

SIGRID HOLMWOOD

Introduction to the dyed calicos

Plant dyes are something that surround us without us even knowing. There are many good sources of yellow especially that can be foraged from verges, often they are considered weeds. This fits well with one idea of the commons or commoning—harvesting sustainably from plants that grow wild or semi-wild alongside us. Plants that nobody owns. However, some colours, such as red, and especially blue are harder to find and commanded a high price. As a result, the search for good dye plants was also a big driver of colonialism in the dawn of capitalism. The idea of “the commons” was also used to justify colonialism – that these natural resources belonged to everyone, and if indigenous people did not seem to be making good use of the land, then it could be taken away from them. In the process, non-European knowledge of plant dyes was at times appropriated and at other times irradiated.

Printed calicos from India using plant dyes and mordants on cotton fabric were a particularly popular colonial commodity in Europe from the seventeenth century, until many countries introduced import bans to support local industries during the eighteenth century. These European calico printers appropriated the Indian techniques, and used plant dyes from around the globe such as indigo cultivated with enslaved labour in the Americas, and later India, under the plantation system; and brazilwood and logwood from the rainforests of Central and South America.

The printed calicos displayed in the Wagon Walk tell these entwined global histories.

Headscarf in Cannibal and Witches pattern, 2020 [top of case]

Patterned calicos formed an integral part of regional peasant costumes in many Eastern European and Scandinavian countries. They were used for headscarves, aprons, and linings for bodices – thereby demonstrating that the figure of the peasant that has been used to construct ideas of nationhood in Europe, was in fact implicated in global colonial forces. See below for details of the Cannibal and Witches pattern.

Media: Brazilwood, madder, and logwood, printed on cotton lawn.



Woad leaves, balls, and dyed wool (MERL 2018/33-37) [bottom of case]

These woad samples were collected by Jamieson Boyd Hurry from the last working woad mill in Parson's Drove, Wisbech. Woad was grown in East Anglia into the twentieth century where the last working rural production was based. The introduction of synthetic indigo made from cold tar at the turn of the twentieth century brought woad cultivation to an end, but it had already been declining for centuries due to the importation of tropical indigo from colonial plantations. The samples were donated to the museum by Professor Philip John, of the University of Reading, who used them as a part of the SPINDIGO research project (2000–2004). The EU-funded SPINDIGO project researched the possibility of cultivating indigo bearing plants in Europe (specifically woad and Japanese indigo) with a view to introducing a more environmentally sustainable source of indigo. This suggests that in a post-petroleum age we may see a return to plant dyes for colour.

Woad, Ch'oj, and Chains (blue and red), 2021

Indigo is the best and most lightfast of plant dyes. In Europe the only native plant that contains indigo is woad. Woad was a very early cash crop, making centres of production in Toulouse and Thuringia very wealthy. The cultivation of woad in Europe declined as indigo from colonial plantations of tropical plants in the Americas and then India began to be imported. The indigo plantations in the Caribbean and the Americas used forced indigenous labour and then enslaved Africans. At the same time, a remarkable Mesoamerican indigenous technology for making a turquoise pigment from the local indigo plant (Ch'oj in Mayan) was lost due to colonialism. Maya blue, as it is now known, has been through a process of rediscovery, and recently the Mayan teacher and artist, Luis Manuel May Ku has brought the practice back to the Mayan people.



Media: Maya Blue Ch'oj made by Luis Manuel May Ku, brazilwood, madder, and buckthorn berries printed on calico

Cannibals and Witches, 2021

The image of the witches comes from *The History of Witches and Wizards: Giving a True Account of All Their Tryals in England, Scotland, Sweedland, France, and New England ... Collected ... By W. P. (1720)*. The contemporary writer, Silvia Federici argues that the Great Witch Hunts in Europe were more about elites asserting their power rather than lingering vestiges of medieval thought. She points out that tactics used in European Witch Hunts were exported to colonies in order to suppress indigenous religions and ways of life.



The image of the cannibals come from Theodor de Bry's publication about the European voyages to the Americas published at the end of the sixteenth century. This is the European vision of Tupi Amazonian Amerindians as savage cannibals. The Tupi were involved in felling swathes of Brazilwood in return for metal tools for the European dye industry.

