

**REGISTER**  
OF THE  
**ARTS AND SCIENCES.**

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VOLUME THE FIRST,

CONTAINING

A CORRECT ACCOUNT OF SEVERAL HUNDRED OF THE MOST  
IMPORTANT AND INTERESTING

INVENTIONS, DISCOVERIES,



PROCESSES.

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ILLUSTRATED

WITH UPWARDS OF ONE HUNDRED ENGRAVINGS.

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increased strength and power to resist the effects of percussion, will, we think, be counterbalanced by other serious disadvantages. The expense must thereby be greatly increased, and the enormous weight of the metal must materially lessen the buoyancy, and consequently reduce the capacity of a vessel for a heavy cargo.

#### IMPROVEMENTS IN DYEING.

Mr. RICHARD BADNALL, of Leek, in Staffordshire, silk manufacturer, has recently taken out a patent for some improvements in the art of dyeing silk, which we think are too important to be merely glanced at, and as the specification is very concise and clear, we insert the whole of it, verbatim, as follows:

"I, the said RICHARD BADNALL do hereby declare, that the nature of my said invention, and the manner in which the same is to be performed, are particularly described and ascertained in and by the following specification thereof; that is to say:

"My improvements consist, first, in the application of Prussian blue to the purposes of dyeing silk, cotton, wool, or any other article; and, secondly, in the application of pressure to Dyeing in general. The following is my method of Dyeing by means of Prussian blue.

"The Prussian blue being previously ground as fine as possible, is to be put into any convenient vessel of glass or earthenware. Strong muriatic acid is to be poured upon it a little at a time; and the mass is to be kept constantly stirred, with a rod of white wood, a piece of tobacco pipe, or any other material not liable to be acted upon by the acid. The stirring must be continued, till the mixture has become a smooth homogenous mass of a semi-gelatinous consistence. The proportion of acid requisite for this purpose depends, in some degree, on the quality of the Prussian blue, and, therefore, cannot be precisely set forth in words; but, by proceeding carefully, as above described, it is impossible to fall into error; as the mixture, if made too thin from excess of acid, may be rectified by the subsequent addition of more Prussian blue.

"This mixture, which I call prepared Prussian blue, may be used as soon as made; but it is better after three or four days; and I have not found that its qualities are altered by age.

"In dyeing silk with the Prussian blue, prepared as above, I proceed in the following manner:

"The gum having been discharged from the silk by any of the usual means, I steep the silk, for three or four hours, in a cold solution of alum in water, of the common strength employed by silk dyers: I then rinse it in cold water.

"The dye vat is composed by diluting the prepared Prussian blue with cold water, till its colour is of the required depth, according to the particular tint intended to be given to the silk. The silk, prepared as above, is then to be put on sticks, and immersed in the bath; taking care that it be constantly turned, that the colour may be perfectly level, and that it remain in the bath till it has acquired the proper tint or shade. It is then to be well washed in running water

ceases to be discoloured by it. Lastly, the silk is to be dried, either in the shade, or in a stove, heated to not more than a summer temperature.

From Prussian blue, prepared as above, various greens and purples may be obtained; either by combining it with the ingredients usually employed for such colours, and dipping the silk in this compound bath; or, by using the bath of prepared Prussian blue, either before, or after the application of the other ingredients, according to circumstances, and to the nature of such ingredients. The proportion however it is not necessary to recite; the object of this part of my patent being merely by my new mode of preparing Prussian blue, so as to dye silk, cotton, wool, or any other article, by means of it, either alone, or mixed and combined with other dyeing materials.

"The second invention I claim, is the application of pressure to dyeing in general, whether it be that of thick cloths, hats, woods for veneering, or any other purpose; or any other or more delicate materials, such as linen, cotton, or silk goods, lace, &c. For this purpose, the materials to be dyed are to be placed, with the dyeing liquor, in any suitable vessel of wood, copper, iron, or other material; the aperture of which vessel can be secured water-tight, by a lid fitted to it by any suitable and well-known means. To this vessel is to be fitted a hydrostatic pressure-pump, or any other machinery, employed for the purpose of producing high pressure; such as a column of water or mercury of sufficient height, &c. All things being thus adjusted, the lid is to be fitted securely on; and the pump worked, until the necessary pressure is obtained; when it is evident, that if the goods are put in dry, or well wrung, the pressure thus produced will greatly facilitate the introduction of the dyeing liquor within the internal pores, particularly in heavy cloth goods, hats, woods, hard twisted silk, or lace; and, if necessary, suitable mechanical means may be employed to agitate and wring the goods while under pressure: but I do not claim this exclusively, but only the application of pressure to the forcing of the dyeing liquor into the pores of the cloths, hats, silk, woods, &c.; or the joint application of pressure, with suitable means for producing agitation, &c. &c.

#### VAPOUR BATH.

"To the Editor of the Register of the Arts and Sciences, &c.

"SIR,

"ALLOW me to congratulate you on the growing celebrity of your Register. In the last number of it I observe a detailed account of a *Cheap Vapour Bath*. I beg to be favoured with a page of your sheets, in order to make a few observations on the subject of Vapour Bathing, which, without hesitation, I affirm to be the most pleasant, safe, and most important agent, in the preservation of health, and in restoration from disease, that has ever been resorted to by mankind. It is a remedy that nature has unequivocally been pointing out to us every day; it produces PERSPIRATION, *Nature's*