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Ancient sounding-weights: a contribution to the history of Mediterranean navigation

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For a few terrifying days in September or October of A.D. 60,¹ St. Paul huddled with 275 other anxious passengers and crew on a ship in great peril somewhere in the southern Ionian Sea. The Alexandrian grain freighter, embarking late in the sailing season on a voyage via Myra in Lycia to Puteoli in Italy, was caught in a storm (*Acts* 27: 13-20, 27-32).

Fearing that they might be driven on to the Syrtes, they let down a sea-anchor and so were carried along. Since we were being badly tossed about by the storm, the next day they began to jettison the cargo, and on the third day with their own hands cast overboard the ship's tackle. And when neither sun nor stars appeared for many days, and a great tempest was upon us, all hope of our being saved was at last abandoned.

When the fourteenth night had come and we were being carried along in the Sea of Adria [Ionian Sea], the sailors suspected that they were nearing land, and casting the sounding-weight [βολίσαντες], they found 20 fathoms. A short distance along they sounded again [πάλιν βολίσαντες] and found 15 fathoms. Afraid that we might run up on some shoals, they let out four anchors from the stern and prayed for daylight. The sailors lowered the ship's boat into the sea under the pretence of setting anchors from the prow, scheming to escape from the ship. But Paul said to the centurion and his soldiers, "Unless these sailors remain on the ship, we cannot be saved," and the soldiers cut the rope holding the boat, and let it go.

For two weeks the sailors had been deprived of astronomical sightings, their only means of navigating in the open sea, and the ship's position was very uncertain. The crew's observation of changes in the shape and direction of swells and waves, and most likely their senses of smell and hearing as well, indicated that land was near. At this point they made use of the second major tool of ancient navigation, the sounding-weight, to determine the depth of water and bottom topography. When it became clear they were in shoal water, they deployed their anchors, probably wooden anchors with lead stocks and braces for the flukes.² This passage is a nearly unique ancient reference to practices now documented as well by the discovery of Greco-Roman anchor stocks and sounding-weights on Mediterranean reefs, both alone and in association with shipwreck sites.

But the sounding-weight did not die out with the Roman empire. Samuel Clemens, who took his pen name Mark Twain from the two-fathom mark that indicated dangerous shallows to a "lead-man" on a riverboat, records the use of precisely the same device and procedures on a steamboat plying the Mississippi River in the mid-19th c.³ These two eye-witness descriptions indicate a striking continuity in reliance on the sounding-weight for navigation over a period of at least 1800 years. But what of the weights themselves, and their method of employment? Can we reconstruct the origins and development of this artifact in the Classical world, the typology of the sounding-weight, and the history of its use in Mediterranean waters?

The sounding-weight as archaeological artifact

One of the great accomplishments of underwater archaeology over the past 30 years has been recognition of the unique chronological value of artifacts recovered from an undisturbed shipwreck. Wrecks constitute a type of closed utilitarian assemblage very rare in archaeological contexts on land.⁴ There are other classes of nautical artifacts, however, that are frequently found in isolation on the sea-floor — most notably stone anchors, lead anchor stocks,

1 The most likely years are 59 or 60; see H. Betz, "Paul," in *Anchor Bible Dictionary* 5 (1992) 191.

2 For lead anchors, see Frost, 1982; Gianfrotta 1980; Kapitän 1984.

3 Mark Twain, *Mississippi pilot* (London 1877) 31-32.

4 Richard 1983; Parker 1995.