Media: Brazilwood, madder roots, and buckthorn berries, printed on calico.

Instruments of Torture, 2021

This pattern depicts instruments of torture used in the Great Witch Hunts in Europe. The feminist writer Silvia Federici argues that the Great Witch Hunts in Europe were a tool to appropriate and control women's sexuality and reproductive capacities. Peasant women would have had an extensive knowledge of plants that could be used as contraceptives and abortifacients, but this became illegalised. Women's bodies were essentially enclosed and made the private property of men. The madder roots used to print the background colour were once used as an abortifacient, sometimes chopped up and added to beer. There is reference to the practice in a Norse herbal from 1500, the *Medicalia Læknisfrøði*.



Media: Caput mortum and madder roots printed on calico

Chopping and Rasping, 2020

Brazilwood is a tree which produces a red dye, and which gave the country of Brazil its name. The birth of the brazilwood trade in the sixteenth century is a devastating example of bioprospecting which exploited the Tupi Amerindians, who were depicted as savage cannibals by Europeans and decimated the brazilwood trees leaving it endangered to this day. Meanwhile, in Europe brazilwood was very much implicated in the disciplining of a new proletariat. The displacement of peasants in the wake of agrarian capitalism meant that many moved to urban centres and became beggars and vagrants. In response, the authorities in Amsterdam, set up a new form of prison that used forced labour to discipline and reform these vagrants of rural origin. In 1596 the Rasp- and Spinn-huis was established, and functioned until 1815. Here, male inmates were set to work rasping brazilwood for the dye and pigment industry, while women were forced to spin and weave textiles.

Media: Brazilwood printed on calico



Woad, Ch'oj, and Chains (Blue and pink), 2021

For details of the pattern and dyes used in this printed calico see the blue and red patterned calico listed above.

Media: Maya Blue Ch'oj made by Luis Manuel May Ku, Brazilwood and madder printed on calico



Burning Books, 2021

This pattern is based on an image of the burning of heretical books from the fifteenth-century Nuremberg Chronicle. It stands in for the destruction of all sorts of knowledge through the enclosures of land and colonialism – European peasant folk knowledge and indigenous knowledge. It refers not only to the burning of European heretical books, but also witches and indigenous codices.

Media: Brazilwood, madder, buckthorn berries, and Maya blue Ch'oj made by Luis Manuel May Ku, printed on calico.



Bones (red and yellow) / Bones (Blue), 2021

A wide-spread aspect of Amerindian and Native American thinking is that personhood extends to all beings beyond just human beings. As the Brazilian anthropologist Eduardo Viveiros de Castro puts it, humanity is extended to all living beings and “**When everything is human, the human becomes a wholly other thing.**” It also implies that all our relationships with other beings, including plants, have aspects of cannibalism. This in turn means that using plants is taken very seriously in terms of reciprocity and sustainability.

Media (red and yellow): Brazilwood, madder, and buckthorn berries printed on calico

Media (blue): Maya blue Ch'oj made by Luis Manuel May Ku and green umber printed on calico



Mills Archive records (not on display)

During her time exploring collections material in Reading, Sigrid also carried out research into indigo and woad processing using the archival holdings of the Mills Archive, which is located near to The MERL. The following cuttings speak to the role of mills and milling in these contexts.

The following pages feature facsimilies of some of the cuttings and information that she found. We are grateful to our colleagues at the [Mills Archive](#) for permission to reproduce these items here.

Ill. Brev. J. F. P. 9.12.39.

THE LAST OF THE WOAD MILLS.

