

## Book Reviews

*Works intended for notice in this column should be sent direct to the Book-Review Editor (J. H. Robertson, School of Chemistry, University of Leeds, Leeds LS2 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.*

*Acta Cryst.* (1985). **B41**, 80

### Mobility and function in proteins and nucleic acids.

Edited by R. PORTER, M. O'CONNOR and J. WHELAN. Pp. x+357. London: Ciba Foundation/Pitman Books, 1983. Price £25.00, US \$35.00.

The common ground between crystallographers and others interested in biomacromolecular structure is based on the richness of fine structural detail obtainable from diffraction methods. However, their restriction to the crystalline or semi-crystalline state has led over the years to persistent questions concerning relevance and relation to the state of molecules in solution. Recent years have seen this issue addressed by ever more powerful NMR methods, with conclusions that are interpreted as frequently supporting the X-ray data.

Functionality of biological macromolecules cannot be understood solely from a static structural viewpoint. Techniques that provide dynamic data are assuming increasing importance in providing information on molecular mobility, dynamics and flexibility. It is now realized that to some extent temperature-factor data from X-ray crystallography can be analysed for such information albeit on a time-averaged basis compared to the NMR time scale.

*Mobility and Function in Proteins and Nucleic Acids* contains the proceedings of a CIBA Symposium held in March 1982, that attempts to review the approaches and problems in this increasingly important area. There is a good mix of contributions on crystallography (Petsko, Steitz, Holmes), NMR (Roberts, Williams, Jardetzku, Reid, Wüthrich) and molecular-dynamics calculations (Karplus), as well as some biophysical chemistry on topics that are probably less familiar to crystallographers (such as measurements of rotational dynamics and internal motions). These contributions are mostly well written and authoritative accounts of particular areas; however, this is not just another symposium volume. This is remarkably distinct in that the small number of participants in the meeting took part in very lively discussions after each paper, which are published in full. These do much to illuminate the papers, as well as indicating many of the problems of understanding macromolecule (especially protein and enzyme) mobility for which there are as yet no consensus answers. The serious and almost philosophical problems of what types of mobility are observed, between crystallographers on the one hand, and at least some of the NMR community (as well as sometimes among themselves!) are brought out into the open with much lively and ultimately illuminating discussion.

Inevitably in a book of this nature, some topics are less well represented than others. It is particularly notable that nucleic acids receive patchy treatment, with fundamental topics such as DNA backbone flexibility, structural transitions and dynamics being largely ignored, apart from oblique mention in some of the discussions.

In spite of the inevitable slightly dated nature of this, like all symposium volumes, the inclusion of stimulating and critical discussions make this a very worthwhile addition to the libraries of laboratories interested in macromolecular structure and function.

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### Books Received

*The following books have been received by the Editor. Brief and generally uncritical notices are given of works of marginal crystallographic interest; occasionally a book of fundamental interest is included under this heading because of difficulty in finding a suitable reviewer without great delay.*

**Clusteranionen: Struktur und Eigenschaften.** By H.-G. VON SCHNERING, pp. 24, and **Neue Entwicklungen in der Chemie der metallreicher Verbindungen.** By A. SIMON, pp. 20. Report No. 325 of the Rheinisch Westfälische Akademie der Wissenschaften. Wiesbaden: Westdeutscher Verlag, 1984. Price DM 20.00.

**The science and technology of coal and coal utilization.** Edited by B. R. COOPER and W. A. ELLINGSON. Pp. xvi+666. New York: Plenum, 1984. Price US \$85.00.

**The structure of matter: from the blue sky to liquid crystals.** By A. GUINIER, translated from the French by W. J. DUFFIN. Pp. x+230. Arnold, 1984. Price £9.95. André Guinier, internationally known for his crystallographic achievements and for his warm personality, wrote this book three years ago, in French. (A retired crystallographer, he has explained, can render this sort of service to the public.) Dr Duffin's translation now makes this excellent popular presentation of science available to the world of English-speaking readers. It is truly a most attractive production, full of intriguing and enlightening illustrations, artistic and attention-holding, and, of course, scientifically sound. The original French edition was reviewed by G. S. D. King [*Acta Cryst.* (1982). **A38**, 559; **B38**, 1685], who remarked, 'The author's style is so clear that it is a pleasure to recommend this book...' It is to be hoped that many schools, school pupils and teachers, parents, laymen, and even universities, will make use of it.