

and suspect Indians, riding roughshod over what were insensitively termed 'caste superstitions'. Indian opinion in turn united in opposition to the 'filthy habits' of Western medicine, including the mass public medical inspection of suspects and the searching of houses by soldiers. Imperial medicine thereby galvanized anti-imperial wrath.

Arnold is scrupulously fair and avoids being judgemental. On the evidence here adduced it is hard not to regard what he dubs 'the colonizing of the body' as at best largely ineffectual and at worst disastrous. Western medicine was all too often racially arrogant and culturally ignorant; in any case, it had few cures in the bag. Westminster was never prepared to invest the resources — they would have been colossal — to create a proper health administration. To a large degree, in consequence, medicine served principally as an ideological weapon for supporting white superiority. For the Indians, its pills were bitter. It probably created more wounds than it healed. □

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Light in motion

Richard N. Dixon

Photodissociation Dynamics. By Reinhard Schinke. Cambridge University Press: 1993. Pp. 417. £50, \$89.95.

THE past decade has seen a symbiosis of molecular spectroscopy, photochemistry and electronic structure theory that has revolutionized our knowledge of primary molecular photochemical processes. Experimental tools that have made this possible are tuneable pulsed dye lasers, optical harmonic generation of ultraviolet and vacuum ultraviolet light, and good cheap pulsed molecular beams. Fast computers with large memories can calculate with almost 'chemical accuracy' molecular potential energy surfaces for small molecules, with which classical or quantum trajectories can be run to simulate experiments. This new understanding of molecular dynamics has wide applications in photochemistry and the theory of chemical reactions.

This book provides a comprehensive theoretical description of nuclear motion

during photodissociation, and its relationship to observable phenomena such as molecular absorption spectra and the internal energy distribution within photofragments. A central theme concerns the various ways in which the multi-dimensional potential energy surface of a molecule can influence the outcome after its excitation. The author has adopted the policy of using a few well chosen molecules (H_2O , H_2O_2 , H_2S , $CINO$ and CH_3ONO) to illustrate the many dynamic features, rather than attempting a comprehensive experimental review. An exact description of the dynamics requires the use of quantum mechanics, but Schinke shows how most experiments can be understood at least qualitatively through classical mechanics.

The text intersperses a description of salient experimental findings with the theory necessary to explain them. The author starts with molecular absorption spectra, showing how any resonant structure arises from an excited complex that can live for at least a few vibrational periods before it breaks apart. He then proceeds through a general description of photodissociation to the more specific features of excitation of the photo-products. He shows how their internal energy distribution reflects a mapping of the initial excitation onto the potential energy surface, and how this varies with the interatomic distances and angles as the fragments move apart. The book ends with theory on the experimental control of photodissociation, and with recent real-time experiments on the dynamics of photodissociation.

One of the strengths of the book is that it can be read at more than one level. A newcomer to the field could skip the mathematical details without losing the thread of the essentially physical description; bullet-points concisely summarize the most important features. The applications of time-independent quantum theory, time-dependent quantum theory and classical mechanics are all described in detail as appropriate, and interrelated wherever possible. Schinke has amply fulfilled his declared aim of providing an overview of the field for graduate students in molecular physics and for experimentalists who are not familiar with the quantum theory of photochemistry. □

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Autumn Books

Nature's next review supplement is Autumn Books, which will be published on 25 November. The issue will feature, among others, James Jasper on the atomic bomb, Rupert Hall on defining science and Roy Porter on gender in the making of science.



COLD snap — young adult king penguins, displaying to win their first mate, stand out in a creche of nearly full-grown chicks who have survived their first winter. This picture by Ben Osborne is taken from *Life in the Freezer* by Alastair Fothergill (BBC Books, £18.99), a natural history of the Antarctic, which is considered to be the last unspoilt continent. Full of clever and unusual colour photographs of wildlife adapted to the harshest of environments and of the scenery about them, it accompanies a BBC television series, presented by David Attenborough, to be released shortly.