

## FIVE CENTURIES BEFORE OLYMPIAS

In 1446 Leon Battista Alberti sent divers down on what is now known as Nemi ship I (Ucelli, 1950). Hooks were attached to it and planks torn off. Well may the archaeologist shudder! Alberti identified the wood and described the lead sheathing. (Alberti, 1512, I, 5, 12).

In 1535 Francesco de Marchi dived on the same ship in a diving-bell. He found the same things Alberti found, but also the mortise-and-tenon construction (Marchi, 1599, ff.42ro 44vo). Nobody was interested. Much was being written about ships in antiquity, but interest centred on the arrangement of multiple rows of oars and/or oarsmen. They had little evidence of that from ancient literature. Chiefly:

1. Line 1074 of Aristophanes' *Batrachoi* (farting into the face of the thalamioi, but who did it?)
2. A scholion to Aristophanes, according to which the thranitai sat aloft, the zygitai in the middle, and the thalamioi below, while also the thalamioi sat forward, the zygitai in the middle and the thranitai aft. This probably indicates the way the rows were staggered, but for  $\pm 3$  centuries scholars thought the 2 statements contradicted one another.
3. Measurements of Ptolemaios Philopator's tesserakontéres. (Athenaios, V. 203c. - 204b.)
4. Vitruvius' remark about the interscalmium being a module in naval architecture, that might decide the size of ships. Complication: he mentions a greek name for the interscalmium; space between tholes, that is not clear in the manuscripts, but looks like meaning 2 cubits, which, if meant literally, would contradict the idea of a module. (Vitruvius, I, 2, 4,).
5. Byzantine descriptions of Dromons, from almost a 1000 years later than Vitruvius (Leo VI, XIX, 7-8. Anon. PBPP, II, 7).

All this was treated as belonging to one period.

In the 15th and 16th century "trireme" was a household word in the Italian maritime republics. It indicated the common galley a sensile, where on every

bench 3 oarsmen sat, each with his own oar. So many scholars thought that this had been the system of the ancient polyereis. A Venetian professor of Greek, one Vettor Fausto, who was also a good shipbuilder, produced a quinquereme on the a sensile principle, claiming that he had found the measurements for her in "libri greci antiquissimi". The ship was a success, technical as well as personal, but in these books he can only have found the word "penteres". (Fincati, 1881, pp. 49-56).

A Portuguese priest and sailor, Fernao Oliveira, tried to apply Vitruvius' idea of the interscalmum to the current (horizontal) trireme. He calls the distance between the 3 oars in one "bunch" belonging to a bench interscalmum and the distance between bunches "interordinium" (between rows), then he realizes that ordines (rows) are supposed to go longships and not the men on one bench, so his purely verbal way is to claim that interordinium is the distance between the places where the rows come together. (Oliveira 167v - 168v).

In 1536 Lazare de Bayf published a book in which he took the second part of the Aristophanes scholion and thus created the longitudinal trireme, with the thranitai aft etc. He honestly and modestly confessed to be at a loss as to the nature of the larger multiremes, especially the 40er. (Bayf, 1536 pp. 42-43).

In the second half of the 16th century, the oarsmen of one bench got one oar; this system was called ascaloccio. The earlier system was soon forgot. So the classics were read without horizontal triremes blocking the view.

Already in 1550 one Piccheroni della Mirandola offered a set of drawings to the doge of Venice. They showed refinements in a sensile rowing and section of vertical multiremes, including one of 50 rows, with no comment except the promise that these ships would sail better than others. More articulate scholars later in the century showed that the first part of the Aristophanes scholion had become gospel. In 1581 sir Henry Savile in a note to a translation of some books of Tacitus, casually remarked that "warships were sorted into their several kindes according to the number of bankes and oares placed one above the other" (sonthe, 1581, notes p.49).

A vigorous polemist in the cause of the vertical multireme was Josephus Justus Scaliger. He also set the arrogant and mocking tone common among the adherents of the vertical "school". His special butt was the dead Bayf. A rather fatal idea of his was, that a trireme could be compared to a building with 3 floors, etc. (Scaliger, 606 notes to Eusebius pp.6-63).

Some of his followers were among the most famous scholars of the 17th century in other subjects, but the tesserakonteres had a great attraction for them. The mathematician, astronomer and surveyor Willibrord Snellius said, that however the oars were arranged, the oarsmen would always be packed like pickled herrings (Snellius 1614 unnumbered page). One Thomas Ryves (Rivius) had the modern idea (cf. Casson 1971), that no ship had oars at more than 3 levels, but that the qualifications came from the number of oarsmen thranite oars, so the trieres had 3 men at every top-level oar, and the tesserakonteres 40! and 30 and 10 at the two other levels to make up the number of 4000 oarsmen Athenaios mentioned, for you could only have 25 oarsmen in a row. Why? Because Leo VI in the 9th century A.D. said that this was the case in a dromon! (Rivius, 1653 pp.309-312).

