were busy with their lives rather than waiting for a disaster, and, fortunately, only the relevant scientists were conducting earthquake watches. When the big one comes, watching for it and waiting for it, or even storing water bottles in doorways where they will be safe, are likely to have been irrelevant acts for these millions.

CHARLES PERROW
Department of Sociology,
Yale University,
New Haven, CT 06520

Progenitor Cells

Megakaryocyte Development and Function. RICHARD F. LEVINE, NEIL WILLIAMS, JACK LEVIN, and BRUCE L. EVATT, Eds. Liss, New York, 1986. xviii, 435 pp., illus. $68. Progress in Clinical and Biological Research, vol. 215. From a conference, Woods Hole, MA, Sept. 1985.

In the past two years the availability of cloned recombinant hematopoietic growth factors and considerably better definition of in vitro assays have provided greater insight into the regulation of hematopoiesis. Understanding of megakaryocytopoiesis has lagged far behind. This is not at all surprising considering the rarity of megakaryocyte progenitors, the relative difficulty encountered in the enumeration of megakaryocyte colonies, and, above all, the extraordinary cell biology of platelet production, a complicated process that is simply not modeled in culture conditions in vitro.

Megakaryocytes are normally found plastered against the walls of the endothelial lining of the fronds of marrow tissue that extend into the marrow sinusoids. By a process that is totally obscure, they extend all or part of their cytoplasms through fenestrations in the endothelial lining structure and then shatter into platelets that are swept by the sinusoidal blood into the periphery. The regulation of megakaryocyte production from progenitors, the endoreduplication of the megakaryocyte nucleus, the path of the cell toward the endothelial lining, and the shattering process are all matters that are not understood.

Given the lack of understanding of the system, it is not at all surprising that the growth factor requirements that promote megakaryocytopoiesis are also vague. A variety of factors called thrombopoietin, megakaryocyte colony stimulating factor, megakaryocyte potentiating factor, and thrombopoiesis stimulating factor have operationally defined several different in vitro assay systems. The requirements for megakaryocytic progenitor cells to form recognizable colonies differ so widely that results of different assay systems become impossible to evaluate. As Richard F. Levine, senior editor of this proceedings volume, concludes, "We have become victims of reading and writing too many papers that present neat boxes of distinct cell populations that do not exist in nature."

Levine's opening paper focuses on the early history of the field, including identification of megakaryocytes and the regulation of megakaryocytopoiesis as a function of platelet demand. This overview is followed by some 40 contributions on the kinetics and control of megakaryocytopoiesis, the hormonal regulation of megakaryocytes, megakaryocyte biology, megakaryocytes in human disease, and platelet production from megakaryocytes. The book summarizes the state of the art as of 1985. It will probably be the last book of its kind in this field. In the next five years, as pure growth factors emerge from cloning laboratories and new monoclonal antibodies are developed that purify progenitors, the systems that encourage the development of megakaryocytes from progenitors will surely be defined. Whether we will actually fully understand the cell biology of platelet production from megakaryocytes is another matter.

I recommend this book to students of hematopoiesis as a compendium of what has been and a hope for what will be.

DAVID G. NATHAN
Department of Medicine,
Children's Hospital, Boston, MA 02115

Some Other Books of Interest

Embryogenesis in Angiosperms. A Developmental and Experimental Study. V. RAGHAVAN. Cambridge University Press, New York, 1986. xiv, 303 pp., illus. $39.50. Developmental and Cell Biology Series.

Raghavan's objective in *Embryogenesis in Angiosperms* is "to present an integrated version of the facts about the morphology, ontogeny, biochemistry and genetics of different modes of embryogenesis encountered in angiosperms in a book that would be suitable for a one-semester course on plant embryogenesis" and that would serve as "a review of the current perspectives in the field" for specialists. An opening chapter gives an account of "how the scene has changed" in the study of embryogenesis as new techniques have become available. The next two chapters treat the development of embryos, endosperm, and accessory embryos and cellular and biochemical aspects of embryogenesis. Results of "experimental embryogenesis" (experiments based on perturbation of normal embryogenesis) are then summarized. Further chapters deal with embryogenesis from somatic cells and from pollen grains and with the regulation of gene activity during embryogenesis, a subject about which the author notes relatively little information is available. A final chapter is devoted to applications of experimental embryogenesis, including embryo rescue in inviable hybrids as a way of transferring potentially useful genes. The book includes a bibliography of some 1000 items and author and subject indexes.—K.L.

