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Part I

The Ship of Saint Paul
Historical Background

by Nicolle Hirschfeld

This relief depicts a Roman merchant ship in the harbor of Rome around 200 C.E. The rig of the ship on which Saint Paul sailed probably resembled this one. Photograph courtesy of Lionel Casson and the Gabinetto Fotografico Nazionale, Rome.

In C.E. 62, Saint Paul left Caesarea for Italy. Sailing in a vessel of unknown type, he reached Myra on the southern coast of Turkey, where he boarded another ship for the second leg of his trip. Acts 27:6–28:16 records subsequent events: the voyage to Crete made difficult by unusual autumnal winds; an attempt to find a Cretan harbor in which to stay the winter; and finally the tempest that drove the ship across the Adriatic and caused it to wreck on the island of Melita (Malta). This story is more than a tale of adventure. From the perspective of nautical archaeology, it preserves important information about the type of vessel on which Paul and his companions sailed: a ship en route from Alexandria to Italy (Acts 27:6), carrying grain as its cargo (Acts 27:38), as well as 276 passengers and crew members (Acts 27:37). There is little doubt that the ship in question was one of a very special fleet, designed and constructed by the Romans expressly to transport grain from the fertile land of the Nile to Italy, particularly to Rome.

Historical Evidence

These *Alexandrian grain ships* are a fascinating historical and archaeological puzzle. Evidence for their existence consists of a few brief references in Roman texts. For example:

> Today the Alexandrian ships suddenly made their appearance, the ones that are usually sent ahead to announce that the

These excavators are searching for metal artifacts on the wreck of a large Roman merchant ship discovered just north of the harbor at Caesarea. Photograph by Mark Little and courtesy of the Caesarea Ancient Harbour Excavation Project.

An aerial view of the harbor at Caesarea Maritima, where Paul began his journey to Rome in 62 C.E. It is not known what type of ship Paul boarded at Caesarea Maritima, but it is almost certain that the type of ship that eventually took him to Rome was one of the grain ships specially designed to transport grain from the fertile Nile to Italy. These great grain ships remain a mystery because the only evidence for them comes from a few brief references in ancient Roman texts. Photograph courtesy of the Caesarea Museum, Kibbutz Sdot Yam, and the Caesarea Ancient Harbour Excavation Project.

> fleet [of big grain ships from Egypt] is behind and will be arriving. . . . To the Campanians they are a welcome sight (Seneca, *Epistulae*, 77.1–2; see Gummere 1920: 168–69).

This passage indicates that some of the grain ships travelled in a fleet and shows the importance of the grain.

Besides the biblical account of Saint Paul's voyage, only one other reference provides more extensive clues. Lucian, a Greek writer and traveller of the second century C.E., wrote a partial description of the *Isis*, a grain ship blown off course and forced to dock in the Peiraeus, the harbor of Athens (Lucian, *The Ship or the Wishes*; see Kilburn 1959: 434–41).

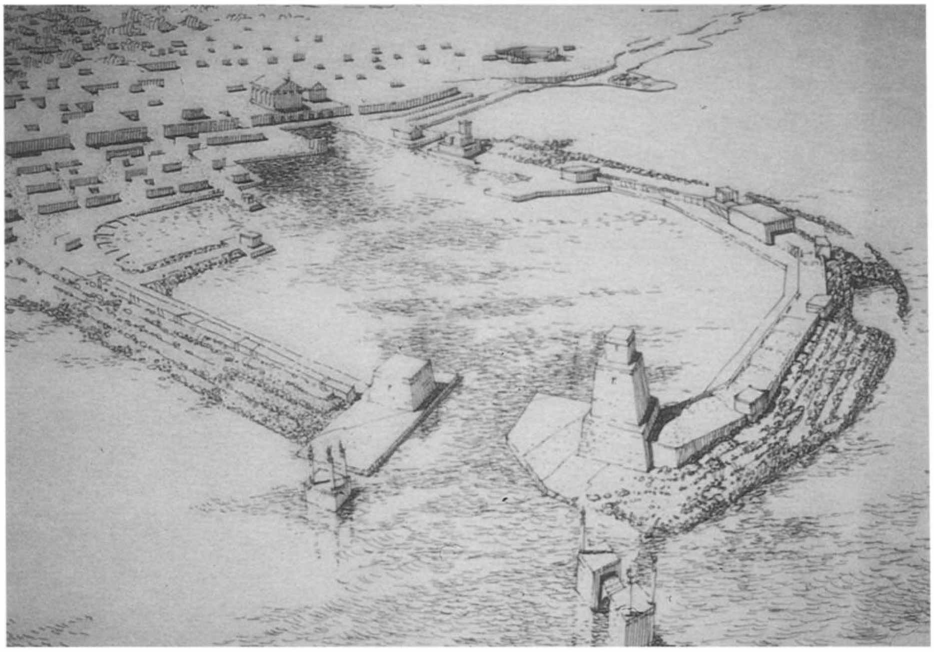
Each of these texts supplies different types of information. Although a hodge-podge of details can be gleaned, they are isolated facts whose significance can be understood only with respect to other texts or archaeological information.