Jacques Lepaulmier, known as Palmerius, designed something like a staircase for his oarsmen to sit on, contrary to the Aristophanes scholion, it went up and aft! (Palmerius 1694 p.174).

Marcus Meibomius from Holstein, had a rather clear idea for staggering the oars, with the bottom ones forward, but he put his oarsmen on tall one-legged stools, with a minimal footrest attached to that leg, so that they would never have been able to pull (Meibomius 1671 tolding-plate by Romeyn de Hooghe). He was a brilliant writer of Latin and in a flamboyant preface he told Louis XIV of France to scrap all his galleys and replace them with multiremes built by "a German man". (Meibomius of course), and then conquer the world. He actually managed to obtain a long interview with Louis' minister, the Marquis de Seignelay, before he had to climb down. (Barras, Ms. Fr. pp. 188v-189v).

Giovanni Alfonso Borelli became famous all over Europe for his thick book *De Motu Animalium*, which seems to be the product of systematic observation and logical thinking. He also wrote, in Italian, a lecture for the "royal academy" of queen Christina, in Rome, late of Sweden. It was about "moltiremi" and he warns that he does not know whether his system was applied in antiquity, but that he thinks it is a good idea. He proposes to build a huge vault on the deck, which he calls "testudo"; but which seems inspired by the fish's swimming bladder, illustrated in the animal movement book. Gianbattista Falda drew a beautiful picture of the intended result (now in the Cabinet des Estampes of the BN in Paris), with parts cut away to show the inner workings. Oarsmen cling to the outside of the "testudo" like flies, at the inner end of oars that on 3 levels pass through the sides of a blow-up of a contemporary galley. Falda mercifully does not show us how long these oars are.

Fabretti wrote a description of Trajan's column, but finding only biremes and 1 trireme there, he added a polyeric chapter. He believes Borelli's bladder to have been a common feature in antiquity and also adopts le Paulmier's staircase. He contends that it became less steep as there were more rows and so the interscalmium on each level became steadily longer. Demetrios Poliorketes' 16 rower had an interscalmium of over 10 feet!

Isaac Vossius also tackled the interscalmium. He said the Greek word in Vitruvius should be read "eiresia" and mean the distance from thole to handle, in other words: the loom! He very ingeniously demonstrated the drawbacks of Palmerius' staircase and wanted to put oarsmen on beams sloping down to the side of the ship, never on more than 7 levels in this way, he designed his tesserakonteres. He based this idea on Pollux, who says ships don't have more than 7 tropoi, by which he probably meant beams sticking out through the side, counted horizontally. (Vossius, 1685 pp. 98-101).

The much writing galley-captain Jean Antoine Barras de la Penne read all this and at great length proclaimed it all nonsense. There had never been anything but galleys a scaloccio! He also designs a tesserakonteres, surprisingly phantastic for something thought up by an experienced sailor. He followed Bayf's idea of the longitudinal trireme, with 20 men at each oar. Moreover he put the zygitas (midships) a deck higher than the forward thalamioi and the thranites aft one higher again. This was probably thought a plausible idea, because of the contemporary sailing ships with their quarter- and poopdeck. His idea was later taken up by one André François Deslandes. We are now in the 18th century, when generally the theories of the 16th and 17th centuries were rehashed by lesser men.

In 1820 Jean Rondelet published a plausible section of a trireme, among a crowd of by now familiar phantasies, only drawn better than before (Rondelet 1820. pl. 1).

He was the last knight going on the old style polyeric quest. Soon after, in the 1830ies, the naval inscriptions at Piraeus were discovered and published by August Boeckh. Later the shipsheds. So there were possibilities to know more about common or garden triereis and tetrereis, and as more data always cause more questions, there was a marked decline in speculations about the ships with the higher numbers. We may say that the polyeric quest in which we are engaged, began.

The "spectre" that haunted 19th century polyeric lore was decks between the rows of oarsmen. There were partly derived from unclear indications in classical

litterature and Scaliger's floors, but probably reinforced by the importance of gundecks in the last years of the great men of war under sail and the first decennia of the steampowered ones. The trireme that Jal and Dupuy de Lôme designed and built for Napoleon III, even had tumblehome! (Jal, 1861, pp. 14-17),

There were some relapses, apart from the phantastic "underground" that goes on and on. Bernard Graser, though he had taken part in the search for the ancient harbours in Piraeus, drew the whole Palmerian staircase for the Philopator ship, and other topheavy things and published in Latin. And from 1904 to 1934, W.W. Tarn fiercely defended Bayf's longitudinal trireme.