NMR of Proteins and Nucleic Acids. KURT WÜTHRICH. Wiley-Interscience, New York, 1986. xviii, 292 pp., illus. $49.95. The George Fisher Baker Non-Resident Lectureship in Chemistry at Cornell University.

Noting that the "potentialities and practice" of nuclear magnetic resonance in the study of the structure and function of proteins and nucleic acids have been "decisively changed" in the past few years, Wüthrich in this volume sets out to provide "a comprehensive introduction to the underlying principles and experimental procedures" of such applications of NMR for the benefit of "practicing scientists and students of biochemistry, chemistry, biophysics, and molecular biology." The volume opens with an account of symbols and abbreviations used and an introductory survey of NMR generally. The first main section of the text, headed The Foundations: Structure and NMR of Biopolymers, contains chapters on NMR of amino acid residues and mononucleotides, NMR spectra of proteins and nucleic acids in solution, the NMR assignment problem in biopolymers, two-dimensional NMR with proteins and nucleic acids, and nuclear Overhauser enhancement in biopolymers. Parts 2 and 3, containing seven chapters in all, are devoted to resonance assignments and structure determination in proteins and nucleic acids respectively. The final section of the book, With NMR to Biopolymer Conformation and Beyond, consists of chapters on the conformation of noncrystalline proteins and nucleic acids and NMR studies of intermolecular interactions with biopolymers. A 15-page bibliography and an index conclude the volume.—K.L.

Drosophila. A Practical Approach. D. B. ROBERTS, Ed. IRL Press, McLean, VA, 1986. xx, 295 pp., illus. $47; paper, $30. The Practical Approach Series.

"The aim of this book is to provide the basic set of techniques necessary to exploit *Drosophila* as a research organism," writes

Roberts in his preface. The book opens with a chapter by Roberts on "basic care and techniques," the coverage of which ranges from classification through environmental conditions, feeding, and collecting to cell and tissue preparation. Two chapters then deal with mutagenesis generally (Grigliatti) and in P-M hybrids (Kidwell). Gene cloning (Pirrotta), in situ hybridization to DNA of chromosomes and nuclei (Pardue), and localization of RNA's in tissue sections by in situ hybridization (Hafen and Levine) are the subjects of the next three chapters. The remaining six chapters cover injection of eggs (Santamaria), P-element–mediated transformation (Spradling), embryology (Wieschaus and Nüsslein-Volhard), cell marking (Lawrence *et al.*), cell surface antigens (Wilcox), and preparation of nucleic acids (Jowett). An appendix gives names and addresses of suppliers of unspecified "specialist items," and a general index and an index of genes, mutants, and chromosome aberrations are included. Techniques in population and quantitative genetics and neurobiology are deliberately omitted from the volume as "representing specialized aspects of fly work" rather than general aspects.—K.L.

Books Received

Conservation Biology. The Science of Scarcity and Diversity. Michael E. Soulé, Ed. Sinauer, Sunderland, MA, 1986. xiv, 584 pp., illus. $46.50; paper, $27. Based on a conference, Ann Arbor, MI, May 1985.

Content Analysis of Verbal Behavior. Significance in Clinical Medicine and Psychiatry. L. A. Gottschalk, F. Lolas, and L. L. Viney, Eds. Springer-Verlag, New York, 1986. x, 281 pp., illus. Paper, $42.50.

The Contribution of Acute Toxicity Testing to the Evaluation of Pharmaceuticals. D. Schuppan, A. D. Dayan, and F. A. Charlesworth, Eds. Springer-Verlag, New York, 1986. xii, 104 pp., illus. $25.50. From a symposium, Geneva, Oct. 1984.

