SCIENCE

25 October 1974

Vol. 186, No. 4161

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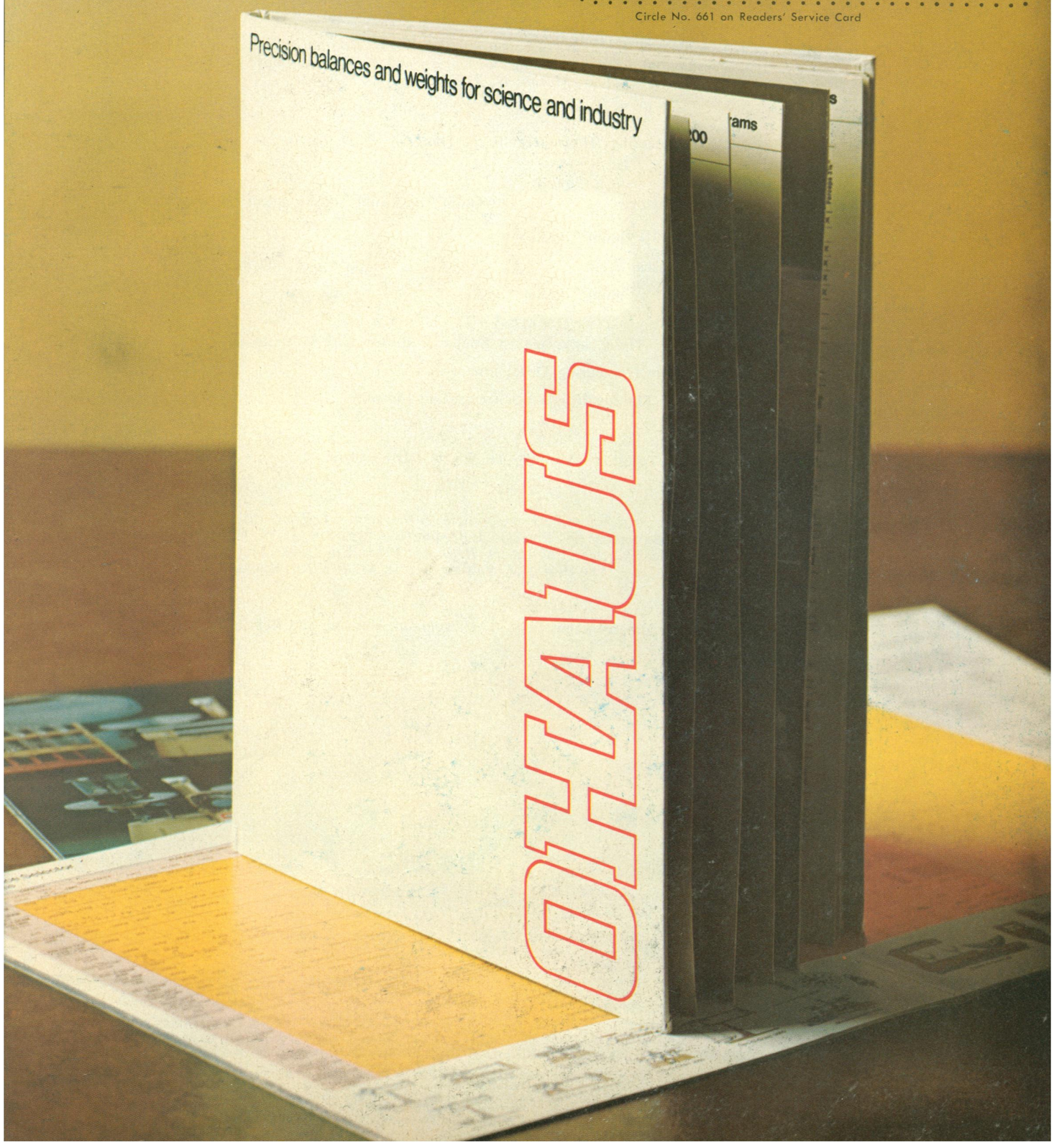

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COVER

Electron micrograph of chitin microfibrils assembled in vitro (about × 64,000). See page 357. [V. O. Sing, J. Ruiz-Herrera, and S. Bartnicki-Garcia, University of California, Riverside]

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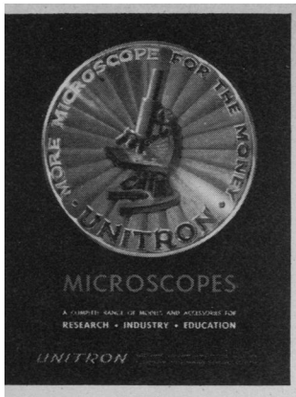

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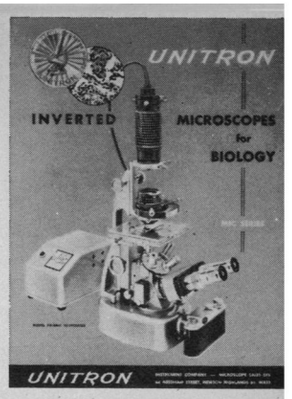

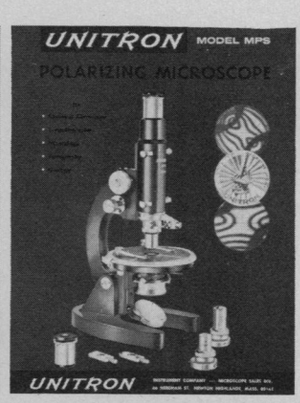

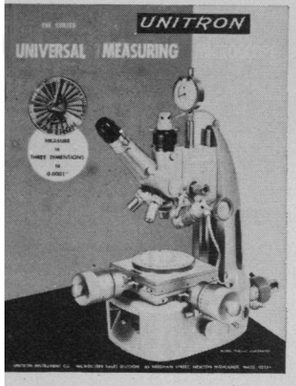

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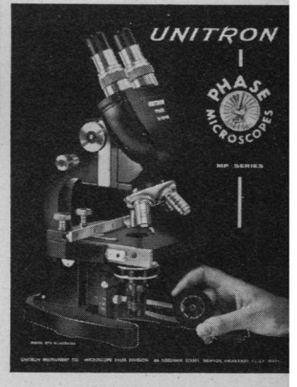

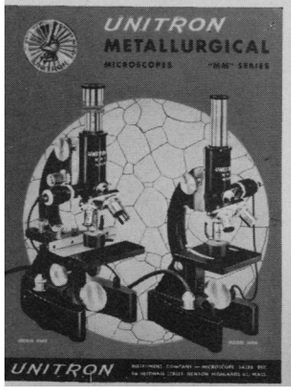

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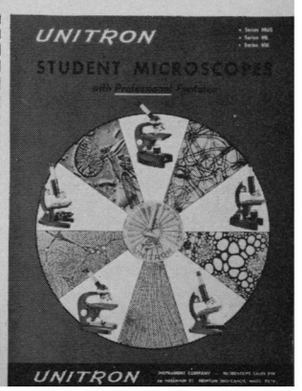

