METHODS OF ANALYTICAL HISTOLOGY AND HISTO-CHEMISTRY

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by

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1958

LEONARD HILL [BOOKS] LIMITED

9 EDEN STREET, LONDON, N.W.1

PREFACE

This book is concerned almost exclusively with the identification, by colour reactions, of chemical groups and compounds, observable under the microscope, in the sites they occupy in both normal and pathological tissues, by methods that can be carried out without the use of costly and elaborate equipment beyond that which is normally on hand in the average biological laboratory. It is hoped that the book will prove to be of service to a wide variety of workers in histological, pathological and general laboratories.

The methods described herein have been set out fully and as concisely as possible, so that they can be followed step by step at the laboratory bench without interruption for reference to other literature during the course of practical work.

Some of the sections of the book are introduced by brief explanatory matter for the convenience of those who may have forgotten certain biochemical definitions and have not the time or the facilities to refer to other books for these; many users of this book will no doubt be working in isolated parts of the world without ready access to libraries, and with few books at hand. The introductory matter is in smaller print than the practical methods, so that readers who have no need for the brief definitions comprised in the introductory pages can pick out the practical methods at a glance without unnecessary reading.

The book is not encyclopaedic in scope: procedures, which require costly treatment, such as X-ray spectography, ultra-violet spectography, freezing-drying, etc., have been omitted because comparatively few laboratories at the present time are equipped with facilities for carrying out such techniques.

Analytical histology, or histo-analysis and histo-chemistry, are experimental branches of biology, and the emphasis of this book is directed towards practical work. Apart from the introductory matter at the beginning of some of the sections of this book, the only theoretical considerations will be found at the end of some of the methods under the headings 'Notes and Observations' where, in some cases, chemical formulae are given; it is hoped that these notes and observations will be of service. It is felt that theoretical discussions of the different schools of thought have been dealt with at length and very adequately in other works, and the inclusion of similar discussions here would defeat the purpose of this book.

Although the majority of the methods described here are sometimes referred to elsewhere as 'histochemical', I have chosen the title 'Analytical Histology and Histo-Chemistry' because I feel that the latter term would preclude a number of useful analytical matters which cannot strictly be described as histochemical. The view is held in some quarters that histochemistry is not chemistry, because the exact nature of histochemical reactions are not fully understood and cannot be equated in detail with chemical formulae. There is something to be said for this point of view, but it should be borne in mind that histo-chemistry, compared with other branches of chemistry, is a young science, and those who enter it at the present time cannot expect to meet with ready-made and well-established

laws along the lines obtaining in other branches of chemistry; and because of this the subject should not be dismissed: rather should it be regarded as the earlier investigators regarded other branches of chemistry: as a field for exploration and development.

It is hoped that this book will be of some service in suggesting ways and means by which histological procedures may eventually be resolved on a chemical basis, but a great deal of work involving the co-operation of biologists, chemists, physicists and others is needed before this object can be achieved.

In the writing of this book many references have been made to numerous journals and standard works, chief of which are as follows:

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I wish to place on record my thanks to my wife, Mrs F. P. Gurr, B.Sc., for her helpful criticism of the manuscript and encouragement; also my thanks are due to her and to Mr J. R. Thomas for relieving me of other work, thereby making it possible for me to devote the necessary time to the writing of this book. I also wish to express appreciation of the encouragement received from my very good friend, Professor M. A. MacConaill, M.R.I.A., of the Department of Anatomy, University College, Cork, Eire, who had been aware of the task I had undertaken, although he has not seen the script prior to publication.

I am also indebted to my very good friend, Mr W. Leonard Hill, the Chairman of Leonard Hill Limited and Leonard Hill [Books] Limited, the

publishers, and to Mr R. G. Thixton, the publishers' production manager, for the helpful and efficient way in which he has handled the publication; and last, but not least, I must record my gratitude to the printers, Messrs W. S. Cowell Ltd, for their careful and helpful interpretation of the MS.

April, 1957 EDWARD GURR

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