

A DYE FOR GODS AND KINGS

by Patrick E. McGovern

PURPLE, EXTOLLED BY THE POET Robert Browning as the "dye of dyes," has close associations with the Phoenicians. According to Greek legend the dye was discovered by Melqart, king and deity of Tyre, when he and the nymph Tyros were strolling along the Mediterranean shore with their dog. Biting into a large sea-snail or mollusk, the dog stained its mouth purple, whereupon Melqart promptly dyed a gown with the new-found substance and presented it to his consort.

The legend may well retain a kernel of truth. The Mediterranean mollusk species (*Murex trunculus*, *M. brandaris*, and *Purpura haemostoma*), whose hypobranchial glands contain



Murex for sale in Marseilles.

the chemical precursors for the purple dye, come into shallower water—especially along rocky shorelines such as that of Lebanon—to mate in the late spring. A dog biting into a shell would certainly come away with a purple mouthful. It is not difficult to imagine that ancient humans would be fascinated by the dye. Once having touched it and strongly colored one's hands, its use as a very fast, intense dye would have been soon appreciated.

The Phoenicians played the pre-eminent role in purple dyeing, and this is highlighted in the archaeological and historical record. Excavations at Sarepta (biblical Zarephath), located midway between Tyre and Sidon, have yielded pottery sherds covered with a purple

deposit from a thirteenth-century B.C. context. Chemical analysis of the deposit verified that it was indeed composed of molluscan purple (6,6'-dibromoindigotin). Moreover, the pottery sherds were from storage containers of the well-known Canaanite jar type, used to store and transport goods throughout the Mediterranean. The jar fragments were found near a pile of crushed shells, primarily *Murex trunculus*. Here, then, was the earliest evidence for large-scale production of the dye.

Contemporaneous literary evidence, including the Amarna correspondence from Egypt, the Ugaritic archives at Ras Shamra in north Syria, and Linear B tablets from Crete, also indicates that fabrics dyed with purple were already important commercial items. Unfortunately, these texts provide no information about where the fabrics were dyed. The finding of shell middens on Crete, in particular, which predate the Sarepta industry by as much as 400 years, suggests to some scholars that the Levantine dyers learned their craft from the Minoans or, at least, that a number of sites in the eastern Mediterranean were engaged in dye production. Yet, thus far, no conclusive evidence, such as a dyed fabric or a dyeing installation from this period has been found on Crete or elsewhere in the Aegean.

In the succeeding centuries of the Iron Age, the Canaanite city-states on the Levantine coast dominated the purple dyeing industry. Even the names of these peoples—Canaanites and later Phoenicians—very likely derive from ancient Semitic and Greek roots for "purple." To promote this industry, dye factories were set up at Phoenician colonies—most notably, along the coasts of Tunisia, Malta, Sicily, and Spain.

Despite the importance of purple dyeing, there are few references to it in Phoenician writings. This may

indicate a desire to guard secrets about dyeing, or may simply reflect our very limited knowledge of Phoenician literature. Biblical texts (Ezekiel 27:7, 16, 24; II Chronicles 2:7, 14) that incorporate Iron Age traditions are more informative about the involvement of Phoenician city-states, especially Tyre, in the industry. The use of purple in early Israelite religion (e.g., in the tabernacle curtains and the High Priest's vestments—Exodus 26:1, 31; 28:4–6; 39:1, 28–29; II Chronicles 3:14) shows considerable Phoenician influence, which was especially strong during the time of Solomon.

It is only in the time of the early Roman Empire that the dyeing process is first described. The most authoritative account is in the *Historia Naturalis* (book IX, sections 60–65, chapters XXXVI–XLI) by Pliny the Elder, who wrote in the mid-first century A.D. He describes in marvelous detail how the mollusks were captured using baited wicker baskets; how the best time to capture the animals was after the rising of the dog-star, Sirius (possibly a veiled reference to the legendary dog?); how the gland was extracted and the extracts heated for ten days in a large tin vat with added salt and water, during which refuse organic materials were periodically skimmed off the surface and the liquid tested for its dyeing properties; how double-dipping the wool was able to produce the "Tyrian color," and so forth. Considering the wealth of detail in Pliny's account, he most likely observed the process first-hand.

The purple was difficult to produce, and thousands of mollusks were needed to make an ounce of the dye, which was worth more than its weight in gold. It is no wonder then that purple became a mark of status (both religious and political) and wealth. One example of conspicuous

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display was the Tyrian purple sail of Cleopatra's ship at the Battle of Actium in the first century B.C. One hundred years later, Nero issued an edict that permitted only the emperor to wear purple.

The complex extractions and dyeing process as described by Pliny has often been understood as a vat process—a chemical reduction of the dye to a colorless compound, in which form it is more easily absorbed by textile fibers. Subsequent reoxidation by exposure to air yields the colored dye, which is now wash-fast. This procedure contrasts with direct application of the molluscan glandular secretions to a textile, followed by color development in the sun. Actual experiments following the recipes and procedures outlined by the Roman writer substantiate vat dyeing in this period. We do not know how early the vat process for purple dyeing was used. That the Sarepta dyeing facility was located in the midst of a large group of pottery kilns may not simply be coincidence or the result of an attempt to consolidate polluting industries—we know from classical writers that the purple dyeing created a horrendous stench. Rather, the kilns could have supplied heat to aid in the extraction process and the true vat-dyeing of textiles.

Following the Islamic conquest of the Middle East in the early seventh century A.D., purple dyeing along the Levantine coast was greatly curtailed, not least because of the increasing availability of less expensive substitutes. Production of the molluscan dye ceased altogether after the fall of Constantinople in A.D. 1453. In 1464, Pope Paul II issued an edict instructing cardinals to substitute kermes, an insect-derived scarlet dye, for the royal purple the church had been using to dye its vestments. ■

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