond to several conflicts at the same time, help to explain why the Ptolemies needed such a large pool of ships. According to WMM, on several (perhaps not always stringent) grounds, the great expansion of Philadelphus’s fleet took place only from the mid-250s on, during the final phase of the Second Syrian War and the last decade of the king’s reign. It was a period of territorial retrieval (pp. 197–200), preparing the initial achievements of his son and successor Ptolemy III. However, WMM seems a little too optimistic when speaking in terms of a «great recovery experienced by Egypt during the Third Syrian War» (p. 220).

For a number of complex reasons, the decline of the ‘big ship phenomenon’ set in around the end of the 3rd century B.C. Having fallen victim to a general economic decay and, from 190 on, gradually pressed by the rise of Rome, the weak-
ened Hellenistic powers lost control of the seas and essential coastal bases. Unlike their forebears, kings were no longer able to build super-galleys nor to maintain enough ‘fours’, ‘fives’ or smaller craft to support their middized polyremes during fights at sea. Becoming increasingly superfluous and cumbersome, warships larger than ‘sixes’ (the latter often used as flagships) disappeared from the scene.

Chiefly relying on ‘fives’, Romans were unwilling to outclass their enemies with unnecessarily costly ships. Trusting in their superior manpower and timber reserves, they generally used their fleets not as naval siege units (which would have required huge ships) but as a means of establishing naval dominance and transporting troops (cf. p. 232). Whereas the Ptolemaic empire in its heyday mainly relied on a network of maritime bases, the Romans ruled over a basically territorial land empire, primarily fighting major wars with land forces (cf. p. 234), which explains the differences in naval strategies and fleet concepts.

There was a short reversal during the Actian campaign (32–31) and the final battle of September 2nd, 31 B.C., especially as far as the fleet of Antony was concerned, though his large ships were far from prevailing. «Not the inherent superiority of light over heavy warships» was decisive, but the fact that Antony had to fight in a pitched sea battle against superior numbers of ‘fours’ and ‘fives’ (p. 243). It was the last sea battle in antiquity that saw large fleets fighting for control of the Mediterranean. At the same time it was the end of the ‘big ship phenomenon’, an end that in fact had been announced before the close of the 3rd century B.C.

Inaccuracies or lacunas are virtually lacking.

P. 55, l. 2 of the main text: read ‘Figure 2.1’ instead of ‘2.3’ – P. 108 n. 82 (and p. 355): read ‘Themison’ instead of ‘Themistos’, the Samian co-commander of the center of Demetrius’s fleet at Salamis, on whom see R.A. Billows, Antigonus the One-Eyed and the Creation of the Hellenistic State. Hellenistic Culture and Society 4. Berkeley, Los Angeles, and London, p. 436 n. 312 – P. 184: The name of the naval engineer [Pyrg]oteles may also have been [Erg]oteles; his father’s name seems to suggest Cypriot descent: cf. RDAC and London, p. 312 – P. 244: On Publius Canidius, see also P. van Minnen, ArchPF 47 (2001), pp. 79–80 – P. 277 (and 355): read ‘Themistos’ instead of ‘Themiston’, kybernetes of a dekeres (mentioned in the Zenon archive; P.Col.Zen. II 63, Recto col. II [probably Jan.–Feb. 217], where the wrong reading «Themistes» is found): ProsPtol V 13837; W. Clarysse, in P.W. Pestman e.a., A Guide to the Zenon Archive (P.L.Bat. 21), Leiden 1981, p. 339 s.v. 1. We can imagine that this man, who had received a respectable loan (20 silver drachmas) at a time when the Second Syrian War was still going on, whereas Zenon, who was operating from Alexandria as the dioiketes Apollonios’s agent and private secretary, was travelling in the Delta (cf. AncSoc 36, 2006, pp. 210–211), was considered to hold a relatively important position within his social class. The dekeres must have belonged to the group of major ships within Ptolemy Philadelphus’s navy (there is no other possibility) and may also have been used for prestige or diplomatic missions, e.g. within the framework of the relations with the Seleucid court (though at that time they were surely interrupted): cf. Plb. XVI 3.3, where the ‘ten’ of Philip V is his flagship (p. 277). About the same time (Feb. 1, 257) an enneres was being built or repaired in Halicarnassus at the expense of the trierarch Xanthippos, a high official who probably belonged to the circle of Apollonios: P.Cair.Zen. I 59036 (see p. 276; cf. AncSoc 21, 1990, pp. 120, 124, 132–139). It is not excluded that the wealthy dioiketes was in one way or another involved in the financial support of the building or repair ofThemistos’s ship, but this remains speculation. It is
strange that in the ‘official’ lists no ‘tens’ are mentioned among the large ships of Philadelphus’s navy (p. 188).

Parmi les nombreux ouvrages scientifiques traitant principalement de Constantin parus ces toutes dernières années dans les différentes langues occidentales, l’étude de T. D. Barnes ici abordée est appelée à occuper une place de premier ordre. En effet, elle est le produit d’une étonnante entreprise engagée par l’auteur depuis une quarantaine d’années. Nourri par une enquête qui a déjà donné matière à 65 publications répertoriées en bibliographie (p. 230–232), dont le très remarqué Constantine and Eusebius, 1981, le présent livre relève donc un défi: inscrire son propos dans un rapport intime à une œuvre d’ampleur en affrontant l’exercice de la retractatio (cf. p. 116 par exemple), tout en entretenant une étroite relation avec les travaux de recherche menés par d’autres. A cet égard, le propos de Barnes ne ménage guère certains de ses confrères dont la méthode et les résultats ne sont pas compatibles avec les siens: R. Van Dam et N. Lensky (dès la p. 2) H. Drake (p. 12), ou encore C. Mango (p. 24–25) sont spécialement visés mais la critique qui leur est assénée veille à toujours rapporter le désaccord à la spécificité des dossiers et au bien-fondé de leur interprétation. C’est avec une égale vigueur que Barnes adhère à certaines conclusions audacieuses qui, récemment avancées, ne font pas encore l’unanimité. C’est ainsi qu’il manifeste un soutien complet à l’hypothèse de K. Wilkinson (2009) selon laquelle les épigrammes du poète égyptien Palladas sont à placer sous le règne de Constantin (elles étaient précédemment situées sous celui de Théodose) pour risquer quelque suggestion supplémentaire (sur son rôle dans la constitution d’un recueil de poème précurseur de l’Anthologie palatine) et en tirer d’importantes conséquences au regard du projet impérial assigné à Constantinople ou en matière de politique religieuse après 324.


