

Maille Coif

Norman c1200



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Design



Figure 1. Miniature by Matthew Paris c. 1250 (Pfaffenbichler, p. 9)

The maille coif was a staple of the Norman warfare culture. As seen in the Bayeux Tapestry, the coif was a primary armour type of most soldiers. (Lowe) Maille coifs were either weaved into maille shirts or worn separately. These separate maille coifs were worn with many different body armour types as shown in Figure 2. Typically coifs covered the head, neck and shoulders. The Battle of Wisby excavation had most finds described as:

“As far as could be ascertained all coifs are of the same type, wholly consisting of mail, provided at the bottom with a collar drooping down over the shoulders, and with the opening for the face straight at the top and rounded at the bottom, this opening being so small that the forehead, chin and greater part of the cheeks were protected.” (Thordeman, p.104)

While others had a removable flap, or ventail, to cover the chin and neck. (Figure 1, 3, 4, & 6) This detail allowed the hood to be thrown back to uncover the head when desired.

*“With vassalage he goes to strike that pagan,
Shatters his shield, against his heart he breaks it,
Tears the chin-guard above his hauberk mailed;
So flings him dead: his saddle shall be wasted.”
Song of Roland, 1100*

One of the finds in the Battle of Wisby had a 10 cm slit on the left side (typical side for a ventail, shield side) (Thordeman, p. 106).

Ties are seen on Figure 4, to close the gap at the neck prior to fastening the ventail. This ensured a close fit and no gaps at the overlap of the ventail.

I chose to make a coif with a ventail that covered my shoulders to the joint.



Figure 2. Manessa Codex 15th Century (Manessa)

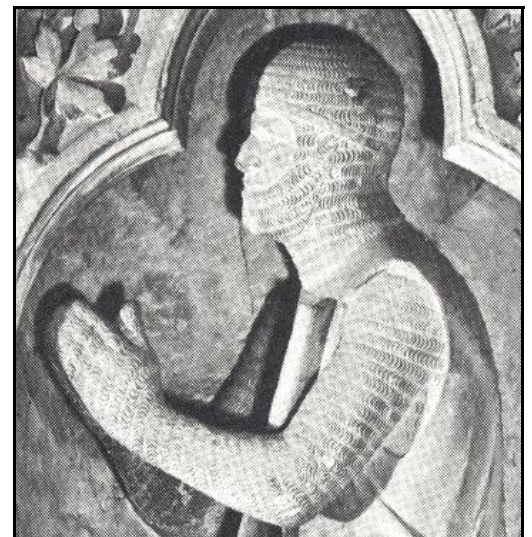


Figure 3. Stone Effigy, 15th Century

Materials

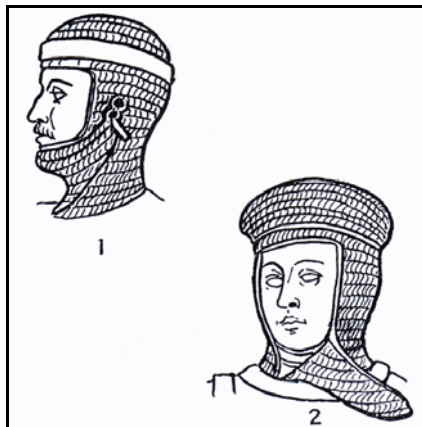


Figure 4. #1-Effigy of William Mare-schal, Temple Church. #2-Effigy in Pershore Church (Ffoulkes, p. 46)



Figure 5. Maille shirt w/ latten edge, Nurnburg Museum 15th century Gravett, p. 60)



Figure 6. Effigy of William Marshall the Younger, Temple Church.

The understanding today is that most maille in period was iron and not steel. Dr. Smith tested 16 rings from various maille garments of known sources. Of these, 3 of them contained enough carbon to be considered steel. (Smith)

“Certainly medieval metal workers have been familiar with the differences between iron and steel since ancient times.” (Sheldon)

So why did they not typically use the stronger steel for maille? Steve Sheldon makes the case that steel is much more likely created in large, tall furnaces, which produce large blooms (raw metal ready for manipulation).

“One of the side-effects of having such a large furnace is that it takes the solid particles of iron, carried by molten slag, more time to reach the bottom of the furnace. Consequently, the iron absorbs more carbon than it would in a smaller furnace. Additionally, a larger furnace may burn hotter than a smaller furnace, which again will enhance carbon absorption.” (Sheldon)

These large furnaces would be much more expensive to operate and build. The large blooms would be much more valuable for plate armor which cannot be easily made from smaller blooms. Wire could be made from any size bloom, from any furnace, particularly the common smaller ones. Therefore the smaller less expensive, predominantly iron, blooms would have been used more often to create wire. Steel is a valid material for maille, most likely only used on very expensive garments. Bronze rings were seen on the bottom edge of many coifs in the battle of Wisby as well as 3 rows of bronze around the temple at the top of the face opening. (Thordeman, p. 105) These bronze rings are presumed to be the attachment points for the textile and leather lining. The bronze would be less corrosive than the iron or steel to the stitches that hold the piece together. Latten (modernly referred to as brass) rings as also found on many maille garments on edges and at stitching locations (Figure 5). These two metals seem to be used interchangeably. For this piece I chose to use brass rings and rivets as shown on Figure 17.

Wire, in period, would have been made by drawings the blooms through a draw plate with incrementally smaller holes until it achieved the desired diameter. This process would not have been the responsibility of the maille maker. Wire drawings was a job unto itself and would have sold pre-made wire to the maille maker (Burgess). I chose to purchase the wire from modern store for, what I think, is the same reason. Wire drawing would have been a time consuming and tedious job. I chose, after this research, to use mild steel wire for the body and brass wire for the trim.

