and editing. He graduated from Oxford in 1930 with first-class honours in chemistry and crystallography, having studied the latter under T. V. Barker. After obtaining also the degree of BSc by research he spent a few years in academic employment before moving to the Forest Products Research Laboratory at Princes Risborough. Ten years later he moved to Shell, and was successively research chemist, technical information officer in the London office, and finally senior technical editor at the Thornton Research Centre near Chester. After his appointment by the Union he set up a 'publication office' in one room of his house, from which the office of the Union has grown through three metamorphoses to its present size. He was a perfectionist in all matters concerned with printing, and it is almost entirely his doing that *Acta Crystallographica* maintained its outstanding quality in format during a period of great expansion in content. Always pleasant and friendly in personal relationships, he was not afraid to take on the Editor, or even the Executive Committee, if any changes that would result in a deterioration of quality of production were proposed on grounds of economy.

St John's Church, Chester, played a great part in Stephen Bryant's life. He was Secretary of the parish council from 1957 till his death, and latterly also Secretary of the Chester Team Parish Council. His funeral took place at the Church on 31 December 1982, and in spite of the wintry weather was well attended by his family, his friends, and Union representatives whose affection and respect he had earned in the course of his work.

Professor **Dan McLachlan Jr** died on 3 December 1982. Born in Arcola, Saskatchewan, Canada on 5 December 1905, he earned a PhD at Pennsylvania State College in 1936 in the laboratory of Wheeler P. Davey. Dr Jenny P. Glusker writes that he held positions at Corning Glass Works, the American Cyanamid Company, the University of Utah, Stanford Research Institute, the University of Denver and Ohio State University, where he was Emeritus Professor of Mineralogy at the time of his death. He was the ninth president of the American Crystallographic Association, a member of the US National Committee for Crystallography and a US delegate to many international meetings. His scientific studies included the interpretation of X-ray photographs, the rapid calculation and representation of electron density maps, the solution of the phase problem from the point of view of the Patterson function, the extension of the Donnay–Harker law and representation of the results of crystal structure analyses. He authored two books on crystallography and one on humor and was working on *Crystallography in North America* (published in April 1983) at the time of his death. He will be greatly missed at ACA meetings.

The *Acta Metallurgica* Gold Medal for 1982 has been presented to Professor **Charles S. Barrett** of the University of Denver Research Institute.

Professor **Sivaramakrishna Chandrasekhar**, Professor and Head of the Liquid Crystal Laboratory, Raman Research Institute, Bangalore, India, has been elected a Fellow of the Royal Society of the United Kingdom.

Dr **Ludo K. Frevel**, Fellow by courtesy at Johns Hopkins University, has been designated as the first recipient of the J. D. Hanawalt Powder Diffraction Award.

Professor **B. Post**, Physics Department, Polytechnic Institute, New York, has received the Bertram E. Warren Award of the American Crystallographic Association.

Professor **John Monteath Robertson**, formerly Professor of Chemistry, University of Glasgow, has been awarded the 1983 Gregori Aminoff Gold Medal and Prize by the Royal Swedish Academy of Sciences for his pioneering contributions to the application of X-ray crystallography for the structure determinations of organic molecules and related development of methods. This is the 4th time that the Aminoff prize has been awarded, the first recipient being Professor **P. P. Ewald** in 1979, the second Sir **Charles Frank** in 1981, and the third Professor **Gunnar Hägg** in 1982.

Professor **C. A. Taylor**, Department of Physics, University College, Cardiff, has been awarded the Institute of Physics Bragg Medal and Prize for his many contributions to physics education.

International Union of Crystallography

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Report of the Twelfth General Assembly and International Congress of Crystallography

The Report of the Twelfth General Assembly and International Congress of Crystallography, held in Ottawa, 16 to 25 August 1981, has been published in the May 1983 issue of *Acta Crystallographica*, Section A, pages 425–480.

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Report of the Executive Committee for 1981

The report of the Executive Committee for 1981 has been published in the May 1983 issue of *Acta Crystallographica*, Section A, pages 481–499. It reports on the meetings and publications of the Union, the work of its Commissions, and the work of bodies not belonging to the Union on which the Union is represented.

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 LS9 9JT, England). As far as practicable books will be reviewed in a country different from that of publication.

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Developments in crystalline polymers. Vol. 1. Edited by *D. C. Bassett*. Pp. 279. London: Applied Science Publishers, 1982. Price £32.00.

This is an interesting and well-written collection of review papers on the subject of crystalline polymers. There are five chapters in this volume. They are written by active researchers who are responsible for the important recent developments in the understanding of crystalline polymers. The chapters are written with sufficient introductory material that the book is quite comprehensible to those who may not be involved in the same area of research as the authors.