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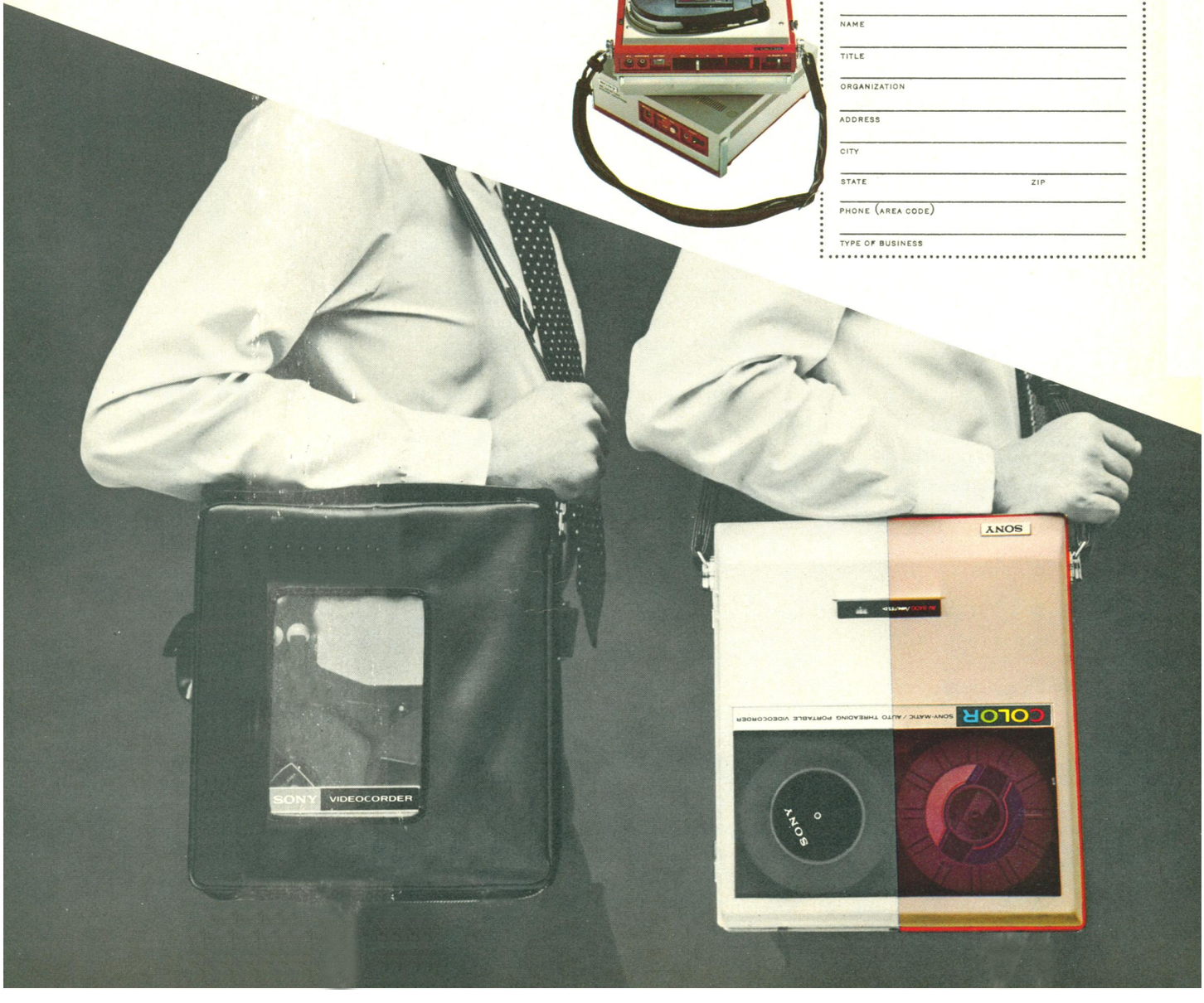

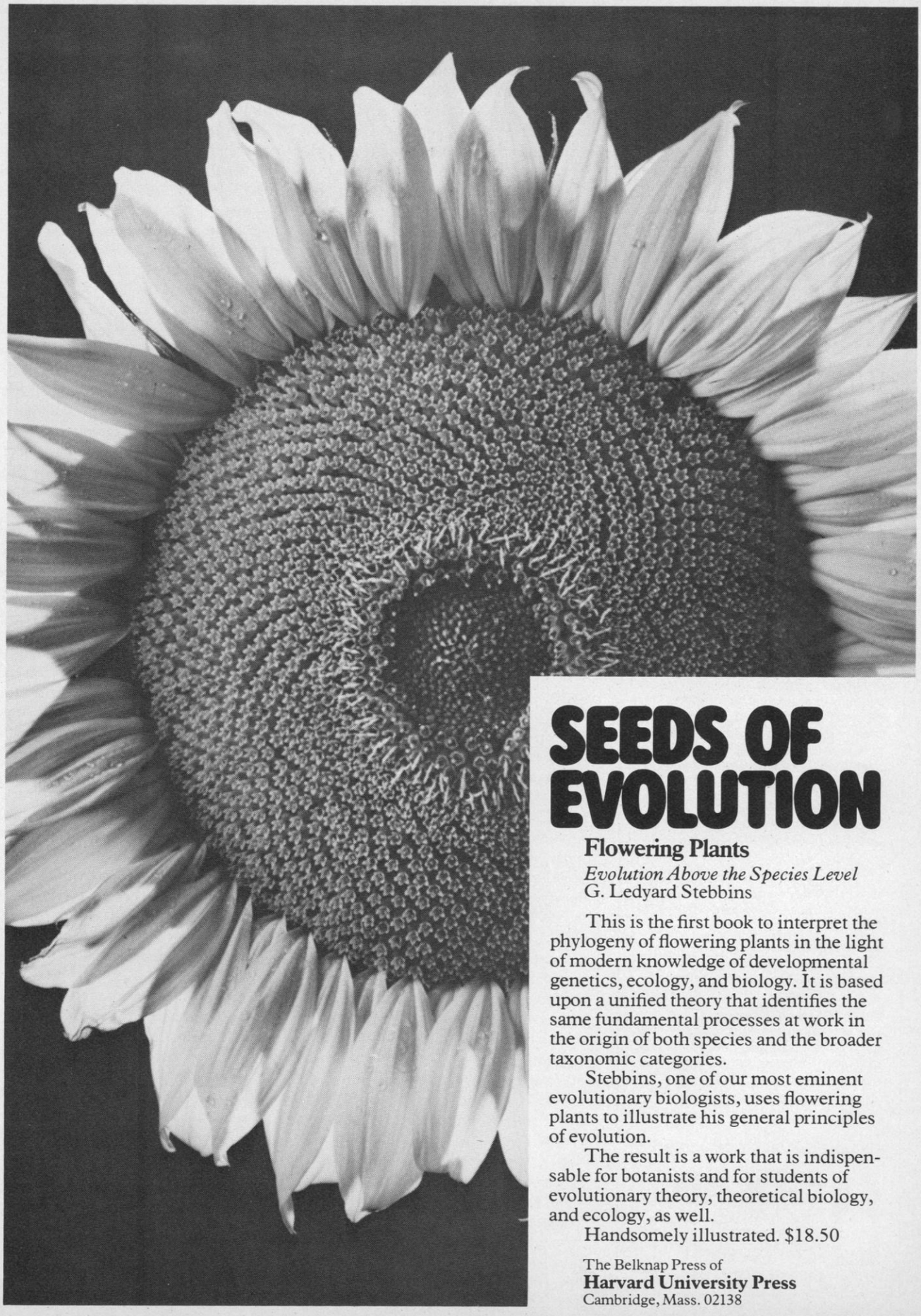

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Henry's analysis and proposals make a valuable contribution to the literature on copyright, but several points should be added, emphasized, or considered in slightly altered contexts.

