



Restore the Relic – Ship Bells

Ship Bells

The object in the *Restore the Relic* exhibit is a ship bell.

Bells on ships were used to mark out time (usually every half-hour), wake the crew, warn of fire and signal a ship's presence when sailing through fog. The earliest bell recorded on a British ship was in 1485. Before chronometers were developed to measure time, hourglasses were turned every half-hour by ship boys or helmsmen, who then rang the bell at the turning of the hourglass. This was an important signal for sailors on watch duty, signalling the end of their four hour duty. Traditionally, the ship's cook maintained the bell, although deckhands or signalmen may have also maintained them.

Objects made from materials other than bronze (such as leather, wood, ceramics, pewter, glass, living tissue, etc) require different methods of preservation and differ in their degree of deterioration. Gold and platinum rarely deteriorate underwater, while organic material such as wood or leather and metals such as iron and silver may be greatly damaged. The majority of metal objects from older shipwrecks are made of iron. Ship bells were generally cast from bronze, with the year of production or ship name imprinted on them. Copper, brass and bronze tend to withstand salt water reasonably well.

A ship's bell was so greatly revered by sailors because it was always preserved, even after a ship had been broken up. Sailors believed the regular clanging noise warded off the evil forces.

Bell restoration techniques

When recovering relics from the seabed, it is important to remember that they have existed in a marine environment for many years, and exposure to air could cause it to deteriorate rapidly. Sometimes, if relics are left to dry in sunlight, they rapidly rust, causing great increases in heat and possible explosions. Generally, recovered relics are immediately immersed in fresh water, with the water being constantly changed before it becomes brackish and causes more damage. This is because ferric chloride can form on the surface, which may turn into hydrochloric acid and corrode the metal further. Alternatively, the item may be wrapped in damp cloth or rinsed with formaldehyde to inhibit corrosion and act as fungicides to destroy harmful organisms.

The condition of the bell when found on shipwrecks depends on environmental conditions. The bell itself is made from bronze (an alloy of copper and tin), while the clapper that hangs inside the bell may be made from bronze or iron. If the iron clapper is still attached, it becomes covered with marine life. This is because the iron is a nutrient for the animal life and the clapper becomes covered with calcium carbonate, which is non toxic. This is then colonised by epifauna (animal life found at the bottom of a seabed), making the shape of the bell even more difficult to determine.

Back in a laboratory, x-rays are used to view any encrusted artefact found with a shipwreck. A white image on the x-ray negative indicates the presence of a solid metal – a black image indicates that the metal has disintegrated. X rays also indicate whether the object has collections of wood, iron, leather stuck in the concretion. Concretion is the hard, solid mass, which forms around an object when it has been left in the ocean for a period of time. Some of the bulkier concretion may be **gently** chipped away with a small geo pick or rubber mallet. A solution of 5% citric acid (to reduce the concretion) and thiourea (which inhibits corrosion) may also be used to restore the bell.