

## Radically speaking

*Microwave Spectroscopy of Free Radicals.* By Alan Carrington. Pp. ix+264. (Academic: London and New York, June 1974.) £4.80; \$12.50.

THIS is a highly specialised monograph by one of the major workers in the field discussed. As expected, it is clearly and precisely written and will be invaluable to those interested in, or working in, that field. It is not, however, likely to be of great interest to conventional electron spin resonance (e.s.r.) spectroscopists, nor is it, in any sense, a text on microwave spectroscopy as such.

The term 'microwave spectroscopy' is extended to cover all experiments "in which the absorption or emission of microwave radiation by a molecular species can be detected directly or indirectly". The term 'free radical' is extended well beyond the normal doublet state species to include  $^1\Sigma$ ,  $^1\Pi$ ,  $^1\Delta$ ,  $^3\Sigma$  and  $^3\Pi$  states. Thus, the experimental section includes sections on microwave rotational spectroscopy, gas-phase electron resonance, microwave/optical double resonance, and molecular beam spectroscopy.

Similarly, the 'free radical' species include a wide range of diatomic species such as CS, AlF, H<sub>2</sub>, O<sub>2</sub>, SO, SeO, NF, CN, and the small number of triatomic molecules so far studied, namely NCO, NCS, HNO, CF<sub>2</sub>, SiF<sub>2</sub>, HCO, DCO, NO<sub>2</sub>, ClO<sub>2</sub>.

The author starts by asking if perhaps this specialised field should be viewed as a "backwater": that it should not be is well demonstrated in this excellent book.

*Reactive Free Radicals.* By J. M. Hay. Pp. viii+158. (Academic: London and New York, June 1974.) £4.40; \$11.50.

THIS book should have a far more explicit title such as 'Structure-reactivity relationships for Organic Radicals'. The author is very much concerned with kinetic parameters derived from reactions in the gas phase. I suspect that the treatment is too biased towards the author's particular conceptions to make it useful for undergraduates, but other workers should find it stimulating.

In the preface we are warned that the book is based on views that are "perhaps even naive" and I fear that this may be a valid warning. Nevertheless, I enjoyed reading it and found several suggestions well worth toying with. I must say, however, that I found an awful lot of glib statements to which I would take exception, such as, "charged radicals are normally produced by electron-transfer at electrodes or from charged species". Or we are told that high-energy radiation pro-

duces an "embarrassment of products" (if that were always true, I would be out of business). Then we are told that electron spin resonance (e.s.r.) spectroscopy will not detect pairs of radicals formed in solvent cages, despite the fact that one of the most important e.s.r. developments in recent years has been the study of such 'triplet' species.

One very misleading suggestion is that the breaking of the C-C bond in R<sub>3</sub>C-CR<sub>3</sub> molecules may result in the formation of  $\sigma$ -radicals R<sub>3</sub>C-sp<sup>2</sup>-hybridisation is implied—despite the fact that the author accepts that R<sub>3</sub>C radicals are planar or very nearly so. Even more unfortunate is the fact that e.s.r. evidence in favour of this idea is cited, although this has long since been refuted. Again, we are told that a proton hyperfine coupling of  $\pm 16$  gauss for HC≡C· is "hard to reconcile with a linear structure". Why?

Throughout, very simple valence-bond structures are presented (often consuming a lot of space) and the results of sophisticated molecular orbital calculations are completely ignored. I can see very little justification for such an approach in a study which is primarily concerned with structural problems.

This short book in no sense overlaps with the excellent recent work on radical displacements by Ingold and Roberts, despite the title. The presentation is satisfactory except that references are given at the end of each of the five chapters. As no help is given to the reader, one inevitably turns up the wrong set of references which can prove to be very misleading. Please can we have all references at the end? **M. C. R. Symons**

## Nervous systematics

*Evolution of the Nervous System.* By Harvey B. Sarnat, and Martin G. Net-sky. Pp. xvii+125. (Oxford University: London and New York, September 1974.) £5.75 boards; £4.00 paper.

THIS is one of the very few comparative anatomy textbooks of reasonable textbook size. It explores neuro-anatomy, system by system, in a functional way "through the dimension of time as revealed by analysis of evolution". The book starts with a general overview of vertebrate evolution, and then proceeds with a system by system analysis, including the brain, spinal cord, and the autonomic nervous system. The emphasis is always on how the evolutionary series relates to the structural and functional organisation of the human brain. The book does not cover invertebrate nervous systems, nor those aspects of vertebrate evolution which are divergent from the point of view of the human nervous system. Written by

a neurologist and a neuropathologist, the text brings out wherever possible the bearing of the comparative approach on our understanding of various congenital and pathological conditions in the human nervous system as encountered in clinical practice. The authors do not hesitate to deal with provocative and speculative points, although always making it clear where they are being speculative.

There is an extensive bibliography, and the references are reasonably up to date in the majority of the sections. The text, however, lacks references to recent developments in the study of central biogenic amines, especially in the accounts of the locus coeruleus, hypothalamus, and nigrostriate system. There is an interesting atlas of selected brain sections in different species.

This comparative neuroanatomy textbook is neatly and handsomely bound, and moderately priced. The text is highly readable and, as all the basic anatomical arrangements are described, it is complete in itself and does not require additional reference to a standard neuroanatomy text. The chapters are well indexed, and within each chapter the sections are clearly headed and subdivided. This makes it easy to look up any particular system, and enhances the value of the book as a reference work. **G. Raisman**

## Tropical forests

*Tropical Forest and its Environment.* (Tropical Ecology Series.) By K. A. Longman and J. Jenik. Pp. x+196. (Longman: London, June 1974.) £1.95.

THIS lucidly written and useful booklet belies its ambitious title, for, as stated in its preface its principle contribution is a synthesis of results of physiological experiments on Ghanaian forest trees carried out in controlled environments, and parallel field investigations; both are then related to existing knowledge of rain forest ecology. The careful accounts of the authors' experiments provide new and rewarding insight into West African rain forests, but attempts to relate them to forests elsewhere in the tropics, and more particularly the additional general chapters on subjects unrelated to the experiments, are of variable quality, as the authors too often assume, wrongly, that West African forest conditions are universal in the humid tropics. The account of tropical forest soil, for instance, is misleadingly over generalised; that on biotic factors is so superficial that it would have been better omitted; previous data is sometimes misquoted (notably in Fig. 4.9); and much recent literature is left unconsulted. But there are well designed diagrams and 25 pages of photographs. **P. S. Ashton**