The Control Revolution. Technological and Economic Origins of the Information Society. James R. Beniger. Harvard University Press, Cambridge, MA, 1986. xiv, 493 pp., illus. $25.

Cost-Effective Quality Control. Managing the Quality and Productivity of Analytical Processes. James O. Westgard and Patricia L. Barry. American Association for Clinical Chemistry Press, Washington, DC, 1986. x, 230 pp., illus. Paper, $40; to members, $30.

Crisis, Health, and Medicine. A Social Critique. Vicente Navarro. Tavistock (Methuen), New York, 1986. vi, 281 pp., illus. $29.95; paper, $12.95.

Dark Companions of Stars. Astrometric Commentary on the Lower End of the Main Sequence. Peter van de Kamp. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Hingham, MA). vi pp. + pp. 215–327, illus. $44.50. Reprinted from *Space Science Reviews*, vol. 43, nos. 3/4 (1986).

Electronic Structure and Electronic Transmissions in Layered Materials. Vincenzo Grasso, Ed. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Norwell, MA). xii, 517 pp., illus. $89.50. Physics and Chemistry of Materials with Low-Dimensional Structures, Series A, Layered Structures.

Electronic Wave Forming and Processing Circuits. Hai Hung Chang. Wiley-Interscience, New York, 1986. xiv, 538 pp., illus. $65.95.

Elementary Particles and Symmetries. Lewis H. Ryder. 2nd ed. Gordon and Breach, New York, 1986. lx, 296 pp., illus. $54.95. Documents on Modern Physics.

Elements of C. Morton H. Lewin. Plenum, New York, 1986. xiv, 246 pp. $29.50. Foundations of Computer Science.

The Emotional Brain. Physiology, Neuroanatomy, Psychology, and Emotion. P. V. Simonov. Plenum, New York, 1986. vi, 267 pp., illus. $55. Emotions, Personality, and Psychotherapy. Translated from the Russian by Marie J. Hall.

Ethics and Regulation of Clinical Research. Robert J. Levine. 2nd ed. Urban and Schwarzenberg, Baltimore, 1986. xx, 452 pp. $39.50.

Euclidean and Non-Euclidean Geometry. An Analytical Approach. Patrick J. Ryan. Cambridge University Press, New York, 1986. xviii, 215 pp., illus. $42.50; paper, $14.95.

Europe-Japan. Futures in Science, Technology and Democracy. Vincent J. McBrierty, Ed. Published on behalf of the Council of Europe by Butterworths, Kent, UK, 1986. xiv, 172 pp., illus. £19.50. From a conference, Tokyo, June 1985.

Evolution and Classification. The Reformation of Cladism. Mark Ridley. Longman, New York, and Wiley, New York, 1986. x, 201 pp., illus. Paper, $16.95.

Evolutionary Perspectives and the New Genetics. Henry Gershowitz, Donald L. Rucknagel, and Richard E. Tashian, Eds. Liss, New York, 1986. xii, 192 pp., illus. $39.50. Progress in Clinical and Biological Research, vol. 218. From a symposium, Ann Arbor, MI, June 1985.

Fertilizer Sulfur and Food Production. J. S. Kanwar and M. S. Mudahar. Nijhoff/Junk, Dordrecht, 1986 (U.S. distributor, Kluwer, Norwell, MA). xxii, 247 pp., illus. $70.

Fire Safety Science. Proceedings of the First International Symposium (Berkeley, CA, Oct. 1985). Hemisphere, New York, 1986. xvi, 1226 pp., illus. $135.

A First Course in Coding Theory. Raymond Hill. Clarendon (Oxford University Press), New York, 1986. xii, 251 pp., illus. $35. Oxford Applied Mathematical and Computing Science Series.

The Fluctuating Enzyme. G. Rickey Welch, Ed. Wiley-Interscience, New York, 1986. xiv, 496 pp., illus. $95. Nonequilibrium Problems in the Physical Sciences and Biology.

