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Book Reviews

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***Magnetic Resonance Imaging in Food Science*; Brian Hills; John Wiley and Sons, New York, 1998, vi + 342 pages, hardcover, ISBN 0-471-17087-9, £70.00**

This book is a coherent, up-to-date account of the applications of magnetic resonance imaging in its subject area. It is written by one of our leading practitioners in the field, and can justly be described as authoritative. The book is intended “to be of value to all food scientists and technologists who seek a better understanding of the present and future role of MRI in their discipline...” I do not doubt that it will perform this function fully, provided the reader has the necessary background, or possibly is prepared to acquire it—though this may not be a trivial task. As in the text, the author has chosen his words carefully; nowhere does he claim this as an introduction, and indeed specifically warns that he assumes the reader will be familiar with the basic ideas of n.m.r. and MRI. One useful feature that this review might perform would be to give an idea of what is meant by “basic ideas”. As an illustration, the first section [1.2] (following a single introductory paragraph) is entitled *Phase Coherence and Fourier Conjugate Variables in NMR*, within which we find the n.m.r. signal described as “the ensemble average of the phase of the transverse magnetisation arising from all the spins in the sample, which can be written

$$S(t) = \langle \exp(i\phi) \rangle = \int d\omega P(\omega) \exp(i\omega t)$$

The author then goes on to explain that $S(t)$ is a complex function, and that it is usual to observe both its real and imaginary components by quadrature detection. While all of this is perfectly standard to n.m.r. aficionados, potential readers may like to consider whether, with no explanations, and the briefest of definitions for some of these terms, the book is likely to suit them. Furthermore, Dr. Hills is far from those irritating writers who spend their first chapter on a quantitative introduction, only to abandon all equations for the remainder of the text. The book is presented at a sophisticated spectroscopic level throughout.

In order to classify the material over this highly diverse field, it is presented in three parts, concerning the macroscopic, microscopic, and molecular distance fields, and is essentially method-based, rather than

substrate-based. An intriguing feature, and a valuable one, is that the author has not only included techniques which are currently undergoing development, but has been prepared to suggest, in some cases, the likely outcomes. These speculations frequently take the form of suggesting that this method will give useful results or that that technique is capable of much higher resolution. It will be interesting to see how far these prognostications are borne out in future but, whatever the outcome, it seems unlikely that we will be provided with a better guide for some time to come. The book is nicely produced (without gimmicks), and I noted only a very few (and trivial) typographical errors. References are collected at the end (avoiding much time-wasting searching for the end of each chapter!) and, with many references in 1996, and some 1997, up-to-date though without the exclusion of significant earlier citations. Clearly no laboratory involved in this area can afford to be without this volume, and it is an invaluable source of information and insight for any food science library.

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***Milk and Dairy Product Technology*, Edgar Spreer (1998). Marcel Dekker, New York. ISBN 0-8247-0094-5. VII + 483pp. \$135-00**

This book sets out to convey basic knowledge of milk processing in a concise form to a broad spectrum of readers. The 16 chapters vary considerably in length and fall into three sections.

The first three chapters cover a brief introduction, the composition and both physico-chemical and biological characteristics of milk and aspects of its collection and delivery to the dairy. The fourth chapter provides a good review of the processes and processing equipment common to many dairy plants, though it was odd that the term “decreaming” was invented where the terms skimming and separating already exist and are in common usage.

The subsequent chapters devoted to product groups form the largest section. Chapter 5 covers market milk, milk drinks and cream products and, with the heat treatment processes already covered in the previous