ORCHIL, THE POOR PERSON'S PURPLE

The knitted pouch was worked in circular knitting with commercial worsted and vegetable-dyed yarns in a pattern taken from a medieval knitted fragment from Egypt, given by Richard Rutt in his History of Hand Knitting. *This book also documents circular knitting as an early technique, and shows period (1300s) examples of this style of drawstring pouch ornamented with bottom tassels. The shades I used are from yarrow (green), sumac berries (gold) and three shades of Orchil. I had to choose the coordinating colors very carefully, as there were very few of my dyed skeins that did not produce a rather jarring color effect next to the orchil.*

Did the Vikings wear fuchsia?

Or would you expect to find "hot pink" as one of the colors available from a vegetable dye before A.D. 1600?

Surprisingly, it's quite possible with orchil, a lichen-based dye.

Dyeing cloth and yarn with extracts of plant material is already a very well established process at the beginning of written history. Plants provide abundant shades of brown, gold, yellow, gray, and grayish green, most of them rather subdued unless a lot of plant material is used relative to the amount of yarn being dyed. (Equal weights, measured dry, is the traditional rule of thumb.)

However brighter colors are much harder to get, and were prized (and priced) accordingly. In our period, woad blue and madder red (a somewhat yellowish red) were common, and the more powerful indigo blue, and kermes and cochineal reds, were slowly spreading through Europe.

Most costly and precious of all was "royal purple" or "Tyrian purple," produced by a small mucous gland in several species of shellfish native to the Mediterranean and Atlantic coasts. Large heaps of these *Murex* shells remain in many sites to this day, testifying to the amount of dyeing being done. According to Liles (1990), in about 1908 a German dye chemist, a Dr. Friedlander, was able to gather enough of the pure dye to analyze, and determined that it is actually 6,6'-dibromo-indigo, which produces a deep reddish color. More recent research has shown that most of the relevant shellfish species produce a mixture of this and the blue indigotin, yielding a range of colors between dark red, purplish red (also known as "royal purple" and supposed to be the color of freshly coagulated blood) and the bluer shades that we today identify as "purple."

From the same period that we have records of Tyrian purple, we also have recipes for ways to "stretch" or imitate this much-desired shade. The dyeing of wool with orchil is mentioned by both Theophrastus and Dioscorides, with the comment that "when fresh, its color is so beautiful that it even

excels the ancient purple of Tyre." (I guess it depends on your taste.) Pliny also records that orchil was used as a "bottom" or initial dye for wool which could then be colored purple with a much smaller quantity of the expensive Tyrian purple.

Nearly half the recipes in the "Stockholm Papyrus," a demotic Greek document from the third century A.D., are for such "imitation" purples. Interestingly, even at this early date, most of the recipes take for granted that you have bought already-prepared orchil dye from a merchant, rather than making your own. Dye makers in the Levant seem to have kept the process of making it secret. Here's one such recipe:

> "Dyeing in Phoenician Color with Archil. After the washing, boil it [the wool] with 6 *chus* of salt water for each *mina* of wool, mix in half a *mina* of alum, and mordant the wool therein in the way mentioned. Rinse it out. Then cook in rainwater, until it boils, three times as much archil as the weight of the wool. Put in goat's milk and stir up. Put the wool in and stir again until the color is thoroughly soaked in. Then take the wool out, rinse and dry it, but in doing so protect it from smoke."

The "secrets" of Tyrian purple and orchil dye seem to have been much less widely known in Europe from the fall of the Roman Empire until about 1300. However, Taylor and Walton (1983) are cited by Grierson as reporting "recent discoveries of purple lichen dyes on ancient textiles in some specialist rural weaving centres in 'Dark Age' Europe." This is entirely possible, as the dye is quite distinctive chemically and can easily be distinguished from Tyrian purple or other dyes. (She also cites Digby, 1957.)

The much-quoted, and apparently well-established, story of how orchil was re-introduced to Western Europe was written by G. Marcotti and privately printed in Florence in 1881. The story is that one Ferro, or Federico, began manufacturing orchil dye in Florence in the early 1300s, having brought the knowledge of how to make it from the Levant. He seems to have been successful at keeping the secret in Florence for some time, and his family – who took the surname "Oricellari" from the dye – monopolized its manufacture for nearly a hundred years. It was traded as far as Spain, France, Germany and England, usually in the form of processed and dried lichen.