First, it seems curious that most current discussions of copyright problems with photocopying and computers quickly become partial reviews of the role of libraries in copying. Frightened publishers seem to ignore the existence of coin-operated copying machines in public places other than libraries. Henry notes the influence of decreasing computational and copying costs on the increase in the rate of copying. He fails, however, to consider the potential impact of photocopiers and computers small and inexpensive enough to attract private purchasers. It would certainly be questionable public policy to prohibit copying in libraries if the only effect is to create lucrative photocopying sidelines for businesses across the street from the library or to enlarge the market for home copying devices. Focusing too narrowly on libraries diverts attention from the overriding problem—economic adjustment to technological change.

Second, neither Henry nor many other nonlibrarians seem aware that libraries now routinely pay many journal publishers "institutional rates" that are much higher than regular subscription rates. Far from being parasites, libraries help subsidize low subscription rates for members of many scientific and professional associations. Any clearinghouse system which carries an administrative price tag of $300 million would be sure to increase library costs, which must either be passed on to the patron, inhibiting copying, or absorbed by the library. Since institutional budgets in the 1970's have become less and less elastic, it seems likely that libraries that did not pass on all administrative costs would soon be forced to find some other way to reduce expenditures. Some publishers might not like the outcome of such budgetary reviews.

Third, Henry, in common with many other commentators, discusses copyright problems without any reference to the statement of purpose for copyright clearly given in the portion of Article 1, Section 8, of the Constitution, which grants the Congress patent and copyright power in order "To promote the Progress of Science and the Useful Arts." Perhaps as a result of this omission, neither Henry nor his unnamed but "informed observers" correctly anticipated the U.S. Court of Claims decision (*1*) in favor of the U.S. government in the Williams & Wilkins case. The majority quoted the constitutional purpose and buttressed it with a quote from the 1909 Copyright Act House Committee report to the effect that copyright was not " '. . . primarily for the benefit of the author, but primarily for the benefit of the public' " (*2*). In addition, the majority cited case law and quoted the Supreme Court statement that " 'The copyright law, like the patent statutes, makes reward to the owner a secondary consideration' " (*3*).

If, as now seems likely, the Soviet Union subscribes to international copyright conventions in an effort to suppress foreign publication of the works of domestic heretics, American publishers may join librarians and the rest of the scholarly community in taking the position that the public's right to know is more important than the property rights of an irascible and repressive copyright holder.

Fourth, Henry's report that three journals are born and one dies daily will startle very few librarians. Nonprofit, scholarly journals are often the part-time responsibility of harried academics who publish numbers out of order, change names of their journals with bewildering frequency, and take the offices of the journals with them as they move from one university to another. Getting photocopying permission from a defunct journal could be even more difficult than securing a missed number.

Henry's first consideration for federal policies is given as that of assuring the availability of adequate information. Availability certainly requires that the copyright system or its successor system should not permit scholarly material to become unavailable for copying because of a repressive or a defunct copyright holder.

Henry's final proposal seems valid. Sound research is always an appropriate prelude to policy decisions. But determination of public policy also involves making value judgments. In placing the public's interest before the private right to sequester information or to make profit from it, the Constitution makes a value judgment which is still a valid basis for public policies in this area.

WALTER J. FRASER
Graduate School of Library Service, Rutgers University, New Brunswick, New Jersey 08903

References

1. Williams & Wilkins Company *v.* The United States, No. 73–68, U.S. Court of Claims (1973).
2. U.S. House of Representatives, Committee on Copyright, *Report No. 2222* (60th Congr., 2nd sess., 1909), p. 7 [quoted in (*1*), p. 12].
3. Mazer *v.* Stein, 347 U.S. 201, 219 (1954) [quoted in (*1*), p. 12].

I am pleased to learn that the American Council of Learned Societies (ACLS) has modified its initial pro-owner position. Burkhardt stated before the House Judiciary Committee on 30 June 1964 that the ACLS could not agree with the position of the National Education Association on the copying of educational materials, which "apparently would give a full and free right for the use of photocopy by 'recognized educational institutions or organizations.' With the present development of photocopying techniques, this could work to the disadvantage of authors as well as publishers. The ACLS is in accord with the opinions of Mr. [Lee C.] Deighton . . ." (*1*, p. 290). Deighton was at that time the chief spokesman on copyright for the book publishing industry. Relatedly, in its *Newsletter* of December 1965, the ACLS stated its position as one which favored the copying of extracts for research purposes, but not of whole works without the consent of the copyright owner (*2*, pp. 9–12).

While the ACLS did not take a position on copyright and computer-based information storage and retrieval systems, Burkhardt stated before a House subcommittee on 5 August 1965 that "it seemed to us that a system of controls, royalty charges, and so forth could easily be set up on such a centralized electronic computer system," a remark that would appear to favor the position of copyright owners on this subject (*3*, p. 1550). The testimony submitted by the ACLS to the House Judiciary Committee on 5 August 1965 cited by Burkhardt refers to the period of copyright duration, not to that aspect of copyright covered in my article, which was public policies for the new information technologies.

I presume that Burkhardt is referring to the controversial amendment to Section 108(d) (1) of S. 644 proposed in 1971 by library interests. If so, then this represents a change in the ACLS position. Overall, however, I agree with Burkhardt that there "is no way to resolve these conflicting interests completely. . . ."

Moran is correct that too little attention is paid in the copyright debate to the differing motivations of different kinds of data producers. Only recently, in fact, have copyright owners begun to recognize this distinction; the formation of the Information Industry Association in 1969 and the organization by the Copyright Committee of the Association of American Publishers of two task forces on photocopying, one for scientific and medical publishing and the other for literary works (*4*), attest to this growing awareness. I also agree with Moran that the growing practice of using page charges as a means of subsidizing the production of scientific information is worth greater analysis than it has received; I discuss the role of the page charge in my article, "Copyright: An adequate policy for knowledge management in technological societies?" (*5*).

