Human Physiology, Statical and Dynamical, Or, the Conditions and Course of the Life of Man

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HUMAN PHYSIOLOGY,

STATICAL AND DYNAMICAL;

OR,

THE CONDITIONS AND COURSE

OF THE

LIFE OF MAN.

BY

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"THOUGHTS ON THE FUTURE CIVIL POLICY OF AMERICA," ETC., ETC.

WITH NEARLY 300 WOOD ENGRAVINGS.

SEVENTH EDITION.

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PREFACE TO THE SEVENTH EDITION.

ANOTHER edition of this work being required, I take the opportunity of returning my thanks to the medical profession and the public for their continued favor.

A recent and thorough examination of it enables me to say that I believe it will be found to present the Science of Physiology in its most modern form.

It is intended to give an exposition of the Physiology of Man, considered as an individual, and may be looked upon in that respect as a work complete in itself.

But man is also a member of society, and, as has been remarked in previous editions, History is in truth only a branch of Physiology. This is the point of view from which I have regarded the subject in my "History of the Intellectual Development of Europe," a work which, taken together with this, is intended as a treatise on the entire range of human relations, individual and social.

The remarkable favor with which that portion of the work has also been received, both in America and Europe, several editions, translations, and reprints having been called for in the course of a few months, satisfies me that the views here indicated meet with approval.

For the encouragement so shown to these works I again return my sincere thanks.

New York, 1865.
PREFACE TO THE SECOND EDITION.

Two years ago the first edition of this work was published. Since that time several thousand copies have been disposed of; it has been introduced as a text-book in many of our medical schools, and has been very favorably received by the profession and the public.

I have therefore felt it necessary to submit it to a careful examination, for the purpose of removing any errors it may contain, and improving it as far as its present form admits. The revision it has undergone will, I hope, make it worthy of the continued patronage of those who have hitherto shown it so much encouragement.

In these corrections I have availed myself of many of the suggestions made in various reviews of the original work, and take this occasion to express my thanks for the consideration shown toward it both in America and Europe. No one knew better than myself how numerous were its imperfections. The manner in which they have been overlooked has served to convince me that those who were judges of the science, and could deal authoritatively with it, were disposed to encourage any attempt at its improvement, even though that attempt was marked by many conspicuous shortcomings.

For doubtless they saw that this book aimed at much more than was directly expressed upon its pages. To treat Physiology as a branch of Physical Science; to exclude from it all purely speculative doctrines and ideas, the relics of a philosophy (if such it can be called) which flourished in the Middle Ages, though now fast dying out, and from which the more advanced subjects of human knowledge, such as Astronomy and Chemistry, have long ago made themselves free—to do this, amounts, in reality, to a reorganization and reconstruction: a task of extreme difficulty, and for complete success demanding the conjoint labors of many philosophers and many physicians.

At the best, therefore, such an attempt, embracing the whole science, made by a single individual, must needs be unsatisfactory, if any thing like a rigorous criticism be applied. And yet it may be truly said that the interest of the medical profession at the present time requires that such encouragement as this work has received should be extended to every undertaking of the kind. I hope that the success which has in
this manner attended my labors may prove an encouragement to others
to devote themselves with better results to a similar task.

To physicians I would earnestly address myself, in the hope of ob-
taining their continued aid and hearty patronage for every such attempt. I
would ask them why it is that we never hear of empiricism in Natural
Philosophy, Engineering, Astronomy? Is it not because the principles
upon which those subjects rest have ceased to be speculative, and are
restricted to the demonstrative, the experimental, the practical? In
Philosophy, sects only arise while principles are uncertain; in Medicine,
the quack only exists because there is a doubt. And considering the
condition to which the medical profession in our times has come, consid-
ering its decline in social estimation, and its shortcomings even in its
own judgment—is it not the duty of every physician to inquire into the
causes of such a state?

If a watch is to be mended, or a steam-engine repaired, do we not ap-
ply the principles of common sense to the case? Who ever heard of sects
among watchmakers, or quacks among engineers? If we will only apply
ourselves in a right spirit to its study, there is nothing more mysterious
or incomprehensible in a living organism than there is in such mechanical
contrivances. There is nothing in the structure of man which the intel-
lect of man can not understand. It is this, indeed, which constitutes his
chief glory, and makes him a worthy representative of the wisdom and
power of his Creator.

