Experimentation with Natural Dyes

or Oooh! Pretty Colours!

Lucia de Moranza

This particular dye study did not come about based on good planning and meticulous procedure. It came about during a summer of playing about, mostly in 'mad science' realms and tinkering with tiny sample sized batches. This was very much a 'hey, let's see what happens when... ' rather than 'I wish to have a deep understanding of X.' I went with a very basic set of things to dye: wool, silk and whole raw chicken eggs. After my brief playing with natural dyed pysanky at A&S in Spring 2015, I was determined to find egg colours that weren't various shades of beige and brown. (Spoiler alert: I am going to be generally disappointed.) My reasoning on dunking the eggs into the same dye liquors as what I'm using for fibre is that while I'm certain there was some dyes mixed up specifically for eggs, I'm equally certain that if there are good colours to be found in the same dyes that will colour your socks, they'll use those too. Waste not, want not and all that. I went into this with the intent of working up tiny sample amounts, rather than large projects (with the exception of the indigo vat which got used to dye nearly anything I could think of to turn blue). I made the choice to stick to but a single mordant (alum) when they were called for, just for simplicity (and availability).

Ultimately, my dyestuffs ended up being: Indigo, red sandalwood, brazilwood, goldenrod, onion skins, madder and beets. I'll touch on each of them in turn, in how I prepared the dye liquors and any differences in how I approached the fibres.

Indigo, sandalwood, brazilwood and madder are all referenced frequently in period dye manuals. Madder starts turning up in references in about 300AD[1]. Brazilwood and indigo are certainly in references in the 14th century[2], although I expect both are probably under other names earlier. By the 15th century there is mention of sandalwood[3], but I equally expect that was also used by other names (and in other places) much earlier. In my (admittedly fairly cursory) research, I cannot find any definitive sources for what is thought of as cottage dyeing. Things that were common (weeds or waste), not nearly as light or wash fast, but worked in a pinch for a casual home dyecrafter. I put onion skins and goldenrod in this category. It isn't the sort of thing that would be recorded in a formal recipe, but far more likely to be the sort of thing of 'well, I stained /that/ apron something awful. A dip in onion skins will at least make it show less', or perhaps 'I swear, I hate this tunic colour so much if I wear it one more day I will scream. Goldenrod might not last long, but when it sucks more, I'll dye it something else /then/!'. We have the luxury of choosing a different colour shirt every day, but I expect even 600 years ago, people got well sick of being in the same colour day in and day out. Pure speculation, but not outside the realm of potential. Beets were used as a dyestuff purely to show how terrible a dyestuff they are. The glorious red of borscht is a lie, don't fall for it!

---

[1] Stockholm Papyrus c300 - 400 AD http://www.elizabethancostume.net/dyes/stockholm.html

[2] Innsbruck Manuscript 1330AD http://www.elizabethancostume.net/dyes/innsbruck/

[3] Segreti per Colori 15th century http://www.elizabethancostume.net/dyes/segreti.htm

I chose to pre-mordant the wool and silk thread (fingering weight 100% wool yarn and size 30/2 100% silk thread) with alum. I used a solution of 10% weight of dry fibre (WoF) alum, 5% WoF cream of tartar, heated it gently (180F) and then rinsed well and dried. The same batch of mordanted yarns were used throughout.

Indigo

I went for the easy route here. I purchased pre-reduced indigo and followed the directions for making up an indigo vat in a 5 gallon bucket with entirely modern chemicals. (10g pre-reduced indigo, 40g thiox, 50g soda ash, 3 litres filtered water) I've never used indigo before, and I thought I'd at least open with making it easy on myself. It bloomed nicely, took a day or two to go that perfect disgusting yellow/green colour. I do find that items dipped in it take a /long/ time to oxidize, but they get there eventually.

Red Sandalwood

This dyestuff has been sitting in my stash since the late 90s, with no instructions and cryptic identification as to what it was. I finally determined that it was red sandalwood and blithely tossed 10g of the powder in water in the crockpot to simmer a while. Wool and silk (only mordanted samples) were added, and the whole thing simmered for a couple of hours. To call the colours that came from that underwhelming would be an understatement. When the dye liquor had cooled, I let the egg soak in it for about a day.

