

---

# **Chemistry Applied to Dyeing**

**Napier James**

---

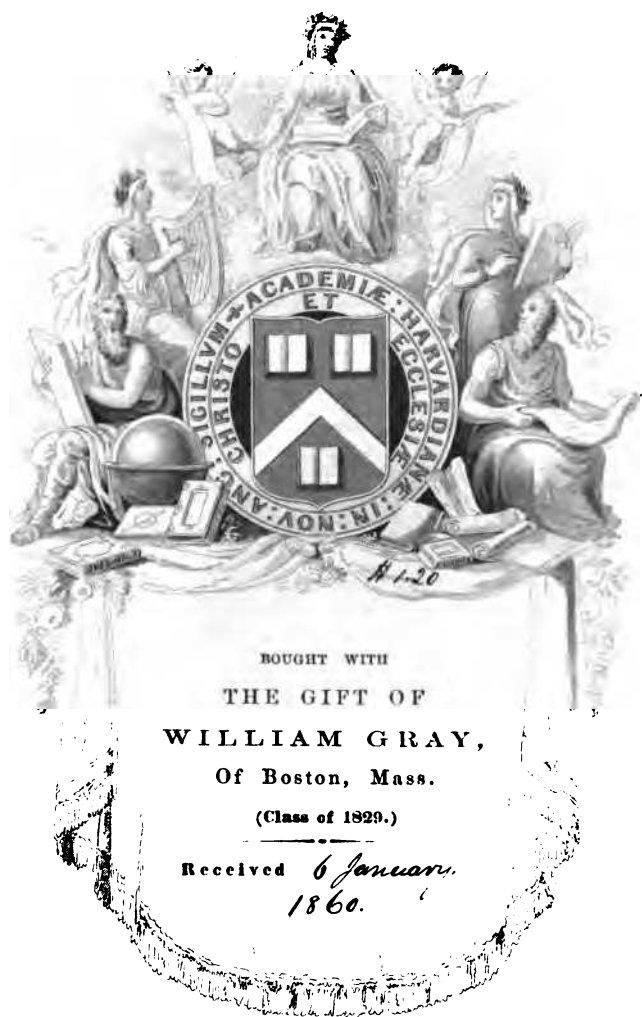
**Title: Chemistry Applied to Dyeing**

**Author: Napier James**

**This is an exact replica of a book. The book reprint was manually improved by a team of professionals, as opposed to automatic/OCR processes used by some companies. However, the book may still have imperfections such as missing pages, poor pictures, errant marks, etc. that were a part of the original text. We appreciate your understanding of the imperfections which can not be improved, and hope you will enjoy reading this book.**



Chem 7608.53



GODFREY LOWELL C



Vertical line of text or a separator.

©  
CHEMISTRY

APPLIED TO DYEING.

BY

JAMES NAPIER, F.C.S.

Illustrated by Engravings.

PHILADELPHIA:  
HENRY CAREY BAIRD.  
1853.

Chem 7608.53

1860. Jan. 9.,

Gray Fund.

\$1.20.

## P R E F A C E .

---

IF there be any trade which, more than another, requires the knowledge of first principles, it is that of dyeing, it being essentially progressive. The particular conditions of the trade render information of this description more needful, and therefore more valuable, than ordinary. The trade is what is termed open, so that any man may enter it; and, in consequence, there are few instances where young men are taught the business systematically. A great many enter the trade who are grown up—their chief ambition being to learn the mechanical operations of the dye-house, and when sufficient dexterity in these is attained, to secure the highest rate of wages. When this is accomplished, zeal for improvement in a great measure subsides. However, there are many who, not content with acquiring a knowledge of the mere mechanical routine, desire to look deeper into the principles of the art, and aim at higher honors than those of a mere laborer in it, but who believe that the means of success consist simply in long and steady service, and a good memory for the rules of manipulation. Both of these are valuable qualifications, but neither of them would be depreciated in the slightest degree by being conjoined with a more extended knowledge of the fundamental principles of the art than usually falls to the share of the practical dyer. There is another evil arising out of this condition of the trade. Individuals who attain the position of good work-



men, value their abilities by the contrast which exists between them and the newly-initiated journeyman ; but they rarely or never look forward to the wide field which lies unexplored before them. Often, indeed, they boast of their capabilities, of their expertness, and their knowledge ; and it is no uncommon thing for them to indulge in petty jealousy, and endeavor to conceal the *secret* of their mode of working from their neighbors. Under these circumstances, it is no wonder that years are often spent—we should say wasted—in endeavoring to discover what was long before patent to every one who knew the scientific principles of the trade, although ignorant of the practical operations of it. This ignorance of principles often makes both workman and master the dupes of knaves who go about hawking *valuable secrets* at so much a piece.