As in any mechanical contrivance, so in ourselves, imperfections and
disarrangements can only be repaired by a knowledge of the construction
of the parts, and their manner of working. The practice of Medicine
must rest on an exact Anatomy and a sound Physiology. As soon as
it is brought to this, empiricism will disappear of itself; it will need no
legal enactments, no ethical codes for its destruction. And for this rea-
son, if there were no others, it is the bounden duty of every physician to
encourage to the utmost within his own sphere of influence every attempt
to realize such a state of things. The encouragement which has been
given to this book I regard as a token that these principles are profound-
ly recognized by the medical profession of our country.

To students of Medicine I may be permitted, on this occasion, to say
a few words. It was chiefly with the hope of influencing them, and
leading them into the paths of scientific Physiology, that I was first in-
duced to write this book. I would impress on them the importance of
cultivating habits of thought arising from the exact and practical sci-
ences. A great revolution is impending over the profession to which
they have devoted themselves. If they design to take a leading posi-
tion, not merely following it as an industrial pursuit, but regarding it as
one of the most dignified and noble of human occupations, they must
prepare themselves in a manner consistent with the modes of thought that must prevail in the times now quickly approaching. It may be too much for us to expect that our contemporaries, who have been educated in the ideas of the past, should unlearn so much of what they have learned, should in so many things begin their studies again; but we may demand a right preparation from those who are only now commencing. In offering to them this book, I do not present an untried work. It is the result of an experience in teaching for many years, an attempt to set forth in plain language the great features of the science, and to give in sufficient detail a representation of the present state of Physiology. For the purpose of facilitating its study, I have divided the whole subject into two branches, Statical and Dynamical. The expediency of this has been impressed upon my attention by the necessity of conforming the course of lectures of which these pages are an abstract, to the wants of a medical class. The physician is chiefly concerned with the conditions of life—the organic functions, as digestion, respiration, secretion, etc. The doctrines of development and the career of an organic form are of less pressing interest; but it was very soon found that other advantages were derived from this subdivision, as might have been expected from its conformity to the usages of writers on other branches of Physical Science.

To the general reader I may remark that I have endeavored to carry out in the following pages the spirit of what is contained in the preceding paragraphs. I have devoted more than twenty years not merely to the study, but also to the experimental determination of physiological questions, of which only a summary could here be offered. It was not possible to give my own results more in detail in a formal text-book on the entire science, but it may not perhaps be improper here to say that opinions sometimes delivered in a few lines have cost me many days, or even weeks, of expensive and laborious experiment.

Among the contemporary works I have used as authorities are Dr. Carpenter’s different treatises, Todd and Bowman’s Physiological Anatomy, and Kirke’s and Paget’s Hand-book. As respects monographs, the language of the authors themselves has been employed wherever it was possible. A list of wood-cuts is annexed, in which reference is given to the sources from which those not original have been derived. In the explanation of these engravings the description used is that of the authors themselves in most cases, and it is incorporated in the text, as, for instance, in Book I., Chapter XVII., in which, the engravings being derived from the Neurology of Leveillé and Hirschfield; the accompanying descriptions are merely translations from the French; or, again, in Book II., Chapter VII., in Dr. Prichard’s statements of the methods of examining the skull. With respect to the original engravings, it will be seen that many have been obtained by the aid of microscopic photog-
raphy, the process having been so far improved by me as to be made very available for these uses. For several of the specimens from which photographs have been taken I am indebted to Mr. Abbott.

In this work I have therefore endeavored to treat of man according to the methods accepted in Physical Science, but still of man as an individual only. Physiology, however, in its most general acceptance, has another department connected with problems of the highest interest. Man must be studied not merely in the individual, but also in the race. There is an analogy between his advance from infancy through childhood, youth, manhood, to old age, and his progress through the stages of civilization. In the whole range of human study there are no topics of greater importance, or more profound, than those dealt with in this second department or division. It is also capable of being treated in the same spirit and upon the same principles as the first. I have nearly completed a volume, which will serve as a companion to this, in which in that manner the subject is discussed, and the laws which preside over the career of nations established, and would bespeak for it the consideration of the reader.

John W. Draper.

University, New York, July 1st, 1858.