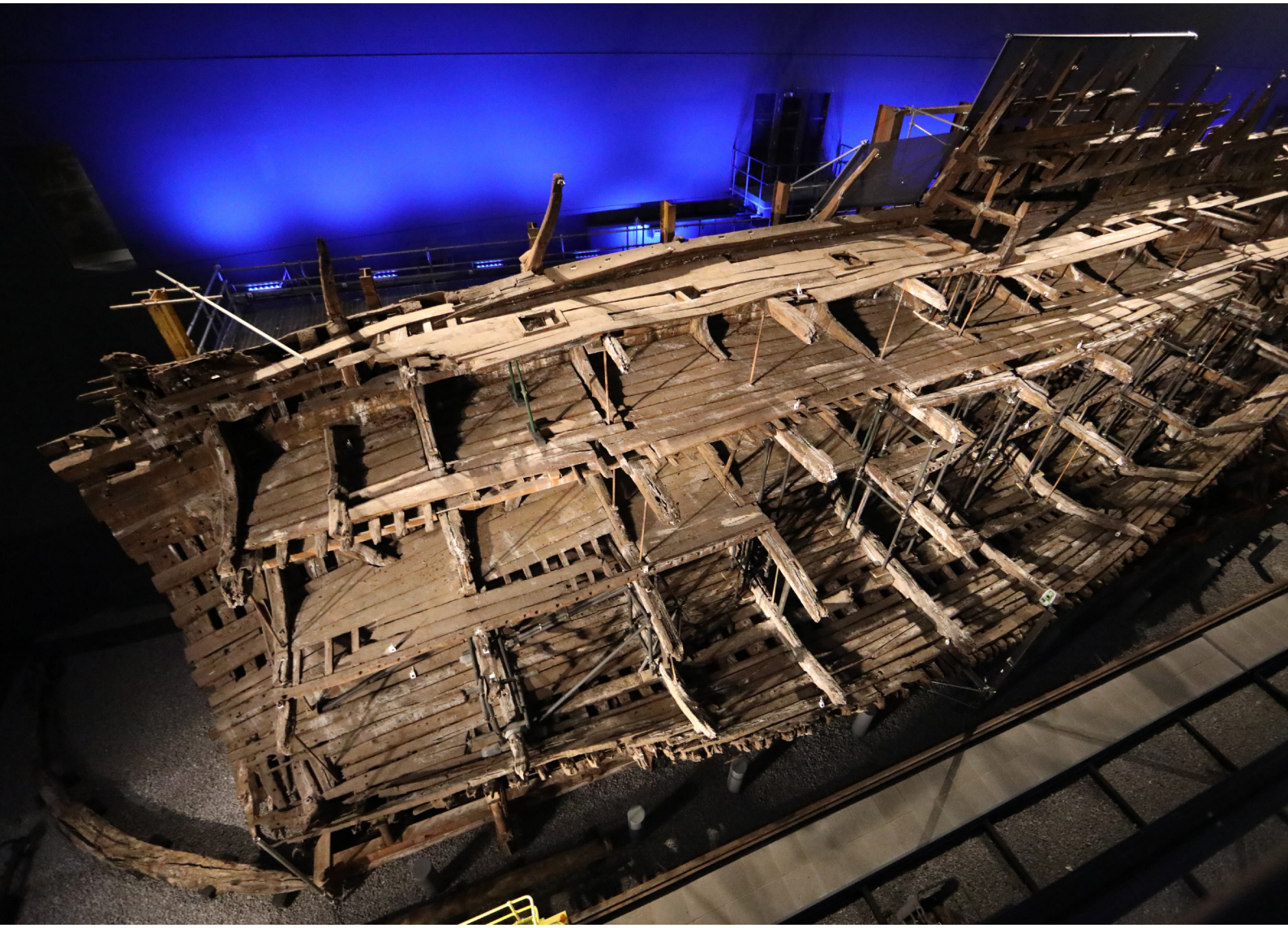

The Mary Rose – a Unique Glimpse into Life in Tudor Times

Building bridges between science, history and archaeology with ZEISS microscopes.

Seeing beyond

The Mary Rose – a Unique Glimpse into Life in Tudor Times

Building bridges between science, history and archaeology with ZEISS microscopes.

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The Mary Rose, a famous warship belonging the Tudor King Henry VIII, sank in 1545 and was brought back to the surface in 1982. By studying artifacts and historical documents with microscopes, the restoration team can piece together what kind of lives its sailors may have led. Eleanor Schofield, Head of Conservation and Collections Care at the Mary Rose Trust and an honorary professor at the University of Kent, talks about the challenges of conserving this historical collection for future generations.

After more than thirty years in service for the English crown, the Mary Rose – a famous warship belonging to the Tudor King Henry VIII – sank during a maneuver at sea in 1545.

Figure 1 *The remains of the Mary Rose's hull. All deck levels can be made out clearly, including the minor remnants of the sterncastle deck.*

The ship was fully equipped at the time and had over 500 sailors on board. For many years nothing was known about life on board. How did the sailors carry out everyday tasks? Where did they originally come from and what did their lives at sea look like?