Rings & Weave



Figure 7. Maille cap , Wallace collection A8 15th century (Schmid, p. 11)

Size

My coif rings are 1.5 cm outer diameter. The range of sizes from the Battle of Wisby were from 0.4cm to 1.7cm (Thordeman, p. 111)

Flatten

Overall flattened ring with a clockwise rotation. Flattening the entire ring was common to reduce the overall weight and force the metal into the strong axis. (Schmid, p. 13, image #25)

Rivets

Steel wedge shaped rivet. European maille was most commonly riveted with a wedge rivet made out of iron, steel or Latten. (Schmid, p. 13, image #26) See Figure 8 for front and Figure 9 for back of ring.

Pattern

The pattern of the maille is achieved by starting with one single center ring and using multiple expansion rings at each row to spread the weave and create the dome as well as the collar. (Figure 7 & 11) The vertical head section is only slightly tapered down to the neck for a closer fit. Examples of this pattern can be seen on Figure 12.



Figure 10. Top of maille coif



Figure 8. Maille Shirt, Royal Armouries Leeds 15th century (Schmid)



Figure 11. Top of maille cap, Wallace collection A8 15th Century (Schmid, p. 11)



Figure 9. Wedge rivet back, Wallace collection A9 15th c. (Schmid, p. 13)

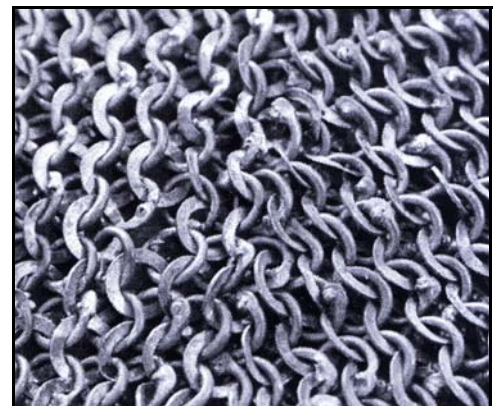


Figure 12. Expansion row in maille sleeve, Wallace collection A10 16th century (Schmid, p. 15)

Padding, Edging & Maker's Mark



Figure 13. Charles VI arming coat 13th century (Price, p. 308)



Figure 14. Trim on maille garments (ffoulkes, p. 88)



Figure 15. Maker's mark, Wallace collection A2 15th century (Schmid, p. 7)

While there are only a few examples of period padding, one surviving is the arming coat of Charles VI (figure 13) This coat is linen stuffed with cotton batting. Also Ffoulkes indicates that armour padding was made of Linen stuffed with cotton waste of four fingers. (Ffoulkes, p. 88) A coif from the Korsbetningen find still had textile attached to the rings (Korsbetningen) I had the padding made by Dame Meagan Windemere, who used linen stuffed with cotton batting off my pattern. Much like the drawing of wire, the job of adding fabric to this piece would have been the job of the fabric amourers solely. (Ffoulkes, p. 88)

Maille garments were often edged in some material as shown on Figures 4 & 14. Also in the Battle of Wisby, there was a gauntlet that was found that still had some leather attached to the rings. (Thordeman, p. 105). I used deerskin for all my edging. Maker's marks are found on a handful of maille from many different areas. They were cast or stamped and then weaved into the garment (Figure 15) or stamped directly on the rings (Burgess, p. 195) The maker's mark on this coif is on the front bottom edge, stamped into a brass ring 'matheus bane'. (figure 18)



Figure 16. Padded ventail on maille coif



Figure 17. Detail of ventail & tie



Figure 18. Maker's mark on coif

Tools & Technique



Figure 19. Winding coils on mandrel



Figure 20. Cutting individual rings w/ overlap



Figure 21. Flattening rings with piston tool



Figure 22. Piercing hole for wedge rivet

I used all self made custom tools for all my maille. The rings go through a 10 step process with the highlights shown in Figures 19-23. The holes for the wedge rivets were pierced through the overlap in the ring, not punched or drilled because as you can see on figure 25, the extra material pushed through is visible next to the rivet. This method allows more material to be used in setting the rivet head and helps lock the ring and the rivet together, as well as being much easier to accomplish. A strait piercing bit and die would have been used, although I opted to modify a pair of tongs (which is a tool mail makers would have had) to accept the bit and die to guarantee quick alignment (Figure 25). Although no period maille making tools have ever been found, I believe that period mail makers would have had a similar tool, to the one I use, to help streamline this critical step in ring production.

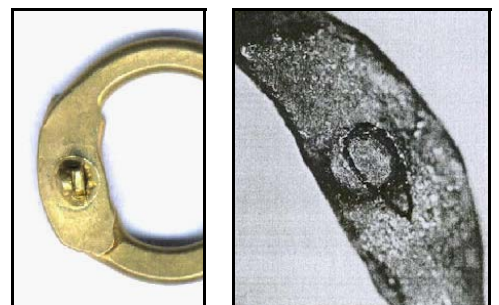
There are many woodcuts from the 15th to the 17th century that show mail makers. These all seem to show one pair of tongs being used to add rings to a garment. As shown in Figure 24, these tongs have long handles which indicate that the user needed great pressure with the tool. The conclusion is a rivet setting tong that forms the rivet as well as the watershed marks on the overlap. The unset ring shown in Figure 25 shows a flat ring without any sign of watershed right before setting of the rivet.



Figure 23. Setting wedge rivet



Figure 24. Maille maker w/ setting tongs, 17th century (Pfaffenbichler, p. 56)



#1

#2

Figure 25. #1 My rings prior to setting rivet #2 A ring from C455 shirt prior to setting rivet (Vike)

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