

TREATMENT BY DIET

BY

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Preface to the Fifth Edition

Intelligent treatment by diet is the greatest weapon available to preventive medicine. Owing to the tremendous advances in the field of nutrition since the Fourth Edition of this work it has been necessary to rewrite, revise and expand more than half the book. The importance of vitamins in nutrition should not need any emphasis. The constructive criticism that has curbed the over-enthusiasm which resulted in the public's indiscriminate use of vitamins has caused the pendulum to swing back to the physician for specific and discriminating use.

The new knowledge of protein and amino acids in diet therapy has raised an appreciation of their special value as prophylactic and therapeutic agents of great interest to the medical profession. This aspect of protein usage is increasing very rapidly and a new chapter has been written to give full coverage to the therapeutic use of protein and amino acids.

The discovery and synthesis of the vitamin folic acid (*L. casei* factor), which is effective in cases of pernicious anemia, sprue, macrocytic anemia of pregnancy and other forms of macrocytic nutritional anemias in a manner similar to that caused by liver extract when given orally or parenterally, give encouragement to the belief that these relationships will soon be clarified and that the nature of the anti-pernicious-anemia principle itself will be discovered.

Many new charts have been supplied which cover the fat- and water-soluble vitamins and give their function in the body, clinical features of deficiency or absences, their relative distribution in a few common foods, and indicate recommended daily allowances and therapeutic dosage.

We have proposed five methods of diagnostic aid in determining deficiency states. We have drawn up numerous tables to afford quick aid in differential diagnosis of deficiency states and in determining factors that may interfere with digestion, absorption or utilization of food ingested.

A new chapter has been supplied on de-

ficiency diseases incorporating the newer concepts of nutrition and deficiency states. This chapter includes macrocytic anemias and hypochromic, microcytic anemias with many colored photographs demonstrating physical signs in patients with deficiency disease about the tongue, eyes and mouth.

The chapter on liver disease has been rewritten to incorporate the newer conception of the application of protein and to bring up to date the use of choline and other food factors utilized in treating cirrhosis of the liver, chronic hepatic diseases and hepatocellular jaundice.

In the chapter on diabetes mellitus we have taken out all the diets restricting carbohydrates below 100 grams and have added or reorganized our series of diets for diabetes to allow up to 250 grams of carbohydrate. We have written a new chapter on diet and skin diseases and on preoperative and post-operative dietary care; have added tables, taking advantage of shorter methods of calculation as well as long tables of 100-gram portions of foodstuffs, incorporating vitamins, minerals, etc.

A series of new colored plates has been added to demonstrate and to aid in the visualized teaching of comparative servings of all the types of food recommended by the Food and Nutrition Board of the National Research Council.

The magnitude of the literature on nutrition today makes it well-nigh impossible for clinicians and others to keep abreast of the field. We cannot hope to have done more than approximate justice to all the publications or to have avoided entirely errors of judgment in selection and interpretation of the available literature. We have purposely omitted excessive details and lengthy accounts of theories. We have attempted to maintain the original purpose of this book, namely, to give physicians a simple, crystallized, practical and workable method of prescribing diets and applying treatment by diet to health and diseases. We shall appreciate constructive criticism or comments that

will improve the efficiency or practical usefulness of this book.

The author appreciates the tireless, devoted and efficient efforts of his secretary Nona Pillar, and his son, Clifford J. Barborka, Jr., who typed all of the manuscript. To our publishers, J. B. Lippincott

Company, we wish to express our deep gratitude for their patience, forbearance, counsel and aid.

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Preface to the First Edition

The purpose of this book is first, to present to physicians a concise, practical and systematic method of prescribing diets and applying treatment by diet to health and disease; second, to aid the physician and dietitian in teaching the individual patient how to make a selection of the proper amount and type of food that has been prescribed for him. The chapter on "The Application of Diet Therapy" offers an excellent method of teaching the patient to visualize definite portions and servings of the various foodstuffs.

Almost every physician has a different method and conception of treatment by diet. Most of these are variations of existing plans and stock diet lists of greater or less antiquity and do not consider the individual patient's needs. Many are fairly complex with the result that the patient, and at times even his medical advisor, are both needlessly confused. There is a great deal of scientific material of considerable value regarding diet being written and given out to the public; however, there is, also, so much unscientific and faddish information being disseminated that it is very difficult for the

physician to teach his patients the proper conception of the relation of diet to health and disease.

Because of the above facts the writer has placed stress upon the elementary principles that science has developed. He has purposely omitted excessive details and lengthy accounts of theories. Through his observation and contact with other physicians in the practice of medicine and by an extensive review of the literature, including the many excellent scientific and detailed texts on the subject of nutrition, he has incorporated the most widely accepted ideas of other men in the various fields of nutrition.

Furthermore, the material presented in this book has proved to the writer to be an effectual measure, in applying treatment by diet, in both hospital and private practice.

The author is under obligation to various friends and co-workers both during the years spent at the Mayo Clinic and the present facilities afforded by the Northwestern University Medical School. Particularly does he wish to acknowledge the valuable aid and criticism of his dietitian, Miss Pearl Lewis.

CLIFFORD J. BARBORKA

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PART I
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Diet in Health

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TION
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DEFICIENCY STATES
THERAPEUTIC TESTS WITH
VITAMIN SUPPLEMENTS

We have been engrossed so long in perfecting machines that we have almost forgotten the nameless and the indispensable force behind them—man. We have studied the nutritional needs of our domestic animals; we have replanted our forests and dust bowls; we have built dams and irrigation ditches; but only very recently have we begun to be aware that there is such a thing as human erosion. We have taken the human being for granted. We have worked more or less on the old theory that what was good enough for grandfather was good enough for us, forgetting that the soil and the foods in grandfather's day and the conditions of that civilization differed tremendously from those of the mechanized

civilization of today. Sadly enough, not until war involved a rich and a wasteful land did the nutrition of mankind become a matter of national policy.

