

The chapter concerning mitochondrial biogenesis in HeLa cells, by Giuseppe Attardi *et al.*, must be singled out as especially readable.

The treatment of the genetics of chloroplasts is less thorough, although plastid variegation in higher plants is covered exceptionally well by R. A. E. Tilney-Bassett. The coverage of chloroplast biogenesis is very spotty, consisting only of a chapter by J. Kenneth Hooper and W. J. Stegeman, in which they discuss primarily their own work.

Included in this collection are two papers that will be of interest to those outside the field of plastid genetics. The discussion of the evolution of ferredoxin and fraction I protein in the genus *Nicotiana* by S. G. Wildman *et al.* demonstrates the use of biochemical probes to study the evolution of higher plants and deserves the attention of population geneticists and persons interested in plant evolution. A paper by John R. Laughnan and Susan J. Gabay is concerned with instability of S cytoplasmic male sterility in corn. One wonders about the inclusion of such a topic in this collection, since very little is known about the molecular or cellular basis for cytoplasmic male sterility. Perhaps presentation of the subject in this context, where it will receive the attention of persons unfamiliar with this system, will provide stimulus for investigation on the cellular and molecular levels.

JEAN L. FORSTER

NICHOLAS W. GILLHAM

Department of Zoology,
Duke University,
Durham, North Carolina

ELIZABETH H. HARRIS

Department of Botany,
Duke University

Plant Physiology

Phloem Transport. Papers from a NATO Advanced Study Institute, Banff, Alberta, Canada, Aug. 1974. S. ARONOFF, J. DAINITY, P. R. GORHAM, L. M. SRIVASTAVA, and C. A. SWANSON, Eds. Plenum, New York, 1975. x, 626 pp., illus. \$48. NATO Advanced Study Institutes Series A, vol. 4.

The conference of which this book is the proceedings assembled 73 active workers on phloem transport to discuss one of the last great puzzles of plant physiology: how plants distribute their organic food materials. It was one of the aims of the conference to provide ample time for discussion, and a third of the book is taken up with question-and-answer exchanges on the topics of the pre-

sented papers. These provide a particularly lively view of the more debatable areas in this controversial field and of the personalities of the more vocal participants, their insights and prejudices.

The first of the three sections is devoted to phloem anatomy. An avowed intention of this was to bring about "a dialogue between the anatomists and physiologists, because it was clear that a great gap . . . exists between the two." This seems to be an unfair description of workers in the field. No phloem anatomist fails to be drawn by the fascination of the sugar transport problem into study and speculation about the function of the cells he studies; nor does any physiologist neglect the descriptive papers that might show structures that would help his thinking on function. Half the contributors to the symposium would be difficult to classify under either heading, and those who are clearly in one category are found ably discussing the papers of those in the other. So the fruitful integration of views that emerges from these pages was strengthened and extended, but not initiated, by this conference.

In the anatomical section there are wide-ranging reviews of phloem and sieve tubes and similar structures in angiosperms, gymnosperms, and lower plants, and concentrated discussion of the topical subjects of P-protein and transfer cells. There is, strikingly, no account of the light microscopy of living phloem, to which much effort has been devoted.

The second part of the book, Physiology of Translocation, is concentrated on loading, tracer kinetics, the effects of external factors, bidirectional transport, and phloem exudates. These are among the "facts" of the process from which an understanding of how it may work must be derived. The balanced surveys of published and novel work and the dialogue of the discussions will give the reader unacquainted with the difficulties a clear view of how these facts can fade away when approached by experimenters with opposing viewpoints or different techniques.

The third part, headed Biophysics of Phloem Transport, is in fact concerned mostly with the hypothesized models. The reader who has not kept up with the arguments about mechanism will find here the wide range of tenable views, the assertions and contrary facts, the acts of faith, and the selections of assumptions that make this a fascinating game, and he will retire bewildered that so little progress has been made since he last tried to follow it all.

Much of the appeal of the book is in its topicality and in the diversity of the observations that are brought out for consideration in both the papers and the discussions. One may expect much of this to go out of date quite quickly. Nevertheless, there are half a dozen critical and deeply researched reviews that will become part of the permanent literature of the subject and should earn the book a place on the shelves of all serious botanical libraries.

M. J. CANNY

Botany Department,
Monash University,
Clayton, Victoria, Australia

Books Received

Administration Behavior. A Study of Decision-Making Processes in Administrative Organization. Herbert A. Simon. Free Press, New York, and Collier Macmillan, London, ed. 3, 1976. lii, 364 pp. Cloth, \$12.95; paper, \$5.95.

