

divided planarian the soul, or mind ("l'âme"), exists after cutting.

Brøndsted is a believer in "neoblasts," allegedly totipotent or pluripotent embryonic reserve cells existing in the parenchyma, which have been reported to migrate to the wound site and form the blastema. He dismisses arguments against neoblasts, despite their highly controversial status. This is unfortunate, because studies completed after his literature survey support the alternative process of dedifferentiation, proliferation, and redifferentiation to form the blastema cells and subsequent differentiated structures. In analogous fashion, he rejects Child's theory of axial physiological gradients in favor of Wolff's inhibitor theory. A somewhat less restricted interpretation of Child's theory, not his experiments, coupled with recently published data makes the theory at least as acceptable as, if not preferable to, Wolff's.

This book presents the questions, the controversies, and the appropriate background for future investigations on regeneration in planaria and the inherent problems of polarity, patterns of differentiation, and stability of phenotype.

STUART J. COWARD

*Department of Zoology,
University of Georgia, Athens*

Mammalian Fibers

Hair Growth. Proceedings of a symposium, Beaverton, Ore., 1967. WILLIAM MONTAGNA and RICHARD L. DOBSON, Eds. Pergamon, New York, 1969. xxii + 586 pp. + plates. \$21.50. Oregon Regional Primate Research Center Publication No. 277. *Advances in Biology of Skin*, vol. 9.

This volume contains the bulk of recent knowledge and thought on control mechanisms affecting hair morphology and hair growth. When compared with other texts on this subject published in recent years it reveals some change in focus of research, particularly extension of interest to several mammalian species including nonhuman primates. Nearly half of its 35 chapters deal with observations on man.

While new knowledge concerning hair growth has been developed during the past decade, this information has failed to yield any evident substantial advance in identification of the physiological influences that regulate the growth of hair in any species—this despite the fact that an array of diverse experimental conditions can markedly

affect the ability of a hair follicle to produce hair. Most of these experimentally imposed conditions inhibit rather than stimulate hair growth, a fact reflecting the normal high mitotic and synthetic events within the hair follicle that are operative only under optimum circumstances. This high activity explains the reported finding that nutritional deficiencies provoke distinct morphologic defects in the hair fiber which can be used as a measure of nutritional health.

The hair follicle remains a superb model of growth and differentiation, an isolated system that continually flaunts its normal cyclic patterns of growth, involution, and regeneration. This volume testifies that the follicle has successfully kept secret against the forays of those who have tried to discover them the essential ingredients of its regulatory forces.

EUGENE J. VAN SCOTT

*Skin and Cancer Hospital, Temple
University, Philadelphia, Pennsylvania*

Medical Genetics

Human Afflictions and Chromosomal Aberrations. RAYMOND TURPIN and JÉRÔME LEJEUNE. Translated from the French edition (Paris, 1965). Pergamon, New York, 1969. xii + 392 pp., illus. \$21. *International Series of Monographs in Pure and Applied Biology: Modern Trends in Physiological Sciences*, vol. 32.

This book is a heroic attempt to summarize the explosive field of human cytogenetics, a task the authors accomplish with clarity and by a methodological approach satisfying to the historically oriented scientist.

The historical chapter is informative. In it European work is extensively reviewed and significant contributions are attributed to individuals not widely recognized by English-speaking reviewers. The systematic documentation of progressive observations and theories is continued in the chapter on techniques. This historical approach gives a dateless quality to the book, making it a valuable acquisition for novice and expert alike and partially compensating for the lack of revision since 1965.

The discussion of chromosomal grouping (karyotype) and the variations within measurements of the human somatic complement are the result of extensive research by the authors and present an original topographical method. The quality of reproduc-

tion in the illustrations is excellent and allows the reader to evaluate the authors' proposal to identify individual chromosomal pairs numerically, an ability not universally professed by cytogeneticists. This chapter is handicapped by the lack of autoradiographic data and of reference to the standardized nomenclature more recently adopted, however.

