

## **SMITHS ON BOARD LATE BRONZE AGE SHIPS**

The question of whether smiths were on board Late Bronze Age ships is not a recent one. As early as 1956, Hugo Mühlestein suggested that smiths appeared to be an indispensable part of military Bronze Age vessels (Mühlestein 1956; Bass 1967, n. 52). Basing himself solely on literary evidence, Mühlestein theorized that the *oka*-tablets from the Palace of Pylos refer to ships, saying that the word *oka* or *ὄκᾶς* designates a sailing vessel. If this is the case, then every military ship listed has as one of its leaders a man who is also a smith. In no case are two smiths on board one ship.

### **The evidence from the Cape Gelidonya shipwreck**

Mühlestein's suggestion gained substantial support and a more generalized frame of reference from the discovery of the Cape Gelidonya shipwreck in the early 1960's (Bass 1967). This ancient wreck excavated by George Bass and his team on the sea-bed off the southern coast of Turkey, gives a vivid picture of the last voyage of a sort of tramp ship that had sailed from Syria to Cyprus about 1200 BC and there collected the ingots of copper and tin and the scrap metal which made up its cargo on its final trip westward. Only 11 meters long, this little ship carried a ton of metal cargo which, at the time it was found, was the largest hoard of pre-Classical copper and bronze implements ever found in the Aegean area. The information embodied in the items she carried gave a new picture of trade in the East Mediterranean and of the activities of Late Bronze Age seafarers.

On board the ship there appears to have been a merchant with his balance-pan weights prepared to trade in any Eastern Mediterranean port, and perhaps a smith with all the implements necessary for bronze-making. Beside the copper,

tin, bronze scraps and ingots for being recast, as well as many agricultural tools, all the basic implements of a prehistoric smith were in the area of the wreck: two stone maceheads which must have been part of perforated hammers used for forging, six stone rubbers and polishers, a whetstone for sharpening tools, a bronze swage block for shaping tools and three large, hard stones which would have served as anvils. In the cabin area were also a bronze chisel and a punch. All that was missing from a travelling smith's kit were molds, but these may have existed in the form of soft clay which must have been washed away by the currents after the ship sank (Bass 1967, 275). If only chisel and punch were aboard the ship, one would assume that these were part of the cargo, since such tools often appear in contemporary founder's hoards. But the existence of stone implements such as maceheads, rubbers, polishers and a whetstone, makes this unlikely. However, only hammering, sharpening and polishing must have been done on board. Furnaces would have been quickly made of stone and clay at various stops along the route (Bass 1967, 80).

#### **The evidence from the Ugarit maritime texts**

The idea of a travelling smith was also suggested by Elisha Linder in 1970 concerning a text from the city of Ugarit on the northern coast of Syria (Linder 1970). This tablet is part of a number of texts which cover the maritime activities of the kingdom of Ugarit from ca. 1380 to 1195 BC. In an analysis of text 2056, Linder compared the inventory of an Alasia ship at one of the harbours of Ugarit, with the items hauled from the Cape Gelidonya wreck. The similarities were striking. Both ships carried copper and bronze ingots, agricultural tools such as shovels and picks, a number of bronze weapons and smith's tools such as adzes and chisels (Linder 1970, 26-7, 216-7).

#### **The evidence from the Ulu Burun (KAS) shipwreck**

The finds of another Late Bronze Age shipwreck, the excavations of which began in 1984 by the Institute of Nautical Archaeology (Bass 1986), also hinted at the possible presence of a smith aboard the ship. This 16 meter vessel laden with valuable commodities from around the Mediterranean, sank near the promontory of Ulu Burun in southern Turkey around the 14th century BC. The wreck's preserved metal cargo included more than six tons of copper and tin ingots, and many bronze weapons. There were also cutting tools, a set of tongs, a stone mace head and a whetstone, all of which may have been part of a travelling smith's tools and utensils.

There is evidence and a strong argument why at least some of the tools must belong to a smith and not a ship's carpenter as the excavation team suggests (Fred Hocker, personal communication, 26.VIII.1989). George Bass indicates that an Egyptian gold ring found with scrap gold "had been purposely cut in two with a chisel" (Bass 1987, 28). Is it really possible that a carpenter would have used a chisel to cut metal, even if it is soft metal? For here one sees the action of a smith, not a carpenter. Together with the fact that this cut ring was found with scrap gold, is proof of the presence of a goldsmith on board from activities actually witnessed (cutting of a ring, putting it together with other scrap from the same metal); the presence of a carpenter is just postulation for the time being, which in any case does not exclude the presence of a goldsmith.