Contrary to Fraser's contention, many persons are cognizant of the increasingly frequent propensity of journal publishers to charge high "institutional" subscription rates to libraries on the obviously avaricious theory that libraries are professionally obligated to provide as much information as possible to their patrons; indeed, the practice is noted in a report on photocopying by John Walsh (News and Comment, 29 Mar., p. 1274). Many persons also are aware of Article 1, Section 8, of the Constitution. The narrow decision (3 to 4) by the U.S. Court of Claims to overturn the recommendation of its own commissioner in the Williams & Wilkins case is by most measures an unusual one, and one that I and others did not expect. I have little doubt that the Constitution was taken into account in the decisions of both the commissioner and the Court of Claims (*6*) and will be relied on again when the U.S. Supreme Court reviews the case, as it has agreed to do.

NICHOLAS L. HENRY

Department of Political Science, University of Georgia, Athens 30602

References

1. F. Burkhardt, in hearings before the U.S. House of Representatives, Committee on the Judiciary, *Copyright Law Revision*, part 4, *Further Discussions and Comments on Preliminary Draft for Revised U.S. Copyright Law* (Government Printing Office, Washington, D.C., 1964), p. 290.
2. *ACLS Newsl.* **16**, 1 (December 1965).
3. F. Burkhardt, in hearings before the U.S. House of Representatives, Committee on the Judiciary, Subcommittee No. 3, *Copyright Law Revision, Serial No. 8* (Government Printing Office, Washington, D.C., 1966), part 3, pp. 1548–1561.
4. *Publ. Wkly.* **200**, 29 (4 October 1971).
5. N. L. Henry, *Science*, in press.
6. M. G. McCormick, compiler, *The Williams & Wilkins Case* (Science Associates/International, New York, in press).

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Genetic Engineering: How Great Is the Danger?

Public concern over the potential dangers of genetic engineering in man now seems likely to be activated again, since a recent statement of a committee of the National Academy of Sciences* has brought to public attention the definite dangers of genetic engineering in bacteria.

Two major categories of genetic engineering in man may be envisaged. One, aimed at replacing defective genes, has given rise to fear that the technique would be used not only to cure disease but also to modify peoples' natures. Indeed, the prospect of parents shopping in a genetic supermarket, or of a tyrant specifying the genes in his subjects, would be harrowing. But for a realistic assessment of these dangers the distinction between single-gene traits and polygenic traits is crucial. The former depend on a single definable gene, with a recognizable qualitative effect (for example, the presence or absence of particular protein, such as sickle cell hemoglobin). In contrast, polygenic traits (for example, size and shape, strength and dexterity, intelligence and special talents, features of temperament), which are socially much more interesting, show a continuous range of variation, because they depend on the sum of the small contributions of many genes interacting with many environmental factors.

The contrast in our knowledge of these two classes of traits is enormous. The success of molecular genetics has been confined to single-gene traits. For any behavioral trait we know only that many genes are involved: we have no idea how their products contribute to the circuitry of the 10 billion cells of the developing human brain. Moreover, we cannot identify *one* gene or protein whose variation contributes to the normal range of behavior, though we would need such information for many genes before we could try to modify behavior by manipulating DNA.

This vast ignorance about polygenic traits protects us against the main possibilities of harm from gene replacements. On the other hand, the possibilities for good are enormous, with increasing recognition of single genes that influence many aspects of man's health (such as specific immune responses). Hence it would be tragic to discourage efforts to overcome the technical obstacles—and these are still large.

The other major category of gene manipulation is the production of an exact gene copy of an individual. Such cloning, already accomplished with frogs, seems likely to become feasible in mammals fairly soon, and in a world facing severe food shortages the incentive to clone prize cattle will be strong. Extension to humans would indeed have grave and novel moral implications. But the dangers are hardly terrifying. If human cloning becomes feasible, and if it is then proscribed, an occasional violation would not shake the heavens. Moreover, if a tyrant wished to develop a particular kind of population he would not need cloning but could employ selective breeding, as used in animal husbandry since neolithic times.

Genetic engineering presents quite different problems in man and in bacteria. With bacteria the moral issues are simple. With man the moral issues are novel, and the problem is a general one for society. But since we cannot predict when a particular kind of manipulation may become feasible, and since moral standards and social needs change with time, it would be presumptuous for us to try to guide future generations by our present wisdom.

It seems important for scientists to help the public to sort out these complex issues and avoid anxiety over improbable or distant developments. Such anxiety could lead to pruning of valuable major limbs on the tree of knowledge, rather than of branches with dangerous fruit.

—BERNARD D. DAVIS, *Bacterial Physiology Unit, Harvard Medical School, Boston, Massachusetts 02115*

* P. Berg, D. Baltimore, H. W. Boyer, S. N. Cohen, R. W. Davis, D. S. Hogness, D. Nathans, R. Roblin, J. D. Watson, S. Weissman, N. D. Zinder, *Science* **185**, 303 (1974).

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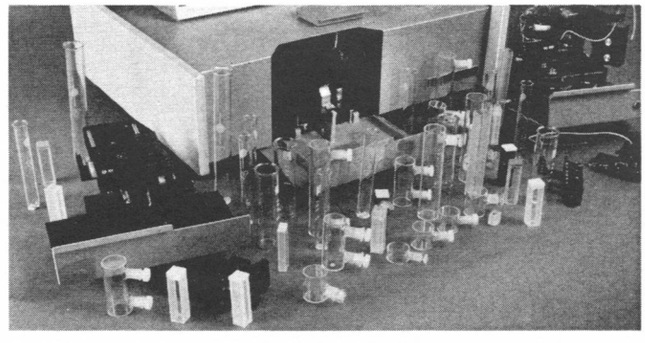

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Electron Microscopy In Pathology

by George Bridges and J. H. Martin, Baylor University Medical Center, Dallas, Texas

Introduction

Electron microscopy has become a useful diagnostic tool of the pathologist. Although its use on every specimen is impractical and, in fact, wasteful at our present level of knowledge and technical capability, the electron microscopic examination of selected surgical specimens and autopsy specimens is every bit as practical and useful as many of the "special" stains routinely employed in many pathology laboratories.

The principal developments allowing for the increased current application of electron microscopy in diagnostic pathology as we see them are: (1) the collection of specimens in a dual purpose aldehyde fixative allowing for both light and later electron microscopy on the same biopsy specimen, (2) rapid, simplified and reliable dehydration, embedding, staining and photographic techniques making the results of electron microscopy available within twenty four hours of receiving the specimen, (3) wide-spread usage of the "adjacent" or "thick" 0.5 micron epoxy embedded and cover slipped sections for light microscopy as a selective device and bridge between conventional paraffin embedding techniques and electron microscopy and (4) the relatively recent development of excellent, reliable ultramicrotomes and high-quality, simplified electron microscopes opening the door to technologists as operators rather than highly skilled artisans.