IN 1932, the last crop of woad, the plant that is known in all nurseries (probably quite erroneously) as the source of the national dress of the ancient Britons, was grown at Skirbeck, Boston, Lincolnshire. It was the last crop to be grown in the world, after centuries of cultivation throughout western Europe. Woad was used first as a dye, and later as a mordant for rendering indigo permanent, but its use was expensive and, finally, was confined to the preparation of cloth for blue Government uniforms. The economies enforced by the financial crisis of 1931 are given as the cause of its abandonment. Sown in April, it was transplanted in November and was ready for cropping in the following August, when it resembled spinach. It was cropped by hand into baskets, and thence loaded into carts for transportation to the mill. The type of cart used was of peculiar design, being in effect a waggon body on two wheels, the unusual proportions being due to the fact that the crop was light in proportion to its bulk, and the two-wheeled form, to the necessity for tipping, to shoot the leaves into the mill. Originally, woad-growing was undertaken on hired land; and, as it exhausted the land rapidly, only the best was hired, and periodically the growers, the “wadmen” and the mills were transferred to “pastures new.” About 150 years ago, however, when knowledge spread of the advantages of rotation of crops, permanent farms and mills were established; until, by 1857, the last of the peripatetic woad mills came to rest finally at Parson Drove, in the Cambridgeshire Fens. Here it was operated until it was pulled down in 1914.

MORE ABOUT WOAD.

The Seat of the Industry in Lincs.

HOW IT IS MILLED

FOR HOME AND ABROAD.

[BY OUR SPECIAL COMMISSIONER.]

ON the great Fen table-land between Spalding and Boston and within bowshot of Algarkirk Station, boldly stands a feature on the landscape, a lofty, steam-power Woad Mill and Works, the whited hoods of the ventilators catching the eye like the surf on some hidden shoals as one gazes far out to sea. The steam from the exhaust puffs out aggressively and in volume until the breezes across these open Fens strike it above the sheltering roof. It appears in a mighty hurry to get free, so different to the leisureliness of the surroundings, for around everything is methodical even to dullness. The horses attached to specially-made capacious carts for fetching up the woad from the fields around seem to have a well-groomed, contented, come-day-go-day air about them and their movements; the gaily tumbrilling mill beneath the great sun goes its round diurnally at a pace which is most aggravatingly deliberate; the workmen and workwomen whose progenitors have manipulated the "wad" for successive generations, almost dreamily feed the circular juggernaut which crushes the little green plant into a pulp at the rate of many loads a day, a life-size illustration of which plant I give (just as I cut it with my penknife from the field). It is only when the men and women bending at the huge vat of chopped-spinach-like stuff press it up into spheres the size of Dutch cheeses, that one sees any pretence at briskness in this somniferous Land of Woad. This is not a reflection for a moment on the industry of those engaged in the manufacture of this "fixer" of dyes—for it is not used as a dye, but to "fix" the indigo colour in seafaring serges for our Naval men and such like, so that the colour shall stand. They are a smart lot, they know their work and how to do it effectively without fuss and bustle, and the output in a season is something extraordinary.

"And pays?" "Oh, yes," said Mr. Henry Bates, of Fletton Avenue, Peterborough, shrewd business man, agriculturist, churchwarden, and manager for the Nusseys, who

are fabric makers and dyers, Yorkshire way, the proprietors of the mill.

"As long as anyone has the land and the equipment, and does the growing and manufacture regularly, there is money to be made out of it; but if one had to put up works and get the wad grown for him, there would not be much on the profit side. There are so few of us at it, and thus it pays, but the demand is so small, though continuous, that it does not tempt speculators to go in for it against the established mills."

In further conversation with my excellent guide, whose courtness and amiability are grateful, I learned that at Algarkirk, of the 300 acres of land devoted to the growth of woad or wad, only 20 acres are in cultivation under the wad plant. It is so greedy and exhaustive to the soil that the same land does not come into use again for the plant for fully five years.