Orchil is prepared by steeping the right species of lichen in an ammoniacal solution for two to three weeks, sometimes longer. A slightly later recipe for preparing orchil, from the Plictho de L'Arte de Tintori, written by G. V. Rosetti in the 1540s, is as follows:

> "Take one pound of the Orselle of the Levant, very clean; moisten it with a little urine; add to this sal-ammoniac, sal-gemmae ("sel terrestre et fossile"), and saltpetre, of each two ounces; pound them well, mix them together, and let them remain so during twelve days, stirring them twice a day; and then to keep the herb constantly moist, add a little urine, and in this situation let it remain eight days longer, continuing to stir it; you afterwards add a pound and a half of pot-ash well pounded, and a pint and a half of stale urine. Let it remain still eight days longer, stirring it as usual; after which you add the same quantity of urine, and at the expiration of five or six days, two drachms of arsenic; it will then be fit for use."

Meanwhile, in the "backwaters" of medieval Europe, notably Scandinavia and northern Britain, orchil-producing lichens were abundant. Was the use of them known? Could the Vikings have worn fuchsia? Indications are that they could. A red lichen dye called "lacmus" was being exported from Norway to Germany and England by the early fourteenth century. Annette Kok in her history of orchil dyes also speculates that the practice of making and using orchil never quite died out in Gaul. Federico Oricellari was certainly not the only "discoverer" of orchil dye, but he and his fellow Italians get the credit as its great popularizers.

At the time I was experimenting with these dyes, I knew very little of their history, except that they were obscure and little known (a good recommendation to the curious). The dyeing resource books I had were the *Brooklyn Botanic Garden's Dye Plants and Dyeing* (a pleasant, but far from systematic collection of articles) and Eileen M. Bolton's *Lichens for Vegetable Dyeing*, first published by Studio Books, London, in 1960. (I've seen the same book mentioned with at least two later publishers and dates.) Reading Bolton's account of these dyes fascinated me.

I had been hired by a summer camp in northern Maine as "staff naturalist," and had brought these books with me. Bolton gives a very simple description of the orchil process, merely directing that the lichen be steeped (people usually say "fermented," though no bacterial fermentation actually takes place) in a 1:2 ratio of household ammonia and water, just sufficient to create a stirrable "slurry" of the soaked lichen.

I was intrigued by the process, and by the rather brief account she gave of the dye's history, so along with trying a number of other dyes, I started two batches of orchil. What caught my eye particularly was the statement that lichens in the genus Umbilicaria could be used, since these were extremely common on the granite boulders in and around camp.

At this point it's a bit difficult to say exactly what species I used. Bolton's book is British, and while many genera in the northeast U.S. are the same, the species are likely to be different. And while her watercolor illustrations of lichens are lovely, they are not detailed enough for precise identification. The likeliest candidates are Umbilicaria mammulata, a common species with a smooth top, and U. papulosa, whose surface is covered with raised pustules. It is not uncommon to find several species of Umbilicaria growing together, and in fact I did process the two types separately.

I was limited in what supplies I could obtain and what procedures I could use. In particular, since I was borrowing the camp kitchen's cooking facilities, it was clear that I could only use common food substances and cleansers that were culturally acceptable for use in pots that would later contain food. Household ammonia was fine; stale urine, the traditional ammonia source, would not have been.

We were also about an hour away from the nearest grocery stores (and 15 miles from the nearest telephone), and limited to whatever the stores in a small lumber-mill town would carry. I was able to obtain ammonia, vinegar, glass jars, and skeins of cheap white commercial wool worsted. With a little more difficulty, I was also able to get a quarter-pound of ammonium alum through the pharmacy in town. I didn't even consider using tin or other metallic mordants, not only because of supply problems but because of their toxicity.

While I waited for the orchil to mature, I pursued other dye projects. I was able to get quite a variety of shades by the conventional boiling-water process from such sources as alder bark, red maple, goldenrod, sumac (Rhus sp.), yarrow, St. Johnswort, three shades from blueberries, seven shades ranging from rust to greenish from onion skins, and two shades of a very attractive mellow tan from the lichen Lobaria sp. processed in boiling water. (This is another genus mentioned in Bolton's book.) My sources mention alder, sumac, yarrow, St. Johnswort and Lobaria among the dyes used in Europe in our period.

After about three weeks, the first batch of orchil was ready to use. I produced five shades ranging from pale pink to a startlingly bright fuchsia by simmering yarn in the dye from 5 minutes to an hour and a half. Orchil is one of the relatively few dyes that does not need a mordant, although mordants can be used with it. I've since found out that other dyers have experimented with leaving skeins in the dye bath overnight, or even adding them to the ammonia steep at the very beginning of the process, and produced even brighter shades.