The purpose of this paper is to outline briefly some of these viewpoints on methodology, instrumentation, and current applications of electron microscopy in diagnostic pathology.

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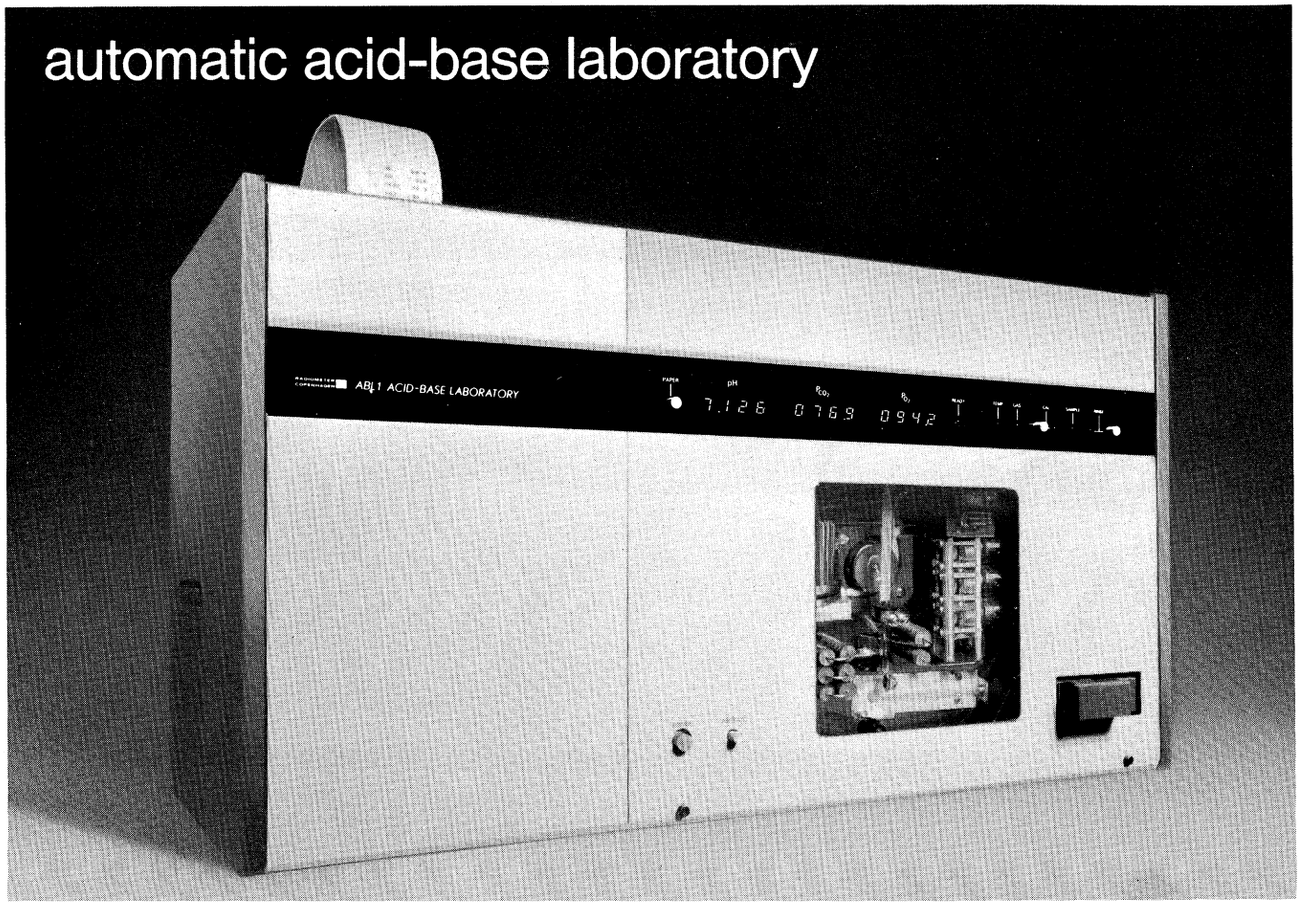

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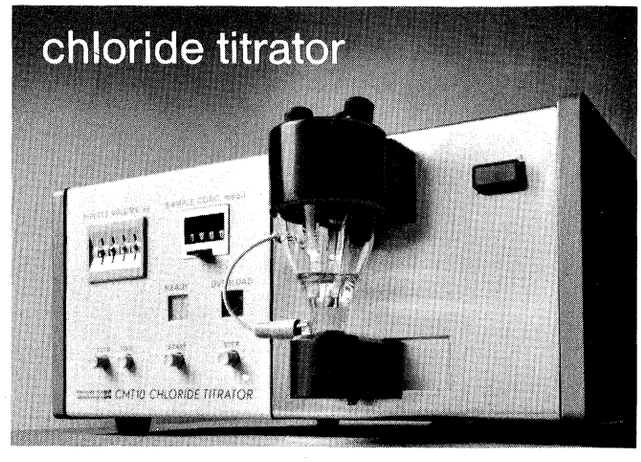

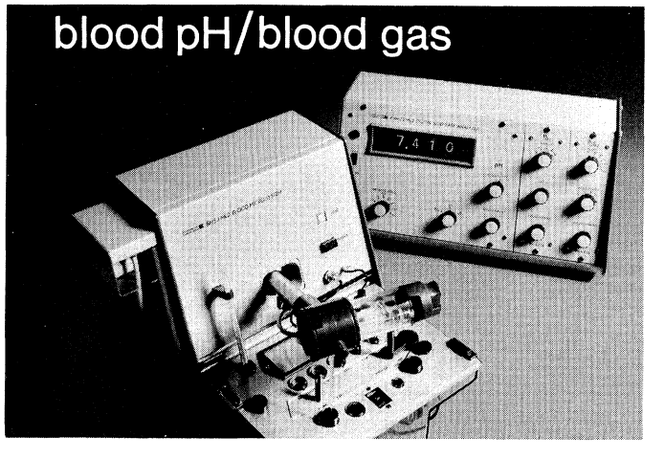

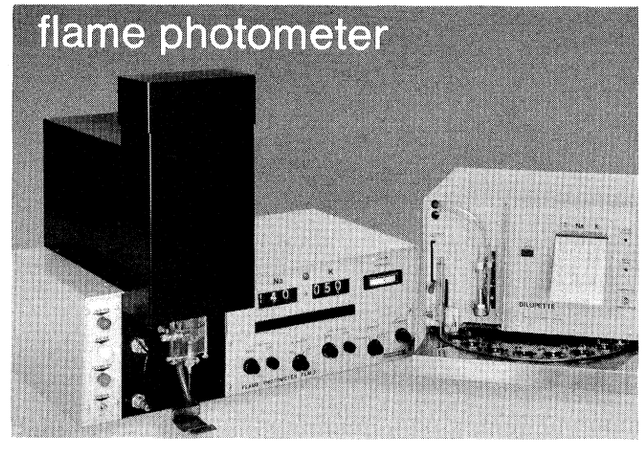

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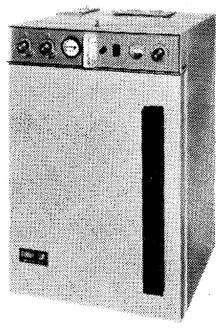

