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## Art. VII.—On the Yellow Colour of the Barberry, and its Uses in the Arts

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Journal of the Royal Asiatic Society of Great Britain & Ireland / Volume 7 / Issue 13  
/ January 1843, pp 74 - 77

DOI: 10.1017/S0035869X00155686, Published online: 14 March 2011

**Link to this article:** [http://journals.cambridge.org/  
abstract\\_S0035869X00155686](http://journals.cambridge.org/abstract_S0035869X00155686)

### How to cite this article:

E. Solly (1843). Art. VII.—On the Yellow Colour of the Barberry, and its Uses in the Arts. *Journal of the Royal Asiatic Society of Great Britain & Ireland*, 7, pp 74-77 doi:10.1017/S0035869X00155686

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ART. VII.—*On the Yellow Colour of the Barberry, and its Uses in the Arts.* By E. SOLLY, Esq.

HAVING learnt, whilst engaged in inquiries amongst manufacturers, and other practical men, that the root of the common Barberry, or *Berberis vulgaris*, was an article of increasing value in the arts, on account of the fine yellow colour which it contains, and that a new source of this dye stuff was rather a desideratum; I was led to inquire in how far the root in question could be advantageously obtained from India.

The most important use to which the colouring matter is applied, is, as I am informed by a gentleman well acquainted with the arts of dyeing, for the purpose of dyeing or staining leather yellow; for which purpose it is found peculiarly well suited.

The colouring principle is found in the bark and wood of the stem, as well as in the root. But the root only has, I believe, been applied in dyeing. In the specimens which I have seen, the colouring matter was in the stem for the most part collected together in the bark, and round the circumference; a considerable portion, also, was deposited round the pith, particularly in the larger stems; whilst the great bulk of the woody fibre intervening, contained very little colour. The root, however, was wholly of a fine yellow colour.

The gentleman before mentioned (and to whom I am indebted for much useful information on this subject) informs me, that the barberry he has seen was generally in large straight pieces, having a somewhat honeycomb cellular structure, and that the colour was generally collected together as it were in masses.

In the larger stems, the proportion of useless woody fibre to the bark and parts yielding colour, is undoubtedly large, but this is quite compensated by the superior richness of colour in the old stems.

According to some experiments of MM. Buchner and Herberger, which are detailed in the *Journal de Pharmacie*, the root of the *Berberis vulgaris* contains rather more than 17 per cent. of yellow colouring matter, which is entirely soluble in hot water, and to which the name of Berberite has been applied. The root, besides this, contains gum and many other substances, but

it is the berberite alone which is available for the purposes of the dyer<sup>1</sup>.

Few natural orders are more widely distributed than the Berberideæ, for they are found in most temperate parts of the globe; species are found in most of the countries of Europe, and extend, as De Candolle has observed, from Candia to Christiania. In Asia, they are, perhaps, even more widely diffused and abundant. The best known varieties of Asiatic barberries are :—

1. *Berberis Sibirica*. A small shrub, found on the lower mountains and rocky hills of Altaic Siberia.
2. *Berberis Sinensis*, which abounds in China, and the northern parts of India.
3. *Berberis Wallichiana*. A native of Nepal.
4. *Berberis floribunda*. This plant, which is common in the whole of the north of India, was formerly thought by Dr. Wallich to be identical with *Berberis aristata*; it is now, however, known to be different.
5. *Berberis Asiatica*. Abundant in Nepal and Kumaoon; and according to De Candolle, the *Berberis tinctoria*, which flourishes in the Neelgherries, is indential with this species.
6. *Berberis aristata*, perhaps the most widely diffused of all these species; it abounds in the mountains of Northern India, and extends from the Himalaya mountains to the Neelgherries, and as far south as Nuera Ellia, and Adam's Peak in Ceylon. It has been described in the *Botanical Magazine*, under the name of *Berberis chitra*; it is, however, not the same as the *Chitria* of Nepal, which is another variety of *Berberis*.

Many of these species live for a long series of years, and attain very considerable size; according to Dr. Royle, *Berberis Nepalensis*, a most beautiful species, which inhabits the mountainous districts in the north of India, grows in shady places to the height of 12 feet, at elevations of from 5 to 6,000 feet above the level of the sea; and M. Leschenault de La Tour states, that the *Berberis tinctoria*, which flourishes in the Neelgherries, and is there known by the name of Jakalow, attains a height of even 20 feet.

