

## OF DYEING AS AN ART

DYEING is a very ancient art ; from the earliest times of the ancient civilisations till within about forty years ago there had been no essential change in it, and not much change of any kind. Up to the time of the discovery of the process of Prussian-blue dyeing in about 1810 (it was known as a pigment thirty or forty years earlier), the only changes in the art were the result of the introduction of the American insect dye (cochineal), which gradually superseded the European one (kermes), and the American wood-dyes now known as

logwood and Brazil-wood : the latter differs little from the Asiatic and African Red Saunders, and other red dye-woods ; the former has cheapened and worsened black-dyeing, in so far as it has taken the place of the indigo-vat as a basis. The American quercitron bark gives us also a useful additional yellow dye.

These changes, and one or two others, however, did little towards revolutionising the art ; that revolution was left for our own days, and resulted from the discovery of what are known as the Aniline dyes, deduced by a long process from the plants of the coal-measures. Of these dyes it must be enough to say that their discovery, while conferring the greatest honour on the abstract science of chemistry, and while doing great service to capitalists in their hunt after profits, has terribly injured the art of dyeing, and for the general public has nearly destroyed

Of Dyeing it as an art. Henceforward there is an  
as an Art. absolute divorce between the *commercial process* and the *art* of dyeing. Any one wanting to produce dyed textiles with any artistic quality in them must entirely forgo the modern and commercial methods in favour of those which are at least as old as Pliny, who speaks of them as being old in his time.

Now, in order to dye textiles in patterns or otherwise, we need four colours to start with—to wit, blue, red, yellow, and brown ; green, purple, black, and all intermediate shades can be made from a mixture of these colours.

Blue is given us by indigo and woad, which do not differ in colour in the least, their chemical product being the same. Woad may be called northern indigo ; and indigo tropical or sub-tropical woad.

Note that until the introduction of Prussian blue about 1810 there was *no*

other blue dye except this indigotine that could be called a dye; the other blue dyes were mere stains which would not bear the sun for more than a few days.

Of Dyeing  
as an Art.

Red is yielded by the insect dyes kermes, lac-dye, and cochineal, and by the vegetable dye madder. Of these, kermes is the king; brighter than madder and at once more permanent and more beautiful than cochineal: the latter on an aluminous basis gives a rather cold crimson, and on a tin basis a rather hot scarlet (*e.g.* the dress-coat of a line officer). Madder yields on wool a deep-toned blood-red, somewhat bricky and tending to scarlet. On cotton and linen, all imaginable shades of red according to the process. It is not of much use in dyeing silk, which it is apt to "blind"; *i.e.* it takes off the gloss. Lac-dye gives a hot and not pleasant scarlet, as may be noted in a private militiaman's coat. The French

Of Dyeing as an Art. liners' trousers, by the way, are, or were, dyed with madder, so that their countrymen sometimes call them the "Madder-wearers"; but their cloth is somewhat too cheaply dyed to do credit to the drysaltery.

Besides these permanent red dyes there are others produced from woods, called in the Middle Ages by the general name of "Brazil"; whence the name of the American country, because the conquerors found so much dyeing-wood growing there. Some of these wood-dyes are very beautiful in colour; but unluckily they are none of them permanent, as you may see by examining the beautiful stuffs of the thirteenth and fourteenth centuries at the South Kensington Museum, in which you will scarcely find any red, but plenty of fawn-colour, which is in fact the wood-red of 500 years ago thus faded. If you turn from them to the Gothic tapestries,

and note the reds in them, you will have the measure of the relative permanence of kermes and "Brazil," the tapestry reds being all dyed with kermes, and still retaining the greater part of their colour. The mediæval dyers must be partly excused, however, because "Brazil" is especially a silk dye, kermes sharing somewhat in the ill qualities of madder for silk; though I have dyed silk in kermes and got very beautiful and powerful colours by means of it.

Of Dyeing  
as an Art.

Yellow dyes are chiefly given us by weld (sometimes called wild mignonette), quercitron bark (above mentioned), and old fustic, an American dye-wood. Of these weld is much the prettiest, and is the yellow silk dye *par excellence*, though it dyes wool well enough. But yellow dyes are the commonest to be met with in nature, and our fields and hedgerows bear plenty of greening-weeds, as our

Of Dyeing as an Art. forefathers called them, since they used them chiefly for greening blue woollen cloth ; for, as you may well believe, they, being good colourists, had no great taste for yellow woollen stuff. Dyers'-broom, saw-wort, the twigs of the poplar, the osier, and the birch, heather, broom, flowers and twigs, will all of them give yellows of more or less permanence. Of these I have tried poplar and osier twigs, which both gave a strong yellow, but the former not a very permanent one.

Speaking generally, yellow dyes are the least permanent of all, as once more you may see by looking at an old tapestry, in which the greens have always faded more than the reds or blues ; the best yellow dyes, however, lose only their brighter shade, the "lemon" colour, and leave a residuum of brownish yellow, which still makes a kind of a green over the blue.

Brown is best got from the roots of the walnut tree, or in their default from the green husks of the nuts. This material is especially best for "saddening," as the old dyers used to call it. The best and most enduring blacks also were done with this simple dye-stuff, the goods being first dyed in the indigo or woad-vat till they were a very dark blue and then browned into black by means of the walnut-root. Catechu, the inspissated juice of a plant or plants, which comes to us from India, also gives rich and useful permanent browns of various shades.

Of Dyeing  
as an Art.

Green is obtained by dyeing a blue of the required shade in the indigo-vat, and then greening it with a good yellow dye, adding what else may be necessary (as, *e.g.*, madder) to modify the colour according to taste.