Forest Ecosystems in the Alaskan Taiga. A Synthesis of Structure and Function. K. Van Cleve *et al.*, Eds. Springer-Verlag, New York, 1986. x, 230 pp., illus. $47.50. Ecological Studies, vol. 57. Based on a conference, Fairbanks, AK, June 1983.

Formaldehyde Release from Wood Products. B. Meyer, B. A. Kottes Andrews, and Robert M. Reinhardt, Eds. American Chemical Society, Washington, DC, 1986. viii, 240 pp., illus. $49.95. ACS Symposium Series, 316. Based on a symposium, Miami Beach, FL, April 1985.

Foundations of Developmental Genetics. D. J. Pritchard. Taylor and Francis, Philadelphia, 1986. xiv, 372 pp., illus. $63; paper, $33.

The History and Preservation of Chemical Instrumentation. John T. Stock and Mary Virginia Orna, Eds. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Norwell, MA). viii, 268 pp., illus. $59. Chemists and Chemistry. From a symposium, Chicago, Sept. 1985.

In Search of Stability. An Assessment of New U.S. Nuclear Forces. Peter Clausen, Allan Krass, and Robert Zirkle. Union of Concerned Scientists, Cambridge, MA, 1986. x, 71 pp., illus. Paper, $4.50.

In the Company of Animals. A Study of Human-Animal Relationships. James Serpell. Basil Blackwell, New York, 1986. viii, 215 pp. + plates. $19.95.

Indo-Pacific Fish Biology. Proceedings of the Second International Conference on Indo-Pacific Fishes (Tokyo, July 1985). Teruya Uyeno *et al.*, Eds. Ichthyological Society of Japan, Tokyo, 1986 (U.S. distributor, ISBS, Portland, OR). xii, 985 pp., illus. $250.

Infraspecific Classification of Wild and Cultivated Plants. B. T. Styles, Ed. Clarendon (Oxford University Press), New York, 1986. xiv, 435 pp., illus. $85. Systematics Association Special Volume no. 29. From a symposium, Oxford, United Kingdom, Sept. 1984.

Intelligent Decision Support in Process Environment. Erik Hollnagel, Giuseppe Mancini, and David D. Woods, Eds. Springer-Verlag, New York, 1986. xvi, 524 pp., illus. $90.50. NATO Advanced Science Institutes Series F, vol. 21. From an institute, San Miniato, Italy, Sept. 1985.

Mechanistic Models of Asymmetric Reductions. A. Ohno and S. Ushida. Springer-Verlag, New York, 1986. iv, 105 pp., illus. Paper, $15. Lecture Notes in Bio-Organic Chemistry, 1.

Medical Care, Medical Costs. The Search for a Health Insurance Policy. Rashi Fein. Harvard University Press, Cambridge, MA, 1986. xii, 240 pp. $20.

Membranes and Membrane Processes. E. Drioli and M. Nakagaki, Eds. Plenum, New York, 1986. xii, 663 pp., illus. $95. From a congress, Stresa, Italy, June 1984.

Metal Clusters. Martin Moskovits, Ed. Wiley-Interscience, New York, 1986. xii, 313 pp., illus. $49.95.

Microbial Communities in Soil. V. Jensen, A. Kjøller, and L. H. Sørenson, Eds. Elsevier, New York, 1986. xiv, 447 pp., illus. $66. From a symposium, Copenhagen, August 1985.

Microbial Energy Transduction. Genetics, Structure, and Function of Membrane Proteins. Douglas C. Youvan and Fevzi Daldal, Eds. Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, 1986. x, 181 pp., illus. Paper, $27. Current Communications in Molecular Biology. From a conference, Cold Spring Harbor, NY, Feb. 1986.

Middle East Oil Crises Since 1973. Benjamin Shwadran. Westview, Boulder, CO, 1986. xvi, 254 pp., illus. $35.

Mineral Nitrogen in the Plant-Soil System. R. J. Haynes *et al.* Academic Press, Orlando, FL, 1986. xii, 483 pp., illus. $62.50. Physiological Ecology.