I then found out that sandalwood doesn't give up its colour readily to a water soak, and the next 10g was soaked in enough vodka to cover it for a week or more. That whole concoction was simmered in plenty of water in the crockpot, and then once the threads were added, simmered for a couple hours more. These colours, on both mordanted and unmordanted samples were much more interesting. Again, once the dye liquor had cooled, I let an egg soak in it for about a day.

The colour difference between water soaked and alcohol soaked on the eggs are very minor. Quite a dramatic difference from the eye popping change between water and alcohol on fibre.

The next set of dye stuffs were all handled the same way for convenience. A sous vide appliance was set to 78C and held a water bath at exactly that temperature with different dye liquors in jars in that water bath. Fibre was put in the jars, left at temperature for 90 mins, and then left to cool naturally overnight. The threads were removed approx 20 hrs after they went in.

Brazilwood

Having learned my lesson with the sandalwood, I soaked 7 g of brazilwood in vodka for about a week right off the top. The soaked bark was mixed with hot water, and then allowed to cool with the fibre in it. In spite of the lack of heat, I still got good colour on mordanted fibre. Unmordanted

fibre was pretty uninspiring. The strained dye liquor was then put in the water bath to see how it differed from the cool one.

Goldenrod

I (and my long suffering spouse) picked the flowers while they were fresh and open, and then they were dried. As many dried flowers as would fit were crammed in a litre mason jar, which was filled with water and put in a 78C water bath. After 2 hrs in the water bath, the dye liquor was strained off into a clean jar with fibre and put back in the bath and treated the same as all the others in that bath.

Onion Skins

There are two different dye liquors for onion skins. One that was simmered in a crockpot, strained and then put in a cupboard for 6 months. The other was made fresh the night of dyeing. (skins in a jar, left in the water bath for a couple of hours, then used.) Both dye liquors were treated the same in the water bath.

Madder

I prepared madder the same way twice, and then explored how temperature played a role, as its a common statement that madder is very temperature sensitive. I dissolved approx 10g of madder in a mason jar of tap water and then heated it in a water bath. One jar was heated to 78C and the other to 58C. Both were left at that temperature for a couple of hours, and then fibre was added for about an hour and a half. At that point, the heat was turned off, and it was left to cool naturally for about 24 hours. Surprisingly, the two are almost identical. Clearly more experimentation is required.

Beets

This was a last minute impulse jar. I took a couple small beets, cut them up and put them in the 58C water bath. They sat for a couple hours getting hot, and then fibre was added as per madder. After the fibre was taken out and rinsed, it was the sad grey that I expected. I added a healthy glug of vinegar into the jar to see if that might help and tossed the entire thing in a crockpot to simmer on low for a few hours.

There is something absolutely fascinating about putting in a thread of one colour and pulling it out as something different, it is magic. Indigo is magic right before your eyes, but even the stirring and waiting and patience is its own kind of magic. I love to dabble and see what comes out of my dyepots, and this is unlikely to be the last time that I throw stinky weird things in a pot and hope for the best. I would love to explore madder and brazilwood both a bit more in depth, there's a lot of potential in both. The temptation to take period dye recipes and actually follow them is also strong (and probably moderately toxic, but that's a whole different story.) I am

spoiled by my usual dye work with food dyes which require no pre-mordanting, and having to plan ahead is something I'm not always very good at. I have also only worked in tiny batches that were dramatically overkill in terms of amount of dyestuff for the fibre quantity involved, and playing with those ratios will probably also be fascinating, as well as actually getting enough to do something with.

Bibliography

Klos, Dagmar (2004). *The Dyer's Companion.* Interweave press.

Segreti per Colori http://www.elizabethancostume.net/dyes/segreti.htm
AnneLeise's Natural Dyeing to 1600 http://fibers.destinyslobster.com/Dyeing/dyehistory.htm
Wild Colour's Dyeing with Madder http://www.wildcolours.co.uk/html/madder_dye.html
Innsbruck Manuscript http://www.elizabethancostume.net/dyes/innsbruck/about.html
Mappae Clavicula http://www.elizabethancostume.net/dyes/mappae.html
Stockhold Papryus http://www.elizabethancostume.net/dyes/stockholm.html