

**OUTLINES OF MODERN
CHEMISTRY, ORGANIC,
BASED IN PART UPON
RICHES' MANUEL DE CHIMIE**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649666058

Outlines of Modern Chemistry, Organic, Based in Part upon Riches' Manuel de Chimie by C. Gilbert Wheeler

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

www.triestepublishing.com

C. GILBERT WHEELER

**OUTLINES OF MODERN
CHEMISTRY, ORGANIC,
BASED IN PART UPON
RICHES' MANUEL DE CHIMIE**

*With the compliments
of C. G. Wheeler.*

OUTLINES

OF

MODERN CHEMISTRY,

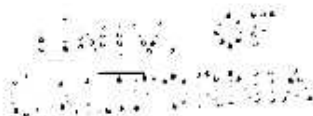
ORGANIC,

BASED IN PART UPON RICHES' MANUEL de CHIMIE,

BY

C. GILBERT WHEELER,

Professor of Chemistry in the University of Chicago.



A. S. BARNES & CO.,
NEW YORK AND CHICAGO.

1877.

OTHER WORKS BY PROF. WHEELER.

- DETERMINATIVE MINERALOGY. A practical guide to the recognition of mineral species, chiefly by physical characteristics. Price.....\$1.00.
- NATURAL HISTORY CHARTS. Five in number, one each of the following: MAMMALIA; BIRDS; REPTILES and FISHES; INVERTEBRATES; MINERALS, ROCKS and FOSSILS. In all, over 700 illustrations. Wholly hand colored. Price of each chart, \$7.00. The set,.....\$35.00.
- NATURAL HISTORY PRIMER. A concise descriptive work on Zoology and Mineralogy. Price.....\$1.00.
- CATALOGUS POLYGLOTTUS, Or classified list of the more important animals, minerals and fossils in Latin, English, French, German and Spanish; for Scientific Travelers, Collectors, Curators of Museums and others. Price.....\$2.00.

IN PREPARATION.

THE CHEMISTRY OF BUILDING MATERIALS.

COPYRIGHT
C. SILBERT WHEELER.

1877.

PREFACE.

Organic chemistry has not as yet secured in American colleges sufficiently pronounced attention to create a demand for text-books of considerable size or extended scope. In these simple Outlines, therefore, no more has been attempted than this circumstance would appear to warrant. It is hoped that the necessary conciseness in method and form of expression has not resulted in any important sacrifice of perspicuity in thought or arrangement.

It would have been easier to prepare a larger work. From the bewildering wealth of results afforded by the labors of investigators in this branch of science, the appropriate selection of that suited to the wants of students was by no means an easy task.

It is assumed in these Outlines that those entering upon the study of Organic Chemistry have previously made themselves acquainted with Inorganic Chemistry as taught by some modern author, such as Miller or Barker, or have at least become familiar with the general principles of modern chemical philosophy. The author taking this for granted, has not, therefore, encumbered the work with a restatement of that which appertains to the theory of chemistry in general.

In addition to the organic portion of Riche's *Manuel de Chimie*, a translation of which by the author

PREFACE.

has served in part as basis for these Outlines, the works of Miller, Fownes, Williamson, Roscoe, and others have been freely used, while the chemical journals of Europe and America, including their latest numbers, have been consulted and the data which they afforded utilized.

For the benefit of any who may care to read the full original papers from which are taken the abridged excerpts of recent articles there are given references, within parentheses, to a list of authorities to be found in the author's work on *Medical Chemistry*.

Lest any regard the number of characteristic reactions of the more important compounds as insufficient, it should be stated, that it was not within the plan of the author to adapt this work to the requirements of an analytical manual. Not more than two or three analytical tests are therefore given as a rule, and even this number only in the case of the leading compounds. A similar explanation might be proffered to any who may miss the full technical details relative to certain compounds which are usually given in works on applied, or technological chemistry.

Throughout the work, the centigrade thermometer and the metric system of weights and measures are employed, unless otherwise specifically stated.

C. GILBERT WHEELER.

UNIVERSITY OF CHICAGO, October, 1877.

CONTENTS.

	PAGE
INTRODUCTORY, - - - - -	7
CLASSIFICATION OF ORGANIC COMPOUNDS,	10
HOMOLOGOUS SERIES, - - - - -	12
HYDROCARBONS, - - - - -	18
ALCOHOLS, - - - - -	44
" MONATOMIC, - - - - -	46
" DIATOMIC, - - - - -	58
" TRIATOMIC, - - - - -	64
ETHERS, - - - - -	69
ALDEHYDS, - - - - -	85
ACIDS, - - - - -	90
" MONATOMIC, - - - - -	96
" POLYATOMIC, - - - - -	112
ALKALOIDS OR BASES, - - - - -	127
" ARTIFICIAL, - - - - -	132, 170
" NATURAL, - - - - -	137
NEUTRAL FATTY BODIES, - - - - -	174
SUGARS, - - - - -	181
GLUCOSIDES, - - - - -	193
VEGETABLE CHEMISTRY, - - - - -	199
CELLULOSE, - - - - -	205
STARCH, - - - - -	210
DEXTRIN, - - - - -	214
GUMS, - - - - -	216

1

2

3

4

5

6

7

8

9

10

ORGANIC CHEMISTRY.

INTRODUCTORY.

Organic chemistry is the science of the compounds of carbon.

Only a small number of other elements are met with in natural organic substances; they are hydrogen, oxygen and nitrogen, sometimes also, sulphur, phosphorus, and very rarely certain other elements.

Chemists have succeeded in incorporating most of the elemental substances in organic bodies, yet the larger number even of the artificial compounds include only the four elements first named.

Paraffine is found by analysis to contain only carbon and hydrogen, and is therefore called a *hydrogen-carbide*. The hydrocarbides are compounds so stable and fundamental that some chemists, as Schorlemmer for instance, have even defined organic chemistry as "the chemistry of hydrocarbons and their derivatives."

From alcohol, or sugar, we may obtain carbon and water. These bodies therefore are composed of three elements: carbon, hydrogen and oxygen, and are called *carbohydrates*; though by some chemists, this term is restricted to those compounds containing car-