The chapter on autosomal anomalies and sex chromosomal errors is reflective of the authors' involvement in medical genetics. For example, the term "mongolism" is deliberately replaced by "trisomy 21." The authors then progressively document the theoretical prediction, by Waardenburg in 1932 and others, of the chromosomal etiology now so widely known. It is of interest that the frequent chromosomal aberrations and numerical anomalies were well known and described by 1965.

The clinical significance of translocations and genetic counseling of families is stressed in addition to the association of deletion markers and aneuploidy frequently found in malignancies. Caution is expressed and appears warranted in expressing finite risk or attributing causal relationships in either case.

The final sections review developmental sexual defects, mosaicism, twin zygosity, and possible chromosomal linkage of biochemical markers.

The great advantages of this book lie in its historical approach, its thoroughness (over 1800 references to 1964), and the personal approach and theories it presents of two founding scientists in medical cytogenetics.

CECIL B. JACOBSON

*Department of Obstetrics and
Gynecology, George Washington
University School of Medicine,
Washington, D.C.*

Books Received

Advances in Child Development and Behavior. Vol. 4. Lewis P. Lipsett and Hayne W. Reese, Eds. Academic Press, New York, 1969. xiv + 338 pp., illus. \$13.50.

Advances in Veterinary Science and Comparative Medicine. Vol. 13. C. A. Brandly and Charles E. Cornelius, Eds. Academic Press, New York, 1969. xviii + 422 pp., illus. \$18.50.

Adventures in Discovery. Tom Purdom, Ed. Doubleday, Garden City, N.Y., 1969. x + 182 pp., illus. \$4.95.

(Continued on page 1178)



APPLIED SOLID STATE SCIENCE:

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Volume 1

edited by **RAYMOND WOLFE**, *Bell Telephone Labs, Murray Hill, New Jersey*, and Consulting editor, **C. J. KRIESSMAN**, *Ferroxcube Corporation of America, Saugerties, New York*

This new publication is devoted to reviews of current work in applied solid state science. Each article deals with a specific aspect of solid state device research, with emphasis on the basic physics or material science on which each device is based rather than on engineering details or applications. The first volume contains comprehensive and up-to-date reviews on such topics as Junction Electroluminescence, Electron Transfer Through Insulation Thin Films, Metal - Insulator - Semiconductor Physics, and Ion Implantation in Semiconductors.

1969, 390 pp., \$20.00

CURRENT INJECTION IN SOLIDS

by **MURRAY A. LAMPERT**, *Department of Electrical Engineering, Princeton University, Princeton, New Jersey*, and **PETER MARK**, *Department of Electrical Engineering, Princeton University, Princeton, New Jersey*

The intent of this book is to provide a thorough exploration of the bulk-controlled behavior of injection currents in solids, with emphasis on the underlying physics. The subject matter is covered at several levels, ranging from the purely phenomenological to the purely analytical. The subject matter is divided into two parts. The first part describes the one-carrier injection current which are necessarily space-charge-limited, and the second part covers the two-carrier injection current in which recombination, as well as space charge, can play an important role.

April, 1970, about 309 pp., in preparation

ELECTROMAGNETISM AND QUANTUM THEORY

by **DALE M. GRIMES**, *Department of Electrical Engineering, University of Michigan, Ann Arbor, Michigan*

This book provides a unified method of presenting modern physics as a potentially deterministic science. It develops the equations of special relativity from a single, deterministic viewpoint, deductively obtains from them classical mechanics and electrodynamics, and in turn inductively obtains from these the equations of quantum theory. Included in this work are the effects of reactive electromagnetic fields about accelerating charges.

1969, 151 pp., \$9.00



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BOOKS RECEIVED

(Continued from page 1118)

Air Quality Criteria for Particulate Matter. National Air Pollution Control Administration, U.S. Department of Health, Education, and Welfare, Washington, D.C., 1969. xviii + 442 pp., illus. Paper, \$1.75. National Air Pollution Control Administration Publication No. AP-49.

Anatomy of the Monocotyledons. C. R. Metcalfe, Ed. Vol. 4, Juncales. D. F. Cutler. Clarendon (Oxford University Press), New York, 1969. xii + 360 pp., illus. \$14.