### **The Smith in ancient societies**

Since the first smiths started their craft in the Late Stone Age, this mysterious craft formed the center of abundant myths and legends and the smith grew to belong to a singular social type associated with religious rites and taboos. The smith of prehistoric times may be honoured or despised, but always held in awe. He is often identified with the magician or priest probably because of the complexities of the metallurgical processes he alone has mastered and his knowledge of the secret manipulations and necessary rites to purify the new, unclean metal (Robins 1953). The smiths's craft partook of the magician's rites, and until very recently in the rainforest regions of Cameroon and Gabon in West Africa, the witch doctor of the village was often also the smith (J. Phillipson, personal communication, 15.VI.1989).

Ancient Sumer in southern Mesopotamia provides an example of smiths who were not free craftsmen but were persons linked closely to the temple-state economy that characterizes one of the world's oldest societies, from about 3000-2000 BC (Limet 1960). However, later, during the reign of Hammurabi and his successors, from 1800 BC on, temple-guilds seem to have declined and although the smiths still had a certain religious prestige, they had a difficult time which grew worse in the Kassite period from about 1600 BC, when temple-guilds broke up into guilds of free craftsmen (Forbes 1964, 90).

Not much is known about the smiths of ancient Egypt, but there is evidence from Old Kingdom mural paintings that the Egyptians used many dwarfs as smiths (Montet 1952, 1ff.). Whereas bronze-workers do not seem to have been much respected, goldsmiths formed an exception. They were part of guilds that worked under the supervision of the temples with the high priest of Ptah in Memphis

presiding over as “high inspector of the artists” (Erman and Ranke 1923, 550; Forbes 1964, 84).

In the Aegean world, documents dated to about 1300 BC indicate different types of smiths living together in small closed communities (Ventris and Chadwick 1962). The smiths on most of the tablets from the Palace of Pylos seem to have been honored craftsmen who possessed slaves. But since the tablets do not call these smiths *δημιουργοί*, that is those who work for the demos or the city, it appears that these craftsmen were sent for or came from outside the local community (Forbes 1964, 95).

Still later, the dissolution of the Hittite Empire about 1200 BC seems to have accounted for the wondering of many smiths over the Near East (Forbes 1964, 91). These smiths possessed a mass of lore and knowledge quite different from that of the copper and bronze-smiths who had already been at home in the towns of the Near East and the Aegean, and their superiority must have been largely due to their knowledge of making iron. But the smiths from Asia Minor were not allowed to immigrate everywhere. As far as can be judged from the meagre data, states like Egypt, Assyria and Babylonia were officially closed against these immigrants. Therefore the earliest signs of these Hittite smiths are found in Syria and Palestine at the close of the Bronze Age. Otherwise the quick spread of the working and use of iron in the area would be less intellegible. Smiths appear to have remained valueable craftsmen in the area of the Levant for many years after that. The domination of Palestine by a handful of Philistines seems to have been credited to their excellent smiths (1 Sam. 13. 19), and Nebuchadnezzar of Babylon mentions expressly that he carried off the smiths of Jerusalem in 587 BC (Isa. 24.1; 29.2).

### **Late Bronze Age shipping and trade**

By the time the Ulu Burun ship sank in the 14th century B.C., it appears that a vast trade network was well established between the Near East and the Aegean region. The Late Bronze Age ships plied the Eastern Mediterranean in a circular pattern, taking advantage of the westward currents along the shores of southern Turkey, when sailing from Syria-Palestine to Cyprus and to the Aegean, then back with the eastward currents of the North Africa shores to Egypt (Lambrou-Phillipson 1991, 11-19).

There is no longer much doubt that a large part of the cargoes of Late Bronze Age ships which sailed from the Levant westward consisted largely of new metals.

Some years ago W.F. Albright speculated that the Biblical Tarshish Ships were not ships from the city of Tarsus, as had been one of the earlier suggestions (Bass 1967, 16T n. 37). He believed that these were ships which carried metal acquiring their name from the Akkadian word "tarshish" meaning smelting plant or refinery (Albright 1965; Bass 1967, 16T n. 36). Although these references are from a slightly later period, the Cape Gelidonya and Ulu Burun wrecks prove that such ships, dealing almost exclusively in metals, did sail. Indeed, a text from Ugarit (UT 2110) indicates that one ship carried over one hundred units of copper talents to be distributed to various customers (Linder 1970, 29-30).

