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Book Review

Temperature and Animal Cells. Symp. Soc. Exp. Biol. No. xxxxi. Edited by K. Bowler and B. J. Fuller. Company of Biologists Ltd., Dept. of Zoology, University of Cambridge. 1987. ISBN 0-948601-08-6. ix + 460 pp. Price: £40.00.

This book has chapters entitled 'Water, temperature and life' (F. Franks), 'Temperature and macromolecular structure and function' (R. H. Pain), 'The effects of temperature on biological membranes and their models' (D. C. Lee and D. Chapman), 'Temperature effects on red cell membrane transport processes (J. C. Ellory and A. C. Hall), 'Temperature acclimation and metabolism in ectotherms with particular reference to teleost fish (I. A. Johnston and J. Dunn), 'Adaptive responses of animal cell membranes to temperature' (A. R. Cossins and R. S. Raynard), 'Temperature and animal cell protein synthesis' (R. H. Burdon), 'A temperature-compensated ulltradian clock explains temperature-dependent quantal cell cycle times' (D. Lloyd and F. Kippert), 'Cellular heat injury: Are membranes involved?' (K. Bowler), 'Hyperthermia effects on the cytoskeleton and on cell morphology' (W. T. Coakley), 'Role of energy in cellular responses to heat' (S. K. Calderwood), 'Sensitivity of tumour cells to heat and ways of modifying the response' (M. B. Yatim, W. H. Dennis, J. A. Elegbede and C. E. Elson), 'Thermotolerance and the heat shock proteins' (R. H. Burdon), 'Cold tolerance in mammalian cells' (J. S. Willis), 'Cold shock injury in animals' (P. F. Watson and G. J. Morris), 'Storage of cells and tissues at hyperthermia for clinical use' (B. J. Fuller), 'Mechanisms of freezing damage' (D. E. Pegg). 'Cryopreservation of animal cells' (W. J. Armitage),

'Mechanism of cryoprotectant action' (M. J. Ashwood-Smith), 'Biochemical and functional aspects of recovery of mammalian systems from deep sub-zero temperatures' (R. de Loecker and F. Penningkx), 'Temperature effects on different organization levels in animals' (K. Y. H. Lagerspetz), 'Temperature acclimation of carp intestinal morphology' (J. A. C. Lee), 'Increased heat tolerance in FHM-cells: heat shock versus elevated culturing temperature' (R. Merz and H. Laudien), 'Thermal compensation of the Na^+ pump of rainbow trout (*Salmo gairdneri*) "erythrocytes" (R. S. Raynard), 'Heat sensitivity of tumour tissue' (K. Bowler, A. M. A. Kooshmeery and C. J. Barker) and 'Temperature dependent membrane changes in human and eel red blood cells' (D. J. Hornsey and M. A. El-Missing).

As can be seen from this list of titles, food chemists (with the exception of meat and fish scientists and technologists) will find the book of limited interest. However, freezing, drying and freeze-drying, as well as heat denaturation and reversible activation of enzyme systems are covered in exceptional detail and membrane effects, ionic phenomena and the ubiquitous role of water are fundamental to all branches of food chemistry. Indeed the opening chapter by Franks neatly summarises the myths and facts about water structure and function and sets the tone for the high scientific quality of the ensuing book.

Food biochemists (rather than chemists) and food microbiologists are likely to find material of direct interest in this volume. However, food chemists could usefully study its pages to gather detail which is relevant in many fields. The information is based on active up to date research (many references to 1986 work) and for £40·00 the contents are well worth while.

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