Annual Progress in Child Psychiatry and Child Development 1969. Stella Chess and Alexander Thomas, Eds. Brunner/Mazel, New York, 1969. xii + 700 pp., illus. \$15.

Annual Review of Genetics. Vol. 3. Herschel L. Roman, Laurence M. Sandler, and Allan Campbell, Eds. Annual Reviews, Palo Alto, Calif., 1969. viii + 588 pp., illus. \$8.50.

Applied Genetics. The Technology of Inheritance. David Paterson. Doubleday, Garden City, N.Y., 1969. 192 pp., illus. \$5.95. Doubleday Science Series.

Asian Dilemma: United States, Japan and China. Based on a conference, Santa Barbara, January 1969. Elaine H. Burnell, Ed. Center for the Study of Democratic Institutions, Santa Barbara, Calif., 1969. xviii + 238 pp., illus. Paper, \$2.25. A Center Occasional Paper.

Atmospheric Circulation Systems. Their Structure and Physical Interpretation. E. Palmén and C. W. Newton. Academic Press, New York, 1969. xviii + 606 pp., illus. \$26. International Geophysics Series, vol. 13.

Aviation and Space Medicine. Proceedings of the 17th international congress, Oslo, August 1968. Birger Hannisdahl and Carl Wilhelm Sem-Jacobsen, Eds. Universitetsforlaget, Oslo, 1969 (U.S. distribution office, P.O. Box 142, Boston. 400 pp., illus. \$33.40).

Basic Exercises in Immunochemistry. A Laboratory Manual. A. Nowotny. Springer-Verlag, New York, 1969. viii + 200 pp., illus. \$9.50.

Biochemical Microcalorimetry. Harry Darrow Brown, Ed. Academic Press, New York, 1969. xiv + 338 pp., illus. \$16.

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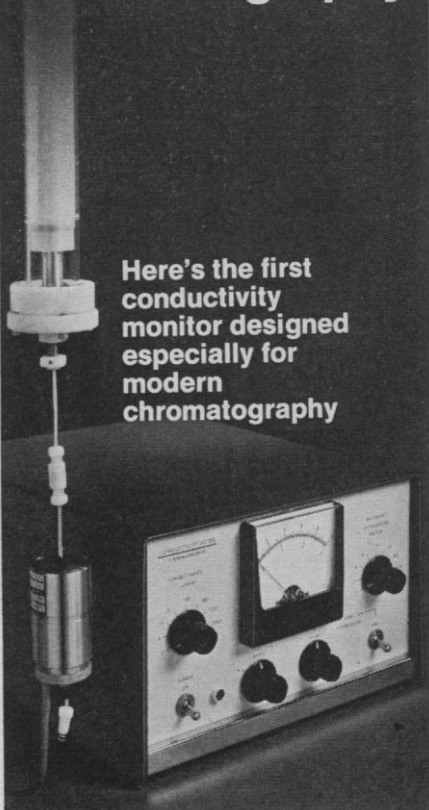
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Brother Animal. The Story of Freud and Tausk. Paul Roazen. Knopf, New York, 1969. xxii + 234 pp. + plates. \$5.95.

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Colloquium on Forest Fertilization. Proceedings of the 5th Colloquium of the International Potash Institute, Jyväskylä, Finland, 1967. International Potash Institute, Berne, Switzerland, 1969. 380 pp., illus.

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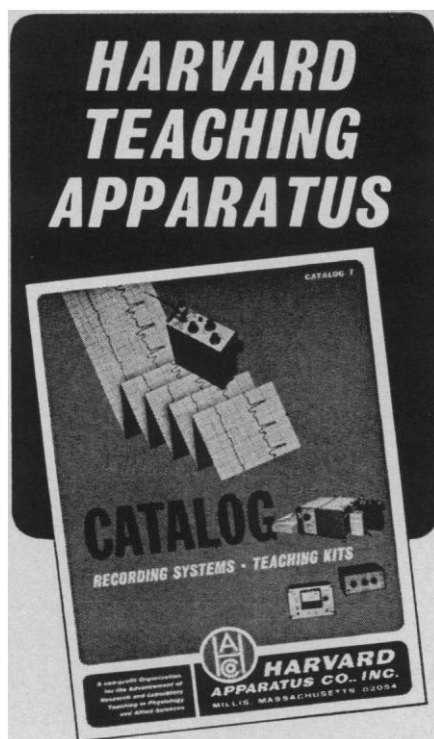
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ner. Dover, New York, 1969. xx + 340 pp., illus. Paper, \$2.50. Reprint of the 1937 edition.

