

SYSTEM OF OPHTHALMOLOGY

EDITED BY
SIR STEWART DUKE-ELDER

VOL. II

THE ANATOMY OF THE VISUAL SYSTEM

BY
SIR STEWART DUKE-ELDER
G.C.V.O., F.R.S.

AND
KENNETH C. WYBAR

B.Sc., M.D., CH.M., F.R.C.S.
Lecturer in Ophthalmology, University of London.
Ophthalmic Surgeon, Moorfields Eye Hospital, and
the Royal Marsden Hospital.

WITH 842 ILLUSTRATIONS AND 3 COLOURED PLATES

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PREFACE

THIS book forms a new edition of the section of anatomy in my *Textbook of Ophthalmology*. Its greater bulk is due partly to the fact that anatomy today is in no sense a dead subject but is rapidly growing, and partly because the text has been amplified in two respects. In the first place, I have paid considerable attention to the historical development of the subject ; apart from its great intrinsic interest, it cannot be denied that an appreciation of how our knowledge has evolved through the years not only makes its factual presentation a living story of triumphs and mistakes, but has a salutary effect in convincing the reader that what we accept today with apparent assurance will almost certainly be changed tomorrow. I have also stressed more than is perhaps usual the functional aspects of structure. In the *Textbook*, anatomy and physiology were contained within the same volume so that it was easy for the one to supplement the other ; but a treatise on structure alone with no indication of why it is so constituted is meaningless and lacks its essential interest.

The striking advances made in the anatomy of the visual system since the first edition was written thirty years ago are indeed remarkable. It is astonishing, for example, that it is only quite recently that the finer structure of a region so important as the angle of the anterior chamber of the eye has been intensively investigated or that the more intimate ramifications of the intra-ocular vascular system are becoming appreciated. Even today the anatomy of the central nervous organization subserving vision with its widespread limbic, thalamic and reticular connections is only beginning to be understood. Finally, with the introduction of the electron microscope and its application to ocular anatomy within the last two decades, a revolution is being effected in our appreciation of structure as complete as that which is extending the scope of astronomy by thousands of millions of light-years since the radio-telescope has come to supplement the optical telescope. Indeed, this volume probably marks the end of an era that has lasted a little over a century, wherein histological anatomy replaced the study of gross structures ; its successor will deal not only with cells but the molecular world within the cells, and when we know how to interpret the new appearances rapidly being unfolded, it would seem that the study of form and function will be welded into an indivisible entity.

STEWART DUKE-ELDER.

INSTITUTE OF OPHTHALMOLOGY,
UNIVERSITY OF LONDON,
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" Those who have dissected or inspected many bodies have at least learned to doubt, when others, who are ignorant of anatomy and do not take the trouble to attend to it, are in no doubt at all."

Morgagni.

ACKNOWLEDGEMENTS

IN the writing of this book we have drawn heavily upon the kindness and liberality of many workers in the field of anatomy and particularly ocular anatomy. Our greatest debt is to Dr. Katharine Tansley of the Institute of Ophthalmology, who has collaborated with us in writing the section on the minute anatomy of the retina, a study which has been her life's work. We have also had the great benefit of the criticism of Professor G. A. G. Mitchell of Manchester University in the chapter on the autonomic system; this is a rapidly growing subject and we thought it well that our presentation was reinforced by the greatest authority on it in this country.

In providing illustrations we have relied entirely on other people. All the original figures have been prepared in the Department of Medical Illustration at the Institute of Ophthalmology, and for this we are indebted to its Director, Dr. Peter Hansell, and two of his assistants, Mr. N. Jeffreys and Mr. T. R. Tarrant. The sources of those which we have borrowed are all acknowledged in the text. In addition to many journals, we feel, however, that we must acknowledge our debt to several sources on which we have drawn freely: Dr. Norman Ashton, Professor of Pathology at the Institute; Dr. F. Vrabec of Prague; Dr. J. R. Wolter of Ann Arbor, Michigan; the Oxford University Press for many illustrations from Cunningham's *Textbook of Anatomy*; Longmans, Green & Co. for illustrations from Gray's *Anatomy*; the Chicago University Press and Professor Heinrich Klüber for several photographs and drawings from Polyak's *The Retina*; and Professor A. Brodal of Oslo and the Clarendon Press, Oxford, for drawings from his *Neurological Anatomy*.

As in the first volume of this *System*, we have had much welcome assistance in the somewhat thankless task of proof-reading from Miss Mina Yuille and Mr. A. J. B. Goldsmith. Finally, we must acknowledge once more the indispensable help we have received from Miss Rosamund Soley, who has typed and prepared the manuscript, prepared the illustrations for reproduction, checked the proofs and bibliographies and written the index. Without her help the book would not have appeared. It is extraordinary how the chores of publication can be lightened by help of this nature, particularly where it is supplemented by the kindness and interest of our publisher, typified in Mr. George Deed.

STEWART DUKE-ELDER.
KENNETH C. WYBAR.

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