Dyeing with Madder

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Evidence in the form of both written primary sources and archeological evidence for madder being used throughout the SCA-period and throughout Europe and Asia is plentiful. Table 1 is a very small sampling of some of that evidence.

Extant examples of madder dye exist on silk, wool, linen and cotton textiles. The archeological evidence also extends to madder dyestuff found in a dye context and madder stained pottery sherds. The written evidence takes the form of sumptuary laws, trade regulations and restrictions, dye recipes, and estate documents such as wills. Combined these sources point to a history of not only home based madder dyeing, but the development of a thriving trade in madder dyed textiles at various points of time in several locations. Examples of this trade include Roman Pompeii, Anglo Saxon and Medieval England, Medieval Flanders, and Renaissance Venice and Florence.

Madder was used on its own to obtain reds, oranges and browns, in combination with woad to create purples, in combination with yellows such as weld to create brighter oranges, as an aid in woad fermentation vats, and in combination with brazilwood to create scarlet.

Table 1:

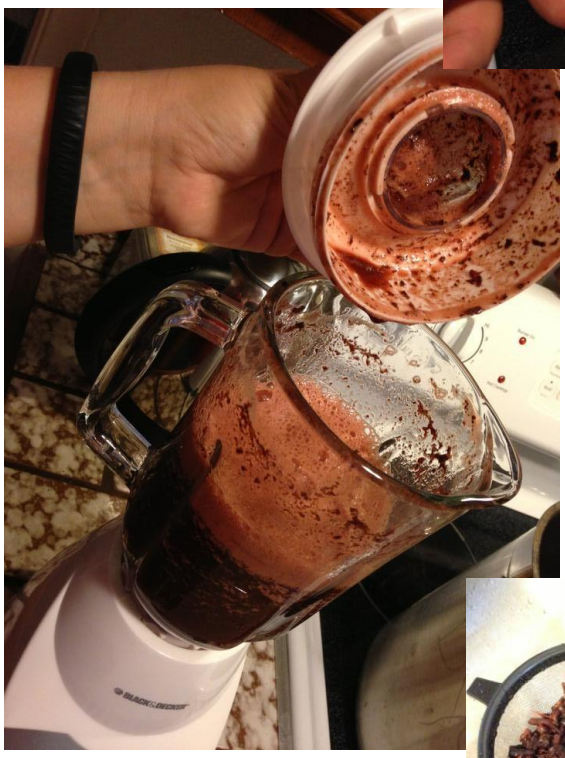
Evidence	Location/Culture	Approximate Date
Quiver	Egypt	2000 BC
Tutankhamun's Belt	Egypt	1350 BC
Crescent Shaped Cloak	Etruscan (Italy)	725-700 BC
Wool Textiles	Hallstatt, Austria	800-400 BC
Unspecified Bog Textile	Skaerso, Denmark	210 BC -90 AD
Madder Dyestuff (In a Dyehouse Context)	Pompeii (Italy)	79 AD
Pliny the Elder	Rome (Italy)	1st Century
Silk Textiles	Palmyra/Roman	110-250 AD
Thorsberg Tunic	Germany	3rd Century
Stockholm Papyrus, Recipes	Greece	300 AD
Unspecified Patterned Textile	Coptic (Egyptian)	4th Century
Högom Find	Sweden	500 AD
Wool Band	Evebø, Norway	5th Century

Table 1 Continued:		
Evidence	**Location/Culture**	**Approximate Date**
Wool Band	Snartemo, Norway	6th Century
Överhogdal Hanging	Sweden	800-1100
Oseberg Tapestry	Norway	840 AD
Wool Cords, Wool Tabby and Twill, Wool Sock, Silk, Dye Plant	York	9th-10th Century
Madder dyed striped textiles	London, England	9th-10th Century
Madder Stained Potsherd	Thetford, England	9th-11th Century
Silk Scarf	Dublin, Ireland	10th Century
Mammen Textiles	Denmark	10th Century
Pile Woven Trim	Hedeby, Denmark	10th Century
Silk Dress	Gnezdovo, Russia	10th Century
Unspecified Patterned Textile	Coptic (Egypt)	10th-11th Century
Wool Tabby & Twill, Silk	York, England	10th-11th Century
Wool Twill	Waterford, Ireland	11th-12th Centuries
Madder Plant Material (in a Dye Context)	Beverly, England	12th-14th Century
Madder Plant Material (in a Dye Context)	Bristol	14th Century
Chinese Twill Damask	London, England	14th Century
Wool Textile	London, England	1330-40
Chaucer, *The Former Age*	England	1380's
Wool Textile	London, England	14th & 15th Century
Wool Textiles	Turku, Finland	14th & 15th Century
Reymerswaal Regulations	Netherlands	1480
Unicorn Tapestries	Netherlands	1495–1505
T Bouck va Wondre, Recipe	Dutch	1513
The Plictho, Recipes	Italy	1548
Child's Tunic	Udval, Norway	2nd half of the 14th Century
Rafael and Tobias, Wool Tapestry	Brussels, Belgium	1550
Elizabeth I's *Proclamation Prohibiting the Use of Logwood*	England	1567
Silk Brocade, Wools	Topkapi, Turkey	16th Century
Wool Textiles	Groningen, Netherlands	16th Century

