Investigation of a 16th-century gun powder chamber from the Tudor warship Mary Rose

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ABSTRACT: Work on the gun powder (breech) section of a wrought-iron port piece has provided information about the manufacturing process, as well as the structure and properties of the iron used.

The Mary Rose and her guns

The warship Mary Rose was commissioned by King Henry VIII and completed in July 1511. The earliest inventory, dated 1514, demonstrates that the vessel had a formidable array of weaponry. During her 35-year service the Mary Rose had at least one major re-build which upgraded her from 600 to 700 tons and enabled the weight of ordnance carried to be increased. The main hull, built with flush carvel planking, can accommodate gun ports with watertight lids. When she sank in 1545, her inventory listed 39 guns mounted on carriages, 50 smaller ship-supported anti-personnel guns, 50 handguns, 250 longbows and 300 staff weapons. The excavation and raising of the Mary Rose has provided an opportunity for a much greater understanding of the construction and use of ordnance at sea in the middle of the 16th century and enabled the identification of many types of gun by comparison of the archaeological evidence with the historical inventory (Hildred 1988, 55). The keel length is 32m with a total length of 45m, breadth of 11.7m and a draught of 4.6m. The guns were deployed over three decks, the lowest a continuous deck within two metres of the waterline. It was on this main gun deck that the majority of the heavy ordnance (up to three tonnes) was carried, either seven or eight large guns on each side.

These guns were situated at gun ports which had fitted lids, possibly added as late as 1539. The guns of the Mary Rose included breech-loading guns of forged (wrought) iron, small muzzle-loading cast-iron guns and some cast-bronze guns. By far the most numerous are the wrought-iron guns all of which have separate chambers to contain the gunpowder. The largest of these, the port pieces, had bores of up to 200mm in diameter and fired a round stone shot of up to 9kg or a lanthorn-shaped canister filled with flint or small pebbles of up to 14kg.

Port pieces are the commonest type of large gun carried on warships of this period and the Mary Rose had twelve (Fig 1). These appear to be a relatively new development, with their name possibly suggestive of their position at lidded gun ports, although the form dates back to the 15th century (Smith 1993). The discovery of wrought-iron breech loaders on the Mary Rose has caused a reappraisal of their importance and questioned the long held belief that they were slow to use, dangerous, inaccurate and obsolete (Archibald 1840). This culminated in a project to manufacture and