

THE PROTEIN ELEMENT IN NUTRITION

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The protein element in nutrition by D. McCay

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D. MCCAY

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BY

MAJOR D. McCAY,

M.B., B.Ch., B.A.O., M.R.C.P., I.M.S.

PROFESSOR OF PHYSIOLOGY, MEDICAL COLLEGE, CALCUTTA

ILLUSTRATED

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SUBSCRIPTION

GENERAL EDITORS' PREFACE

THE Editors hope to issue in this series of International Medical Monographs contributions to the domain of the Medical Sciences on subjects of immediate interest, made by first-hand authorities who have been engaged in extending the confines of knowledge. Readers who seek to follow the rapid progress made in some new phase of investigation will find herein accurate information acquired from the consultation of the leading authorities of Europe and America, and illuminated by the researches and considered opinions of the authors.

Amidst the press and rush of modern research, and the multitude of papers published in many tongues, it is necessary to find men of proved merit and ripe experience, who will winnow the wheat from the chaff, and give us the present knowledge of their own subjects in a duly balanced, concise, and accurate form.

Major McCay deals with a subject of fundamental importance—viz, the amount of protein required in nutrition. From prolonged inquiries into the habits and physique of the tribes and races of India, he brings forward a body of evidence which proves that a high protein ratio is necessary in child life to produce a virile and active race of men. Major McCay has had splendid opportunities in the material afforded him by the prison dietaries of India, and he has utilized these to the fullest advantage. His final conclusions are in opposition to those of Chittenden, and demand the closest attention of all, and particularly of those who have to deal with dietaries for the young in schools and institutions.

LEONARD HILL,
WILLIAM BULLOCH.

September, 1912.

AUTHOR'S PREFACE

THE object with which the following pages have been written is to present to the reader a broad view of the subject of nutrition in the light which recent investigations have shed on the problems connected therewith.

Since the publication of the volumes dealing with Chittenden's views on the protein requirements of the body, a very considerable amount of investigation has been quietly going on. Sufficient time has now elapsed, since his first onslaught on the generally accepted opinions held with regard to the level of nitrogenous interchange within the body necessary for the maintenance of a healthy man of average weight and doing a moderate amount of work in health and in a state of efficiency, to permit of definite conclusions being arrived at.

It is meet, therefore, that the stage now arrived at in the determination of the ideal form of the dietary of mankind should be placed on record. Such a record, the author hopes, will be found in the matter set forth under the following chapters.

In the present volume the author has made use of the observations and investigations of a great many of the more important recent publications on the subject, and has attempted to show that the weight of evidence is entirely against the great reduction of the protein content and caloric value of the dietaries of mankind so strongly advocated by Chittenden.

Recent investigations by different research workers have shown that it is possible to reduce very considerably the quantity of protein necessary to maintain an animal in nitrogenous equilibrium, when the particular nitrogenous compounds required by that animal only are given in the food. In fact, at the

present time, no one denies the feasibility of maintaining either man or animals in a condition of nitrogenous equilibrium on quantities of protein very much below the standards set up by the old masters in the science of nutrition.

If we knew exactly how much, and what particular nitrogen compounds the body requires in each specific state of nutrition, it is rational to expect that it would be possible to maintain the body in health, vigour, and efficiency on quantities of protein very much less than those hitherto considered necessary; but, as we do not know what form of nitrogen combination nor how much of any particular unit is required in the different states of bodily nutrition, it is surely only rational that, in order to insure a sufficiency of those elements absolutely essential, a liberal standard of dietary should be recommended. The work of Leonard Hill and Flack on flours, and the researches carried out on the production of beri-beri by feeding animals on rice deprived of certain of its outer layers, show how important certain minute constituents of the food may be.

It seems, therefore, only reasonable to lay down such a standard of protein in the feeding of man as will at least give to the body the opportunity of obtaining the particular combinations it requires in any given state of nutrition.

This deduction is fully borne out by a careful consideration of the information available from dietary studies carried out in many different countries, and particularly by the investigations made in India to determine the effects of different degrees of protein interchange on several tribes and races living under exactly the same conditions, except as regards diet. An absolutely dispassionate survey of the physical development and general capabilities of the races and people of India points undoubtedly to the conclusion that, other factors being eliminated, those who obtain a liberal supply of absorbable protein in their daily food are superior in every respect to those whose dietaries exhibit any marked degree of lowering of the average protein standard.

The general conclusion arrived at, from a broad consideration of all the facts available in the present state of our knowledge, is that the views held by the older writers on nutrition are sounder and more in accord with the findings of careful scientific