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WITH SPECIAL REFERENCE TO CHROMATOPHORES

BY

G. H. PARKER

Harvard University

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To
James Gray

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PREFACE

THE idea prevalent among the ancients that personality and the control of bodily responses were aspects of man's nature that permeate his whole frame gave way gradually with the increase of knowledge to the view that these functions belong exclusively to his nervous system, a doctrine that was at its height in the days of Cuvier about a century ago. Some decades after this period Claude Bernard called attention to the great importance in this respect of the internal fluids of the body with their immensely complex array of solutes. These collectively constituted in his opinion an internal environment for the organism quite as important as the external one and of first significance in understanding any creature's economy. It was not, however, till 1902 that Bayliss and Starling initiated an analytic attack on this field by the discovery of secretin and by introducing the conception of the hormone. Thus was brought about a new method of approach to this aspect of organic activity, and bodily control by hormones was set up in strong contrast with that by nerves. In a rather remote way the new doctrine revived the ancient one of the cardinal humours.

In the first edition of the *Principles of General Physiology* the distinguished author, Professor Bayliss, raises the question as to the relative ages of the nervous and the humoral control; he asks, in other words, which of these two contrasted systems of co-ordination appeared first in the course of animal evolution. Professor Bayliss was inclined on the whole to favour hormones as the

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more primitive agents. That the relations of these two systems are of a somewhat different nature from that suspected by him and far more intimate than he ever supposed them to be is the conclusion to be drawn from the present study, a conclusion, however, that is rather a working hypothesis than a final answer.

The content of this volume is the substance, somewhat expanded and brought up to date, of a lecture that the writer was kindly invited to give in May, 1930, to the members of the Zoological Laboratory of the University of Cambridge. He wishes to express to the Laboratory Staff his appreciation of the honour done him in the invitation. He also wishes to thank the Syndics of the University Press of Cambridge for their generous suggestion that the manuscript be submitted to them for publication. Acknowledgments are due to Miss Mary F. Wolfe, Miss Alice Starkey, and Mrs G. H. Parker for their care in the preparation of the text, and Dr F. M. Carpenter and Mr E. A. Schmitz for their kind attention to the illustrations.

G. H. PARKER

Harvard University
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