Electrochemical Techniques for Inorganic Chemists. J. B. Headridge. Academic Press, New York, 1969. viii + 124 pp., illus. \$5.50.

Electron Spin Resonance of Metal Complexes. Proceedings of a symposium, Cleveland, March 1968. Teh Fu Yen, Ed. Plenum, New York, 1969. x + 206 pp., illus. \$17.50.

Electronic Transitions in Organometallics. Brian G. Ramsey. Academic Press, New York, 1969. xii + 300 pp., illus. \$16. Organometallic Chemistry.

The Encyclopedia of Marine Resources. Frank E. Firth, Ed. Van Nostrand Reinhold, New York, 1969. xii + 740 pp., illus. \$25.

Environment, Heredity, and Intelligence. Compiled from the *Harvard Educational Review*. Cambridge, Mass., 1969. iv + 248 pp., illus. Paper, \$4.95. Reprint Series No. 2.

Essays in Toxicology. Vol. 1. Frank R. Blood, Ed. Academic Press, New York, 1969. xii + 172 pp., illus. \$7.50.

Evolution of the Vertebrates. A History of the Backboned Animals through Time. Edwin H. Colbert. Wiley, New York, ed. 2, 1969. xviii + 542 pp., illus. \$12.95.

Explorations in Science. A Book of Basic Experiments. Harry Milgrom. Illustrated by Ann Marie Jaus. Dutton, New York, 1969. 128 pp. Paper, \$1.25. Reprint of the 1961 edition.

The Focal Encyclopedia of Film and Television Techniques. Hastings House, New York, 1969. xxiv + 1100 pp., illus. \$37.50.

General Properties of Matter. B. Brown. Plenum, New York; Butterworths, London, 1969. viii + 292 pp., illus. \$12.50.

A Guide to Practical Histochemistry. J. Chayen, R. G. Butcher, Lucille Bitensky, and L. W. Poulter. Lippincott, Philadelphia, 1969. xii + 262 pp., illus. \$11.

A Guide to the Human Adaptability Proposals. J. S. Weiner. With a contribution by Paul T. Baker. Published for the International Biological Programme by Blackwell Scientific Publications, Oxford, England, ed. 2, 1969 (U.S. distributor, Davis, Philadelphia). x + 70 pp. Paper, \$3. IBP Handbook No. 1.

The Harvey Lectures. Delivered under the Auspices of the Harvey Society of New York, 1967-1968. Walsh McDermott, Renato Dulbecco, Jacob Furth, Lewis Thomas, Harold A. Scheraga, Alton Meister, G. J. V. Nossal, M. F. Perutz, and R. S. Edgar. Academic Press, New York, 1969. xvi + 328 pp., illus. \$9.50. Series 63.

A History of the Conic Sections and Quadric Surfaces. Julian Lowell Coolidge. Dover, New York, 1968. x + 214 pp., illus. Paper, \$2.75. Reprint of the 1945 edition.

Hutchison's Food and the Principles of Nutrition. Hugh M. Sinclair and Dorothy F. Hollingsworth. Arnold, London, ed. 12, 1969 (U.S. distributor, Williams and Wilkins, Baltimore). viii + 644 pp. \$18.25.

The Influenza Viruses. L. Hoyle. Springer-Verlag, New York, 1968. iv + 376 pp., illus. \$27. Virology Monographs, vol. 4.

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by Mikhail V. Vol'kenshtein

Institute of Molecular Biology, Academy of Sciences of the USSR, Moscow, USSR

Translated from Russian by Serge N. Timasheff
Graduate Department of Biochemistry, Brandeis University, Waltham, Massachusetts

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Lepidoptera Pupae. Five Collected Works on the Pupae of North American Lepidoptera. Edna Mosher. Entomological Reprint Specialists, East Lansing, Mich., 1969. Illus. \$9.95.