For example, there is a good description of the route of Paul's ship: beginning in southern Asia Minor, it took a course south of Crete and across the Adriatic with the intent of reaching Italy. The route is consistent with our knowledge of wind patterns and the sailing capabilities of Roman ships. The only other direct mention of a grain ship's sailing route (Lucian, *The Ship or the Wishes*; see Kilburn 1959: 437–41) corroborates the account in Acts. In that instance, the ship followed a similar path but was also voyaging late in the sailing season and was blown completely off course, eventually making port at Athens. It is not known if this was the only route followed by grain ships, or whether it was simply an alternative, perhaps chosen because of the lateness of the sailing season.

A tantalizing detail in Acts 27:17 is almost incidentally included in the narrative, and is so brief that its interpretation is problematic: ". . . they used helps (*boetheia*) to undergird (*hupozonnumi*) the ship. . . ."

Hypozomata were apparently heavy ropes or cables used for hull reinforcement (Morrison and Coates 1986: 170–72; Morrison and Williams 1968: 294–96; Kennedy 1976). Beyond a general notion of using tension to hold the ships together, it is difficult to envision exactly how these ropes functioned. They are primarily associated with warships, being mentioned on standard lists of gear for fifth-century Athenian triremes. Thus, the mention of *hypozomata* in connection with a grain ship raises interesting questions. Were *hypozomata* also used on merchant ships? Because records of gear for commercial vessels have not been found, the existence of

The dimensions of the Alexandrian grain ships were comparable to those of the *USS Constitution* and Nelson's *Victory.*



A reconstruction of the outer basin of the harbor at Caesarea, looking southeast. Photograph by Mark Little and courtesy of the Caesarea Ancient Harbour Excavation Project.

mostly military inventories has perhaps biased theories of ship construction. However, the merchant ships excavated thus far have yielded no evidence of *hypozomata*, nor do we know of any design aspects that suggest the necessity for such a device. Did, then, the great size of the grain ships require extra measures to assure hull integrity? If so, it is of interest that both triremes and grain ships, although of completely different design, solved the problem of hull reinforcement in the same manner. This could be an indication of limited technological options open to shipbuilders.

In another perilous moment during Paul's voyage, four anchors are cast from the stern to prevent the ship from being dashed upon a rocky shore (Acts 27:29). Acts 27:30 implies that there were more. Archaeological evidence reveals that throughout antiquity ships routinely carried large numbers of anchors: the fourteenth-century-B.C.E. wreck at Ulu Burun, Turkey, carried at least 23 stone anchors (Pulak 1988: 15; personal communications); five lead anchor stocks, seemingly dropped from a first-century-C.E. Roman ship, were found off Italy (Throckmorton 1987: 78–79); a seventh-century-C.E. merchant vessel at Yassı Ada, Turkey, carried 11 iron anchors (Bass and van Doorninck 1982: 121–43); and an eleventh-century ship at Serçe Limanı, Turkey, was found with seven iron anchors still on board (Bass and van Doorninck 1978: 124).

The other extended account of a grain ship, that of the *Isis* by Lucian, again does not present a complete picture, for it focuses almost exclusively on the ship's tremendous size:

> What a size the ship was! 180 feet in length, the ship's carpenter told me, the beam more than a quarter of that, and 44 feet from the deck to the lowest point in the hold. And the height of the mast, and what a yard it carried, and what a forestay they had to use to hold it up! . . . Everything was incredible: the rest of the decoration, the paintings, the red topsail, even more, the anchors with their capstans and winches, and the cabins aft. The crew was like an army (Lucian, *The Ship or the Wishes*; see Kilburn 1959: 434–37).