The first contribution is by D. T. Grubb on *Electron microscopy of crystalline polymers*. As the title suggests, this chapter is concerned with electron microscopy and its wide range of applications in polymer science. Introductory sections describe the major problems encountered, the methods normally applied to deal with them, and the limitations imposed by radiation damage. Moving on to describe recent developments, some are due to new instruments, particularly the scanning transmission electron microscope (STEM), others to methods of improving contrast such as defocus phase contrast and improved staining and etching techniques. The controversy over the presence of ordered domains in amorphous polymers is then briefly commented on. As the author has indicated, polymers suffer by comparison with other materials in

that it has not generally been possible to exploit the high resolution of the electron microscope to determine their microstructure in adequate detail. However, Grubb has summarized beautifully in his review that combining both novel and old techniques, such as low-dose dark-field imaging with defocus contrast, can overcome this inherent problem. When exploited fully, these recent methods must add to our knowledge and provide a firmer fundamental base for future developments.

The second chapter is by A. Keller on *Radiation effects and crystallinity in polyethylene and paraffins*. This review summarizes the research findings to date on how crystallinity in polymers, particularly polyethylene, can influence radiation-induced chain scission and crosslinking. The principal theme is that the usual conception of random introduction of crosslinks into a random assembly of macromolecules needs to be modified in the presence of crystallinity and possibly chain folding. Other topics covered are the destruction of crystallinity and the promotion of hexagonal phase in polyethylene through radiation. The effect of chain scission on morphology and the general but still unsolved issue of how to assess crosslinks by a *direct* analytical method such as NMR are also discussed. The author points out that radiation damage bears the primary responsibility for restricting electron microscopy. In his chapter, Keller recounts how appreciation of this fact led him into a fascinating study of ever deeper aspects of radiation damage in polyethylene over the past two decades, often controversially but invariably clarifying the basic understanding of an area now of increasing commercial importance.

The third chapter is by D. C. Bassett on *The crystallization of polyethylene at high pressures*. Since crystallization of macromolecules still poses many unsolved problems, this review provides general insight through the study of how polyethylene molecules crystallize at high pressures. The research findings of the author suggest polyethylene chains tend to form a liquid-crystalline phase at pressures above *ca* 3 kbar (0·3 GPa). Bassett believes that high-pressure crystallization results in polyethylene lamellae which falls within the class of 'chain-folded crystals'. The author of this chapter indicates serious doubts on claims by other researchers that 'fully-extended-chain conformation' results during high-pressure crystallization of polyethylene. Very few references or arguments representing the opposite point of view, however, are included in this review. The hexagonal structure of polyethylene resulting from high-pressure crystallization is discussed in comparison wih the normal orthorhombic structure. The study of hexagonal to orthorhombic transition at low temperatures is also covered. An informative section on the mechanical properties of high-pressure-crystallized polyethylene is elegantly presented. In summary, Bassett has effectively utilized the high-pressure crystallization behavior of polyethylene as a valuable model system to provide insight for polymeric crystallization phenomena in general.

The fourth chapter is by D. Bloor on *The polymerization of disubstituted diacetylene crystals*. Ever since the pioneering work performed by G. Wegner, it has been demonstrated that the solid-state topotactic polymerization of disubstituted diacetylenes can lead to a macroscopic polymer single crystal. The recent intensive investigations of this polymerization are reviewed. The constraints on the crystal structures of the monomers necessary for solid-state reactivity are outlined. X-ray diffraction data are used to identify the most important criterion for reactivity. The models developed to describe the kinetics of polymerization are presented in the context of available experimental data. Also, the details of the polymerization mechanism, as revealed by spectroscopic studies, are discussed. Solid-state polymerization represents an area of research where novel properties have excited much interest. The highly anisotropic structures of these polydiacetylene single crystals bring enhanced electron transport along molecular chains, offering the possibility of useful electrical applications. Bloor has done an admirable job in writing this excellent review summarizing the recent developments in this very active area of research.

The fifth and final chapter is written by A. J. Lovinger on *Poly(vinylidene fluoride)*. This presents a comprehensive review of the structure and properties of PVF_2. This review is both extensive and up-to-date pertaining to structure, crystallization, and morphology of this industrially important polymer. Synthesis, molecular weights and chain regularity are discussed first, followed by a description of unit-cell structure, crystallization, morphology and phase transformations of the different polymorphs. Thermal behavior and relaxational properties (including dynamic mechanical properties) are summarized next, prior to a discussion of ferroelectricity, piezoelectricity, and pyroelectricity in this polymer. The review concludes with a short description of blends and copolymers, and with a section on general engineering properties and applications of PVF_2. This chapter is clearly written with a nice touch of historical perspectives. Lovinger's wide-ranging review not only surveys the various aspects of PVF_2 ferroelectricity, but also disentangles the complexities surrounding the multiple crystal structures and summarizes the structure–property relations and uses of this polymer.

Overall, the five authors have presented a well written summary of the physical, structural, and spectroscopic properties of crystalline polymers. Most polymer scientists will find this book to be a useful reference in their library.

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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.

Small angle scattering. Edited by *O. Glatter* and *O. Kratky*. Pp. x + 515. London: Academic Press, 1982. Price £43.60, US$89.50. A review of this book, by G. Fagherazzi, has been published in the May 1983 issue of *Acta Crystallographica*, Section A, page 500.

Pulsed neutron scattering. By *Colin Windsor*. Pp. vii + 432. London: Taylor and Francis, 1981. Price £25.00. A review of this book, by Harold G. Smith, has been published in the May 1983 issue of *Acta Crystallographica*, Section A, page 501.