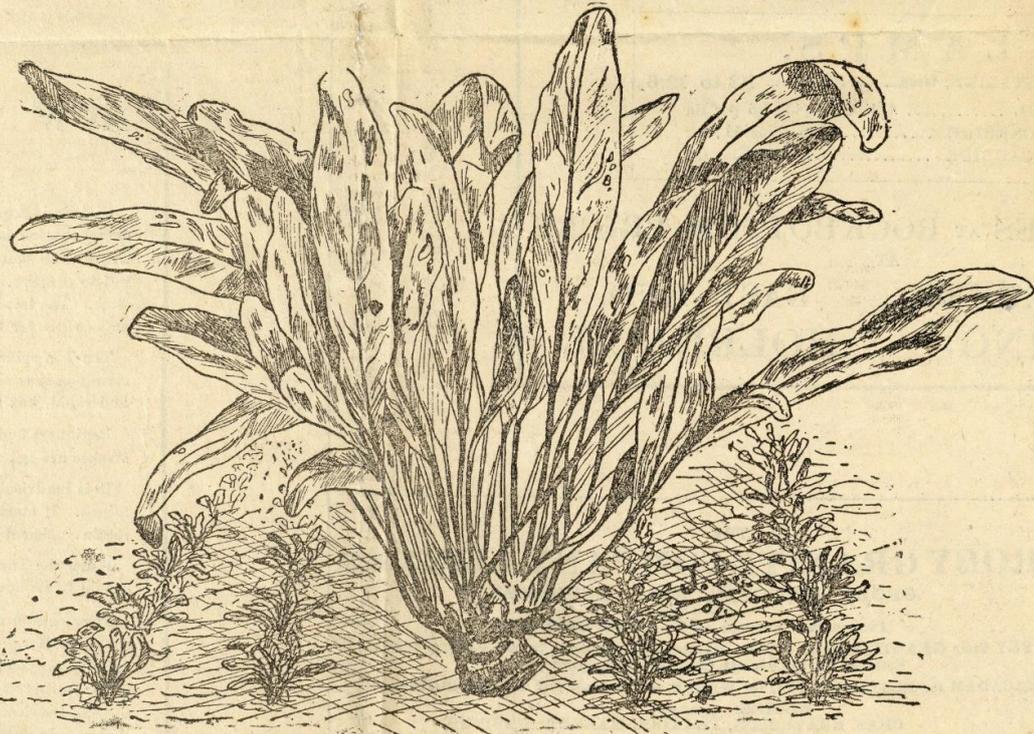
Successive sowings of the seed are made from the 6th April to the 24th May in each year; in August the first crop is pinched off from the plant, leaving the root to sprout out afresh; but at the later harvest of the woad plant now being carried it is cut off at the collar—in fact, just as it is seen in the excellent illustration herewith. It takes thousands and thousands of these to make a cart-load, and they are forked on to the elevated circular "tread" of oak-planking in front of the approaching rollers, which really are sets of steel bars or knives fixed around eccentric drums, which trundle over the foliage until the little plant is made into a plastic mass. These rollers I illustrated in the previous article. Then the mass is collected and shot into a large vat, the superfluous moisture is drained into a catch pit and with sleeves rolled up half-a-dozen or so of men and women press it into the balls, thence they are taken to dry and placed on lofty racks, which catch the breeze but are sheltered from the rain. In a short time they become like a ballish shaped piece of clunch, or the upper spit of Fen peat. When quite dry and looking more like dried cowdung than anything else, they are taken to a "couch"—a shed with a brick floor—and here the shrunken Dutch cheeses are broken into small pieces. Meanwhile the surroundings reek with ammonia which escapes from this dry-as-a-bone mass of woad, now quite beyond recognition. It is rammed into barrels—some I saw contained 20cwt.—and is then ready for the dyer. When the Indigo vats of the dyers are ready for use, portions of this dirty looking, peaty stuff are tumbled into it and the indigo colour will not work out of the fabric. Without

it, it would, despite the use of chemical substitutes which are never wholly satisfactory. Curious that this pretty little plant of our Island should play such an important part in our Navy and in the commerce of the world!

It has always been a perplexity as to how the industry of woad growing and producing came to be settled in these parts, when after all the land is not overwhelmingly adapted to it—a harsher and heavier soil being its choice. The same applies to the ancient little horse power mill at Parso Drove, between Peterborough and Wisbech recently illustrated and described in these columns, and to the other mill known to exist nearer Boston. In the present case it is partly accounted for by the fact that the Nusseys were interested in land at Algarkirk and were also dyers and fabric makers in Yorkshire, where their mills still are and where great quantities of the Lincolnshire-grown woad are used.

