

detail. Several of the authors are based in Malaysia, which reflects the importance of that country in palm oil production. The authors' enthusiasm for the use of palm oil in food products shows up clearly in Dr Kheiri's chapter on uses in human food, where some of the limitations in the use of palm oil for certain foods are underestimated. The references provided in most chapters are useful, but no references are included in the sections dealing with production or industrial uses of the oil.

The book appears to be factually accurate and there appear to be few errors. However, the sterol content in Table 4.5 adds up to 109%. One unusual convention, which can be rather misleading, is the use of \pm as representing approximately. Although some topics are covered rather superficially, this text provides a useful introduction to all aspects relevant to palm oil production and utilisation, and it can be highly recommended for the non-specialist.

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Food Factories: Processes, Equipment, Costs. Edited by Alfred Bartholomai. xvi + 281 pp. VCH Publishers Verlagsgesellschaft, Weinheim, NY, Basel. 1987. DM220. ISBN 3-527-26490-6 (VCH Verlagsgesellschaft), ISBN 0-89573-554-7 (VCH Publishers).

The manual consists of 41 chapters (each prepared by a specialist with extensive experience) on the engineering and operation of plant producing different processed foods. Examples of products from all areas of the food processing industry are included, and the scale of plants described ranges from a US\$116 000 mushroom plant to a \$30 million corn starch plant.

Each chapter follows a uniform format designed to simplify the presentation of the data. For each factory information is presented on the product and its market as well as the process description, plant layout and output. The requirements of the plant in terms of labour (numbers and skill level), raw materials, equipment and utilities are described. Detailed analyses of the cost of plant and equipment including all design, engineering and freight costs are presented. Operating costs are itemized and expressed both as total cost per annum and cost per unit of product.

The introduction states that the role of the manual is to assist in investment decision and to help in economic evaluation of an investment in a food processing business. The major drawback is how useful the information on cost can be to a specific situation. While the figures for cost of items of plant are likely to be accurate, costs of raw materials, energy, labour and utilities are standardized to single rates which can only be arbitrary and could lead to vast discrepancies in operational costs in some

countries. (E.g. milk as a raw material is costed as \$0.1/litre—actual cost in the UK is approximately \$0.26/litre. The estimated cost of labour—unskilled operator \$4000 per annum including social benefits—is far too low for Western Europe and the USA). The resulting estimates of operating costs can only be considered to be within an order of magnitude of the true figures and it is questionable whether an actual cost figure should have been included on these items. Therefore, while much of the data may be useful to an economic evaluation, the final cost figures may be misleading.

The book does, however, provide a great deal of information on the unit operations and processes, processing plant and operating requirements for many products in a very comprehensible format. As such it should prove useful as a reference work for anyone involved in the food processing industry, including teachers and students of food technology.

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