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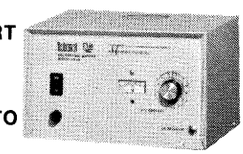

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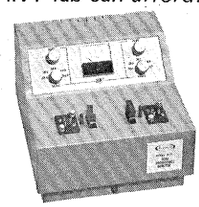

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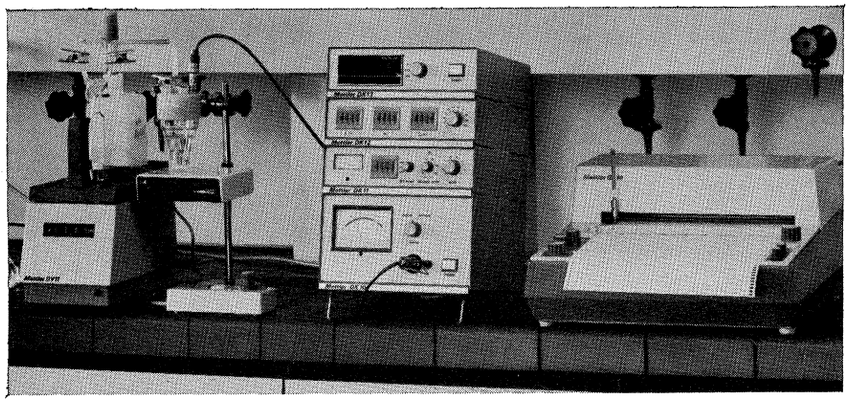

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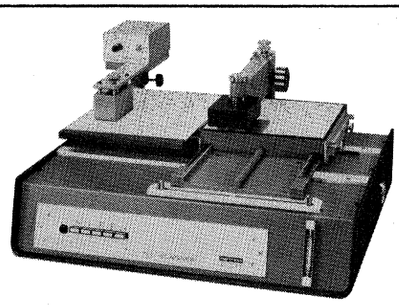

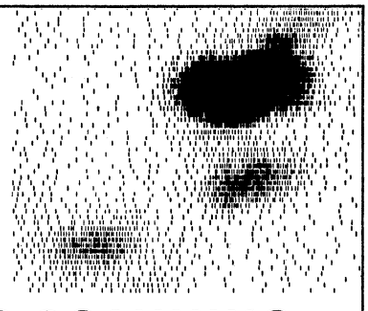

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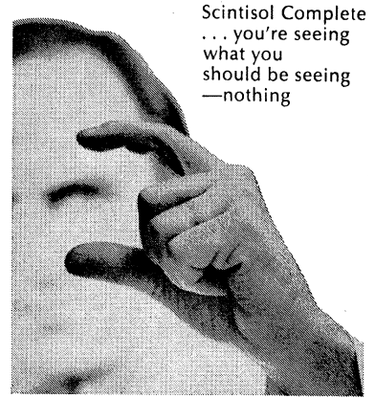

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Annual Meeting, New York City, 26–31 January 1975

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Principal Professional Interest

11 ☐ Physical, mathematical
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13 ☐ Engineering
14 ☐ Social, behavioral
15 ☐ Science policy
16 ☐ ..... (other)

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21 ☐ Teaching, education
22 ☐ Health practice
23 ☐ Other practice, consulting
24 ☐ Research, development
25 ☐ Administration
26 ☐ ..... (other)

Institutional Affiliation Type

31 ☐ University, 4-year college
32 ☐ Other educational
33 ☐ Industrial, commercial
34 ☐ Other private
35 ☐ Government
36 ☐ ..... (other)

Highest Educational Level

41 ☐ Doctoral Degree
42 ☐ Master's Degree
43 ☐ Other professional
44 ☐ Bachelor's Degree
45 ☐ ..... (other)

Age

51 ☐ Under 26 years
52 ☐ 26 to 35 years
53 ☐ 36 to 45 years
54 ☐ 46 to 55 years
55 ☐ 56 to 65 years
56 ☐ Over 65 years

Distance Traveled to Meeting

61 ☐ Under 51 miles
62 ☐ 51 to 100 miles
63 ☐ 101 to 200 miles
64 ☐ 201 to 500 miles
65 ☐ 501 to 1000 miles
66 ☐ Over 1000 miles

Membership: in AAAS ☐ 71, in Affiliate ☐ 72 ..... (specify) Neither ☐ 73

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30 January. Organic electrochemistry (A. Bard, discussion leader): F. Beck, "Cell design and engineering aspects in organic electrosynthesis"; P. Zuman, "The role of hydration in electroreduction and electrooxidation of some carbonyl compounds." (R. deLevie, discussion leader): (speaker and subject to be announced).

31 January. Nerve conduction (R. deLevie, discussion leader): C. P. Bean, "Electrical microstimulation of nerves"; A. Pilla, "Electrochemical information transfer at living cell membranes."

BOOKS RECEIVED

(Continued from page 343)

Fish Immunology. Douglas P. Anderson. Stanislas F. Snieszko and Herbert R. Axelrod, Eds. T.F.H. Publications, Neptune City, N.J., 1974. 240 pp., illus. $9.95. Diseases of the Fishes, No. 4.

From Theoretical Physics to Biology. Proceedings of a conference, Versailles, France, June 1971. M. Marois, Ed. Karger, Basel, 1974. xvi, 468 pp., illus. $43.

Fundamentals of Physics. David Halliday and Robert Resnick with the assistance of W. Farrell Edwards and John Merrill. Wiley, New York, 1974. xxii, 828 pp., illus. $15.95. Reprint of the 1970 edition.

The GASP IV Simulation Language. A. Alan B. Pritsker. Wiley-Interscience, New York, 1974. xviii, 452 pp., illus. $17.50.

Génétique des Populations Humaines. Albert Jacquard with the assistance of André Chaventré, Laurent Degos, André Langaney, and Philippe Lefèvre-Witier. Presses Universitaires de France, Paris, 1974. 220 pp., illus. Paper, 35 F. Collection Sup. Le Biologiste.

Igneous Petrology. Ian S. E. Carmichael, Francis J. Turner, and John Verhoogen. McGraw-Hill, New York, 1974. xvi, 740 pp., illus. $22.50. McGraw-Hill International Series in the Earth and Planetary Sciences.

Implementing the Learning Society. Charles S. Benson and Harold L. Hodgkinson with the assistance of Jessica S. Pers. Jossey-Bass, San Francisco, 1974. xx, 148 pp. $8.75. Jossey-Bass Series in Higher Education.

Initial Reports of the Deep Sea Drilling Project. Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES). Vol. 25. June–Aug. 1972. Prepared for the National Science Foundation by the Scripps Institution of Oceanography, La Jolla, Calif., 1974 (available from the Superintendent of Documents, Washington, D.C.). xx, 884 pp., illus. $14.15.