These different species of *Berberis* are employed by the natives in the districts where they abound, in medicine, and as a dye; and the fruit of some are dried and used as an article of food. The late

<sup>1</sup> This colour has been long used in Astrachan and Poland as a dye for leather, and in some parts of Germany for staining wood of a bright yellow colour.

General T. Hardwicke, in his *Narrative of a Journey to Sirinagur*, published in the *Asiatic Researches*, relates that a variety of *Berberis* is abundant in the valley through which the Koa nullah has its course; the fruit of this variety is eaten by the natives, and the wood, which is of a bright yellow colour, is used by them for dyeing; but from the imperfection of their processes the colour so obtained is not permanent. Dr. Royle, in his *Illustrations of the Botany and Natural History of the Himalaya Mountains*, says, when describing the properties and uses of the *Berberideæ*, "The root and wood of one species, the *Berberis aristata*, being of a dark yellow colour, and forming the *Dar Huld* of Persian writers, are used as a dye; and being bitter and a little astringent, are, together with the bark, employed in medicine. The variety of *Berberis* found in the Neelgherries, and which M. Leschenault de La Tour calls *Berberis tinctoria*, from the use to which it has been applied, has by the experiments of M. Vauquelin, been found to be inferior to few woods, for dyeing a yellow colour." There being fortunately preserved in the Museum of this Society, a small quantity of barberry root, which had been sent from Ceylon, together with other specimens of dye woods, &c., I have been enabled to make some experiments with its colouring matter, the result of which proved that it was quite as abundant in the Asiatic as in the European barberry; and on comparing it with some root from Cologne, I found that the colour from the Asiatic was even finer and more brilliant; and from some experiments in dyeing cotton and silk with it, I have no doubt that it will be found, if not superior, at least quite equal, to the very best which has hitherto been obtained from Cologne, Hamburg, and some other European towns.

Experiments should be made as to the relative quantity and quality of colour contained in the old and young trees, and in their wood, bark, and roots respectively, and likewise as to the best time for collecting them.

As the root contains only about 17 per cent. of useful colouring matter, and the remainder consists of woody fibre and other matters not useful to the dyers, it is important to inquire into the possibility of substituting for the wood or root a watery extract of them. This would contain the whole of the colouring matter, and whilst it would present it in a condensed and convenient form, would of course greatly diminish the expense of carriage and freight, and, in consequence, reduce the ultimate cost of the colour.

It is evident that there would be no great difficulty to prevent

this being done, for the natives prepare extracts with great success, and have considerable experience in such operations, as we see from a number of Indian extracts, such as Cutch, and Terra Japonica, which have lately become important articles of trade. But there would be far less difficulty in obtaining the extract of barberry, than that of many other trees, for the natives have long made and used it themselves as a medicine, and it is described in the Asiatic books on *Materia Medica*, under the names of Rusot, Hoozis, and Huzuz. There can therefore be no difficulty in obtaining the article in any quantity which may be required.

It has long been remarked, as a curious circumstance, that Dioscorides has made no mention of the barberry, which from its wide diffusion, and remarkable properties, could hardly escape the attention of the early naturalists. This has, however, been explained by Dr. Royle, who has adduced the most unexceptionable evidence to prove that the Lycium of the ancients, or *Λύκιον* of the Greeks, was really identical with the Hoozis of the present day, and was, in fact, an extract of barberry. A very interesting confirmation of this will be found in Avicenna, who, when speaking of Lycium, says it is the extract of Al-Feluzahargi, and Dr. Royle, in his paper on Lycium, informs us, that the Persian name of Rusot, the extract of barberry, is Feelzurch.

Some little confusion is caused by the term Dar Huld, or yellow wood, being applied to more than one plant; thus, among many others, Playfair, in his translation of the *Talif Sherif*, describes Dar Huld as turmeric, and says, "it is pungent, bitter, hot, and dry," a description applicable to turmeric, but not at all to barberry, which is usually described as bitter, cooling, and slightly astringent: and Dr. Royle informs us, that in the north of India Dar Huld signifies barberry, and that on asking to see the plant yielding Dar Huld and Rusot, species of *Berberis* were pointed out; whilst in the south of India it is only applied to turmeric.

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