

Comprehensive colloids

A. D. Buckingham

Surface Forces. By B. V. Derjaguin, N. V. Churaev and V. M. Muller. *Consultants Bureau (Plenum): 1987. Pp. 440. \$114, £67.*

THE NAME of the distinguished Soviet scientist B. V. Derjaguin is well known throughout the world. Derjaguin began publishing in the field of surface effects in 1932, and has written many papers and books on the subject of colloid science. In 1941, with L. Landau, he published a classic paper on the theory of the stability of lyophobic colloids; in the occupied Netherlands E.J.W. Verwey and J.Th.G. Overbeek independently solved the same problem and the theory is universally denoted 'DLVO'.

Derjaguin has been particularly concerned with the influence of solids on the structure and properties of liquids in contact with them. The changes due to these 'surface forces' may extend over distances that are large compared to molecular dimensions but small in relation to macroscopic objects. The forces have many notable manifestations, including their effects on colloid stability, the properties of thin interlayers and films, and flotation, and implications in water treatment, soil science and microbiology.

This book is claimed to be the first comprehensive monograph devoted to surface forces. It contains eleven chapters, a brief conclusion and a short subject index. Emphasis is placed on general theory and on the application of surface

forces to thin films, forces between macroscopic objects, boundary layers in polar liquids, the stability of lyophobic colloids, wetting and osmosis. From the preface we learn that Derjaguin contributed to all eleven chapters, Churaev to five and Muller to four.

The book conveniently presents the principal contributions of the Moscow group to colloid science, giving a compact account of a large amount of research in an important area. The approach is generally through bulk properties, such as susceptibilities, rather than through a truly molecular description. Apart from a forward glimpse in the Conclusion, computer simulation is not mentioned. The monograph is not appropriate for students wishing to learn about the fundamentals of intermolecular forces — the permittivity enters the theory at an early stage — and there are some irritating deficiencies; for example neither f nor h in equation (1.4) is defined, and SI units are not used.

It is appropriate to compare the book with J.N. Israelachvili's *Intermolecular and Surface Forces with Applications to Colloidal and Biological Systems*, published by Academic Press in 1985. Israelachvili adopts a rather more molecular view and a tighter focus; his volume is of wide appeal and excellent for those beginning research in molecular biology. It is much the more attractively produced of the two, but it must be remembered that *Surface Forces* has been translated into English. The new generation of researchers will benefit greatly from reading both books. □

A. D. Buckingham is a Professor in the University Chemical Laboratory, University of Cambridge, Lensfield Road, Cambridge CB2 1EW, UK.

Blood companions

Lucio Luzzatto

Atlas of Blood Cells: Function and Pathology, 2nd edn. Edited by D. Zucker-Franklin, M. F. Greaves, C. E. Grossi and A. M. Marmont. *Edi Ermes, Via Timavo 12, I-20124 Milan/Gustav Fischer, Stuttgart: 1988. Two volumes, pp. 777. £154.69, \$225.*

HAEMATOLOGISTS have long been producers and admirers of good pictures. In the first half of this century a haematology textbook owed its success as much to the painstaking work of unnamed artists, who spent hours in front of the *camera lucida* of a microscope, as to the text written by its author. When hand-made drawings yielded to photomicrographs, the consequent greater objectivity was at first associated with a sharp drop in quality. Now photomicrography has come of age,

and when combined with the resolving power of transmission electron microscopy, the three-dimensional plasticity of scanning electron microscopy, the specificity of cytochemistry and of monoclonal antibodies, and with the real beauty of immunofluorescence, the results can be quite stunning. This two-volume atlas is a spectacular example of how the potential of various imaging techniques can be harnessed to help understand the structure and the biology of blood cells.

The subject is so vast that the authors must have been confronted with hard choices. A classical distinction in studying diseases has been between those that are congenital and those that are acquired. The approach to elucidating mendelian genetic disorders has capitalized on the notion that there must be a single lesion, and the task was to pinpoint it. Haematology has been a prime beneficiary of this approach, as haemoglobinopathies have become the prototype of molecular



Cetacean illustration — Whaling at Goro, Hizen Province by Hiroshige, a 19th-century master of the Japanese print. The picture is a detail of a colour original in Whales by Jacques Cousteau and Yves Paccalet, a beautifully illustrated large-format volume published by W. H. Allen/Planet, price £25; in the United States available from Harry N. Abrams, \$49.50.

pathology. Why has the understanding of acquired blood disorders, such as leukaemia, not reached this stage yet? There are at least two fairly obvious reasons. First, in spite of Boveri's early idea that something is wrong in the chromosomes of tumour cells, it has taken too long to realize that specific changes in the genome of somatic cells underlie many acquired diseases, just as specific changes in the genomes of germ cells underlie inherited diseases. Secondly, the somatic genomic lesions leading to leukaemia form a stepwise sequence, rather than being a single lesion. Thus, although in their preface the authors have coined the phrase "molecular morphology", morphology remains more important where knowledge at the molecular level is less advanced.

In the *Atlas*, the emphasis is therefore rightly placed on leukaemias and lymphomas. In this area they constitute much more than an atlas because they do an outstanding, up-to-date job of showing how gene rearrangement analysis of DNA, conventional phenotypic markers and the remarkable insights of traditional morphology come together in working out the taxonomy of these disorders. Also in this area, there is an enriching and authoritative chapter by Janet Rowley on chromosomal abnormalities. At the same time it is refreshing to see much space devoted to less-fashionable topics, such as