The Conservation and Analysis of an Early, Spanish Horseshoe

By Corey Malcom
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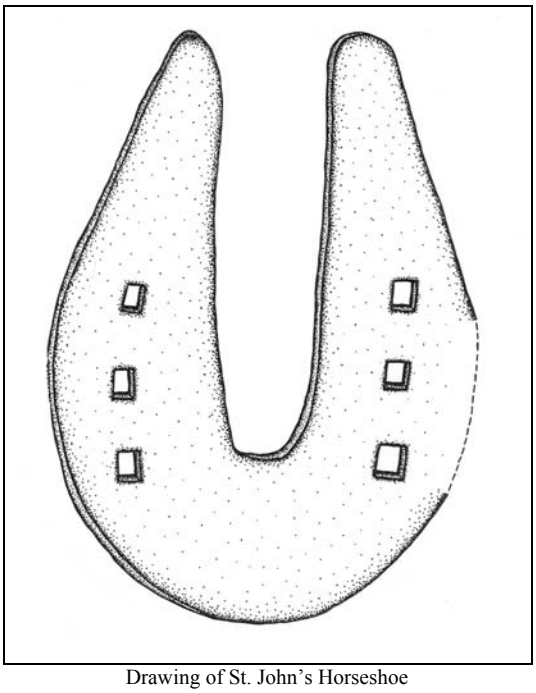
A single iron horseshoe found on the St. John's Bahamas wreck site has recently been cast in epoxy resin from its marine concretion mold. It is surprisingly small and thin, but quite interesting as a symbol of the early use of horses in the Americas. Not long before this ship was wrecked, horses had helped to revolutionize the Spanish conquest of the New World, and they were certainly continuing to do so at the time of this ship's sinking. As one story goes, in 1520 Hernán Cortes and his small army were able to intimidate the much larger and stronger Aztec forces with the display of their horses. Such creatures had never been seen before in Mexico, and the Spaniards' equestrian skills were regarded by the Aztecs as a sign of divinity. The horse was not only important militarily, but its strength allowed for long-range travel, and penetration to the interiors of newly discovered lands. Once exploitable resources were discovered, the horse, along with the mule, was used for overland transport.

Horses on Spanish shipwrecks are not a new concept - both of the 1622 *Tierra Firme* galleons *Atocha* and *Margarita* yielded horse bones - but this example is the earliest such find. The shoe was found amidships, and is the only equestrian hardware from the wreck. Though a few animal bones have been recovered from the wreck, none have been identified as horse. Despite this, it does appear as if this shoe was in use at the time of the ship's sinking, because remnants of nail-heads were found still set in the holes. From other evidence, it is clear the St. John's wreck was homeward bound, so it can be said that at least this one horse was making its way to Spain on the ship.

The horseshoe was immediately identifiable upon excavation (only an attached ship's nail obscured its distinct shape), but any significant, diagnostic details were hidden by marine concretion. Once in Key West, the piece was examined under X-ray, and a scale-drawing made of the resulting image. When a small area of the concretion was removed to prepare the piece for electrolytic reduction, it became clear there was little of the original metal remaining. The area of concretion that had been removed was patched with epoxy resin, and plans were made to prepare the piece as a mold. The concretion was cut along the edges with a very



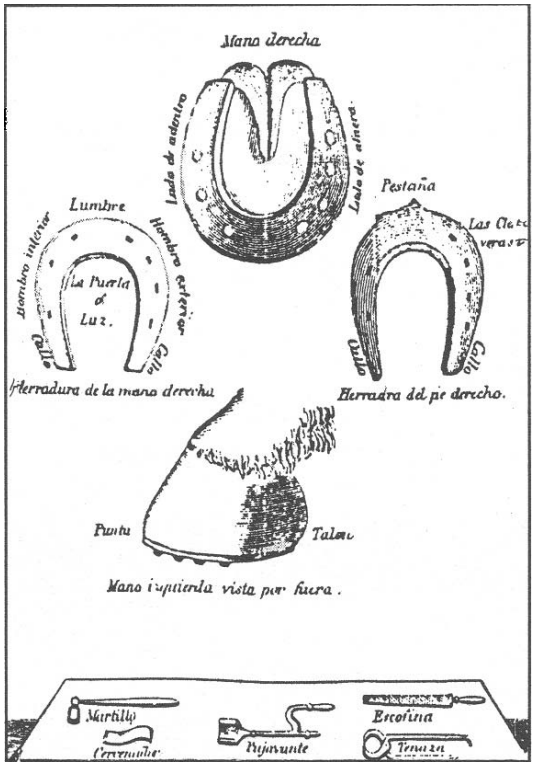
Drawing of St. John's Horseshoe

thin, high-speed saw and it was then split apart into two halves. The corroded metal was cleaned out, and separate casts were made of the nail-heads before they too were removed. After cleaning, the mold was fitted together, sealed, and epoxy resin injected into it. The resulting cast is a startlingly accurate and realistic image of the original shoe.

The horseshoe is of a simple design; essentially a U-shaped plate pierced with six holes, but is a typical example from the period. It is 10.8cm long with a maximum width of 7.9cm. The maximum thickness is 6mm, but this dimension appears to have been the one most affected by corrosion. The heads of the nails are approximately 1cm square, and the holes set in the shoe are approximately 5mm square.

Though a horseshoe may seem to be a basic and uniform object, there are many "parts" to one, and subtle differences reflect specific functions. Spanish colonial designs, and terms for horseshoes were quite detailed, seemingly

more so than the English. With careful observation, it is even possible to determine on which hoof a Spanish colonial shoe was to be mounted. In the Spanish system, a horse's fore-hooves are "*manos*" (hands), and the hind-hooves, "*pies*" (feet). The shoes for the hands are different than those for the feet. The forward shoes are each the same shape, but can be differentiated by the outside branch having an greater number of fasteners than the inside. The bottom face can be determined by the countersinking of the nail-holes, a feature intended to keep the heads flush. On the rear shoes the outside again has more nail-holes, but there is also a difference in the shape of the branches. The interior side is narrower, and ends in a sharper point. All of this is apparently related to the shape of a horse's hooves, and the way in which they generally strike the ground.



Print of Spanish Horseshoes and Their Terminology from *Reglamento Para El Ejercicio Y Maniobras De La Caballeria.* 1836 reprint of the 1768 original.

With the St. John's shoe, the presence of the nail-heads clearly reveals the upper and lower surfaces, which then reveals the interior and exterior sides. The nail-holes are evenly sided, with three on each branch (the function of an odd-shaped hole near the toe is not clear), eliminating them as diagnostic features. The interior branch ends in a point. By looking at this physical evidence, and comparing it to the historical documentation, it is most likely that the shipwrecked, St. John's shoe was fixed to a horse's left- rear hoof.

All of this certainly brings an additional, interesting element to the story and circumstances of this unnamed ship. But as much color as this simple object might add to the story of a particular voyage, it also raises interesting questions about the nature of the material, cultural, and biological exchange between the New World and Old. It is easy to envision the need for horses and other livestock to be brought from Europe to supplement growing colonial enterprises. Why though, was there a trend for horses to sail from the Americas to Spain? Had Spanish horses, bred in America, become commodities by this time? Were horses carried full-circle, as a part of the ships' "equipment"? Is this an example of a passenger's prized pet traveling to Spain? Was it for food? Until historical documentation specific to this issue is discovered, questions such as these will all be viable.