### **Conclusion**

It would appear from the archaeological data that Late Bronze Age vessels are examples of a phenomenon of ancient shipping—that is ships, which not only carried the raw metals, but also the smiths to produce the finished articles.

Unfortunately, there is little evidence at present to help understand the factors and the conditions which could have prompted the smith to become an itinerant specialist aboard Late Bronze Age vessels. Is it external pressures such as social conditions and warfare which obliged smiths to ply their craft from merchant ships? Or could it be the case that the merchant and the smith of the Cape Gelidonya ship were one and the same person and therefore the trader's mentality made an itinerant smith out of a previously sedentary craftsman? Or is it perhaps in an age of non-standardized products, the high costs of metals might have justified such customized service in the production of metal items?

Much light could be thrown on these questions by an exhaustive study of the smiths of ancient societies. A few attempts have been made in the past (Napier 1856, Robins, 1953, Eliade 1962, Forbes 1964), but the abundant archaeological and historical testimony that exists is not collected. The few notes gathered here, no doubt, demonstrate that much awaits the researcher who will deal with this intricate subject.

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**BIBLIOGRAPHY**

- ALBRIGHT, W.F. 1965. "The Role of the Canaanites in the History of Civilization", in Wright, B.E. (ed.), *The Bible and the Ancient Near East*, New York.
- BASS, G. 1967. "Cape Gelidonya: A Bronze Age Shipwreck", *Transactions of the American Philosophical Society*, 57, part 8.
- 1986. "A Bronze Age Shipwreck at Ulu Burun (Kas): 1984 Campaign", *AJA* 90, 269-96.
- 1987. "The Bronze Age shipwreck at Ulu Burun, near Kas", in TROPIS I, *Proceedings of the 1st Symposium on Ship Construction in Antiquity*, Athens.
- ELIADE, M. 1962. *The Forge and the Crucible*, London.
- ERMAN, A. and H. RANKE, 1923. *Aegypten*, Tübingen.
- FORBES, R.J. 1964. *Studies in Ancient Technology*, vol. VIII, Leiden.
- LAMBROU-PHILLIPSON, C. "Seafaring in the Bronze Age Mediterranean: the parameters involved in maritime travel". *Aegaeum* 7, *Thalassa, L'Égée préhistorique et la mer*, Liège 1991, 11-19.
- LIMET, H. 1960. *Le travail du métal au pays de Sumer au temps de la IIIe Dynastie d'Ur*, Paris.
- LINDER, E. 1970. *The Maritime Texts of Ugarit: A study in Late Bronze Age Shipping*, Ph. D. diss., Brandeis University, *University Microfilms International*, Ann Arbor, Michigan.
- MONTET, P. 1952. "Ptah patèque les orfèvres", *Rev. Arch.* 40, 1-11.
- MUHLESTEIN, H. 1956. *Die oka-Tablets von Pylos*, Basel.
- NAPIER, J. 1856. *Ancient workers and artificers in metal*, London.
- ROBINS, F.W. 1953. *The smith, tradition and lore of an ancient craft*, London.
- VENTRIS, M. and J. CHADWICK, 1956. *Documents in Mycenaean Greek*, London.

## **PRIVATE FINANCING AND SHIPBUILDING IN THE KINGDOM OF ARAGON AS SEEN THROUGH ITS LAWS**

The union of Catalonia with Aragón at the beginning of the 12th. century created a power able to expand commerce and dominion over the Mediterranean Sea.

The Kings of Aragón soon considered the advantage of converting the customs which since ancient times had regulated shipbuilding and maritime trade in Catalonia into laws which would be observed all over their dominions. It was Peter the Great who initiated these proceedings in 1340. These laws, which are known as 'customs of the sea' (*costumes de la mar*), are the extension of the 'ordinances of the coast' (*ordinaciones de la ribera*) of Barcelona of 1258 and confirm ancient systems of financing private shipbuilding and regulating the relations of all who were in the maritime trade. The central person of all these laws was the shipowner, (*senyor de la nau*).

Here we are only interested in private financing and ship building. Therefore we shall not consider the relations of the shipowner with the mariners, the merchants who hired the ship, or the pilgrims who went in it. We have extracted from these laws the paragraphs referring to shipbuilding and the means of financing it through the partnership of several people, who put their trust in the one designed as the shipowner (*senyor de la nau*) who would manage the construction of the ship and conduct the freight business going in the ship. The translation of these paragraphs follows this paper as an appendix, the original style has been modernised to avoid the tiring repetitions of the ancient writing.