Advances in Clinical Chemistry. Vol. 18. Oscar Bodansky and A. L. Latner, Eds. Academic Press, New York, 1976. x, 342 pp., illus. \$31.50.

Advances in Sleep Research. Vol. 2. Elliot D. Weitzman, Ed. Spectrum, New York (distributor, Halsted [Wiley], New York). xii, 236 pp., illus. \$20.

Algebra for College Students. Max A. Sobel and Norbert Lerner. Prentice-Hall, Englewood Cliffs, N.J., 1976. xiv, 544 pp., illus. \$11.95.

Anesthesia for the Uninterested. Alexander A. Birch and John D. Tolmie. University Park Press, Baltimore, 1976. x, 188 pp., illus. Paper, \$7.50.

Antiviral Drugs. Mode of Action and Chemotherapy of Viral Infections of Man. Yechiel Becker. Karger, Basel, 1976. xiv, 130 pp., illus. Paper, \$30.50. Monographs in Virology, vol. 11.

Applications de la Thermodynamique du Non-Equilibre. Bases d'Energétique Pratique. Pierre Chartier, Maurice Gross, and K. S. Spiegler. Hermann, Paris, 1975. 192 pp., illus. Paper, 78 F. Actualités Scientifiques et Industrielles, 1363.

Atomic Energy Levels and Grottrian Diagrams. Vol. 1, Hydrogen I—Phosphorus XV. Stanley Bashkin and John O. Stoner, Jr. North-Holland, Amsterdam, and Elsevier, New York, 1975. xx, 616 pp. \$59.95.

Auditory Competence in Early Life. The Roots of Communicative Behavior. Rita B. Eisenberg. University Park Press, Baltimore, 1976. xxviii, 314 pp., illus. \$18.50.

Beyond Economic Man. A New Foundation for Microeconomics. Harvey Leibenstein. Harvard University Press, Cambridge, Mass., 1976. xiv, 298 pp., illus. \$15.

Biology. Richard A. Goldsby in collaboration with C. Ritchie Bell and seventeen others. Harper and Row, New York, 1976. xxiv, 862 pp., illus. + plates. \$14.95.

Butterflies in My Stomach. Or: Insects in Human Nutrition. Ronald L. Taylor. Illustrated by John Gregory Tweed. Woodbridge Press, Santa Barbara, Calif., 1975. 224 pp. \$8.95.

Cellular Membranes and Tumor Cell Behavior. Papers from a symposium, 1975. Published for the University of Texas System Cancer Center M.D. Anderson Hospital and Tumor Institute by Williams and Wilkins, Baltimore, 1975. xiv, 582 pp., illus. \$25.

Chromosome Hierachy. An Introduction to the Biology of the Chromosome. Bernard John and Kenneth R. Lewis. Clarendon (Oxford University Press), New York, 1976. viii, 172 pp., illus. Cloth, \$19; paper, \$8.

Clinical Methods in Psychology. Irving B. Weiner, Ed. Wiley-Interscience, New York, 1976. xviii, 678 pp. \$24.95. Wiley Series on Personality Processes.

Clinical Use of Drugs in Renal Failure. Robert J. Anderson, John G. Gambertoglio, and Robert W. Schrier. Thomas, Springfield, Ill., 1975. x, 252 pp. \$19.50.

Colo-Rectal Cancer. J. H. Weisburger, Bandaru S. Reddy, and David L. Jofte, Eds. International Union Against Cancer, Geneva, 1975. iv, 144 pp. Paper. A Series of Workshops on the Biology of Human Cancer Report No. 2. UICC Technical Report Series, vol. 19.

Communicative Behavior and Evolution. Martin E. Hahn and Edward C. Simmel, Eds. Academic Press, New York, 1976. xvi, 176 pp., illus. \$11.50.

Computers in Neurobiology and Behavior. Branko Souček and Albert D. Carlson. Wiley-Interscience, New York, 1976. xviii, 324 pp., illus. \$22.50.

Confluent Education in Science. Bill Romey. Drawings by Lucretia Romey. Ash Lad Press, Canton, N.Y., 1976. 122 pp. Paper, \$3.95.

Corn. Improvement, Seed Production, and Uses. Robert W. Jugenheimer. Wiley-Interscience, New York, 1976. xviii, 670 pp., illus. \$32.50.

Crowding in Real Environments. Susan Saegert, Ed. Sage Publications, Beverly Hills, Calif., 1976. 126 pp. Paper, \$3.95. Sage Contemporary Social Science Issues 25. Reprinted from *Environment and Behavior*, vol. 7, No. 2.