The dimensions Lucian describes are comparable to those of the *USS Constitution* and Nelson's *Victory* and would seem fantastic, except that evidence for other grandiose feats of Hellenistic and Roman nautical engineering has been preserved:

1) The *Syracusia*, a grain ship built for Hiero II of Syracuse around 240 B.C.E., is described by Athenaeus (Athenaeus; see Casson 1971: 191–99). There is some debate over converting its cargo specifications to modern equivalents, but Lionel Casson calculates its capacity at almost 2,000 tons.

2) In the first century C.E., Caligula ordered the construction of a vessel that carried an obelisk from Egypt to Rome (Pliny, *Natural History*; see Rackham 1945: 518–19). The obelisk and its pedestal weighed 496 tons, and it is estimated that ballast would have weighed another 800 to 900 tons; thus the entire load weighed approximately 1,300 tons (Casson 1971: 188–89).

3) In the 1930s, two barges were excavated from the muddy bottom of Lake Nemi. These strictly-for-pleasure vessels were floating palaces built for Caligula and constructed

To understand how the grain ships were built we must study the remains of merchant ships, then apply those principles to the grain ships.

solely for use on the lake. They were eventually stripped of valuables and abandoned. No superstructure remained, but the extant hulls measured 234 to 240 feet in length and 66 to 69 feet in beam (Ucelli 1950).

4) Josephus' (Josephus, *The Life*; see Thackeray 1926: 6–7) trip to Rome may have been on a grain ship, for he and the 600 other passengers all lived on deck.

These examples clearly show the Romans were technologically capable of building vessels of prodigious dimensions. Caligula's obelisk still stands in the center of Saint Peter's square and is visible proof that such vessels were seaworthy. The reported immensity of the Alexandrian grain ships, then, must be regarded as plausible.

The size of the grain ships raises the question of cargo capacity. Lucian's dimensions do not permit such calculations, for the specific shape of the hull is crucial. There is, in fact, no direct evidence for the hull shape of an Alexandrian grain ship—none has yet been located and excavated—nor are there specific representations of these giant ships. Estimates of cargo capacity must therefore suffice. Some theories combine Lucian's general dimensions with hypothetical hull shapes based on representations of nonspecialized merchant ships, while other comparisons are made to the cargo capacities of much later merchant ships of similar shape and size (Casson 1950: 51–56).

A different approach is to use textual references to standard cargo sizes to postulate how grain ships might relate to such standardized schemes. For example, Roman law (Scaevola, *Corpus Juris Civilis*; see Krueger and Mommsen 1954: 900) stipulated a minimal cargo capacity (50,000 *modii* or 340–400 tons) in order for a shipowner to qualify for certain privileges. Does this minimum figure suggest a standard cargo size? If so, what does this reveal about the scale and organization of Roman shipping, and how radically different was the scale of grain ships?

Archaeological remains of cargoes, such as on the wreck at Madrague de Giens in France (Tchernia and Pomey 1978), are the most direct source of information, but sites have often been looted or their organic remains have disintegrated, leaving behind only partial cargoes. Therefore, estimates of cargo capacity will remain theoretical until more evidence for the hull configuration and cargo capacities of large Roman ships is found.

Construction Methods

How might such large vessels have been constructed? The Nemi barges give some indication, but because they were constructed solely for a luxury purpose and for lake conditions, their design probably does not reflect many of the construction features of commercial seaworthy craft. To understand exactly how a ship was built and why it was built that way, it is more productive to study the archaeological remains of merchant ships, and then hypothesize how those principles might be applied to the problems of constructing a grain ship.

The construction of grain ships occurred during a period—which lasted several centuries—of change toward increasing reliance on frames for strength. How might the builders of grain ships have taken advantage of the changing construction methods? Would the problems of stress in the immense ships have been approached with innovative ideas, or would shipbuilders have relied on conservative methods? It is extremely theoretical to try to determine the choices made by the ancient shipbuilders. However, the examination of preserved hulls provides clues to the range of options available to the ancient shipbuilder and permits the proposal of realistic possibilities as to how these problems might have been solved. As more ships are excavated, it will be possible to understand under which particular circumstances certain solutions were adopted.

Of course, factors other than technology and physics influenced the functions for which the grain ships were built. Grain requires a cool, dry environment because dampness and/or excessive heat causes the grain to mildew, ferment, sprout, or swell (Rickman 1980b: 261). The swelling of a wet cargo of grain could literally split a ship at the seams. Therefore, the watertightness of a ship designed specifically for carrying grain must have been ensured. Archaeological evidence gives us a good idea of how watertightness was addressed on the outside of the ships, but it is not known if further measures were required within the holds.

