

Some Insights into Medieval Die Production and Die Life

Part I

By

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In 2004, based upon my work on medieval coin striking and die production, I was asked to contribute an article for the Fest Schrift that was being produced for the British Museum Curator, Marion Archibald, on the occasion of her 70th Birthday. Previously I had been invited to Kronoberg Castle in Sweden, as part of a 3 week viking/medieval crafts tutorial camp, to be a practical demonstrator of coin striking and was able, whilst there to participate in the building and operating of a viking style iron foundry. Subsequently using the iron produced to manufacture a set of viking style coin dies. Unfortunately the original text and all of the best photographs and negatives were lost in the post. I had therefore little hope of recreating the lost article. However a Swedish re-enactor was able, recently, to provide me with some photographic images of the event and so I am able to, at least partially, resurrect the lost article.

What follows is the process of creating a medieval die from absolute scratch.

1, Building the foundry.



A wooden box like structure some 5 ft square and 3ft 6ins high was assembled of interlocking logs. This was to form the retaining wall of the foundry. Image 1 on the left. Whilst this was being done clay and sand bricks were made by hand from local clay and sand from the surrounding lake and air dried. Image 2 below.



These bricks were fired in a hand built kiln (image 3) and heated by charcoal made on site). They were then used to form a central chimney to the foundry (image 4) This chimney was then surrounded by an infill of soil to hold in place and insulate the chimney (the chimney flue space is some 12 inch diameter).



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A pipe was inserted, just above the ash removal tunnel, to which will be attached a large pair of hand operated bellows So that the air flow from the bellows would increase the heat of the foundry (image 5) Bog iron ore (approximate 50kg) was collected from the surrounding lake and dried overnight by placing it on the hot brick kiln, which was in constant use (for other projects).



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2, Operating the foundry

A charcoal fire was lit in the foundry and approximate 50 kg of bog iron ore was introduced along with copious amounts of more charcoal. The Iron Master (seen in image 1) and his assistant would operate the bellows constantly for a period of some 6 hours raising the foundry core temperature to about 1200 degrees and slowly converting the iron ore into bloom. Charcoal being added via the chimney as required.

After some 6 hours the bloom was removed from the foundry by the iron master standing astride the foundry chimney and removing the bloom with a pair of very long handled pincers. At this point the mass has reduced to some 12-15 kgs.

The bloom is then beaten on a large granite boulder with large hammers to drive out the slag. (image 6 showing the iron Master and the author working the bloom) The bloom would be reheated on cooling by re-introducing it back into the foundry on top of the next charge of iron ore which was being converted into bloom.



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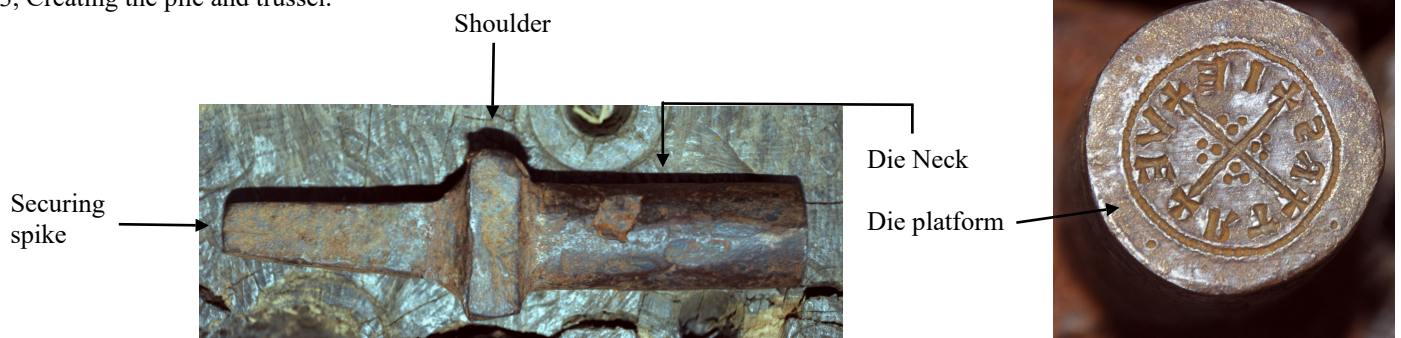


7

After about 3-4 hours hammering the bloom has been reduced to an ingot of some 1-2 kg of iron (the ingot still retains carbon and should really be described as a crude form of steel).

Image 7 shows the bog-iron ore (rusty red) bloom (black) and ingot (blue grey) produced from the process, sitting on top of the foundry. Using this method 1-2 kg of iron ingot could be produced from ore, by two men in one working day.

3, Creating the pile and trussel.



A single ingot from the foundry was passed to the camp blacksmith and the process of creating the pile (lower die) was initiated, to avoid later identification problems the die shape was decided to be a blend of the Coppegate round die and the square Cnut die thus creating a square section die with a round neck and die cap/die-platform.



Coppergate obverse die
Illustration 399 From
Viking to Crusader Catalogue
ISBN 87 7303 558 0



Coppergate Die and cap
(web search images)



Cnut square section reverse die
Illustration 427 From
Viking to Crusader Catalogue
ISBN 87 7303 558 0

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3, Creating the pile and trussel cont.

The smith produced the tapering spike to the base of the die, used to anchor the pile into a wooden striking block along with a square section shoulder to prevent die sinking into the block . (images 8 and 9).

Shoulder of the die was formed and with it the round neck of the die (images 10 and 11)



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The Reverse die was produced by a similar method but without the pike and shoulder (images 12 and 13)

Unfortunately the images of the unused dies have been lost so the dies in their current state are illustrated.



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Finally a striking sleeve was formed by beating a piece of ingot into a thin sheet and forming into a tube on the anvil. (images 14 and 15)



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A striking sleeve can only be used where the dies have a parallel sided neck, as found on the Saxon and early Norman dies. The later dies being tapered from the shoulder to the die platform have to be held solely by hand

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The die pair was then passed to the Moneyer (the author) for die facing and die cutting.

This process I will address in Part 2.

Please note I am relying on memory of a process that was undertaken some 18 years ago, any error in figures and approximate times are the result of the passage of time and errors in recollection.