It must be admitted, however, that notwithstanding all untoward circumstances, the degree of advancement which the art has attained is truly astonishing. A single practical hint is sometimes sufficient to cause a complete revolution in some branch of the trade, so that were the principles of chemistry in their application to dyeing but once generally understood by those practically employed, we can hardly conceive what changes and improvements might not be effected.

Another circumstance calling for a few remarks is the fluctuating state of the trade, which, even in its best condition, throws not less than a fourth part of the workmen idle during the winter months. But while we admit the hardship of such a state of things in its fullest extent, we do not believe that this time should be allowed to glide by in absolute listlessness. It is still a portion of the allotted span of life, and ought to be turned to all the advantage which circumstances will admit ; and if it can be made subservient to future advantage either by advancing the personal interests, or in augmenting the mental enjoyment, of the individual, it is surely

PREFACE.

v

culpable to allow it to run to waste. We sincerely believe that it may be turned to account in both ways, and we promise with some confidence that the following Treatise will suggest the means of deriving remuneration even from idle hours. Lord Bacon's maxim, that "Knowledge is power," has been reiterated till it may be thought to have lost its virtue, but it is still as true as ever, and we are confident that it cannot be more aptly applied than to the case of the practical dyer.

From our own experience we are aware that there at present exists a strong desire amongst a great many of those employed in the processes of dyeing to understand the principles of the art, and to be able to assign reasons for the various changes that take place in producing the colors. Such knowledge is often eagerly sought for without success, both in books and in the lecture-room. The disappointment arises from two sources: first, the inability of the dyer to apply chemical principles to his special purposes; and second, a want of practical knowledge in the author or lecturer, which disqualifies him for pointing out the special applications of the principles he may be defining. These circumstances have long impressed the Author with the opinion that an application of principles to any practical operation can best be done by an individual working at, or familiar with, all the practical details of that particular operation or trade, and that every branch of trade or art ought to have its own guide-book prepared by one of its own operatives. The carrying out of this idea has induced the Author to publish the present **MANUAL**, which is a "SYSTEM OF CHEMISTRY APPLIED TO DYEING." Having been himself a practical dyer for many years, and having experienced the difficulties which an uneducated man has to contend with in striving to become a Dyer in the proper sense of the term, he has in the following pages endeavored to clear away some of the technical difficulties

besetting the path of the practical man, and to guide him in following out first principles while engaged in experiments to advance his art.

The Author acknowledges his obligations to a few intelligent dyers for several practical hints contained in these pages, and which had not come under his own observation. It will also be seen in reading the work, that advantage has been taken of some valuable articles in foreign journals, translations of some of which have appeared in chemical periodicals, such as the *Pharmaceutical Times*, which is now discontinued, and the *Chemical Gazette*, a journal which he earnestly recommends to the practical dyer, as containing from time to time papers of great value upon Dyeing and Dyestuffs.

PARTICK, GLASGOW,  
25th Feb. 1853.

## CONTENTS.

---

	PAGE
Preface . . . . .	v
GENERAL PROPERTIES OF MATTER.	
<b>HEAT,</b>	
Conditions of matter . . . . .	25
Heat the cause of conditions of matter . . . . .	25
General effects of heat . . . . .	27
Measures of temperature . . . . .	28
Boiling of liquids . . . . .	30
Substances affecting boiling point . . . . .	30
Strong boiling . . . . .	31
Chemical effects of heat upon colors . . . . .	32
<b>LIGHT,</b>	
Nature of light . . . . .	34
Relation of colors to the fabric . . . . .	35
Effects of different rays upon colors . . . . .	37
Effects of light causing combination . . . . .	38
Light decomposes chemical compounds . . . . .	38
Practical application of the principles . . . . .	40
<b>ELEMENTS OF MATTER,</b>	
Differences between an element and compound . . . . .	44
Use of symbols . . . . .	46
Chemical nomenclature . . . . .	48
Rules for naming compounds . . . . .	48
Salts, their nature and nomenclature . . . . .	50