The manner in which the grain was stored might also have influenced ship design. Texts and representations indicate grain was loaded or unloaded by means of sacks carried by porters. One wall-painting even shows sacks of grain poured out for inspection. Does this imply then that the grain was poured loosely into the hold, or was it put back into the sack? If grain was stored loosely, did partitions prevent the grain from

The general economic organization of the grain trade must have played a crucial role in the design and construction of ships.

shifting en route? Historical evidence supports the presence of partitions. Roman legal texts discuss compensation to particular individuals in case their cargo was damaged or lost. Sealed samples of grain were sometimes sent along with specific shipments in the cargo. Both of these situations imply that individual lots could be differentiated and that they were probably stored separately, either within sacks or partitions.

Governmental Regulation

The general economic organization of the grain trade must have played a crucial role in the design and construction of the transport ships as well. Grain was a vital commodity in the Roman Empire; a shortage of grain in the capital could cause the populace to riot and influence political policies. In spite of the importance of grain, however, it seems that the government moved slowly in organizing and controlling the grain industry; thus private individuals played a key role in the grain trade until late in the Empire.

How could these individuals cover the enormous expense of construction and purchasing the cargo for these ships? Perhaps these exceptional ships must be reviewed in terms of exceptional situations. These large vessels are mentioned only in connection with Egyptian grain; although the rest of North Africa provided far more grain to Rome by the end of the first century C.E. (Rickman 1980a: 68), there is no indication that any specially-built merchant ships transported grain along this route.

Why was Egyptian grain different? Several factors, including the periodic flooding of the Nile and the ease of transporting the harvest down the Nile to Alexandria, indicate the Nile valley harvest was quite predictable. In addition, papyri document the presence of a highly developed administrative system that controlled all aspects of harvest and storage. Therefore, if the merchants could count on a large quantity of grain at a specific time, extraordinarily large financial investments were not as risky, and thus encouraged.

Egypt's greater distance from Rome also distinguished it from the rest of North Africa as a grain supplier. Distance and wind patterns allowed time for only a single round trip between Rome and Alexandria during the sailing season. If loading and unloading proceeded quickly, a ship could achieve 1½ trips. Perhaps because of the ensured supply and demand and limited time for transport, it was economically and politically necessary to operate the large grain ships (Pomey and Tchernia 1978: 251).

On the other hand, an effective administration may have limited the role of private merchants in the Egyptian grain trade. Egypt seems to have been exceptional in the regulation of its grain trade; government officials were assigned to oversee grain production long before similar regulation was instituted elsewhere. Could governmental control over Egyptian grain trade include projects such as building and maintaining grain ships? If this was the case, need we necessarily expect that these government ships were economically competitive? How would a governmental commission charged with construction affect the building and design of such ships?

Even more questions are raised by the appearance of colossal grain ships in the Roman Imperial period. The use of larger ships required modifications in harbor facilities and services. In fact, the efficient unloading of the large grain ships and the accompanying bureaucratic formalities required a high degree of organization; a testimonial from the second- or third century C.E. indicates the process did not always flow smoothly:

> I arrived on Epeiph 6 [June 30], and we unloaded on the 18th of the same month. . . . Day after day we have been waiting for notification of release. Right up to today [August 2] not one of the grain carriers has been released. (*Select Papyri*; see Hunt and Edgar 1932: 306–07).

What sort of changes did the presence of a fleet cause in the organization of harbor boat operations, storage of goods and the structure of the harbor itself? Texts hint at important regulatory changes taking place in the early centuries of the Empire, and excavations have uncovered an entire harbor complex built near Rome early in the first millennium C.E. How important were the Alexandrian grain ships to administrative and architectural change?

These questions form a beginning. The ancient literature establishes the existence and importance of giant grain carriers, as well as some clues to their actual design and operation. Further scrutiny of written sources may yield additional information, especially concerning the economic and administrative organization of the grain trade.
A second (and expanding) source of information is the excavation and analysis of Roman shipwrecks. No grain ship has yet been excavated, but it is clear that studying Roman

shipbuilding and other ships provides distinct clues about how a grain ship might have been constructed and operated. This is an important and fascinating puzzle, for the specialization reflected in the grain ships is an index to technological, economic and political conditions in the early imperial Roman world.

