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Book reviews

Practical Dehydration 2nd Edition, Maurice Greensmith, Woodhead Publishing Limited, Cambridge, 1998, 288 pp, ISBN 1 85573 394 3, £85.00

This is the second edition of a work first published in 1971. The author has had considerable experience of dehydration projects throughout the world, in particular vegetable drying, and this is evidenced by the practical details included in some of the chapters. In the preface to this edition, the author states that the demand for dried vegetables by the consumer or catering markets has declined in recent years, but instead they are increasingly used as constituents in snack foods, soups and garnishes, ethnic specialities and health foods.

In Chapter 1 the origins, growth and potential of dehydration are discussed. The tables giving figures for the importation of dried vegetables into the UK are for 1986, somewhat dated. Chapter 2 entitled *Factory Organisation* covers plant location, organising raw material supplies, labour requirements, water supplies, power requirements and plant and waste disposal. Chapter 3 is entitled *Preparation Plant* but, in fact it describes a preparation plant for vegetables only. These include various types of cutters, washers, blanchers and conveyors. A table comparing the efficiency of abrasive, lye and steam-peeling is useful. More specialised equipment for preparing beans, onions, tomatoes, peppers, cabbage, spinach, leeks, celery, peas and beetroot is also briefly described. Another useful table listing the power, steam and water requirements for various types of preparation equipment is also included. In Chapter 4, *Dryers*, various types of hot-air dryers, including cabinet, tunnel, conveyor, bin and air-lift dryers, are discussed in some detail mainly in the context of drying of vegetables. Vacuum-dryers, freeze-dryers and drum-dryers receive less detailed treatment. The section on spray-drying has been significantly updated and expanded from the first edition, taking into account new dryer designs and multistage dryers.

Chapter 5 is devoted to dehydration of potato products including granules, flakes, and dice. Flow sheets for each of these products are provided. The title of Chapter 6 is *Dehydration of Vegetables* and includes flowsheets and other information on the drying of green beans, beetroot, peppers, cabbage, carrots, celeriac, celery, garlic, leeks, mushrooms, green peas, onions, parsnips, some herbs, spinach, swedes and tomatoes. This chapter reflects the personal experience of the author and is full of useful information. Chapter 7, *Dehydration of Fruits*, covers the drying of apples, apricots and peaches, which were included in the first edition, but in addition pears, plums and more exotic fruits such as banana, paw paw and pineapple. The production of dried currants and raisins is also described. Spray-dried products are discussed in the new Chapter 8. These include tomato powder, instant coffee and skim milk powder. The description of aseptic filling of liquid products, included in this chapter, seems out of place in this work. In a short Chapter 9, dehydration of meat products is covered. Chapter 10 is entitled *The Formulation of Dehydrated Soup* and in it a basic vegetable soup formulation is presented and the pros and coins of the use of additives and artificial colours are discussed. Sieves for screening dehydrated products, manual and instrumental methods of selection, packaging materials and storage conditions for dried foods are briefly discussed in Chapter 11. *Quality Control* is the title of a very useful Chapter 12. In it the type of laboratory analytical tests applicable to dried foods are outlined; a typical specification for a dried food is presented and chemical and microbiological methods of analysis for potato granules are described in detail. In the final Chapter 13, *The Economics of Dehydration*, the main factors that may influence the economics of a dehydration operation are briefly discussed. These include the hours of operation, the length of the season, the range of products being manufactured, staff deployment, any by-products that are produced and their outlets. The many factors that influence the costing of a process are outlined and a hypothetical project is costed and projected balance sheets presented and discussed. Examples of some of the pitfalls associated with horticultural projects in developing countries are given.

There is a surprising dearth of reference to other relevant publications in this work. This book certainly 'does what it says on the cover'. It is a practical guide to food dehydration. Theoretical aspects of the subject are not covered. Descriptions of equipment are not detailed. It is not likely to be recommended as a textbook for students studying food science and technology. It does

provide a wealth of information on dehydration of specific foodstuffs, in particular vegetables and fruits. It is likely to find its way into libraries in institutions where food science and technology, postharvest technology, agriculture and horticulture are taught. It should be of interest to agricultural and food research organisations throughout the world. This updated edition is a very useful contribution to the literature on the important subject of food dehydration.

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***Food Chemistry*; 2nd ed.; H.-D. Belitz and W. Grosch; Springer–Verlag, 1999. 992+ xlviii pages, ISBN 3-540-64704-X (hardcover) £76; 3-540-64692-2 (softcover) £37.50**

This textbook is the English translation of the fourth German edition published in 1992. Since the publication of the first English edition in 1987, this book has become widely used and highly respected. It is, therefore, very pleasing to see this second, and significantly revised, edition.

This is a substantial, detailed and comprehensive volume with a style which makes it easy to use as a reference book. It provides substantially more detail on the chemistry and biochemistry of food constituents and their interactions than currently available in other food science and food chemistry textbooks. However, its content is not confined to the chemical and biochemical components of foods, and the application of these sciences in the production, processing and storage of all the main food commodities is also discussed in detail.

The book contains 24 chapters, including one additional, short chapter on drinking water that did not appear in the first English edition. The first 10 chapters, comprising more that half the pages, deal with the chemistry and biochemistry of food constituents under the following headings: Water (7 pages), Amino Acids, Peptides, Proteins (84), Enzymes (60), Lipids (85), Carbohydrates (82), Aroma Substances (59), Vitamins (17), Minerals (7), Food Additives (38), Food Contamination (30). The remaining chapters are concerned with food commodities: Milk and Dairy Products (43 pages), Eggs (14), Meat (54), Fish, Crustaceans, Molluscs (21), Edible Fats and Oils (29), Cereals and Cereal Products (62), Legumes (23), Fruits and Fruit Products (53), Sugars, Sugar Alcohols, Honey (28), Alcoholic Beverages (45), Coffee, Tea, Cocoa (31), Spices, Salt and Vinegar (12), Drinking Water, Mineral and Table Water (3). There are approximately 450 tables, 340 figures and 1000 chemical formulae and equations. The book has a comprehensive index (71 pages) and a substantial table of contents (31 pages). Each chapter is very well referenced and a significant number of new references have been added since the previous edition. Each of the chapters dealing with commodities has one or more tables giving statistics of world production for that group of commodities in 1996. These data are more up-to-date than that provided in the most recent German edition of the text.

The style, layout and logical presentation are similar to the previous edition. However, this new edition contains over 200 more pages than the first English edition. While all chapters have been revised and updated to some extent, new sections have been added to some chapters. Examples of these additions include: phase transitions in foods containing water, the properties of proteins associated with the formation of gels, foams and emulsions, a more extensive coverage of the Maillard reaction, extended discussion on aroma compounds in foods, more coverage of food analysis, extended sections on baking and on micelle formation in milk. Overall the translator has done an excellent job in making the English text both accurate and easily understood. In such a substantial work there will be some errors but these are relatively few. Chemical formula are presented in two ways, either in figures with headings, or as numbered formulae within the text, and one small criticism relates to the confusion this can cause. Some of the numbered formulae involve quite substantial reaction pathways covering up to half a page which would have been easier to follow if they had been presented as figures.

This is an excellent book from authors with high international recognition. It is a fitting tribute to Professor H.-D. Belitz who died soon after the publication of the latest German edition on which this translation is based. This book is strongly recommended as a valuable textbook and reference source for advanced students as well as for established food scientists in both industry and academia.

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