EVOLUTION OF OUR DIET

When one delves into the study of man he emerges with the feeling that there have been very definite epochs in the evolution of our diet. Races of people have changed very definitely and radically their habits of eating by some unforeseen circumstance. Custom determines the arrangement of the meal and the kinds of foods eaten, but the experience of the race governs the custom. In reflecting upon the food habits of our ancestors, one may feel that they derived

adequate nourishment without knowing the scientific facts of nutrition, such as the ash content of the orange, the caloric value of bacon and eggs or the vitamin property of tomatoes. This, perhaps, is true, but great changes have taken place in the past thirty years in the production and the selection of food. The assumption is expressed often that the normal person, when free to choose, will by instinct select the foods best suited to his needs. Within definite limits this may be true, but, generally speaking, the question is not so much what he will select as what by economic force and necessity he can get for sufficient nourishment. There is a great diversity of diet upon which people in various parts of the world subsist, and upon which they manage to do fairly well. The American diet contains a large proportion of concentrated foods, low in vitamin, in residue and in alkaline minerals, and high in carbohydrate and in acid minerals. The tendency has run to an inadequate amount of the bulky residue-containing foods, such as fruits and vegetables. As a result of propaganda with regard to fruits and vegetables, the pendulum is probably now swinging in the opposite direction.

The term protective foods has been applied to meat, milk, eggs, fruits and leafy vegetables. The greater use of protective foods is becoming more widespread every day, and milk, fresh meats, eggs, fruits and vegetables are available in the smallest places throughout the year. A diet such as the average one containing a high percentage of nonprotective foods is conducive to early degenerative diseases. Not only this, but diet each day shows its immediate influence on the emotions and the natures of individuals, and indications point to the fact that

years, or even generations, of certain racial habits of an inadequate or unbalanced food intake, though very slight and even disregarded by the casual observer, may affect the mass characteristics and physical build of certain races.

FOOD AS A SOCIAL FACTOR

A large majority of adult patients who consult the average physician are very interested in diets. Journals, bookshelves, newspapers and radio broadcasts are overflowing with information about diets. Some of this information is worth while and some is not. There is no field of human thought in which sentiment and prejudice so completely take the place of sound judgment and logical thinking as in dietetics. Within the last few years our scientific knowledge of vitamin content, mineral elements and other constituents of food has increased tremendously. Our newer knowledge of nutrition is recognized today as of great importance in relation to health and to disease. The application of this knowledge to the treatment of disease is becoming more inclusive each year, and diet therapy is found to be an important factor in the treatment of many diseases with which previously it had not been associated. Food is being recognized as a most important social factor in the life of every human being. Events are occurring today that indicate how international relationships are affected by our universal dependence upon the adequate supply and distribution of food.

Medical treatment is resolving itself more and more into modifications of food ingested. As a matter of fact, the abundance or the dearth of food, its cost and its distribution affect indirectly, but intimately, the therapy of every patient. In order to formulate proper diets in

the treatment of disease, it is first necessary to have a comprehensive grasp of the nutritive principles of diet in health. All the newer knowledge of the nutritive needs of the human body is the result of experimental studies on animals, correlated with the application of these studies to human subjects.

PROBLEMS IN SECURING ADEQUATE NUTRITION

There are many problems to be faced in putting nutrition knowledge to work in the United States. Not the least of these results from low incomes. Many families just do not have enough cash income to buy the right kind of food, and they may not live where they can earn this; or even if they should earn an income sufficient to meet the cost of the adequate amount of food, it is a truly major problem to educate these people as to the proper intake and the proper expenditure for it. We are obligated as physicians to stimulate every patient to realize his own potential optimum health and well-being and to strive to attain it by every means at his command. We must inform every patient of the simplest facts concerning food values, so that he may know how to select the right food. There are pitfalls and dangers in any nutrition program: some people will always exploit nutrition propaganda for personal gain; others will listen to quacks and charlatans; and still others will take a distorted view, either overemphasizing certain phases or discounting the whole program and taking pleasure in expanding their ideas and ridiculing constructive efforts. Then there are those who become so enthusiastic about the potential benefits of synthetic vitamins that they have little faith in the protective foods and well-planned meals. They may

spend money unwisely on vitamin concentrates when the same money spent for good food might benefit them and their families far more. In any surge of interest in a new movement there are these dangers, but, fortunately, the pendulum eventually swings back to the middle of the road. Interest in nutrition is spreading, and it is the duty of those who are informed to convince the uninformed that the knowledge of nutrition is worth having and applying practically. Good nutrition for an individual implies that he receive and utilize a suitable metabolic mixture of all substances necessary for health. This can be obtained only from foods selected, processed, prepared, consumed, absorbed and utilized so as to furnish in optimal amounts the individual's essential nutrients. The optimum allowance which is recommended for each nutrient should be much greater than the minimum requirement of that nutrient; that is, provision must be made not only for actual requirements but also for variations from the normal both in health and in disease, for the accumulation of some reserves and for differences in actual food intake due to food habits, individual taste and variation in economic status. Such a diet must contain certain essential requirements in order adequately to protect and maintain health. These requirements are: (1) Adequate protein; (2) mineral elements; (3) vitamins; (4) sufficient calories for energy requirements; and (5) water.

ADEQUATE PROTEIN

The ingestion of food usually is considered to satisfy two physiologic requirements: first, to furnish raw materials for the growth and the repair of body tissues; second, to furnish energy for the processes of life. Protein alone furnishes