Since the orchil dyes are chemically related to litmus (as in litmus paper), they are supposed to change color if placed in an acid or alkaline solution. I was able to "push" the color toward red by mordanting the yarn with vinegar (acid) before dyeing. However I could see little if any difference in the sample to which I added washing soda (alkaline) in the dye bath. I am pleased to see at least one other dyer (Casselman) has had this same experience.

The second batch, which was from the "pustulose" type of lichen, was smaller, took longer to show color, and was of a noticeably different shade, more reddish and brownish. This could be either because of the difference in species or some difference in processing. Unlike indigo, which is also processed in an ammonia or urine bath, orchil requires oxygen in the bath for the color to develop. It's possible that the second batch wasn't stirred enough, which would produce less brilliant shades.

Orchil when properly processed produces some truly amazing shades of color. Unfortunately, while orchil is at least passably fast to washing, it fades rapidly in sunlight – more rapidly even than logwood, whose use was banned in England at one point because of its fugitive nature. If you look carefully at the brightest skein of Orchil, you will see that the color on the outside is slightly lighter and redder, and less bright, than the color deep in the middle of the skein where light exposure has been less. These skeins have been kept in dark storage for most of their life and still retain most of their original color.

I should also note that I was careful to take only enough lichen for two small batches of dye, just enough to produce samples, and to take it from inconspicuous places. Lichens grow slowly and take anywhere from ten to 100 years to re-grow when they are harvested. Umbilicaria is among the faster-growing lichens, but I would still only do this as a demonstration project and would not recommend gathering any lichen in large quantities or without good reason.

Several writers note that despite its fugitive nature, orchil remained popular as a supplemental dye for a very long time. It has been used to add depth, richness, "lustre" and brilliance to the duller purple shades produced with red and blue dyes. Annette Kok in her article in the Lichenologist says, "It is not only the shade but the quality of the color which seems to be unique; these dyes actually impart a softness and lustre both to silk and wool, whereas many dyes from other sources and their associated processes of mordanting are harmful to these fibres and have to be used with the greatest care so as not to produce harsh cloth and lustreless colors."

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Orchil is a purple lichen dye widely used since ancient times in place of the more expensive Tyrian purple and therefore known as the â€˜poor person's purpleâ€™. Unlike the latter, orchil has a low lightfastness, and in ancient works, it is often faded. Orchil is a complex mixture of different coloured compounds, and they all share a common structure resulting from phenoxazone with a number of different substituents. The resulting insoluble purple solid is known as French purple, a fast lichen dye that was much more stable than other lichen dyes. Gallery[edit]. Î±-amino orcein. Î±-hydroxy orcein. Î²-amino orcein. Î²-hydroxy orcein. Î²-amino orceinimine.Â Orchil, the poor person's purple. v. t. e. Dyeing. Techniques. Batik. Orchil is a purple lichen dye widely used since ancient times in place of the more expensive Tyrian purple and therefore known as the â€˜poor person's purpleâ€™. Unlike the latter, orchil has a low lightfastness, and in ancient works, it is oftenâ€¦ CONTINUE READING. View via Publisher. Save to Library. Create Alert. Cite. Launch Research Feed. Colours and Dyes for 14th and 15th Century Clothing Tyrian Purple Orchil, the Poor Person's Purple by Chris Laning To Dye a Saffron Color: Experiements in dyeing an Irish Leine, by Kass McGann. Medieval Textiles, issue 29. Articles on dyeing with weld, woad and madder Color and Dyes in Medieval Rus Madder Dyeing: Medieval Textiles Dyes of Antiquity: Madder Root Madder: A Most Medieval Dyestuff Cold-dyeing Wool with Madder Dyeing with Safflower Lichen Purples Dyeing with Indigo: A Natural Fermentation Vat The recipe described here is authentic to the 16th century; dyeing blue with madder + At the other end of the financial (if not color) spectrum was the Tyrian, or royal, purple derived from the mucous gland of the murex, a mollusk. Not surprisingly, harvesting this color?a pound of dye required four million mollusks?was a labor-intensive, time-consuming, and smelly process. (The ancient Phoenician city of Tyre, from which the dye gets its name, was known for its reek of rotting mollusks.)Â Hope for the common people lay in the lichen orchil, the poor person's purple, which produced a purplish hue after a two- to three-week ammonia immersion. Red. Reds were mordant dyes; they required the use of a fixative to create an insoluble color that would remain true.