The Design of Piled Foundations. Thomas Whitaker. Pergamon, New York, ed. 2, 1975. x, 218 pp., illus. Cloth, \$12.50; paper, \$8.50. Structures and Solid Body Mechanics. Pergamon International Library.

Development. N. J. Berrill and Gerald Karp. McGraw-Hill, New York, 1976. x, 566 pp., illus. \$15.95.

The Development of Dialectical Operations. Klaus F. Riegel, Ed. Karger, Basel, 1975. viii, 242 pp. Paper, \$15.50. Reprinted from *Human Development*, vol. 18, No. 1-3.

Diseases of Tropical and Subtropical Fruits and Nuts. Allyn Austin Cook. Hafner (Macmillan), New York, and Collier Macmillan, London, 1975. xvi, 318 pp., illus. \$20.

Economics. Private and Public Choice. James D. Gwartney. Academic Press, New York, 1976. xxii, 656 pp., illus. \$12.95.

The Economy of Nature. A Textbook in Basic Ecology. Robert E. Ricklefs. Chiron Press, Portland, Ore., 1976. vi, 456 pp., illus. \$13.95.

Elementary Statistics. Paul G. Hoel. Wiley, New York, ed. 4, 1976. xiv, 362 pp., illus. \$12.95. Wiley Series in Probability and Mathematical Statistics.

Energy. The Solar-Hydrogen Alternative. J. O. Bockris. Halsted (Wiley), New York, 1976. xviii, 366 pp., illus. \$27.50.

Environmental Conservation. Raymond F. Dasmann. Wiley, New York, ed. 4, 1976. xii, 426 pp., illus. + index. Paper, \$9.50.

Frontiers in Materials Science. Disting-

uished Lectures. Lawrence E. Murr and Charles Stein, Eds. Dekker, New York, 1976. xx, 590 pp., illus. \$48.50. Monographs and Textbooks in Material Science, 8.

Frontiers in Virology. In Honor of Joseph L. Melnick on the Occasion of His 60th Birthday. Papers from a symposium, Houston, Nov. 1974. Fred Rapp, Ed. Karger, Basel, 1976. xii, 214 pp., illus. \$40. Progress in Medical Virology, vol. 21.

Gasdynamic Lasers. An Introduction. John D. Anderson, Jr. Academic Press, New York, 1976. xii, 180 pp., illus. \$17.50. Quantum Electronics.

Gaze and Mutual Gaze. Michael Argyle and Mark Cook. Cambridge University Press, New York, 1976. xii, 210 pp., illus. \$18.50.

Great Scientists Speak Again. Richard M. Eakin. University of California Press, Berkeley, 1976. viii, 120 pp., illus. Paper, \$2.65. Reprint of the 1975 edition.

Handbook of Psychopharmacology. Leslie L. Iversen, Susan D. Iversen, and Solomon H. Snyder, Eds. Plenum, New York, 1975. Vol. 3, Biochemistry of Biogenic Amines. xii, 486 pp., illus. \$35. Vol. 4, Amino Acid Neurotransmitters. xii, 318 pp., illus. \$25.

Higher Education. International Trends, 1960-1970. Unesco Press, Paris, 1975 (U.S. distributor, Unipub, New York). 254 pp., illus. Paper, \$8.60. Statistical Reports and Studies, No. 19.

How to Live to Be 100. The Life-Style of the People of the Caucasus. Sula Benet. Dial Press, New York, 1976. xvi, 202 pp. + plates. \$8.95.

The Human Environment. Michael Treshow. McGraw-Hill, New York, 1976. xx, 396 pp., illus. \$7.95. McGraw-Hill Series in Population Biology.

Human Sexuality. Bernard Goldstein. McGraw-Hill, New York, 1976. x, 294 pp., illus. Paper, \$7.95. McGraw-Hill Series in Population Biology.

The Ideal of the Practical. Colombia's Struggle to Form a Technical Elite. Frank Safford. University of Texas Press, Austin, 1976. xviii, 374 pp. \$15. Latin American Monographs, No. 39.

Instrumentation in Amino Acid Sequence Analysis. R. N. Perham, Ed. Academic Press, New York, 1976. x, 198 pp., illus. \$18.50.

Intellectual Talent. Research and Development. Proceedings of a symposium, Baltimore, Oct. 1974. Daniel P. Keating, Ed. Johns Hopkins University Press, Baltimore, 1976. xviii, 346 pp., illus. Cloth, \$16.95; paper, \$3.95.

Interactive Computer Graphics. B. S. Walker, J. R. Gurd, and E. A. Drawneek. Crane, Russak, New York, and Arnold, London, 1976. x, 160 pp., illus. \$14.50. Computer Systems Engineering Series.