Bringing the Mary Rose back to life

The Mary Rose lay on the seabed for 430 years before being raised again in 1982. The excavation of the ship provided a unique opportunity to learn more about everyday life at sea 500 years ago. However, the researchers' first challenge was to conserve the ship and its equipment. These are now located in the Portsmouth Historic Dockyard. Various different conservation techniques have been used to stabilize the wooden ship over the years.

Microscopic evaluation helped to analyze the wood, assess the extent of degradation, and detect minerals and crystals that can destroy archaeological materials. Eleanor Schofield, Head of Conservation and Collections Care at the Mary Rose Trust and an honorary professor at the University of Kent talked about the challenges of conserving this historical ship for future generations.

Figure 2 *"My job is ever-changing, with the goalposts moving constantly as we learn new things – that's what makes it so exciting," says Schofield.*

Schofield became the Conservation Manager at the Mary Rose Trust in Portsmouth in 2012. She is involved in overseeing the conservation of the ship's hull and its many artifacts. Schofield conducts research into new conservation methodologies by developing preservation treatments, analyzing materials, and monitoring the stability of storage and display conditions.

Figure 3 *A small selection of the many rigging blocks raised from the Mary Rose.*

The job as the Head of Conservation and Collections Care

Schofields responsibility is to look after the Mary Rose collection. In addition to the ship itself, over 19,000 artifacts, including clothes, personal belongings, cooking equipment, bowls, ceramics, and more were found. Conserving and maintaining these items is important. They provide a unique snapshot in time concerning everyone on board, as well as giving an unparalleled glimpse into life in the Tudor period. It's about telling the stories of the people on the ship. Many items from the ship, such as plates and cups, are similar to the ones we use today. They worked five hundred years ago and they work now. It's fascinating to have such a strong connection to these everyday people, and it's mind-blowing to imagine what life onboard the ship was like.

Schofield also sets up research projects in cooperation with universities and works with PhD students researching various topics. The main goal in doing so is to find new techniques or materials that aid in the conservation. These new techniques or materials can then be used to provide state-of-the-art conservation for the Mary Rose collection. For one project, a student was sent to the ZEISS Microscopy Customer Center in Cambridge with a variety of different material samples – such as wood, brick, and anchor cable - from the Mary Rose. The research is reactive to what the collection needs. The major focus is currently on wood and iron because of the degree of degradation these materials are exhibiting.

The role of microscopes

Various different microscopes were used for microscopic evaluations. A scanning electron microscope with EDS helps to examine different materials and to see what is inside them. A ZEISS Smartzoom 5 digital microscope in particular helps to analyze both textile fibers and iron cannonballs. It is important to better understand what is going on inside the materials to identify the best conservation technique. Of course, microscopes are important for the conservation work, and they are also used to engage the visitors via outreach activities. The goal is to show people the importance of science in taking care of the Mary Rose collection. Looking at artifacts under a microscope gets visitors interested in the science behind the work. The more visitors there are, the more funds are received to put back into looking after the precious collection. Samples from the Mary Rose were showcased using ZEISS Stemi microscopes and screens on several occasions. There have been samples of wood and a head louse taken from a wooden comb from the Mary Rose, as well as a historical comb from the Tudor period – which looks just like a modern comb.

Figure 4 *A portion of a felted hat made of red wool imaged with ZEISS Smartzoom 5.*

Most important in conservation and collections care

The ultimate goal is to keep the ship and its artifacts stable. To do that, it is a must to understand how degradation affects the stability of each material, and then stabilize them with conservation treatments. There are also challenges to overcome, such as fungi or microbes damaging the different materials. It is not only wood to conserve, but also leather, textiles, bones, iron, bronze, brass, pewter, and more.

Even the ship's dog, kept on board to catch rats, was found. According to DNA work performed on the dog's teeth, he was between 18 and 24 months old, with a light- to dark-brown coat. He may have spent his entire life onboard the Mary Rose, rarely if ever going ashore. Sadly, he suffered from a hereditary disease called hyperuricosuria, a uric acid defect that causes kidney and bladder stones.

In addition to the items mentioned, fine pewter dishes, plates, tankards, spoons, books, and even clothes were found on the wreck. The collection tells a great deal about life in Tudor times.

The bones of a total of 179 individuals were found during the excavation of the Mary Rose, including 92 fairly complete skeletons – around 45 % of the crew. Analysis has shown that all were male and that up to 80 % of them were under 30 years old.

Researchers are continuing to investigate the skeletons by carrying out DNA and isotope analysis. Chemical analysis of the bones can tell whether an individual had an illness, as their bones would have been affected and potentially be broken or damaged. Bones also provide information about people's professions, or about injuries they may have sustained. This research is regarded as invaluable in understanding many diseases.

Many thanks to Eleanor Schofield, Head of Conservation and Collections Care at the Mary Rose Trust and an honorary professor at the University of Kent for sharing her enthusiasm and experiences with us.

References:

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