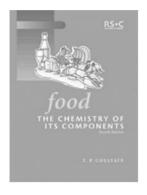
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A Tasty Bit of Chemistry

Juliet A. Gerrard*



Food: The Chemistry of its Components

T. P. Coultate

Royal Society of Chemistry, Cambridge, U.K. 2002, 307 pp. ISBN 0-85404-615-1 Softcover, 17 GBP.

Food chemistry is an interesting discipline, full of tensions. It must meet the needs of both food scientists who demand efficient and reliable tests to ensure quality assurance, and academic researchers seeking precise chemical descriptions of food processing. We remain a long way from knowing exactly which molecules, in which concentrations, are required to make a food taste or smell a particular way, or provide a particular mechanical property. This leaves food chemistry sandwiched between the conflicting approaches of its component disciplines. Faced with an analytical challenge in the carbohydrate arena, a chemist will start with a simple sugar molecule and work up; a food scientist, on the other hand, will start with a custard slice and work down; the food chemist must reconcile the two sets of results and create a model of the system consistent with both views. Progress in food chemistry is often made by striking a productive compromise between precise chemical definition and accurate measurement of a particular property of the food in question.

This 'compromise' approach often leads to working definitions that are confusing at best, and irritating at worst, especially to those trained in pure chemistry. Many contemporary food texts focus on the properties of the food itself and gloss over the chemical details, which are often poorly defined. Such accusations cannot easily be levelled at Food: The Chemistry of its Components, which provides a breath of chemical rigour to the food chemistry arena. As the title suggests, the emphasis is very much on the chemistry of the food components, and less on how these components interact to make the foodstuff. As such, the text is ideal for the chemist interested in food, although it may irritate the food scientist who would like to know more about how the components interact in a food processing context.

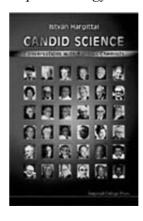
Now in its fourth edition, this book is becoming a classic text and has maintained its traditional structure. After a brief introduction, each chapter tackles a particular food component (sugars, polysaccharides, lipids, proteins, colours, flavours, vitamins, preservatives, undesirables, minerals, and-very important but often overlooked-water) in considerable detail. In each case, plenty of background chemistry is provided before the attention turns to food. Refreshingly, the chemical basis of some common analytical tests is also included. The author is also undeterred by concepts that are challenging to explain in an introductory text. For example, the discussion of colour measurement is very helpful—clearly outlining the particular challenges that the food matrix poses to the analytical chemist.

In places, quite high level research concepts are included—giving the reader a taste for more, and the further reading section gives an easy entry into the research literature. The shift in gear from the very basic to the very complex can sometimes be quite startling, but is mostly well managed by the use of boxes. In places, the research material presented is not quite up-to-date, but a good flavour of current knowledge is provided throughout, with an impressive level of detail.

Food: The Chemistry of its Components is aimed at 'students and teachers of food science and nutrition courses in universities, colleges of further education and school' as well as 'anyone with an interest in food issues.' The writing style is very conversational and easy to read, if a little indulgent with its asides. Those looking for a quick answer to a quick question will be disappointed. However, it doesn't make bad bedtime reading. If you are the sort of person who wonders how many insects it takes to make a bottle of cochineal, or how they make those artificial cherries on the top of cream buns—this book is for you.

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Candid Science: Conversations with Famous Chemists

István Hargittai Imperial College Press, London, U.K. 2002, 506 pp. ISBN 1-86094-228-8 Softcover, \$A 75

Hargittai is a professor of chemistry in Budapest who has been travelling extensively. During the last ten years, while travelling, he has interviewed more than 100 scientists (he 634 Book Reviews

interviewed Mark Oliphant in Canberra in 1999). Most of these interviews were published in an obscure periodical, *The Chemical Intelligencer*, issued by Springer-Verlag, New York. Many of those involving chemists have now been assembled, and some updated, in this volume. Companion volumes, entitled *Candid Science II: Conversations with Famous Biomedical Scientists* and *Candid Science III: More Conversations with Famous Chemists*, have also been published. Hargittai was assisted in these interviews by Magdolna Hargittai, his wife and also a chemist, who recorded the text and also edited the book.

There are interviews in this book with 36 chemists, mostly well-known ones, about half of them winners of the Nobel Prize. The format is questions and answers. There are also four different types of chapters of a general nature, providing background information: one on the Soviet non-acceptance of the resonance theory; one on the beginnings of multiple-metal bonds, one on Paul de Kruif's Microbe Hunters entitled What Turned You to Chemistry, and one on Buckminster Fuller. Six of the scientists (Derek Barton, Michael Dewar, Carl Djerassi, George Oláh, Vladimir Prelog, John Roberts) had written and published autobiographies; the interviews, however, are more recent and sometimes concentrate on different issues. Two scientists are distinguished because they wrote, in Hargittai's opinion, much that can be quoted; thus there is a chapter on Quotable Chargaff and one on Quotable Cornforth. There are many illustrations and photos, some taken by Hargittai himself.

The questions asked by Hargittai vary considerably in different interviews; he was well prepared and familiar with the work of each of his customers. The answers tell how chemists of today have lived and worked, why they chose chemistry as a career and how they were led to make the discoveries for which they are best known. But different chemists present very different stories. Probably the best is the one of Roald Hoffmann who expounds interesting thoughts on chemistry and progress; he had difficult beginnings and did not own a book until he was 16. Dewar presents very unorthodox views and describes how he made several bad moves, for bad reasons. John Pople gives an interesting description of

the development of computational chemistry. Djerassi complains that he was always an outsider and he refers to the Nobel Prize (that he did not get); three of his poems are included in that chapter.

Herbert Brown has had some interesting adventures: When he graduated, his wife gave him a book Hydrides of Boron and Silicon because that was the cheapest chemistry book she could find; they were very poor. Ultimately, he received the Nobel Prize for his work with compounds containing boron. Albert Cotton issues a warning about politicians controlling the expenditure on scientific research. John Cornforth presents a fascinating account of his studies on the stereochemistry of enzymic reactions as followed by the use of asymmetrical methyl groups. Curiously, Prelog—well known for the many good stories he used to tell—does not provide much information of interest in his interview. Barton has some well-informed comments on the differences between the academic atmospheres in Britain, France, and the USAand to the question: 'Who was your most remarkable teacher, colleague, pupil?' he answers: 'Clearly, myself'.

The problematic story of the discovery of fullerene is handled by interviewing all the three chemists who were involved: Harold Kroto, Richard Smalley, and Robert Curl; they shared the Nobel Prize for the discovery. There are also interviews with Eiji Osawa and with two Russian chemists, Elena Gal'pern and Ivan Stankevich who, on the basis of calculations, predicted that the fullerene structure would be stable, some years before its discovery.

This book, of course, can be opened on any page and read with pleasure. The personal speaking style of the text, in contrast to laboriously written paragraphs, makes it easy reading; one feels that one is taking part in a conversation rather than listening to a lecture. There is plenty of useful information, interesting adventure, and valuable advice in the text. The book will be enjoyed by all who have some interest in chemistry, and is highly recommended.

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