Bibliography

Bass, G. F., and van Doorninck, Jr., F. H.
1978 An 11th Century Shipwreck at Serçe Liman, Turkey. *International Journal of Nautical Archaeology* 7: 119–32.
1982 *Yassi Ada I. A Seventh-Century Byzantine Shipwreck.* College Station, Texas: Texas A & M University Press.

Casson, L.
1950 The *Isis* and her Voyage. *Transactions of the American Philological Association* 81: 43–56.
1964 *The Ancient Mariners.* New York: Macmillan.
1971 *Ships and Seamanship in the Ancient World.* Princeton, NJ: Princeton University Press.
1980 The Role of the State in Rome's Grain Trade. Pp. 21–34 in *The Seaborne Commerce of Ancient Rome: Studies in Archaeology and History,* edited by J. H. D'Arms and E. C. Kopff. *Memoirs of the American Academy in Rome* 36.

Gummere, R., translator
1920 Seneca, *Ad Lucilium Epistulae Morales,* volume II. Series: Loeb Classical Library. Cambridge, MA, and London: Harvard University Press and Heinemann.

Hunt, A., and Edgar, C., translators
1932 *Select Papyri,* 113, volume I. Series: Loeb Classical Library. Cambridge, MA, and London: Harvard University Press and Heinemann.

Kennedy, D.
1976 Cable Reinforcement of the Athenian Trireme. *Mariner's Mirror* 62: 159–68.

Kilburn, K., translator
1959 Lucian, *The Ship or the Wishes,* volume VI. Series: Loeb Classical Library. Cambridge, MA, and London: Harvard University Press and Heinemann.

Krueger, P., and Mommsen, T., editors
1954 Scaevola, *Corpus Juris Civilis,* volume 1. Berlin.

Morrison, J., and Coates, J.
1986 *The Athenian Trireme.* Cambridge: Cambridge University Press.

Morrison, J., and Williams, R.
1968 *Greek Oared Ships 900–322 B.C.* Cambridge: Cambridge University Press.

Pomey, P.
1978 Les navires de commerce romains. *Dossiers de l'archéologie* 29 (July–August): 20–29.

Pomey, P., and Tchernia, A.
1978 Le tonnage maximum des navires de commerce romains. *Archeonautica* 2: 233–51.

Pulak, C.
1988 Excavations in Turkey: 1988 Campaign. *INA Newsletter* 15 (4): 12–17.

Rackham, H., translator
1945 Pliny, *Natural History,* volume VI. Series: Loeb Classical Library. Cambridge, MA, and London: Harvard University Press and Heinemann.

Rickman, G.
1980a *The Corn Supply of Ancient Rome.* Oxford: Oxford University Press.
1980b The Grain Trade Under the Roman Empire. Pp. 261–76 in *The Seaborne Commerce of Ancient Rome: Studies in Archaeology and History,* edited by J. H. D'Arms and E. C. Kopff. *Memoirs of the American Academy in Rome* 36.

Tchernia, M. A., and Pomey, P.
1978 *L'épave romaine de la Madrague de Giens (Var)* (supplement to *Gallia*), edited by P. Throckmorton.
1987 *The Sea Remembers: Shipwrecks and Archaeology.* New York: Weidenfeld & Nicolson.

Thackeray, H. St. J., translator
1926 Josephus, *The Life,* volume I. Series: Loeb Classical Series. Cambridge, MA, and London: Harvard University Press and Heinemann.

Throckmorton, P., editor
1987 *The Sea Remembers: Shipwrecks and Archaeology.* New York: Weidenfeld & Nicolson.

Thurneysson, J.
1978 La navigation de Saint Paul. *Dossiers de l'archéologie* 29 (July–August): 94–105.

Ucelli, G.
1950 *Le navi di Nemi.* Rome: Librerio dello Stato.

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Corrections

The righthand photograph on page 214 of the article on votive sculpture by Joan Breton Connelly in the December 1989 issue was incorrectly identified. The caption should have read: This is a classical limestone votary from Idalion. He is in Greek costume and is carrying a bird in his left hand and in incense box in his right hand. Photograph courtesy of The British Museum.

Also on page 214, the inscription in the lefthand photo should have read "I am Timagoras."

These errors were introduced in the production process, and we apologize for any confusion they may have caused.

For clarification, the library at CAARI is called the Claude F. Schaeffer Library, in memory of John Irton Wylde.

The grand opening of the new CAARI facility, which was scheduled for May 25, 1990, has been postponed indefinitely due to local labor problems.