Interstellar Communication. Scientific Perspectives. Cyril Ponnamperuma and A. G. W. Cameron. Houghton Mifflin, Boston, 1974. x, 226 pp., illus. Paper, $5.95.

Introduction to Human Physiology. Mary Griffiths. Macmillan, New York, 1974. xx, 556 pp., illus. $12.95.

Introduction to Marine Biology. Bayard H. McConnaughey. Mosby, St. Louis, ed. 2, 1974. x, 544 pp., illus. $13.95.

Introduction to Switching Theory and Logical Design. Frederick J. Hill and Gerald R. Peterson. Wiley, New York, ed. 2, 1974. xviii, 596 pp., illus. $17.95.

An Introduction to the Scientific Study of the Soil. W. N. Townsend. St. Martin's, New York, ed. 5, 1973. viii, 210 pp., illus. $16.95.

An Introduction to the Study of Man. J. Z. Young. Oxford University Press, New York, 1974. xxviii, 720 pp., illus. Paper, $6.95. Reprint of the 1971 edition.

Key Papers in the Development of Information Theory. David Slepian, Ed. Institute of Electrical and Electronics Engineers, New York, 1973 (distributor, Wiley, New York). vi, 462 pp., illus. Cloth, $14.95; paper, $7.50. IEEE Press Selected Reprint Series.

Lectures on Complex Analytic Varieties. Finite Analytic Mappings. R. C. Gunning. Princeton University Press, Princeton, N.J., and University of Tokyo Press, Tokyo, 1974. iv, 164 pp. Paper, $4.

Liquefied Petroleum Gases. A Guide to Properties, Applications and Usage of Propane and Butane. Alan Fowler Williams and Walter Lowenstein Lom. Ellis Horwood, Chichester, England, and Halsted (Wiley), New York, 1974. xvi, 404 pp., illus. $33.50.

The Lives of a Cell. Notes of a Biology Watcher. Lewis Thomas. Viking, New York, 1974. vi, 154 pp. $6.95.

Logical Abilities in Children. Daniel N. Osherson. Lawrence Erlbaum Associates, Potomac, Md., 1974 (distributor,

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Magic, Myth and Medicine. John Camp. Taplinger, New York, 1974. ii, 192 pp., illus. + plates. $8.50.

Mathematical Review for the Physical Sciences. Jerry B. Marion and Ronald C. Davidson. Saunders, Philadelphia, 1974. vi, 112 pp., illus. Paper, $3.95.

Med Equipment Buyers Guide 1974. Compilation and Specifications of 10,000 Laboratory and Diagnostic Aids. Robert Martinek, Ed. Medical Electronics and Data Corp., Pittsburgh, Pa., 1974. 320 pp., illus. $15.

Media and Symbols. The Forms of Expression, Communication, and Education. The 73rd Yearbook of the National Society for the Study of Education. Part 1. David R. Olson, Ed. National Society for the Study of Education, Chicago, 1974 (distributor, University of Chicago Press, Chicago). xviii, 508 pp., illus. $10.

Mental Health Program Reports. Vol. 6. Julius Segal and Muriel R. Reich, Eds. National Institute of Mental Health, Rockville, Md., 1973 (available as No. 1724-00326 from the Superintendent of Documents, Washington, D.C.). vi, 266 pp. $2.25.

Methods for Statistical Analysis of Reliability and Life Data. Nancy R. Mann, Ray E. Schafer, and Nozer D. Singpurwalla. Wiley, New York, 1974. xii, 564 pp., illus. $24.95. Wiley Publications in Applied Statistics.

Modern Theories of Motivation. A Comparative Metascientific Study. K. B. Madsen. Halsted (Wiley), New York, 1974. 472 pp., illus. $27.50.

Multivariable Mathematics. Linear Algebra, Differential Equations, Calculus. Richard E. Williamson and Hale F. Trotter. Prentice-Hall, Englewood Cliffs, N.J., 1974. x, 630 pp., illus. $15.95.

Natural History, Social Behavior, Reproduction, Vocalizations, Prehension. Duane M. Rumbaugh, Ed. Karger, Basel, 1974. viii, 210 pp., illus. $47.50. Gibbon and Siamang. A Series of Volumes on the Lesser Apes, vol. 3.

The Natural Philosophy of Galileo. Essay on the Origins and Formation of Classical Mechanics. Maurice Clavelin. Translated from the French edition (Paris, 1968) by A. J. Pomerans. MIT Press, Cambridge, Mass., 1974. xxvi, 498 pp., illus. $25.

A New Deal for Blacks. Suggestions for Salvation. Ensen X. Douglas. Exposition Press, Jericho, N.Y., 1974. 100 pp., illus. $4.50.

New UNESCO Source Book for Science Teaching. United Nations Educational, Scientific, and Cultural Organization, Paris 1973 (U.S. distributor, Unipub, New York). 270 pp., illus. $8.50.

Northern Fishes. With Special Reference to the Upper Mississippi Valley. Samuel Eddy and James C. Underhill. University of Minnesota Press, Minneapolis, ed. 3, 1974. xx, 414 pp., illus. $17.50.

Nuclear Electronics. P. W. Nicholson. Wiley-Interscience, New York, 1974. xiv, 388 pp., illus. $24.95.

Physical Anthropology and Its Extending Horizons. Amitabha Basu, Alok Kumar Ghosh, Suhas Kumar Biswas, and Ramendra Ghosh, Eds. Orient Longman, Calcutta, India, 1973. xii, 234 pp., illus. Rs.60.

Physics in the Twentieth Century. Selected Essays. Victor F. Weisskopf. MIT Press, Cambridge, Mass., 1974. xvi, 368 pp., illus. Paper, $2.95. Reprint of the 1972 edition.

Physiology and Pharmacology of Local Anesthesia. Rudolph H. de Jong. Thomas, Springfield, Ill., 1974. xiv, 268 pp., illus. $12.50.

Population Policy in Developed Countries. Bernard Berelson, Ed. McGraw-Hill, New York, 1974. xvi, 794 pp., illus. $17.50. Population Council Book.

Power Plants with Air-Cooled Condensing Systems. E. S. Miliaras. MIT Press, Cambridge, Mass., 1974. xvi, 238 pp., illus. $12.95. Monographs in Modern Electrical Technology Series.

Proceedings of the Fourth International Wheat Genetics Symposium. Proceedings of a symposium, Columbia, Mo., Aug. 1973. E. R. Sears and L. M. S. Sears, Eds. Agricultural Experiment Station, University of Missouri, Columbia, 1973 (distributor, G. Kimber, Columbia, Mo.). xii, 956 pp., illus. $15.

The Psychological Sense of Community. Prospects for a Community Psychology. Seymour B. Sarason. Jossey-Bass, San Francisco, 1974. xiv, 290 pp. $12.50. Jossey-Bass Behavioral Science Series.

