Carbohydrate Polymers **18** (1992) 233–234

Book reviews

Carbohydrates. A.F. Bochkov, G.E. Zaikov and V.A. Afanasief, VSP Science Publishers, Utrecht, 1991. pp viii + 146, price DM 127. ISBN 90-6764-118-9.

A simple trisaccharide composed of D-hexoses can have more than a million theoretical structures, only varying in stereochemistry and combination of the monomers. It may be the almost unlimited versatility of so similar looking and similar reacting accumulations of mainly alcoholic functional groups which cause so many students and professionals to shy away from a deeper contact with carbohydrate chemistry. However, the chances of getting along in chemical and biological science without a sound understanding of saccharides and their related compounds are shrinking dramatically. Carbohydrates are omnipresent now, and they are on the verge of becoming a central research topic in applied and fundamental natural sciences.

Carbohydrates imparts a basic understanding of carbohydrate chemistry in a lucid and sometimes even entertaining though ambitious style. Its lively use of language makes a demanding chemistry seem more easily understandable, and its way of connecting dry facts with examples or applications of general interest keeps the reader's attention.

The book opens with a chapter on carbohydrate structures, and, besides the common monosaccharide subject, the special structural features of polysaccharides and glycoconjugates are treated equally. A second chapter presents an introduction to classical and modern methods of carbohydrate analysis, followed by a third which describes fundamental synthetic strategies in saccharide and glycoside preparations. The last chapter, on applications, explains basically the multiple biological roles of carbohydrates and has therefore a somewhat misleading title, despite its interesting contents. All four chapters are subdivided in a clear manner and are generously illustrated with formulae and figures.

Carbohydrates is highly recommended to everybody who wants to gain an understanding of carbohydrate chemistry but finds access to this topic difficult. Presupposing some knowledge of general organic chemistry, the book introduces the all-important concepts and their applications, thus providing a sound basis for further specialization. However, for people who already have specialist knowledge but who lack an overall picture of modern carbohydrate chemistry, the book is able to offer the missing framework. For quite another reason *Carbohydrates* is interesting for teachers of carbohydrate chemistry: it demonstrates how to impart this demanding topic excitingly.

John F. Kennedy
Hans-J. Danneel

Food: The Chemistry of its Components. 2nd edition, T.P. Coultate, Royal Society of Chemistry, Cambridge, 1989. pp. xi + 325, price £9.95, ISBN 0-85186 433 3

Food is a complex system which includes four main categories of constituent: proteins, carbohydrates, fats and water. Flavouring and colouring agents, anti-oxidants, preservatives, emulsifiers, acidulants and other additives are found in small amounts but they, together with the main components, are responsible for the characteristics of a food product, such as taste, stability, texture, and nutritive value.

Food: The Chemistry of its Components provides discussion on the chemical structure, properties and behaviour of the macrocomponents of food such as carbohydrate, lipids and protein, as well as of the microcomponents—colours, flavouring, preservatives and vitamins, which are classified in terms of their function.

This book is very readable and the addition of a new chapter on water, minerals and undesirables in this second edition, as well as the revised up-to-date data, makes it an important book for understanding the constituents of food systems. It could be useful for researchers, students and those involved in food science or food technology.

Regina C.M. Paula
John F. Kennedy

Industrial Utilization of Renewable Resources. An Introduction. H. Harry Szmant, Technomic Publishing AG, Basel, Switzerland, 1990. pp. xi + 188, price US$29.00, SFr 126, ISBN 0 87762 4437

Due to the continuous and tremendous energy output of the sun, mankind can depend on the constantly

renewable biomass as its primary source of energy and material needs. However, only a very little amount of the renewable resources are utilized for the production of chemicals. The relationship between the current use of renewable resources for the production of chemicals as well as the production of energy, food, lumber and paper products, points to the great potential of purpose biomass-to-chemicals cultivation programs. It is necessary to have a knowledge of the current sources and current industrial uses of biomass to get a better yield of the renewable resources.

Industrial Utilization of Renewable Resources. An Introduction aims to give an overview of the current sources and current industrial uses of biomass to stimulate future initiatives that will bring a greater industrial role of biomass in the world. The book is recommended for anyone interested in the field and clearly it revolves around carbohydrate polymers such as cellulose and starch.

John F. Kennedy
Mercedes G. Garaita

Water and Food Quality. Edited by Thelma M. Hardman, Elsevier Science Publishers Ltd., Barking, 1989. pp. xii + 370, price £53.00/US$95.50, ISBN 1 85166 306 1

The control of the moisture content of foodstuffs and the factors affecting equilibration and mobility of water are of great concern to the food scientist and technologist. The earliest civilisations discovered empirically that a direct relationship often existed between the amount of water in a food and its relative tendency to spoil. Thus, many foods were preserved by sun-drying and salting. Modern quality control techniques include the prevention of moisture exchange and the controlled removal of water, in order to extend the storage life of food products. Chemical changes and microbial growth increase with moisture content.

As the factors that determine water activity have become better understood, so new food products have been developed; and the attainment of food stability by controlling water activity is increasingly being pursued. *Water and Food Quality* aims to describe the effects of water on food quality with regard to the static and dynamic aspects of water activity and how it affects the purely aesthetic aspects of food presentation, the nutritional quality and microbial growth; the interactions between proteins and water; the control of emulsion stability, gel structure and food texture; as well as the effects of water in the eating quality of meat during its mechanical processing and freezing; the quality of confectionery products; and the stability of vitamins. *Water and Food Quality* also includes an extensive bibliography at the end of each chapter, which will enable the reader to explore each particular area in greater detail. The book is a good source of information for scientists and technologists concerned with preservation and quality of food.

Josu M. Anta
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