THE METABOLISM OF LIVING TISSUES
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By

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DEDICATION

Holy writ tells us that no man can serve two masters: fortunately it does not appear to contemplate the case of a man who endeavours to serve both a Master and a Professor. The author, therefore, feels himself at liberty to dedicate this book to the two men under whom he has had the honour to work, in the hope that, whatever its demerits, they will accept it as a token of his admiration and, if he may say so, of his affection. These, his two chiefs, are

PROFESSOR SIR FREDERICK HOPKINS
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and

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CAMBRIDGE
SEPTEMBER 1936
FOREWORD

The primary aim of this highly original book is to provide an adequate survey of all that is most significant in our present knowledge of the dynamic side of biochemistry. Its author has had a wide experience as a teacher of the subject, and writes with a full understanding of the needs of the student. In my own opinion he here supplies a need which is real. Characteristic of his presentation of facts and inferences is a continuity which encourages the reading of the book straight through from cover to cover. I think indeed it is thus that first acquaintance with a book of its kind should be made.

Read as a whole its wide survey of what we know about biochemical events prepares the mind of the student to appreciate the biological significance of the more purely chemical and physical knowledge which he may possess, or later acquire. By reading this book through early in his course, even if at this stage some technical details are beyond his grasp, the student will acquire an understanding of the aims and present position of the science which will add greatly to the interest of his later studies. At the same time I am confident that he will frequently wish to return to the book during the rest of his course, for within the range of its intention it supplies all the essentials of to-day’s knowledge.

I commend it therefore to those beginning a study of biochemistry, feeling also sure that more advanced students will appreciate and profit from the unified survey it provides of present-day knowledge of tissue metabolism.

F. G. HOPKINS
PREFACE

This book has been written primarily in the hope that it will be of use to students reading Biochemistry for Part I of the Natural Sciences Tripos at Cambridge. I have tried to show the subject as it appears to those actively engaged in research upon it, namely as a living and rapidly expanding method of approach to the study of Biology. The most important branch of biology for many of those for whom the book is intended is medicine; so far as it deals chiefly with mammalian tissues, its subject-matter has a direct bearing upon their present and future problems. It is impossible to doubt that the tendency of medical thought in many directions is more and more towards a biochemical approach to this subject.

I have adopted a method of treatment which is somewhat unusual, but which, I believe, has much to recommend it. Aside from general considerations of subjects such as enzymes, oxidation mechanisms and the chemistry of the vitamins and hormones, I have endeavoured to consider the metabolic activity of various tissues—the liver, the kidney and so forth—rather than to follow the chemical changes suffered, for instance, by a protein molecule during the course of metabolism. This treatment, I think, renders it easier to visualise the active, dynamic aspect of tissue metabolism.

Many topics have been omitted from the book, some, such as a discussion of hydrogen ion concentration, or the chemistry of the food-stuffs, because they are very adequately
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dealt with in the current textbooks, others because they already form, or will form in the near future, subjects of separate monographs. Baldwin’s *An Introduction to Comparative Biochemistry* will appear before the present volume, and will cover that part of the course which deals with the metabolism of invertebrates. Stephenson’s *Monograph on Bacterial Metabolism* has already been in existence for several years and will shortly be revised.

Those who are interested in following in more detail special aspects of the subject will be well advised to go, in the first instance, to the various reviews, of which many are now published annually. From these they will most easily obtain references to the original literature. Of such reviews, published in English, there may be mentioned: *Physiological Reviews, Biological Reviews, The Annual Review of Biochemistry, Medicine*, and the Harvey Lectures.

The author wishes to express his gratitude to Mrs A. Barber for typing the manuscript, to Dr S. Bach for reading it over, and to Miss E. Watchorn, Ph.D., for making the index.

E. H.

January, 1937.
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