

Organic chemistry

Stereo Chemistry and the
Chemistry of Natural Products

Volume-2

Finar, I. L

ORGANIC CHEMISTRY

VOLUME TWO

STEREOCHEMISTRY
AND THE CHEMISTRY
OF NATURAL PRODUCTS

by

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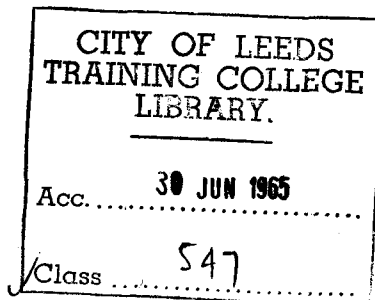


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PREFACE TO THIRD EDITION

THIS third edition has been revised to bring it up to date. This has been made possible by the information I have obtained from articles written by experts on important developments in their field of research. Since the volume of research published on topics dealt with (and not dealt with) in this book make it impossible to include all new work, I have therefore had to choose, but any deficiencies in my choice are, I hope, partly compensated by the reading references given at the end of each chapter.

Chapter III has been rewritten (and renamed), but the section on transition state theory of reactions has been omitted; it has now been included in Volume I (4th ed., 1963). Expanded topics include nuclear magnetic resonance, correlation of configurations, conformational analysis, molecular overcrowding, the Beckmann rearrangement, nucleophilic substitution at a saturated carbon atom, elimination and addition reactions, carotenoids, penicillins, amino-acids, biosynthesis, etc. Some additions are rotatory dispersion, electron spin resonance, specification of absolute configurations, Newman projection formulæ, neighbouring group participation, the Wagner-Meerwein rearrangement, sesquiterpenes, etc.

I. L. FINAR

1964

PREFACE TO SECOND EDITION

THIS volume has now been revised to bring it up to date; this has involved the expansion of some sections and the addition of new material. It may be useful if I indicate briefly the more important changes I have made in this new edition. Two major additions are conformational analysis and biosynthesis: in each case I have given an introduction to the problem, and have also discussed various applications. Some other additions are nuclear magnetic resonance, correlation of configurations, *isoflavones*, and vitamin B₁₂. Expanded topics include dipole moments, molecular rotation, optical isomerism, steric effects (including steric factors and the transition state, molecular overcrowding), ascorbic acid, structure and synthesis of cholesterol, vitamin A₁, polypeptides, mechanism of enzyme action, flavones, streptomycin and patulin.

I wish to thank those reviewers and correspondents who have pointed out errors and have made suggestions for improving the book.

I. L. FINAR

1958

PREFACE TO FIRST EDITION

IN the Preface of my earlier book, *Organic Chemistry*, Longmans, Green (1954, 2nd ed.), I expressed the opinion that the chemistry of natural products is the application of the principles of Organic Chemistry. The present work is, in this sense, a continuation of my earlier one. It is my belief that a student who has mastered the principles will be well on the road to mastering the applications when he begins to study them. At the same time, a study of the applications will bring home to the student the dictum of Faraday: "Ce n'est pas assez de savoir les principes, il faut savoir *Manipuler*" (quoted by Faraday from the *Dictionnaire de Trevoux*).

In the sections on Stereochemistry, I have assumed no previous knowledge of this subject. This has meant a certain amount of repetition of some of the material in my earlier book, but I thought that this way of dealing with the subject would be preferable, since the alternative would have led to discontinuity. I have omitted an account of the stereochemistry of co-ordinated compounds since this subject is dealt with in textbooks on Inorganic Chemistry.

The section of this book dealing with natural products has presented many difficulties. I have tried to give a general indication of the problems involved, and in doing so I have chosen, to a large extent, the most typical compounds for fairly detailed discussion. At the same time, I believe that the subject matter covered should serve as a good introduction to the organic chemistry required by students reading for Part II of the Special Honours degree in chemistry of the London University. I have given a selected number of reading references at the end of each chapter to enable students to extend their knowledge and also to make up for any omissions I may have made. It is impossible to express my indebtedness to those authors of monographs, articles, etc., from which I have gained so much information, and I can only hope that some measure of my gratitude is expressed by the references I have given to their works.

Since physical measurements are now very much used in elucidating structures of organic compounds, I have included a short chapter on these measurements (Chapter I). I have introduced only a minimum amount of theory in this chapter to enable the student to understand the terms used; the main object is to indicate the *applications* of physical measurements.

In this book, cross-references are indicated by section and chapter. If a cross-reference occurs to another section in that chapter, then only the section number is given. It should also be noted that the numbers assigned to formulæ, etc., are confined to each section, and not carried on to subsequent sections in that chapter. When references have been given to my earlier volume, the latter has been referred to as Volume I. In such cases the pages have not been quoted since the pagination of the various editions changes. The student, however, should have no difficulty in locating the reference from the index of Volume I.

I. L. FINAR

1955

LIST OF JOURNAL ABBREVIATIONS

ABBREVIATIONS	JOURNALS
<i>Ann. Reports (Chem. Soc.)</i>	Annual Reports of the Progress of Chemistry (The Chemical Society, London).
<i>Ber.</i>	Berichte der deutschen chemischen Gesellschaft (name now changed to <i>Chemische Berichte</i>).
<i>Bull. Soc. chim.</i>	Bulletin de la Société chimique de France.
<i>Chem. Reviews</i>	Chemical Reviews.
<i>Chem. and Ind.</i>	Chemistry and Industry.
<i>Experientia</i>	Experientia.
<i>Ind. chim. belg.</i>	Industrie chimique belge.
<i>Ind. Eng. Chem.</i>	Industrial and Engineering Chemistry.
<i>J. Amer. Chem. Soc.</i>	Journal of the American Chemical Society.
<i>J. Chem. Educ.</i>	Journal of Chemical Education.
<i>J.C.S.</i>	Journal of the Chemical Society.
<i>J. Pharm. Pharmacol.</i>	Journal of Pharmacy and Pharmacology.
<i>J. Roy. Inst. Chem.</i>	Journal of the Royal Institute of Chemistry.
<i>Nature</i>	Nature.
<i>Proc. Chem. Soc.</i>	Proceedings of the Chemical Society.
<i>Quart. Reviews (Chem. Soc.)</i>	Quarterly Reviews of the Chemical Society (London)
<i>Science</i>	Science.
<i>Tetrahedron</i>	Tetrahedron.