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The ship

The construction of MARS began in 1561, overseen by master Hollinger (Holger) Olsson at Björkenäs shipyard just north of Kalmar in southeastern Sweden. The ship was launched in 1563. At the time, MARS was the most powerful warship in the Baltic.

In May 1564, during the Nordic Seven Years War between Sweden and an alliance of Denmark and Lübeck, MARS found itself in a fierce two-days sea battle. After heavy fighting MARS was boarded by the enemy and during the fighting the ship exploded, killing up to a thousand people, both friend and foe.

MARS lay undisturbed for 447 years, until 2011, when the Swedish underwater exploration team Ocean Discovery found the remnants of the long sought after warship in 75 m of water off Öland on the east coast of Sweden. MARS is now being investigated by a coalition of Swedish maritime institutions.

The crew

MARS had a large crew – numbering around 670 men including soldiers (Ekman 1946, 76), about the same number who lived in the mid-sized Swedish city of Jönköping at the same time (Ekman 1939, 5; Glete 2010, 358 f; Halldin, 149 f). Most of the crew and probably a large number of soldiers from the enemy ships that boarded MARS perished with the ship when it sank.

In the autumn of 2011 the wreck site was surveyed by Sjöhistoriska museum, Marinarkelogiska forsk-
ningsinstitutet (MARIS) from Södertörns högskola, Forsvarshögskolan, Kalmar länsmuseum and Ocean Discovery. During the survey human remains were observed on the wreck site. The bones seen include a femur, a humerus and possibly a skull (personal communication Anna Olsson). On Kronan (which sank in 1676) there were 850 men in the crew, and the excavations have led to the discovery of the remains of over 200 individuals (Einarsson 2001, 42). On Vasa (which sank in 1628) and the English ship Mary Rose (which sank in 1545) have human remains and other finds associated with the crew been made. Among these finds is well-preserved clothing and other equipment that demonstrate the role the person had on board. Bone material has provided valuable information about diseases, diet, and repetitive strain injury in the crew (Hocker 2011, 112 ff). There are expected to be many similar finds in the sediments surrounding Mars (Fig. 2) that can inform on the people and their life aboard a ship of war.

Jacob Bagge – long service at sea

During Gustav Vasa’s and Erik XIV’s time, several admirals were temporarily added for the different campaigns and fleets (Zettersten 1890, 33 f). In 1564, Jacob Bagge commanded the fleet as admiral from his flagship Mars. During Gustav Vasa’s reign, he participated in the Battle of Bornholm in 1535 during the so-called Count’s feud. When the Northern Seven Years War broke out in 1563, he was the admiral of a squadron aboard Elefant. In the first clash between the Swedes and Danes in May 1563 at Bornholm, Bagge defeated three Danish ships, including the Danish flagship. He further participated in a battle at Gotska Sandön in September of the same year (Börjeson – Hafström 1949, 15 f, 77). There were several high ranking officers aboard Mars including Arvid Turesson Trolle and Kristoffer Stråle and the mayor of Stockholm, Matts Persson (Zettersten 1890, 105, 415).

Food and drink on board

The large crew of Mars required large amounts of equipment and supplies, but most of the crew also had some of their own private equipment with them. On the starboard side of Mars, bricks were found that are remains of the galley – the place where the crew’s food was cooked. The galley was typically walled with bricks for protection against fire. The galley from both the Mary Rose and Vasa was located deep down in the ships’ hold around amidships and the same is presumed to be true of Mars. The structure differs between them, Mary Rose’s galley has two ovens and Vasa’s is an open walled space with a hanging pot (Mars den 1997, 97; Hocker 2011, 106).

A large well-preserved three-legged bronze/copper cauldron (Fig. 3) was found in the area around Mars’ galley. The cauldron is of a classic design, having been manufactured in much the same way since the Middle Ages but with a slightly different form of paws and mouth
Another copper cauldron was found inside the port side. Similar large pots have been found on both KRÆVELN (sunk 1525) and MARY ROSE (Adams – Rönnby 1996, 19; 2009, 92). A tripod pipkin has also been found. This type of pot was very common during the Middle Ages and the early modern period (see Wachtmeister 1986, 18). The pot and similar items could have been equipment tied to the vessel itself and the galley or they could also have been private items brought by members of the crew.

It’s likely that the finer stoneware drinking vessel found near the stern were the personal possession of an officer. Everyday objects versus those associated with the upper class or wealth can reflect conditions on board and give an insight into the social structure. Ceramics can be dated precisely by the known date of the wrecking event of MARS and in this way provide typologies for ceramics found elsewhere, such as in the different layers in archaeological excavations on land. On VASA large and small cookware and storage bins were found adjacent to the galley. But they were also found on the upper decks of VASA, often in closed find contexts such as chests and barrels. These tended to be items of a more household nature, such as bowls, spoons and tankards (Höglund 1995).

