The Anatomy of the Central Nervous System of Man and of Vertebrates in General

Edinger Ludwig
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THE ANATOMY
OF THE
CENTRAL NERVOUS SYSTEM
OF MAN
AND OF
VERTEBRATES IN GENERAL.

by

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TRANSLATED FROM THE FIFTH GERMAN EDITION

by

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Illustrated with 258 Engravings.

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THE F. A. DAVIS COMPANY, PUBLISHERS.
1899.
TO HIS TEACHER,

PROFESSOR WILHELM WALDEYER,

THIS FIRST ATTEMPT
AT A
Comparative Anatomy of the Brain
IS
DEDICATED
IN
REVERENCE AND GRATITUDE.

THE AUTHOR.
AUTHOR’S PREFACE TO THE FIFTH GERMAN EDITION.

Nor without a certain hesitation does the author come with this edition before his circle of readers. Though the previously small book has now grown to larger proportions, still it presents a subject which has not previously been comprehensively treated: the comparative morphology of the central nervous system.

Three parts have arisen from the original little work: parts which are so far independent of each other that they who have less interest for the more general matters and for comparative anatomy, by turning past the first two parts will find in the third a somewhat enlarged and richly-illustrated edition of the old book. Grateful for the interest which the medical profession have manifested in the work, the third part, which deals exclusively with the mammalian, and especially with the human, brain, has been carefully rewritten and enlarged through the addition of numerous figures made from photographs of sections. In order to facilitate the study from sections a complete series of frontal sections through the entire brain has been added.

Part I is introductory, giving the fundamental ideas accepted at the present time. It takes into consideration also function, which was not considered in earlier editions.

The second part of the book realizes finally a plan which, since the beginning of my studies in brain-anatomy, I have never allowed to escape my eye. Resting almost completely upon my own investigations, it gives a review of that which may be said, with some certainty, of the structure and course of development of the central nervous system in the vertebrate series. Those who have worked in this field, still cultivated, will, considering the difficulties which tower up everywhere, leniently judge that which is proffered. The first attempt at a general presentation, the book shows everywhere the insufficiencies which such a work must present. No one knows that better than the author himself. If, as here, the plan of the whole forbids going into details, it will not be possible to always give a sufficient foundation for that which is presented. So far as it has been possible, this has been supplied in the numerous figures whose addition has been made possible through the liberality of the publishers. This edition contains 113 figures more than the Fourth, and of the new ones, 99 are devoted to comparative anatomy. The central nervous system has formerly been studied
mostly by physicians. To them, naturally, the first task was to gain a better understanding of the human brain, only the mammalian brain being brought in for comparison. We possess, however, even of the lower vertebrate types, several excellent descriptions.

By comparing animals low down in the vertebrate series the attempt is here made to determine where particular structures appear, how they vary, and what functions they may perform at different stages of their development. It has also been attempted to determine what belongs to each separate part of the nervous system as essential and fundamental. It is an attempt in which the author believed himself justified, in view of the fact that he had been occupied ten years in studies in the realm of comparative neurology.

The preface to the second edition of this book closed with the following words: "There must be a number of anatomical mechanisms which are alike present in all vertebrates: those which make possible the simplest expressions of the activity of the central nervous system. It is only necessary to find that animal, or that stage of development of any animal, in which this or that mechanism appears in so simple a form that it may be completely understood. Once one has anywhere perfectly established the relation of such a mechanism—e.g., a nerve-bundle or a cellular structure—he is usually able to readily find it again even where, through adventitious matter, it is made more or less obscure. The discovery of such fundamental features of brain-structure appears to be the next and most important task of brain-morphology. Once we know them, it will be easier to understand the complicated mechanisms with which the more highly organized brain performs its function."

This was, in a way, a programme which has, in part, been carried out in the new edition.

Edinger.

Frankfurt-am-Main, June, 1896.
TRANSLATOR’S PREFACE.

The hearty reception accorded by the medical students and practitioners of America to Professor Riggs’s translations of the earlier German editions makes it unnecessary for the editor of the present translation to introduce the work to Professor Edinger’s circle of American readers.

The additions which have been made to the original since the last English translation increases the range of its usefulness. Originally addressed particularly to the needs of the medical profession, it now contains matter which is practically indispensable to the general student of neurology or of physiological psychology in the biological departments of our universities.

In a few instances passages, in Part II of the original, which appear in fine print and serve to amplify or to further explain certain statements of the text, have been condensed or omitted, justification for this being urged in the somewhat different needs of the American readers of the work. The “lectures” of the original have been presented as Chapters. This necessitates an occasional departure from the diction of the original.

The translators take this opportunity to acknowledge the efficient assistance of Mr. J. C. Gordon, of the Wisconsin State University, in the preparation of the manuscript.

The fullness of the index prepared by Dr. Charles L. Mix, Instructor in Neurology in the Northwestern University Medical School, adds much to the value of the book, both in its use as a text-book and as a book for reference. The translators express herewith their appreciation of the work done by Dr. Mix in preparing the index, and also in making the final proofreading.

Winfield S. Hall.

Chicago, November, 1898.