Quantum Theory of the Solid State. Part A. Joseph Callaway. Academic Press, New York, 1974. xii, 370 pp., illus. + indexes. $28.

Revolution at Querétaro. The Mexican Constitutional Convention of 1916–1917. E. V. Niemeyer, Jr. Published for the Institute of Latin American Studies by the University of Texas Press, Austin, 1974. xiv, 298 pp., illus. $10. Latin American Monographs, No. 33.

The Schreber Case. Psychoanalytic Profile of a Paranoid Personality. William G. Niederland. Quadrangle, New York, 1974. xvi, 172 pp., illus. $8.95.

Science and Policy. The International Stimulus. Alexander King. Oxford University Press, New York, 1974. xii, 114 pp. $7.25. Science and Engineering Policy Series.

Scientists and Public Affairs. Albert H. Teich, Ed. MIT Press, Cambridge, Mass., 1974. xiv, 316 pp. $14.95. M.I.T. Studies in Comparative Politics.

Setting National Priorities. The 1975 Budget. Barry M. Blechman, Edward M. Gramlich, and Robert W. Hartman. Brookings Institution, Washington, D.C., 1974. xviii, 270 pp. Paper, $2.95.

Song of the North Wind. A Story of the Snow Goose. Paul A. Johnsard. Illustrated by Paul Geraghty. Anchor Press/Doubleday, New York, 1974. x, 150 pp. $5.95.

Sourcebook of Pyroelectricity. Sidney B. Lang. Gordon and Breach, New York, 1974. xvi, 562 pp., illus. $49.50. Ferroelectrics and Related Phenomena, vol. 2.

Space, Time, and Spacetime. Lawrence Sklar. University of California Press, Berkeley, 1974. xii, 424 pp., illus. $15.

The Spectral Analysis of Time Series. L. H. Koopmans. Academic Press, New

York, 1974. xiv, 366 pp., illus. $26. Probability and Mathematical Statistics, vol. 22.

Spectrometric Identification of Organic Compounds. Robert M. Silverstein, G. Clayton Bassler, and Terence C. Morrill. Wiley, New York, ed. 3, 1974. xii, 340 pp., illus. $13.95.

Sixth Texas Symposium on Relativistic Astrophysics. Proceedings of a symposium, New York, Dec. 1972. Dennis J. Hegyi, Ed. New York Academy of Sciences, New York, 1973. 364 pp., illus. Paper, $31. *Annals of the New York Academy of Sciences*, vol. 224.

The Soviet Union and the October 1973 Middle East War. The Implications for Detente. Foy D. Kohler, Leon Goure, and Mose L. Harvey. Center for Advanced International Studies, University of Miami, Washington, D.C., 1974. xii, 132 pp. Cloth, $7.95; paper, $4.95.

Spectral Line Broadening by Plasmas. Hans R. Griem. Academic Press, New York, 1974. xiv, 410 pp. $31.50. Pure and Applied Physics, vol. 39.

Spore Research 1973. Papers from a meeting, Leeds, England, Dec. 1972. A. N. Barker, G. W. Gould, and J. Wolf, Eds. Academic Press, New York, 1974. xiv, 278 pp., illus. $18.50.

The Steamboat Bertrand. History, Excavation, and Architecture. Jerome E. Petsche. National Park Service, Washington, D.C., 1974 (available from Superintendent of Documents, Washington, D.C.). xxiv, 178 pp., illus. Paper. $2.65. Publications in Archeology, No. 11.

A Stereotaxic Atlas of the Mongolian Gerbil Brain (*Meriones unguiculatus*). William James Loskota, Peter Lomax, and M. Anthony Verity. Ann Arbor Science Publishers, Ann Arbor, Mich., 1974. 158 pp., illus. $37.50.

Stochastic Systems and State Estimation. Terrence P. McGarty. Wiley-Interscience, New York, 1974. xii, 402 pp., illus. $19.95.

Structured Polymer Properties. The Identification, Interpretation, and Application of Crystalline Polymer Structure. Robert J. Samuels. Wiley-Interscience, New York, 1974. xiv, 252 pp., illus. $19.95.

Sub-clinical Lead Poisoning. H. A. Waldron and D. Stöfen. Academic Press, New York, 1974. x, 224 pp., illus. $14.25.

Superspill. An Account of the 1978 Grounding at Bird Rocks. Mary Kay Becker and Patricia Coburn. Madrona Press, Seattle, Wash., 1974. iv, 162 pp. Paper, $3.95.

La Synthèse Ecologique. Populations, Communautés, Ecosystèmes, Biosphère, Noosphère. P. Duvigneaud. Doin, Paris, 1974. 296 pp., illus. + plates. 128 F.

Technology and Civic Life. Making and Implementing Development Decisions. John D. Montgomery. MIT Press, Cambridge, Mass., 1974. xii, 240 pp. $12.50. MIT Studies in Comparative Politics.

Transport, Survie et Pouvoir Fécondant des Spermatozoides chez les Vertébrés. Proceedings of a symposium, Nouzilly, France, Nov. 1973. E. S. E. Hafez and C. G. Thibault, Eds. Institut National de la Santé et de la Recherche Médicale, Paris, 1974. 584 pp., illus. Paper, 50 F. INSERM Colloques et Séminaries 1973, vol. 26.

Tropical Grazing Lands. Communities and Constituent Species. Robert Orr Whyte. Junk, The Hague, 1974. xii, 222 pp., illus. Paper, Dfl. 40.

Two Studies on Ethnic Group Relations in Africa. Senegal and the United Republic of Tanzania. United Nations Educational, Scientific and Cultural Organization, Paris, 1974 (U.S. distributor, Unipub, New York). 156 pp. Paper, $5.95.

Water Policies for the Future. Final Report to the President and to the Congress of the United States by the National Water Commission. Water Information Center, Port Washington, N.Y., 1973. xxix, 580 pp., illus. $17.50.

Water Pollution. Julian McCaull and Janice Crossland. Harcourt, Brace, Jovanovich, New York, 1974. xiv, 206 pp., illus. Paper, $3.95. Environmental Issues Series.

The World of the Child. Clinical and Cultural Studies from Birth to Adolescence. Toby Talbot, Ed. Aronson, New York, 1974. xiv, 458 pp. $15.

World Review of Nutrition and Dietetics. Vol. 19. Geoffrey H. Bourne, Ed. Karger, Basel, 1974. xiv, 320 pp., illus. $60.

World Survey of Major Facilities in Controlled Fusion Research 1973 Edition. International Atomic Energy Agency, Vienna, Austria, 1973 (U.S. distributor, Unipub, New York). xii, 356 pp., illus. Paper, $12. Nuclear Fusion Special Supplement 1973.

X-Ray Diffraction Procedures for Polycrystalline and Amorphous Materials. Harold P. Klug and Leroy E. Alexander. Wiley-Interscience, New York, ed. 2, 1974. xxvi, 966 pp., illus. $34.95.