The investigation in 2011 did not include a systematic search for objects, although there were a large number of visual finds. Further investigations will likely result in a large amount of items, finds both specific to the ship as well as the crew’s personal belongings.

**Guns and small arms**

Armament on board a ship during the 1500s could vary significantly from year to year, depending on the resources available and the demand for guns elsewhere. At the time, cannons were called „skytt” (later „stycke”) and the different types went under names such as kartoger, slangor and falconetter. The classifications were further broken down into three-quarter kartoger, half kartoger and so on. A program to modernize artillery was introduced in 1558. A large number of muzzle-loading bronze cannons, especially the larger types, replaced the wrought-iron cannons. The guns were mostly manufactured in Stockholm, but some were also made in Kalmar. Many of these newly cast guns were used on MARS (Glete 2010, 332).

MARS was a legendary ship, even in its own time and that was due in large part to her armament. A range from 106 to 200 guns is mentioned in various chronicles about the ship. Having taken on guns in Stockholm in May 1564, a contemporary document stated the number of guns on board to be 107 (AR 1564/14-15). But it is also known that the vessel took on some artillery in Kalmar before it was taken to Stockholm (Glete 2006, 8). That number may have been on top of the 107 taken in Stockholm. The ship was almost exclusively armed with muzzle-loading bronze cannon, but also had four breech loading wrought-iron guns, which fired stone shot.

**MARS’ armament** (Ekman 1939, 6 f; Glete 2010, 532 ff):

- 2 pieces of 40-pounder (karto-ger)
- 2 pieces of 30-pounder (three quarter kartoger)
- 9 pieces of 20-pounders (seven half kartoger and two notslan- gor)
- 10 pieces of 10-pounder (fält- slangor)
- 4 pieces of 7-pounder (three quarter slangor)
- 20 pieces of 3-pounder (half slan- gor)
- 6 pieces of 2-pounder (double falconets)
- 4 wrought-iron guns of 5, 7 and 8 inches
- 50 pieces of ½-pounder falcon- nets (of which 10 pieces were on MARS’ esping (longboat) when the accident occurred, and thus were saved).

Many guns are visible on the wrecksite. Most are not in their original positions, but some are still in their mountings. On the starboard side, some guns are still sticking...
out through the open gunports (Fig. 4). Three heavily corroded iron cannons have also been found, which is close to the number suggested in historical documents.

A cannon leads to the positive identification of MARS

Prior to the 2011 survey, there were already many indications that the wreck was in fact MARS – including the location of the wreck, its overall appearance and the large number of bronze guns in relation to the few number of breechloaded iron guns. The final proof came from a weight stamp on one of the larger bronze guns. The stamp could be traced through historical sources to MARS. The gun was cast on May 1, 1564, and was loaded onto the ship on May 11 and finally went down with the ship just twenty days later on May 31 – a dramatic but short career (Sjöblom 2012, 20).

The gun carriages were made in Stockholm and Kalmar (Zettersten 1890, 381). On the MARY ROSE, the great bronze guns were mounted in carriages with four wheels. The wrought iron guns were mounted in carriages with only two wheels. The sources say there were 53 carriages but only 28 pairs of wheels aboard MARS. The armament records for the contemporary ship ELEFANTEN mention the use of „shooting benches“ – or „byssbänkar“ which may have provided a platform for gun carriages without wheels (Ekman 1946 (1), 69). On the MARS wreck site only carriages with two wheels have been found so far, with no examples of the later type consisting of four wheels.

Ammunition

There were a variety of ammunition types onboard other than round shot. Chainshot and barshot could be used to destroy the rigging, but could also be used against the crew. Cartridges of shrapnel were used as a devastating antipersonnel weapon. The crew also made use of „fireworks“; using fire arrows, fire rings, fire-balls (containers filled with flammable materials) and cross-barred shot. The latter were smaller types of fire-balls equipped with barbs to get caught in the sails or rigging. Shot could also be made out of stone. There were different types of gunpowder, „slangekrut“ gunpowder to the cannons and „körnekrut“ gunpowder to small arms. On MARS there were 150 pounds of powder for the guns (slangekrut) and more than eight barrels of powder for small arms (körnekrut) (Zettersten 1890, 385). There was approximately 25 metric tons of gunpowder on board.

Small arms

Before boarding, the enemy would be engaged with a series of small arms, besides hailshot-pieces and the like, including crossbows, bows, hand cannons and muskets. In close combat they would use short axes and pikes.

MARS compared with VASA

Was MARS bigger and more powerful than VASA, even though there were 60 years between their short careers? Yes and no; MARS’s displacement has been estimated at approximately 1800 tons and VASA’s at 1200 tons. MARS was probably two to three meters longer and about two meters broader (Fig. 5).