Statics and Strength of Materials for Technology. Don A. Halperin. Wiley, New York, 1976. xii, 228 pp., illus. \$14.95.

The Structural Basis of Membrane Function. Proceedings of a symposium, Tehran, Iran, May 1975. Youssef Hatefi and Lisa Djavad-Ohaniance, Eds. Academic Press, New York, 1976. xx, 480 pp., illus. \$18.50.

A Study of Abortion in Primitive Societies. A Typological, Distributional, and Dynamic Analysis of the Prevention of Birth in 400 Pre-industrial Societies. George Devereux. International Universities Press, New York, ed. 2, 1976. xviii, 414 pp. \$15.

A Systems Approach to Teaching and Learning Procedures. A Guide for Educators in Developing Countries. Unesco Press, Paris, 1975

(U.S. distributor, Unipub, New York). 144 pp. Paper, \$8.25.

Teaching of Chronic Illness and Aging. Proceedings of a conference. Bethesda, Md., Dec. 1973. Duncan W. Clark and T. Franklin Williams, Eds. National Institutes of Health, Bethesda, Md., 1975 (available from the Superintendent of Documents, Washington, D.C.). xiv, 132 pp. \$5.85. Fogarty International Center Series on the Teaching of Preventive Medicine, vol. 2. DHEW Publication No. (NIH) 75-876.

The Theory of Molecular Spectroscopy. Vol. 1, The Quantum Mechanics and Group Theory of Vibrating and Rotating Molecules. C. J. H. Schutte. North-Holland, Amsterdam, and Elsevier, New York, 1976. xvi, 512 pp., illus. \$67.95.

The Theory of Photons and Electrons. The Relativistic Quantum Field Theory of Charged Particles with Spin One-Half. J. M. Jauch and F. Rohrlich. Springer-Verlag, New York, ed. 2, 1976. xx, 554 pp., illus. \$16.80. Texts and Monographs in Physics.

Toward a National Ocean Policy, 1976 and Beyond. Robert E. Osgood. Ann L. Hollick, Charles S. Pearson, and James C. Orr. Prepared for the National Science Foundation by Ocean Policy Project. Johns Hopkins University, Washington, D.C., 1976 (available from the Superintendent of Documents, Washington, D.C.). x, 208 pp. Paper, \$2.60. NSF-RA-X 75-006.

Towards the Elimination of Racism. Phyllis A. Katz, Ed. Pergamon, New York, 1976. xiv, 450 pp. Cloth, \$16.50; paper, \$11.25. Pergamon General Psychology Series, vol. 54. Pergamon International Library.

Trace Substances and Health. A Handbook, Part 1. Paul M. Newberne, Ed. Dekker, New York, 1976. xii, 398 pp. \$34.50.

Umweltschutz aus der Sicht der Chemie. Wolfgang Leithe. Wissenschaftliche Verlagsgesellschaft, Stuttgart, 1975. x, 134 pp., illus. DM 42. Bücher der Zeitschrift *Naturwissenschaftliche Rundschau*.

Use of Physics Literature. Herbert Coblands, Ed. Butterworths, London, 1975. xii, 290 pp. £6. Information Sources for Research and Development.

Variational Methods in Statistics. Jagdish S. Rustagi. Academic Press, New York, 1976. xvi, 236 pp. \$19.50. Mathematics in Science and Engineering, vol. 121.

Who Do You Think You Are? Man or Superman—The Genetic Controversy. Oliver Gilie. Saturday Review Press (Dutton), New York, 1976. 256 pp. \$8.95.

The Wild Boy of Aveyron. Harlan Lane. Harvard University Press, Cambridge, Mass., 1976. xiv, 352 pp., illus. \$15.

World Enough. Rethinking the Future. Margaret Mead. Photographs by Ken Heyman. Little, Brown, Boston, 1976. xxxii, 218 pp. \$17.50.

World Problems in Education. A Brief Analytical Survey. Jean Thomas. Unesco Press, Paris, 1975 (U.S. distributor, Unipub, New York). 166 pp. Paper, \$8. Studies and Surveys in Comparative Education.

Worlds Beyond. A Report on the Search for Life in Space. Ian Ridpath. Harper and Row, New York, 1976. 176 pp., illus. Paper, \$6.95.

Las Yervas de la Gente. A Study of Hispano-American Medicinal Plants. Karen Cowan Ford. University of Michigan Museum of Anthropology, Ann Arbor, 1975. viii, 438 pp. Paper, \$5. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 60.