The new knowledge, acquired in the 19th century led to the building of the Olympias. She is probably the nearest thing to a Greek trireme, designed since many centuries, but we should not forget that she is not a reconstruction, as for the greater part are the Kyrenia II, some replicae of Vikingships afloat in Denmark and Norway and a "Bremen cog" built in Kiel. Olympias is a floating hypothesis, but many new data will have to turn up before a better trireme can be launched.

Louis Th. Lehmann  
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### **ILLUSTRATIONS**

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- Fig. 1 Venetian horizontal trireme. Fragment of the painting: Return of the ambassadors from England, by Vittore Carpaccio. In the St. Ursula series in the Galleria dell'Accademia in Venice. (Photo: Kunsthistorisch Institut. Universiteit van Amsterdam).
- Fig. 2 Marcus Meibomius ideas for polyreis, from his *De Fabrica Triremium*. Drawings by Romeyn de Hooghe.
- Fig. 3 Isaac Vossius. Section of a tesseracter with oars 'a scaloccio' on 7 levels. (Photo unit the verzameling van de bibliotheek van de Universiteit van Amsterdam).
- Fig. 4 Barras de la Penne's idea of a tesseracter. Title page of one of his few printed treatises. (Photo. British library, London).

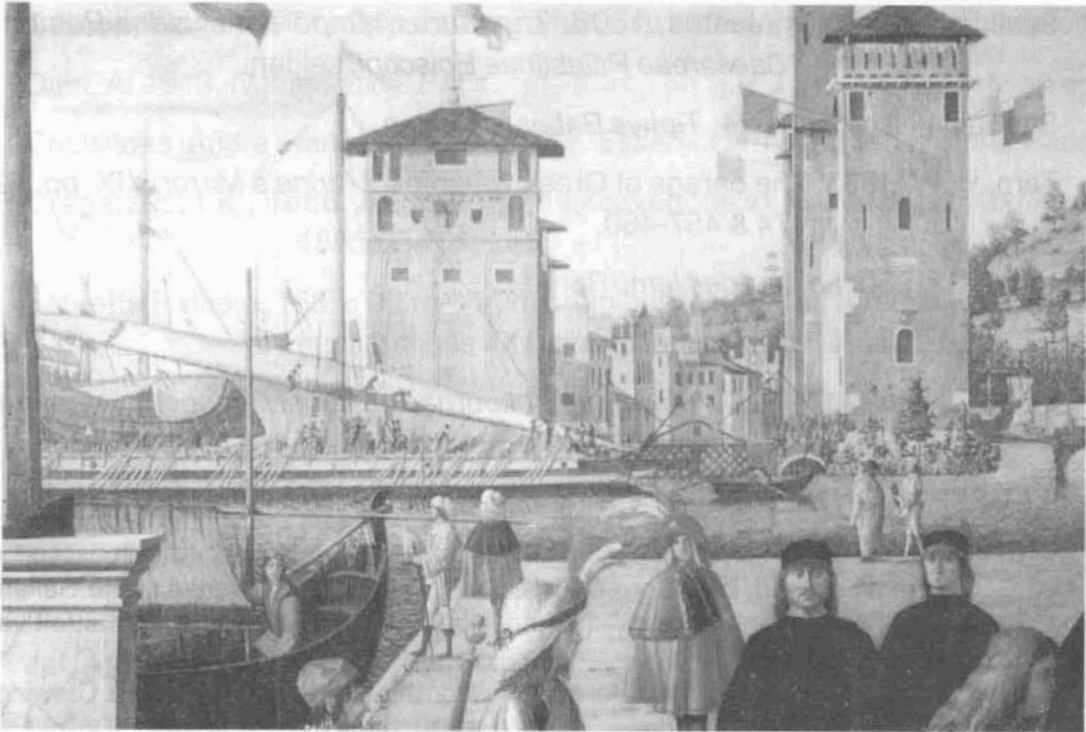
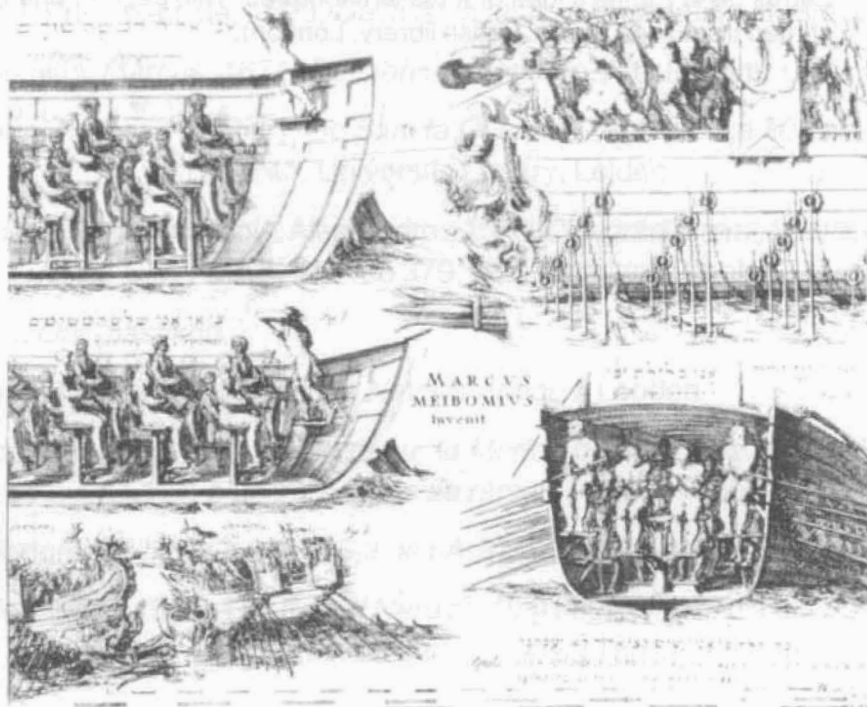