But the biggest difference between the two warships consisted of the power of their guns – their broadside weight of metal – calculated by adding the total weight of the roundshots if all guns were fired at once. MARS could throw about 280 kg of metal versus VASA’s 550 kg – half as much (Höglund 2012 (1), 16). Another important factor was the difference in artillery standardization between the two ships. On MARS there were a large number of cannon with different shot weight. On VASA there were only four different size guns of which the vast majority was of a 24-pounder standard type. This meant that it was easier to calculate the amounts of gunpowder, fewer types of ammunition were needed on board and the crew was able to be trained faster. In short, it made the whole process easier and more efficient. Although both ships sought to maximize the potential power of their artillery, the primary method of attack was still boarding, so both ships were intended to carry a large complement of soldiers. It was only in the latter half of the 17th century, with the development of ship of the line tactics, that artillery became the more crucial component.
in a naval battle. The amount of bronze cannon lost at sea when MARS sank was not surpassed until 64 years later with the sinking of VASA (Glete 2010, 549).

The Nordic Seven Years War 1563–1570

The Nordic Seven Years War was fought between Sweden and Denmark in alliance with the city of Lübeck. Poland also made a small contribution to the allies. The fight was over control of the Baltic and its lucrative trade. Denmark had the further goal of trying to restore the Kalmar Union with Sweden. The war was largely fought at sea. The Swedish ships were largely dedicated warships with powerful armament. The allied fleet consisted mostly of modified trading vessels and the Danish and Lübeck warships were lighter built and armed with the less powerful breech-loading iron guns. The Danish-Lübeck fleet fought in a traditional way seeking boarding actions (Mortensen 1999, 333 ff). During the course of the war, armament was increased on both sides towards heavier guns. The Danes mostly bought cast iron cannons from England (Glete 2010, 537). The success at sea fluctuated, but generally the Swedes had the upper hand until the warfare at sea died. The giant ship MARS slipped when she suddenly exploded. Up to 1000 men, Swedes and Lübecks died. The giant ship MARS slipped beneath the surface to rest on the bottom outside Öland for 447 long years.

References

a) Unprinted sources


b) Printed sources

Ekman, C. 1939: Christian 3:s flåde (Köpenhamn).


Tactics

According to Erik XIV’s instructions in 1565 and 1566, ships were expected to act in triplets – one large vessel assisted by two smaller. The Danish admiral Trolle issued similar directives that the three ships should sail in a V-formation, with the largest ship at the fore (Barfod 1995, 179). The ships would engage at long range with cannon fire, but when the enemy approached they would include small arms fire. The Swedes would generally try to avoid being boarded, instead relying on their superior artillery. This is probably a result of the overall shortage of soldiers in Sweden at the time, and the fact that Swedish ships had more powerful guns (Ekman 1946 (1), 72 ff). If the enemy tried to board, they would be met with a hail of shrapnel from the assault guns and incendiaries would be thrown onto the opposing ship. Enemy ships were kept at a distance with beams and steel saws were used to cut the enemy grappling hooks. (Glete 2000, 38; Zettersten 1890, 397 f, Erik XIV’s instruction 1565, in Tornquist 1788).

Battle off the northern tip of Öland 1564

In late May 1564, the Swedish fleet, which consisted of 37 vessels, of which 16 were major warships, sailed from Dalarö. On May 30, they met with the Danish-Lübeck fleet of at least 25 warships and a number of smaller vessels (Glete 2010, 150). The Swedes probably tried to fight at a distance thereby taking advantage of their superior artillery. The Lübeck ship LANGE BARKEN was sunk and towards evening the battle died out (Barfod 1995, 182). After the first days of the battle, the Danish admiral Trolle and his Lübeck counterpart Knebel, agreed that they had to force a boarding action with the Swedes at all costs to avoid the murderous effect of the Swedish guns. Trolle’s flagship FORTUNA had been hit by 167 projectiles during the course of the battle (Ekman 1946 (1), 75 ff).

At night the fleet was scattered and only a few ships were left near MARS the next morning. Bagge surrendered and transferred to the Lübeck ship ENGEL along with a hundred crew members. The ENGEL’s crew swarmed into MARS to plunder the ship when she suddenly exploded. Up to 1000 men, Swedes and Lübecks died. The giant ship MARS slipped beneath the surface to rest on the bottom outside Öland for 447 long years.
Marsden, P. 2003: Sealed by time. The loss and recovery of the Mary Rose (Portsmouth).
Mortensen, M. 1999: Dansk artilleri indtil 1600 (København).
Probst, N. 1996: Christian 4s flåde (København).
Tornquist, C.G. 1788: Utkast till Swenska Flottans Sjö-tog (Stockholm).
Zettersten, A. 1890: Svenska flottans historia. Del I 1522-1634 (Stockholm).

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