The plant appears to be a hardy annual, and a large patch sown in May will be left to flower and to seed next summer. The flower does not unressemble mustard, but is paler, the seed is produced on straw like oats, and is a very tiny model of a grain of wheat enveloped in a flat husk or case, which is in itself a deep indigo blue, almost approaching black. This seems the only notification of the colour with which the name of woad has been identified in these islands since the days of the Ancient British, who dyed their bodies with a pigment produced from it and the precipitation of which has been recently recovered by Dr. Plowright, of Lynn, as minutely described in the first article.

The Woad makers of Algarkirk are a colony to themselves, inhabiting cottages owned by the firm, are an industrious band, and the occupation was followed by the grandfathers of the present-day workers, and Mr. Bates pointed out father and son still undertaking the work. They are employed the year round, if not in the mill then in the cultivation of the plant, which requires good farming, careful attention, and keeping particularly free from weeds. Growing close to the ground as it does, a woad crop looks a most remarkable one; it is in view of it being strange to the eyes of many of our readers that I have taken this opportunity of familiarising them with it and with the remarkably simple methods which surround it in its raw and manufactured state.



A PLANT OF WOAD OR "WAD" (NATURAL SIZE) JUST BEFORE MILLING.

THE LAST OF THE WOAD MILLS.

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Inspired by Dr. Hurry's book, *The Woad Plant and Its Dye*, Mr. H. O. Clark and Mr. Rex Wailes recently investigated the construction and operation of the two remaining mills, situated respectively at Skirbeck, Boston, and at Algarkirk, in the same district. In spite of their great interest, however, neither of these mills was typical of the old woad mills, both being housed in permanent buildings and designed for operation by engine; but it was found that, in the village of Parson Drove, there lived a Mr. Burnham, since deceased, who had worked at the woad mill for some forty years. With his help, the puzzling and often contradictory information about the mill, that had been gleaned from various sources, was straightened out, and additional information and illustrations were made available.

The mechanism of the mill consisted of three large tapered crushing rollers, mounted on wooden axles which were attached to a vertical rotating shaft. Each roller had two wooden flanges, connected by a number of iron bars parallel with the axis, and as the rollers ran round a circular stone-paved track in the floor, the leaves were shovelled into their path and crushed. After about an hour the leaves were removed, kneaded into balls, and dried by being stored for three or four weeks in open sheds. They were subsequently re-crushed, and shipped off in casks to the buyers. Each roller was drawn by a horse, which walked round on a track raised above the grinding floor, the relative positions of the rollers to each other, about the vertical shaft, being fixed.

Following the publication of the results of these researches,* the Science Museum, South Kensington,

* "The Preparation of Woad in England," by Rex Wailes, M.I.Mech.E., *Trans. Newcomen Society*, vol. xvi, page 69 (1935-36).

was approached by Mr. Adrian-Valance, of the Hinaidi Club, Baghdad, who offered to pay for the construction of a model woad mill, to be placed in the museum. The order was placed with Messrs. George Wailes and Company, Limited, Euston-road, London, N.W.1, who offered to make a model which should be a scale reconstruction of the Parson Drove mill. Two views of the model, from photographs taken when it was nearing completion, are shown in the accompanying Figs. 1 and 2.

Certain fundamental measurements were known, and with these and the aid of photographs and a small-scale block model, an outline scale drawing was prepared in collaboration with the staff of the Science Museum. One of the first difficulties was to copy the irregularity of the wooden framework of the building. It was found impracticable to do this in the case of the roof, although, in other parts of the structure, peeled twigs were used. The turf walls were successfully copied, but the longest and hardest task was the thatching of the roof. Eventually, this was accomplished by using a natural fibre. The waist coat was sewn on in the orthodox manner, but the over coat had to be stuck on, as it was found that scale-model spicks would not hold. It is believed that this is the first successful attempt in England to produce a scale-model thatched building. The woad cart, to be seen in Fig. 00, is a copy of one of the two remaining at Skirbeck, and is correct in every detail, including the shade of the paint work. The iron fittings are all workable and the wheels are built up in the correct fashion with naves, spokes and felloes, and with tyres shrunk on. At present the model is in storage, the Science Museum being closed on account of the war; but, when public exhibition is again practicable, it will certainly be held to reflect credit on all who have been concerned in its production, and especially on the craftsmen who carried out the work with such painstaking attention to every detail.