GABA

GABA in Nervous System Function. (Kroc Foundation Series, Vol. 5.) Edited by Eugene Roberts, Thomas N. Chase and Donald B. Tower. Pp. xv+554. (Raven: New York, 1976.) $30.00.

THE identification of γ-aminobutyric acid (GABA) in mammalian brain in 1950 led, after a short lag phase, to a profusion of physiological and biochemical studies. Many of these were described in the only previous volume on GABA and the nervous system, published in 1960. At that time the possible neuronal inhibitory role of GABA, and its importance in epileptic activity, were the focus of attention. A subsequent period of doubt was followed by one of consolidation. An inhibitory transmitter role for GABA in the mammalian cerebellum, cortex and hippocampus is now generally accepted. Experimentally, epileptic convulsions can be induced by drugs which block the synthesis of GABA or impair its inhibitory action. It has yet to be shown, however, that epilepsy in man (except for pyridoxine-related syndromes) arises from a failure in GABA-mediated inhibitory processes.

The present volume arises from a workshop held in California in 1975. The 37 chapters are by 47 contributors (32 from North America, 10 from Japan, 2 from Norway, 2 from West Germany and 1 from Australia). The predominant emphasis is on biochemistry, cytology and cellular physiology. The last 5 chapters discuss the possible involvement of GABA in disease and therapy.

There are indications that we are entering a new growth phase in GABA research. Suggestions that abnormal functioning in GABA systems contributes to the pathogenesis not only of epilepsy, but also of Huntington's chorea, Parkinsonism, schizophrenia, senile dementia, and anorexia nervosa, are providing the stimulus.

The techniques and basic data presented in this volume provides the means. Of outstanding importance is the development of immunocytochemical techniques which, using antibodies prepared from purified enzymes (glutamic acid decarboxylase and GABA transaminase), enable visualisation of cellular structures containing these enzymes. Pioneering reports from the laboratory of Eugene Roberts, describe the light and electron microscopical localisation of these enzymes. These reports provide beautiful confirmation of neurophysiologists' earlier conclusions about which cell types release GABA in the cerebellum and hippocampus. **Brian Meldrum**

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Polymerisation

Thermodynamics of Polymerization. By H. Sawada. Pp. xiii+403. (Dekker: New York and Basel, 1976.) 130 Swiss francs.

THIS book is an expanded version of the collection of articles written by Dr Sawada for *Reviews of Macromolecular Chemistry* over the period 1969 to 1974. Each chapter has been written as a separate entity so that there is inevitably a certain amount of repetition of both content and references.

The first two chapters are introductory, dealing with the general ideas of ceiling temperature, heats and entropies of polymerisation. These are followed by five chapters covering in succession anionic, cationic, radical, condensation and ring polymerisation. Next comes a chapter on polymerisations, the equilibrium positions of which have been measured, followed by two on copolymerisation. Finally there are two chapters devoted to degradation of polymers and miscellaneous topics such as tacticity and pressure effects.

The reader who comes to the subject afresh may be surprised to discover how much of the book is concerned with kinetics rather than thermodynamics. A more complete description would have been "Kinetic and thermodynamic aspects of processes relevant to polymerisation". Thus under anionic polymerisation we find a discussion of equilibrium between different types of propagating species, under cationic polymerisation an account of the thermochemistry of ionisation processes, and under radical polymerisation substantial sections on the thermodynamics of the initiation, termination and transfer reactions. The kinetic data are sometimes linked with thermodynamically-based parameters such as Hammett σ, and sometimes simply expressed in terms of energies, entropies and volumes of activation. Other times there is only the most tenuous link with thermodynamics, as in the discussion of reactivity ratios in terms of the Alfrey–Price Q,e scheme.

The chief merit of the book is that it brings into a single volume for the first time most of the available information on thermodynamics of polymerisation, and a valuable feature is the Addendum of recent publications.

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Wax esters and non-polar lipids

Chemistry and Biochemistry of Natural Waxes. Edited by P. E. Kolattukudy. Pp. xx+464. (Elsevier: Amsterdam, Oxford and New York, 1976.) Dfl129; $49.75.

THIS book is dedicated to Professor A. C. Chibnall who first became interested in waxes fifty years ago and (with S. H. Piper) carried out some classical studies in this field. Significant advances in our understanding of wax chemistry and biochemistry had to await the chromatographic and spectroscopic procedures which have revolutionised and activated all areas of lipid research. The waxes (broadly interpreted) have shared in these developments, and for any who have overlooked them the record is fully documented in this book. Chemists and biochemists interested in lipid methodology, lipid structure, and lipid biosynthesis, and biologists of many kinds will want to consult this book and to have frequent access to it.

The term "wax" is not here confined to wax esters but includes a wide variety of non-polar lipids: hydrocarbons, ketones and aldehydes, primary and secondary alcohols, ethers, alkanediols, acids, wax esters of several kinds, and terpenoids. In general these may be saturated or unsaturated and straight chain or branched chain. The editor has chosen, however, to organise the chapters on the basis of the type of organism from which the wax is derived, the ten contributions being: introduction to natural waxes (P. E. Kolattukudy); mammalian waxes (D. T. Downing); marine waxes (J. R. Sargent, R. F. Lee and J. C. Nevenzel); bird waxes (J. Jacob); and their biochemistry (P. E. Kolattukudy); insect waxes (L. L. Jackson and G. J. Blomquist); plant waxes (A. P. Tulloch); and their biochemistry (P. E. Kolattukudy, R. Croteau and J. S. Buckner); algal and fungal waxes (J. D. Weete); and bacterial waxes (P. W. Albro). Dr Kolattukudy is to be congratulated on securing the service of such authoritative contributors. In addition to his own writing the editor has—more or less successfully—prevented undue overlap of material between the various chapters.

At appropriate places in the text, structure and composition, structural determination and analytical procedures (chromatography and several kinds of spectroscopy), biosynthesis and catabolism, function, and taxonomy are discussed. **F. D. Gunstone**

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