also occurs in the later chapters. To be fair the author makes apology for the rather arbitrary placing of chapter 7 (called *The Physical Landscape*), but this is little comfort to the reader who constantly has to flick forward a hundred pages or so for details of systems with which he is unfamiliar. Personally, I would have preferred the chapter to have preceded chapter 3, so that the basic features of the systems are described before getting involved with their Jahn–Teller properties.

Chapter 4 is a mixed bag of examples of the behaviour of Jahn–Teller systems under stress, including the (often crucially important) effect of internal random strains in crystals. Chapter 5 presents a very useful account of the operation of the Jahn–Teller effect in extended systems, examining the relation between vibronic coupling and symmetry-lowering crystallographic phase transitions. This is a difficult branch of the subject, since it would seem that few distortive effects in extended systems have a unique interpretation. Nevertheless the author manages to present a critical review which should equip the reader for a more detailed pursuit of these topics. Chapter 6 discusses relaxation problems. Again the treatment is probably rather abbreviated for the uninitiated, relying heavily on the references. The book ends with nine appendices, including a collection of data on Jahn–Teller systems, which forms a valuable feature of the book as a reference text.

Despite the rather uneven success rate at getting the material across to the reader, this book will be a useful text for research workers involved directly or indirectly with the various manifestations of the Jahn–Teller effect. The references are comprehensive and there are many instances where recent, sometimes unpublished, work is included. Dr Englman has made a significant step forward in preparing a book of this type, and its few shortcomings are mitigated by its unique place in the Jahn–Teller literature.

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Optical transforms. Edited by H. S. LIPSON. Pp. xi + 436, London: Academic Press, 1972. Price £7·25.

It is a quarter of a century since work began in Manchester on the application of optical transforms to X-ray crystallography under the guidance of Professor Lipson. At that time the effort was concentrated on the solution of crystal structures by matching optical transforms to weighted reciprocal-lattice sections and some work was also done in producing optical Fourier syntheses. The advent of the computer and the development of better techniques for solving crystal structures rendered this activity out of date by the mid 1950's. However that was not the end of optical-transform research: since that time it has been applied to an ever wider variety of problems and this book is devoted to a description of what can be done, and what can be better understood, by working or thinking in terms of optical transforms.

The book consists of a series of articles, written by acknowledged experts in their fields, and many of them protegés of Professor Lipson. Each article deals with a particular topic and they are so written that they are complete in themselves and can be read without reference to each other.

The titles of the chapters and their authors are as follows:

1. *Basic principles* by H. Lipson.
2. *Coherence requirements* by B. J. Thompson.
3. *Determination of crystal structure* by B. Chaudhuri.
4. *Polymer and fibre diffraction* by C. A. Taylor.
5. *Biological studies* by J. A. Lake.
6. *Optical Fourier synthesis* by G. Harburn.
7. *Low energy electron diffraction* by W. P. Ellis.
8. *Optical data processing* by B. J. Thompson.
9. *Holography* by J. Shamir.
10. *Optical transforms in teaching* by S. G. Lipson.
11. *Miscellaneous applications* by J. E. Berger, C. A. Taylor, D. Shechtman and H. Lipson.

The overall quality of the writing is very high and the illustrations are excellent and numerous – a credit to the authors and to the publisher. In the view of the reviewer Chapters 3 and 6 can be regarded only as of historical interest and should have had less space and detail devoted to them.

Covering such a wide field there is something for nearly everybody in this work and it can be wholeheartedly recommended to those interested in any aspect of optics or diffraction.

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LEED – Surface structures of solids, Parts 1 & 2. Edited by M. LAZNIČKA. Part 1: Pp.431; Part 2: Pp. 470. Prague: Czechoslovak Academy of Sciences, 1971. Obtainable from JČMF, Spálená 26, Praha 2, Czechoslovakia. Price approximately $16.

At the beginning of September 1971 the Czechoslovak Academy of Sciences held a Summer School on Low Energy Electron Diffraction in Smolinice, Czechoslovakia. They chose to do so because it was their opinion that LEED had reached a stage in its development when a summarizing point of view could be practically and usefully attempted. To undertake this task they invited as speakers and teachers those physicists who have played a prominent role in the theoretical and experimental work completed on LEED since the mid 1960's when the present upsurge in interest in LEED started. These two volumes represent the proceedings of the formally taught part of the school and the quality and timeliness of the material they contain reflect great credit on the judgement of the school's organizers. The proceedings contain material with a strong emphasis upon helping the reader to understand, rather than be blinded by, the difficult material of LEED theory. As appears to be unavoidable in Summer schools with an international set of teachers who cannot give a great deal of time to coordination between themselves, the standard of different contributions varies rather widely and the experimentalists come off