FIG. 1

FIG. 2



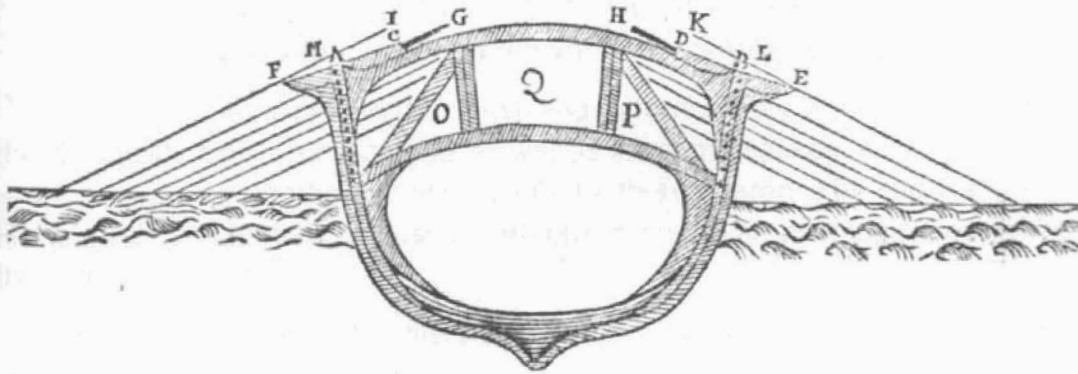
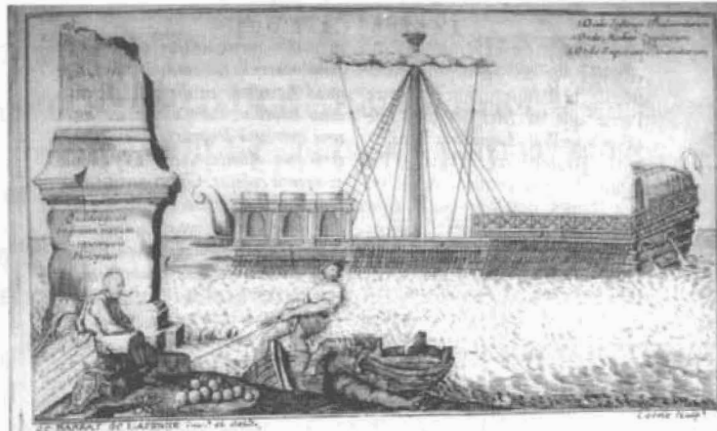


FIG. 3



EXPLICATION  
DES  
PLAN, PROFIL ET COUPES  
DE LA GALERE  
DE PHILOPATOR.

**L**ES Dessins de la fameuse Galere de Philopator, ont été faits sur la Description d'Athenée, Livre 5. du premier Livre de Callixene, rapportée par Plutarque, dont voicy la Traduction Française faite sur la Latine de Bayf.

**P**HILOPATOR fit construire un Vaisseau de quarante ordres, long de 280. coudées, large de 38. d'un Bord à l'autre. Sa hauteur jusques à ce qu'on nom-

**Q**uadragesima ordinum Navem construxit Philopator, qua in longitudinem haberet 280. cubitos, octo autem & triginta in latitudinem ab aditu in aditum,  
M

FIG. 4