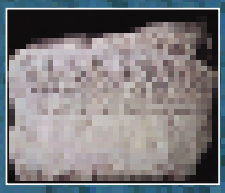
The Olympias Trireme Reconstruction

Olympias at sea (photo, Alexandra Guest)

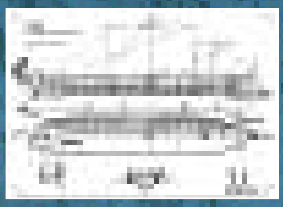
The trireme was the most important warship type of the ancient world. We know that it was powered by 170 oars, with one man at each oar, and was intended to operate principally as a ramming weapon. Triremes were used continuously by Greek and Roman navies in one form or another from at least the 6th century BC until to the 4th Century AD, a life span of some 850 years. Their precise form has, however, been a matter of debate since shortly after they ceased to be built. In particular, it has been hotly disputed whether their oars were arranged at three different levels, something which many scholars have believed to be impossible. This was because it was assumed that the oars on the different levels would have to be of different lengths, and could not therefore be rowed in time with each other.

In 1941, the classicist John Morrison (who died in 2000) showed that oars of the same length could after all be rowed from three different levels, and argued that the ancient evidence in favour of this arrangement should now be accepted. This view continued to be greeted with scepticism, and eventually, together with a friend, Frank Welsh, and John Coates, who had just retired as Chief Naval Architect and Deputy Director of Ship Design at the Ministry of Defence, he set up the Trireme Trust in 1982 in an attempt to produce a truly practicable reconstruction.



The Lenormant Relief, found on the Acropolis at Athens

There were no surviving trireme wrecks on which to base a reconstruction (being light warships they had positive buoyancy when holed) and so Morrison and Coates had to rely on such evidence as was available. This included literary passages which provided a few construction details, confirmed that the ships had one man rowing at each oar, and gave an indication of their performance. Inscriptions added several more details, including the number of oars at each level and their length. Vase paintings, coins and sculpture, including the famous Lenormant relief from the Acropolis of Athens, gave visual clues. Most crucial of all, perhaps, were the surviving remains of the sheds in which the ships were housed, which provided measurements for their maximum length and beam.

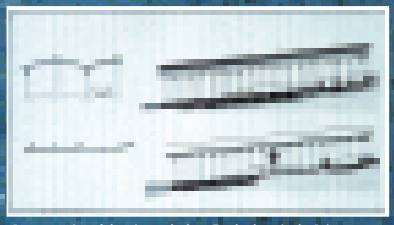


Olympias design as revised in the light of sea trials (drawing, J.F. Coates)

The Greek Ministry of Tourism and the Hellenic Navy became interested in the reconstruction and eventually agreed to build a full-size ship, which was launched in 1987 and given the name Olympias. With the permission and support of the Hellenic Navy, the Trireme Trust subsequently conducted sea trials in the Saronic Gulf in 1987, 1988, 1990, 1992 and 1994, and the ship was also operated on the River Thames in 1993 as part of the celebrations in London of the 2,500th anniversary of Greek democracy.

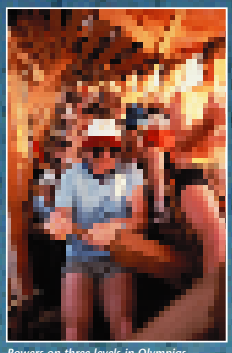
The vessel is 37 m long, with a beam of just under 6 m, and displaces 47 tonnes fully laden with crew. In the trials, she was rowed continuously for more than 30 miles at cruising speeds of up to 6 knots, and achieved just under 9 knots in a sprint under oar. Equipped like the ancient ships with a square-rigged mainsail and boat-sail, she was sailed to within 65 degrees of the apparent wind and touched 10.8 knots in a following gust. Her extreme manoeuvrability was tested and recorded, and a great deal was learned about the practicalities and logistics of operating her under both oar and sail. As a result, a number of further modifications to the design were proposed, partly as a result of the ship's performance and partly as a result of new archaeological evidence which has come to light since her construction. None of these modifications, however, has significantly subverted the basic design.

Olympias has thus acted, in the words of Professor Seán McGrail, as a 'floating hypothesis'. Because she was not based on an actual wreck, the project has met with opposition from some purist nautical archaeologists, but it has always been made clear by the Trireme Trust that she was intended as a test-bed for the proposed design. Even though important questions remain unanswered, what has been learned has more than justified the effort and expense of the physical reconstruction.



Reconstruction of the trireme sheds at Zea harbour in the Peiraeus (drawing, J.F. Coates)

The project has been published in detail, and the ship has appeared in numerous television films and as an illustration in countless books. Mock-ups of a section of the ship are on display at the River and Rowing Museum at Henley-on-Thames and the University Museum in Manchester. Meanwhile, the Leverhulme Trust has agreed to fund a new three-year project on Ship Sheds in the Ancient Mediterranean, which will begin at Royal Holloway, University of London in September, 2003. Building in part on the Olympias reconstruction, this project aims to learn still more about the sheds and the triremes and other oared warships which were housed within them.



Rowers on three levels in Olympias (photo, J.F. Coates)

For a detailed account of the Olympias project, see J.S. Morrison, J.F. Coates and N.B. Rankov, The Athenian Trireme. The History and Reconstruction of an Ancient Greek warship (Cambridge University Press, 2nd Edition, 2000).

Overhead view of Olympias passing through the Corinth Canal (photo, Jack Connolly)

For information about the Trireme Trust and the latest news of Olympias, see http://www.atm.ox.ac.uk/rowing/trireme or contact Boris Rankov at b.rankov@rhul.ac.uk.