Purple is got by blueing in the indigo-vat, and afterwards by a bath of cochineal,



Of Dyeing or kermes, or madder ; all intermediate  
as an Art. shades of claret and murrey and russet  
can be got by these drugs helped out by  
“saddening.”

Black, as aforesaid, is best made by dyeing dark blue wool with brown ; and walnut is better than iron for the brown part, because the iron-brown is apt to rot the fibre ; as once more you will see in some pieces of old tapestry or old Persian carpets, where the black is quite perished, or at least in the case of the carpet gone down to the knots. All intermediate shades can, as aforesaid, be got by the blending of these prime colours, or by using weak baths of them. For instance, all shades of flesh colour can be got by means of weak baths of madder and walnut “saddening” ; madder or cochineal mixed with weld gives us orange, and with saddening all imaginable shades between yellow and red, including the

ambers, maize-colour, etc. The crimsons in Gothic tapestries must have been got by dyeing kermes over pale shades of blue, since the crimson red-dye, cochineal, had not yet come to Europe.

Of Dyeing  
as an Art.

A word or two (entirely unscientific) about the processes of this old-fashioned or artistic dyeing.

In the first place, all *dyes* must be soluble colours, differing in this respect from *pigments*; most of which are insoluble, and are only very finely divided, as, *e.g.*, ultramarine, umber, terre-verte.

Next, dyes may be divided into those which need a mordant and those which do not; or, as the old chemist Bancroft very conveniently expresses it, into *adjective* and *substantive* dyes.

Indigo is the great substantive dye: the indigo has to be de-oxidised and thereby made soluble, in which state it loses its blue colour in proportion as

Of Dyeing the solution is complete ; the goods are  
as an Art. plunged into this solution and worked  
in it "between two waters," as the phrase  
goes, and when exposed to the air the  
indigo they have got on them is swiftly  
oxidised, and once more becomes in-  
soluble. This process is repeated till the  
required shade is got. All shades of  
blue can be got by this means, from the  
pale "watchet," as our forefathers called  
it, up to the blue which the eighteenth-  
century French dyers called "Bleu  
d'enfer." Navy Blue is the politer name  
for it to-day in England. I must add  
that, though this seems an easy process,  
the setting of the blue-vat is a ticklish  
job, and requires, I should say, more ex-  
perience than any other dyeing process.

The brown dyes, walnut and catechu,  
need no mordant, and are substantive  
dyes; some of the yellows also can be  
dyed without mordant, but are much

improved by it. The red dyes, kermes Of Dyeing  
and madder, and the yellow dye weld, as an Art.  
are especially mordant or adjective dyes :  
they are all dyed on an aluminous basis.  
To put the matter plainly, the goods are  
worked in a solution of alum (usually  
with a little acid added), and after an  
interval of a day or two (ageing) are  
dyed in a bath of the dissolved dye-stuff.

A lake is thus formed on the fibre which  
is in most cases very durable. The  
effect of this "mordanting" of the fibre  
is clearest seen in the maddering of  
printed cotton goods, which are first  
printed with aluminous mordants of  
various degrees of strength (or with iron  
if black is needed, or a mixture of iron  
with alumina for purple), and then dyed  
wholesale in the madder-beck : the result  
being that the parts which have been  
mordanted come out various shades of  
red, etc., according to the strength or

Of Dyeing as an Art. composition of the mordant, while the unmordanted parts remain a dirty pink, which has to be "cleared" into white by soaping and exposure to the sun and air; which process both brightens and fixes the dyed parts.

Pliny saw this going on in Egypt, and it puzzled him very much, that a cloth dyed in one colour should come out coloured diversely.

That reminds me to say a word on the fish-dye of the ancients: it was a substantive dye and behaved somewhat as indigo. It was very permanent. The colour was a real purple in the modern sense of the word, *i.e.* a colour or shades of a colour between red and blue. The real Byzantine books which are written on purple vellum give you some, at least, of its shades. The ancients, you must remember, used words for colours in a way that seems vague to us, because they

were generally thinking of the tone rather than the *tint*. When they wanted to *specify* a red dye they would not use the word *purpureus*, but *coccineus*, *i.e.* scarlet of kermes. Of Dyeing  
as an Art.

The art of dyeing, I am bound to say, is a difficult one, needing for its practice a good craftsman, with plenty of experience. Matching a colour by means of it is an agreeable but somewhat anxious game to play.

As to the artistic value of these dye-stuffs, most of which, together with the necessary mordant alumina, the world discovered in early times (I mean early *historical* times), I must tell you that they all make in their simplest forms beautiful colours; they need no muddling into artistic usefulness, when you need your colours bright (as I hope you usually do), and they can be modified and toned without dirtying, as the foul

Of Dyeing blotches of the capitalist dyer cannot be.  
as an Art. Like all dyes, they are not eternal ; the sun in lighting them and beautifying them consumes them ; yet gradually, and for the most part kindly, as (to use my example for the last time in this paper) you will see if you look at the Gothic tapestries in the drawing-room at Hampton Court. These colours in fading still remain beautiful, and never, even after long wear, pass into nothingness, through that stage of livid ugliness which distinguishes the commercial dyes as nuisances, even more than their short and by no means merry life.

I may also note that no textiles dyed blue or green, otherwise than by indigo, keep an agreeable colour by candle-light : many quite bright greens turning into sheer drab. A fashionable blue which simulates indigo turns into a slaty purple by candle-light ; and Prussian blues are

also much damaged by it. I except from *Of Dyeing*  
this condemnation a commercial green <sup>as an Art</sup>  
known as gas-green, which is as abomin-  
able as its name, both by daylight and  
gaslight, and indeed one would almost  
expect it to make unlighted midnight  
hideous.

WILLIAM MORRIS.