To Dye a Saffron Colour

Legendary Ireland

Norman Ireland

Medieval Ireland

Tudor Ireland

- The Dungiven Costume
- The Kilcommon Costume
- The Killery Costume
- The Léine
- The Shinrone Gown
- Wool Stockings
- Linen Headdresses
- A Few Arguments on the Subject of Saffron

Despite many historical references to Irish and Scottish *léinte* dyed with saffron, it is my opinion, based upon the available evidence, that these references are mistaken. The main reason for my disbelief in the use of saffron as a spice is its prohibitive cost. Modernly, saffron costs $150 an ounce, more than gold. In the 16th century, this would have been an even larger number. Since saffron (that is, the stigma of the autumn crocus) does not grow in Ireland, all saffron must have been imported, making it even harder to obtain. Considering the reported 20-40 ells (about 7-12 60" wide yards) that went into making a man's *léine*, the amount of saffron needed would be extraordinary. There is no reason to believe that the saffron shirt (*léine croich*) was dyed with saffron. It is more likely that "saffron" was a word used to decribe the colour of the garment, not the stuff with which it was dyed. It may have been like referring to an "orange shirt" whose dye had nothing to do with the citrus fruit. Indeed the Cannons in *Dye Plants and Dyeing* emphatically state that the "Saffron Robes" of Buddhist monks were not dyed with saffron but were merely of a saffron colour. This may have also been true of the Irish "saffron shirt".

So if they weren't dyeing their shirts with saffron, what were they dyeing them with? The truth of the matter is that many dye plants produce yellow. Some of the best yellow dyes come from two plants known in antiquity in Ireland, weld and broom (also known as dyer's greenweed or dyer's woadwaxen). Weld (Reseda luteola) and broom (Genista tinctoria) both produce the same dyestuff, luteloin, except that broom has it in smaller quantities, much like the relationship between indigo and woad.

For my experiment, I chose to use broom. Rather, broom chose me. Broom lasts later in the season than weld and I did these experiments in Ocotber. Originally, I began the experiments with weld, but I only got to the swatch stage when the weld turned (the weather turned cold). So broom it was.

Dyer's Greenweed also known as Dyer's Broom

Before dyeing with any dyestuff, you must prepare your fabric. The fabric must be scoured to remove any oils or finishings on the cloth. I simmered the linen in a pot of water with an ounce of dishwashing liquid for one hour, then rinsed well.

Dyestuffs do not penetrate vegetable fibres like linen as readily as they do wool, so a mordant is needed. Adjective dyes (like broom) do not bond to the fibres themselves, but they will bond to a mordant. Fibres are therefore treated with a mordant before dyeing. The most popular and oldest mordant for linen is alum and tannin. Alum (potassium aluminium sulfate) is a substance used in deodorants and foot powders and in some gardening applications. It is used to mordant both linen and wool, but with different additives. I dissolved 8 ounces of alum in 2 quarts of hot water as described in Liles. When the solution cooled off, I mixed 1 ounce of washing soda (sodium carbonate) in a pint of water. This solution was supposed to fizz like shaken seltzer, but it only got a small amount of white bubbles on the surface. After it stopped bubbling, I added it to the alum mixture. Then I added just enough water to the pot to cover the linen. I then added the wet linen and worked for a few minutes. The linen sat under the surface of the solution for six hours. Afterwards,

I squeezed out the linen and let it rest in the sink.

Liles (and others) suggests using this alum in combination with a tannin bath and followed by a second alum solution. I dissolved an ounce of tannic acid (available from dye suppliers but also naturally found in oak galls and sumac leaves and branches) in 4 gallons of hot water and put the linen into the bath and worked the solution through. This sat for eight hours. See the resultant fabric below.

Linen fabric before mordanting.

Linen after tannin

Linen in alum bath

After that, I repeated the alum process, but I only had six ounces of alum left. I reduced the amount of water and hoped for the best. I was concerned about the colour the linen had become after the tannin processing. Naturally, tannin is the stuff that makes tea brown, so I expected a colour change. But I was told by a friend who tried this process previously that the second alum bath made the linen white again. After the second alum bath, my linen was still brownish. I borrowed some alum and washing soda from a friend and tried the alum bath a third time. This time, not only did the washing soda produce the aforementioned fizziness, the bath became milky white (see photo at left). However, the linen still did not return to a white state. It may have lightened slightly, but not having anything to compare it to, I cannot be sure.

I hung the linen up to dry without rinsing. The day I started the broom dyebath, I rinsed the linen to make sure any excess alum wasn't stuck to the surface. This is essential to the

dyeing process. If unabsorbed mordants aren't rinsed away, they will prevent dyeing, not aid it. So make sure your fibres are well rinsed right before dyeing.

Now it was time to prepare the dyebath. I cut up some broom (stems, leaves and all) and placed them in a pot with just enough water to cover them. I simmered the plants for an hour and left the plants to soak overnight. The mixture smells alot like tea. The following evening, I strained away the liquid and placed it in a different pot. To this I added the wet linen and some other fibres I wanted to experiment with (unmordanted linen, mordanted and unmordanted wool). After I removed the plants, I realized they still had more dye in them. So I put some of the simmered plants in a strainer and placed it back in the dyebath so more dyestuff could come out. Buchanan suggests simmering for 15 minutes to produce clear yellows and longer for darker golds. However, Dean suggests leaving the fibres in the pot overnight before simmering for 15 minutes or longer. I decided to let the fibres soak overnight and see what colour was produced in the morning. The next day, I simmered the bath for 15 minutes and then allowed it to cool before discarfing it.

An unmordanted linen swatch simmered with the plants turned pure yellow. But an unmordanted linen swatch soaked in the dyebath overnight and simmered for 15 minutes hardly changed colour at all. Some alum mordanted and unmordanted wool were also put in the dyebath with the linen. The alum mordanted wool became a dark yellow colour. The unmordanted wool became only slightly yellow.

The alum-tannin-alum linen became a dark yellow. Unfortunately, I was trying to produce a clear yellow like that shown in illustrations of 16th century Iris kern. I think this experiment suffered from overuse of tannin. In the coming few days I intend to dye swatches of unmordanted linen, alum mordanted linen, and linen mordanted with the above alum-tannin-alum combo in broom before it goes bad. Watch this page for those results.

Update!

When I completed this experiment, I thought I missed the mark because the linen appeared to be a dark yellow. However, after I washed and allowed the material to dry, it became a milder yellow. Matter of fact, the colour of this linen now matches an unmordanted linen

swatch that I boiled with real saffron.

Conclusions

I am not certain whether the 16th century Irish used real saffron to dye their shirts or only dyed them "of a saffron colour". There is good evidence supporting both sides (click here to read about it). However, it is clear that "a saffron colour" can be made with dye plants that grow abundantly and natively in Ireland. Why not try it yourself?

References

Buchanan, Rita. *A Dyer's Garden.* 1995: Interweave Press, Loveland, CO.
Buchanan, Rita. *A Weaver's Garden.* 1987: Interweave Press, Loveland, CO.
Cannon, John and Margaret. *Dye Plants and Dyeing.* 1994: Timber Press, Portland, OR.
Dean, Jenny. *Wild Color.* 1999: Octopus Publishing Group Ltd., New York.
Liles, J. L. *The Art and Craft of Natural Dyeing.* 1990: The University of Tennessee Press, TN.
McClintock, Henry Foster. *Old Irish and Highland Dress.* 1950: Dundalgan Press Ltd., Dundalk.
McClintock, Henry Foster. *Handbook on the Traditional Old Irish Dress.* 1958: Dundalgan Press Ltd., Dundalk.