Red Fox. The Catlike Canine. J. David Henry. Smithsonian Institution Press, Washington, DC, 1986. 176 pp., illus. $22.50. A Smithsonian Nature Book.

Reflections of a Physicist. Anatole Abragam. Clarendon (Oxford University Press), New York, 1986. 159 pp. $22.95. Translated from the French edition (Paris, 1983).

Regulation of Gene Expression. 25 Years On. I. R. Booth and C. F. Higgins, Eds. Cambridge University Press, New York, 1986. x, 309 pp., illus. $59.50. Symposium of the Society for General Microbiology, 39th (Warwick, U.K., April 1986).

Relaxation in Glass and Composites. George W. Scherer. Wiley-Interscience, New York, 1986. xiv, 331 pp., illus. $54.95.

Renewable-Resource Materials. New Polymer Sources. Charles E. Carraher, Jr. and L. H. Sperling, Eds. Plenum, New York, 1986. x, 332 pp., illus. $59.50. Polymer Science and Technology, vol. 33. From a symposium, Miami Beach, FL, April 1985.

Respiratory Physiology. Allan H. Mines. 2nd ed. Raven, New York, 1986. viii, 168 pp., illus. Paper, $19.50. Raven Press Series in Physiology.

Risk Management and Political Culture. A Comparative Study of Science in the Policy Context. Sheila Jasanoff. Russell Sage Foundation, New York, 1986 (distributor, Basic Books, New York). x, 93 pp. Paper, $5.95. Social Research Perspectives, 12.

Robot Analysis and Control. H. Asada and J.-J. E. Slotine. Wiley-Interscience, New York, 1986. xiv, 266 pp., illus. $33.95.

Science in the Federal Government. A History of Policies and Activities. A. Hunter Dupree. Johns Hopkins University Press, Baltimore, 1986. xxiv, 460 pp. Paper, $14.95. Augmented reprint, 1957 edition.

Science of Ceramic Chemical Processing. Larry L. Hench and Donald R. Ulrich, Eds. Wiley-Interscience, New York, 1986. xxiv, 594 pp., illus. $59.95. From a conference, Palm Coast, FL, Feb. 1985.

The Science Question in Feminism. Sandra Harding. Cornell University Press, Ithaca, 1986. 271 pp. $35; paper, $9.95.

Scientific and Engineering Applications with Personal Computers. A Software Approach with Examples for the Apple-, IBM-PC-, and CP/M-Based Microcomputer Systems. Raymond Annino and Richard D. Driver. Wiley-Interscience, New York, 1986. xxii, 577 pp., illus. $45.

Scientific Programming with Macintosh Pascal. Richard E. Crandall and Marianne M. Colgrove. Wiley Press, New York, 1986. viii, 279 pp., illus. Paper, $18.95.

The Search for Extraterrestrial Intelligence. K. I. Kellerman and G. A. Seielstad, Eds. National Radio Astronomy Observatory, Green Bank, WV, 1986. viii, 271 pp., illus. Paper, $10. NRAO Workshop no. 11. From a workshop, Green Bank, WV, May 1985.

Selforganization. Proceedings of the Liberty Fund Conference on Selforganization. (Key Biscayne, FL, 1984.) Sidney W. Fox, Ed. Adenine, Guilderland, NY, 1986. x, 203 pp., illus. $55; paper, $22.50.

Testing Statistical Hypotheses. E. L. Lehmann. 2nd ed. Wiley, New York, 1986. xx, 600 pp., illus. $45.95. Wiley Series in Probability and Mathematical Statistics.

Wave Propagation and Scattering. B. J. Uscinski, Ed. Clarendon (Oxford University Press), New York, 1986. x, 381 pp., illus. $59. The Institute of Mathematics and its Applications Conference Series, 5. Based on a conference, Cambridge, UK, April 1984.

Wildlife Conservation Evaluation. Michael B. Usher, Ed. Chapman and Hall (Methuen), New York, 1986. xii, 394 pp., illus. $69.95; paper, $27.50.