

**FOOD: SOME ACCOUNT
OF ITS SOURCES,
CONSTITUENTS AND USES**

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Food: Some Account of Its Sources, Constituents and Uses by A. H. Church

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A. H. CHURCH

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FOOD

*SOME ACCOUNT OF ITS SOURCES, CONSTITUENTS
AND USES.*

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PREFACE.

Scope and Uses
of the Present
Volume.

THIS book is meant to serve two ends. In the first place it is intended for the instruction of those visitors to the Bethnal Green Museum who may wish to study the collection of food-products there displayed. Secondly, it has been so written that its pages may be read, it is hoped with profit, apart from any such exhibition of the actual materials of food.

Origin of the
Food Collection.

A few words concerning the origin and character of the Food Collection may fitly here be given. The first suggestion of such a series was made by Thomas Twining, Esq., of Perryn House, Twickenham, who planned an Economic Museum, illustrative of the materials and processes of every-day life. The Food Collection was first arranged in 1857, when it became part of the General Museum of the Science and Art Department. For some time it was under the direction of the Rt. Hon. Lyon Playfair, C.B., M.P., who has himself done much good service through his studies of the relations between Food and Work. The late Dr. Lankester was subsequently entrusted with the management of the collection. It has been recently re-arranged, enlarged, and re-described by the author of the present volume.

Nature of the
Food Collection.

The Food Collection contains two distinct classes of specimens. One of these comprises all the usual and important articles of human food, whether derived from animals or plants. The other class of specimens illustrates, by what may be termed *displayed analyses*, the chemical composition of many individual food-materials, such as breadstuffs, pulse, milk, eggs, and butchers' meat. Moreover, in this part of the collection the uses of food are shown in relation to the nutrition and work of the human body. An attempt has been made to let the Food Collection tell its own story. For while each important specimen and illustration is labelled in the usual way, longer and fuller descriptions, in conspicuous

type, accompany each group of related specimens. Statistics as to the production, imports, and consumption of foods are also exhibited, together with numerous drawings and diagrams. Besides these aids to a thorough grasp of the subject, a set of tables has been prepared, showing at a glance the positions, in the kingdoms of Organic Nature, of the chief animals and plants used as food.

Plan of the Present Guide-Book. The arrangement adopted in the present volume corresponds with that of the Food Collection; it is based on the chemical composition and physiological functions of food. Both collection and book are confessedly imperfect: in each there are deficiencies to be supplied, redundancies to be removed. The collection of necessity continually grows, but the regulation of its growth is difficult. Not only are the defects of the collection reflected in the present Guide, but there are some sections of the subject where our exact knowledge fails. We may note in illustration of this point the imperfection of our published chemical analyses of butchers' meat, fish, and poultry. Such deficiencies will be slowly made good, but the work involved is difficult and tedious. It should be stated in this place that the Guide to the Animal Products Collection will afford to the reader of the present volume the zoological details concerning the most important animals used as food. In the case of vegetable products the following pages give a certain amount of botanical information; here the nomenclature adopted in Professor Oliver's Guide to the Kew Museums has been almost invariably followed.

Authorities consulted, and Sources of information. In the present volume there have been incorporated some parts of the "Guide to the Food Collection" compiled by Dr. Lankester, in 1863. Advantage has also been taken of such portions of the former "Inventory of the Food Collection" as had been revised by Professors Huxley and Frankland. The well-known works and papers of Liebig, Fresenius, Payen, Gorup-Besanez, Beaunis, Moleschott, Dupré, Bouchardat and Quevenne, Lawes and Gilbert, Frankland, Playfair, Pavy, E. Smith, Lankester, Hassall, Johnston, and many other writers on Food, Dietetics, and the Chemistry of Plants and Animals have been consulted, but the responsibility of a large proportion of the numerical results given in the present volume rests with the author, inasmuch as they have been derived from or checked by hundreds of new analyses performed in his laboratory.

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FOOD.

PART I.—OF FOOD IN GENERAL.

§ 1.—THE USES OF FOOD.

IN order to show clearly what is the nature of the food of man, and what the work which it has to perform in the body, we may make use of a comparison which will be familiar enough to our readers. Let us compare the complex, living machine of the human body with a locomotive engine. In the case of the engine, we have, first, its material structure; secondly, the fuel in the form of coke or coal with which it is constantly supplied; thirdly, the air which enables the coke to burn; fourthly, water; and fifthly, waste, in the shape of ashes, cinders, and gases. In the case of the human body we likewise have, first, a material structure; secondly, fuel, in the form of our daily rations of food; thirdly, air, which enters into the lungs, and serves to consume the food; fourthly, water; and fifthly, the waste-products, which are thrown out of the body by different channels. In both cases the fuel is burnt by the aid of air, the oxygen of which unites with the combustible part of the fuel, and in so doing the power of doing work or potential energy in the materials which combine is set free as heat and motion. In the steam-engine this heat is chiefly used to change water into steam, and then, by the expansion which