Madder Dye Procedure, Great Western War 2014

<table>
<tr><th colspan="2">Fiber Prep; Fiber used: 100% Wool from JoAnn's</th></tr>
<tr><td colspan="2">1. Skeins were washed using Orvus fiber wash.</td></tr>
<tr><td colspan="2">2. Skeins were then treated in a heated Soda Ash bath (1/4 cup soda ash to 3 gallons of water) for 30 minutes and left to soak overnight to remove any commercial finish. *Note the observations about this in the conclusion section. I do not recommend this step.</td></tr>
<tr><th>Alum Mordant</th><th>Copper Mordant</th></tr>
<tr><td>1. Heated water (about 1 ½ gallons) and dissolved 2 teaspoons alum.</td><td>1. Heated water (about 1 ½ gallons) and dissolved ½ teaspoons copper.</td></tr>
<tr><td>2. Added wet fiber and heated to a simmer. Left simmering for 30 minutes.</td><td>2. Added 8 teaspoons clear vinegar and stirred well.</td></tr>
<tr><td rowspan="2">3. Let skeins soak for 5 days</td><td>3. Added wet fiber and heated slowly to a simmer. Let simmer for 1 hour.</td></tr>
<tr><td>4. Rinsed skeins well.</td></tr>
<tr><th colspan="2">Madder Prep</th></tr>
<tr><th>Soaked, Strained and Ground</th><th>Broken</th></tr>
<tr><td>1. Chopped and broke madder roots into small pieces.</td><td>1. Chopped and broke madder roots into small pieces.</td></tr>
<tr><td>2. Covered roots with water and left to soak for 24 hours.</td><td>2. Placed broken pieces into knee high stockings.</td></tr>
<tr><td>3. Strained water off of roots and discarded it.</td><td rowspan="4"></td></tr>
<tr><td>4. Added strained roots and water to the blender small sections at a time, and ground roots.</td></tr>
<tr><td>5. Water was strained from ground madder, but retained.</td></tr>
<tr><td>6. Strained ground madder was placed into knee high stockings.</td></tr>
</table>

Pre-War Madder Prep



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Dyeing the Fiber	
1. Add madder water strained from the blender to the dye pot and add more water until the pot is at a good level. (Usually about 1 ½ gallons total for a small pot.)	• Add about 1 ½ gallons of water to the dye pot.
• Add knee high stockings with ground madder to dye pot.	2. Add knee high stockings with broken madder to dye pot.
• Slowly heat water being careful to keep the temperature between 120 – 170 degrees Fahrenheit.	3. Slowly heat water being careful to keep the temperature between 120 – 170 degrees Fahrenheit.
• Keep the pot warm, and add yarn skeins. Allow to sit until desired color is achieved.	4. Keep the pot warm, and add yarn skeins. Allow to sit until desired color is achieved.
• Allow the yarn to rest, and then rinse.	5. Allow the yarn to rest, and then rinse.

Modifying the Color

To achieve a broader spectrum of color, modifiers such as iron, calcium carbonate and slaked lime can be used.

Calcium Carbonate	Slaked Lime	Iron
For calcium carbonate, dissolve 1 ½ teaspoons calcium carbonate into warm water and add it to the dyebath.	For slaked lime, dissolve about ¾ of a teaspoon slaked lime in warm water and **after** the yarn has taken up color, add it to the dyebath. It should deepen the color.	For iron, add ¼ teaspoon iron to an iron specific pot. *Make sure not to breathe the dust and to wear gloves. Iron is poisonous.* Heat slowly and then dip the pre-dyed skeins. Make sure to rinse the yarn well as iron can eat away at fibers.

Dyeing the yarn at GWW, Photo Credits: Eugenia Swingle Hernandez


Dyeing with Madder, Fiber Arts Track, Great Western War 2014
Madder Dyed Samples, Great Western War 2014
Alum Mordant
Soaked, Strained & Ground
Alum Mordant
Broken, No Other Prep
Alum Mordant Calcium Carbonate Modifier
Broken, No Other Prep
Copper Mordant
Soaked, Strained & Ground
Copper Mordant
Broken, No Other Prep
Copper Mordant Slaked Lime Modifier
Broken, No Other Prep
Copper Mordant Iron Modifier
Broken, No Other Prep

Reflections and future steps…

The range of colors achieved during the GWW dye session varied greatly. It became immediately apparent that the method of madder prep had a profound impact on the color given. The soaked and ground madder took up the dye quickly and became a very deep color. The color was also one of the reddest shades I've managed to achieve in a heated dyepot. The madder that was broken and heated that day produced lighter oranges. It is becoming apparent that long term cold dyeing and pre-soaked madder will give some of the best reds.

Temperatures were carefully monitored and kept between 120-170° F. It may be interesting to see what colors can be achieved at a lower temperature. Several sources gave 120° as the temperature at which the dye chemical alizarin, which produces red, is released. I'm curious to see if that means at lower temperatures yellower oranges can be achieved or if there is just little to no color released.

Several sources also mentioned hardness and pH as factors that affect the color. We did try slaked lime and calcium carbonate, and both did indeed deepen the color achieved. Iron was also used as a modifier, and its results were especially satisfactory. The light orangey-tan was darkened to a purple-brown. Because of the limited number of skeins available during this dye session, not all of the combinations of madder preparation, mordant, and modifier were tested. Definitely something that needs to be tried in the future!

The two mordants used resulted in distinct color families among the skeins dyed. The copper mordant resulted in various shades of brown –everything from a light orangey-tan to a deep purpley-raisin. The alum mordanted skeins stayed in the orange-red family with colors ranging from a salmon to a deep almost-red.

One learned lesson that needs to be highlighted is whether soda ash is really useful as a finish remover. The skeins had developed an odd hand (they felt weird) and were actually felting to one another. This made it difficult for the dye to be absorbed evenly. The soda ash used to remove the commercial finish is the most likely culprit. In the future, I will be eliminating that step from the fiber preparation process or substituting a smaller amount of baking soda.

Overall, I'm extremely pleased with the variety of shades we achieved and feel like valuable information was gained. The dye session has left me excited to experiment more!

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