Mathematical Geodesy. Martin Hotine. Environmental Science Services Administration, U.S. Department of Commerce, Washington, D.C., 1969 (available from the Superintendent of Documents, Washington, D.C.). xvi + 416 pp., illus. \$5.50.

The Mathematical Sciences. A Collection of Essays. Edited by the National Research Council's Committee on Support of Research in the Mathematical Sciences (COSRIMS), with the collaboration of George A. W. Boehm. Published for the National Academy of Sciences-National Research Council by M.I.T. Press, Cambridge, Mass., 1969. xii + 276 pp., illus. Paper, \$3.95.

Mathematics for Biologists. Alan Crowe and Angela Crowe. Academic Press, New York, 1969. x + 306 pp., illus. \$8.50.

Medical Neurology. John Gilroy and John Stirling Meyer. Illustrated by Geraldine E. Fockler. Macmillan, New York; Collier-Macmillan, London, 1969. xiv + 722 pp. \$16.

Mental Health Research in Asia and the Pacific. A conference, Honolulu, March-April, 1966. William Caudill and Tsung-yi Lin, Eds. East-West Center Press, Honolulu, 1969. xvi + 488 pp., illus. \$12.50.

Mental Imagery. Alan Richardson. Springer, New York, 1969. xii + 180 pp. \$5.75.

Methods of Experimental Physics. Vol. 8, Problems and Solutions for Students. L. Marton and W. F. Hornyak, Eds. Academic Press, New York, 1969. xii + 284 pp., illus. \$14.50.

Mineral Metabolism. An Advanced Treatise. C. L. Comar and Felix Bronner, Eds. Vol. 3, Calcium Physiology. Academic Press, New York, 1969. xvi + 552 pp., illus. \$24.50.

Modernizing Peasant Societies. A Comparative Study in Asia and Africa. Guy Hunter. Published for the Institute of Race Relations, London, by Oxford University Press, New York, 1969. xii + 324 pp. Cloth, \$6.50; paper, \$2.50.

Molecular Processes on Solid Surfaces. Battelle Institute Materials Science Colloquium, Kronberg, Germany, May 1968. Edmund Drauglis, Ronald D. Gretz, and Robert I. Jaffee, Eds. McGraw-Hill, New York, 1969. xviii + 654 pp., illus. \$37.50. McGraw-Hill Series in Materials Science and Engineering.

Named Organic Reactions. Ronald C. Denney. Plenum, New York; Butterworths, London, 1969. viii + 252 pp., illus. Paper, \$9.95.

The Native Cacti of California. Lyman Benson. Stanford University Press, Stanford, Calif., 1969. xii + 244 pp. + plates. \$7.95.

The Oppenheimer Case: Security on Trial. Philip M. Stern. With the collaboration of Harold P. Green. Special commentary by Lloyd K. Garrison. Harper and Row, New York, 1969. xiv + 594 pp. \$10.



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Pfaff's Problem and Its Generalizations. J. A. Schouten and W. v. d. Kulk. Chelsea, New York, 1969. xvi + 542 pp. \$12. Reprint of the 1949 edition.

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Political Violence. The Behavioral Process. H. L. Nieburg. St. Martin's, New York, 1969. viii + 184 pp. Cloth, \$5.95; paper, \$2.50.

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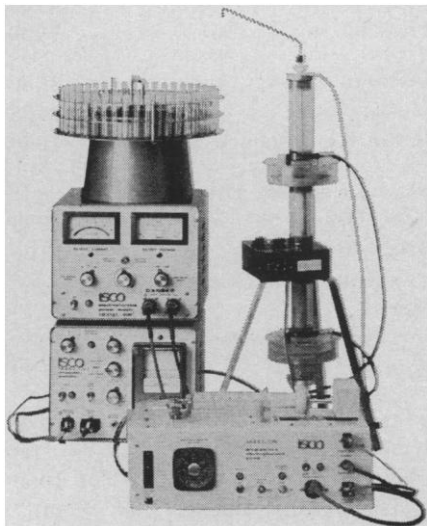
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