

kind of taxonomy which does not assume that evolution has taken place.

The book has the journalistic merit of being easy to read. The fluency is gained, I think, by concentrating on who disagrees with the orthodox, and by avoiding much in the way of exposition of ideas. We learn who the orthodox neo-Darwinians disapprove of, but we do not learn why

(except for prejudice) they disapprove. If only Leith had not lost so completely his admiration for those monkish zealots, screaming dark anathemas out of their cells, he might have found that they are capable of reasoning too. □

Mark Ridley is the Hayward Junior Research Fellow of Oriel College, Oxford University.

Excitement in theory and in practice

R.F. Barrow

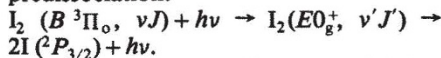
Dynamics of the Excited State. Edited by K. P. Lawley. Pp.667. ISBN 0-471-10059-5. (Wiley: 1982.) £35.90, \$77.50.

ADVANCES in chemical physics, theoretical but more particularly experimental, are leading to the happy conclusion that more and more specialists in different fields talk to each other. The development of laser and molecular beam technologies has resulted in the production of qualitatively new information, not only about the details of stationary molecular energy states but also about the rate constants for the transfer between states under the action of photons or of collisions with other particles. This trend is evident in *Dynamics of the Excited State*, where there is matter to engage the attention of the pure state-to-state kineticist, the specialist in energy transfer, the photochemist, the theoretician and the spectroscopist.

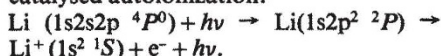
The nine chapters have been written by experts from various fields. Some of the contributions are primarily experimental, dividing into single photon experiments such as the laser-induced fluorescence of the halogens and other diatomic molecules, the quenching of electronically excited metal atoms, the study of photofragment dynamics, and multiphoton processes as represented by a chapter on infra-red excitation and dissociation. Other sections, on the processes of photon-catalysed predissociation and autoionization, on the statistical mechanical treatment of unimolecular reactions induced by infra-red radiation (URIMER!), on rotational to translational and electronic to vibrational energy transfer and on the calculation of potential energy surfaces might be said to be primarily theoretical and interpretative.

The subjects discussed are those that might be expected in a book with this title, and they are treated at an advanced and exciting level. Some contributors have gone beyond the professional review and, for example, much of the material in the chapter on fitting laws for rotationally inelastic collisions is new. All of the accounts are reasonably up to date, but that on the photon-as-catalyst effect describes phenomena that were first proposed and analysed only some five years ago. The iodine molecule (as so often!) provides an example of catalysed

predissociation:



In a second process, the resonant intermediate level might be an unpopulated rotational-vibrational level in the ground electronic state. The lithium atom is used to illustrate the possibility of photon-catalysed autoionization:



This is a well-edited and stimulating book. Overall one gets a good impression of the development of elegant and powerful new experiments; for their interpretation, however, we must await new insights. □

R.F. Barrow is Reader in Physical Chemistry at the University of Oxford.

Imaginative imaging

K.V. Ettinger & U.J. Miola

Imaging with Ionizing Radiations. By K. Kouris, N.M. Spyrou and D.F. Jackson. Pp.204. ISBN 0-903384-30-2. (Surrey University Press/Blackie: 1982.) £29.75.

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