

nism of the open water and marine phases of homing. The book is written in a style that the general public will find exciting and understandable, but the volume also provides sufficient data to serve colleagues working in other scientific disciplines as a general review of the problem. Investigators working in the field of fish migration will refer to the volume, not only because it is a succinct summary of Hasler's theories, but also for the account of the historical development of the reasoning behind his experiments. Particularly intriguing is chapter 8, on sun compass orientation, which presents results of some very interesting experiments during which fish trained in orientation were transferred from Wisconsin to South America.

The book is organized for the general reader, almost half of it being devoted to the stream phase of salmon homing—for example, a discussion of the laboratory experiments and field tests of the various hypotheses. A shorter section discusses the open water and oceanic phases of salmon migration, phases that Hasler's group has only recently begun studying. Some of this portion of the book is based on

the work of other West Coast investigators. The book closes with a summary of other or alternative types of mechanisms that could account for fish homing and, finally, a statement of Hasler's complete hypothesis. Although almost all of the scientific terms are defined, a notable exception is the term and concept of *imprinting*. The chapter on sun orientation is the most technical but, even here, Hasler has done a remarkable job of simplifying a complex phenomenon. In essence, the volume is a summary of the evidence for Hasler's hypothesis of salmon migration. The weight of the evidence, as might be expected, varies with the state of the knowledge of the various phases of the homing process. Hasler recognizes these limitations and suggests many lines for profitable investigation. The volume is well illustrated with line drawings and photographs, and it is remarkably free from errors. A bibliography of some 119 references and a three-page index terminate the volume.

NORMAN J. WILIMOVSKY
*Institute of Fisheries,
University of British Columbia,
Vancouver, Canada*

discussed briefly, but there is little about modern molecular orbital theory in the considerations of structure. In opening the section on aromatic compounds, for example, the formula chosen to illustrate the benzene nucleus or benzene ring is the Kekule structure. The oscillatory hypothesis is mentioned, along with conjugated systems, but the concept of delocalized electrons is not discussed.

Many topics that seem familiar today—ferrocene, carbonium ions, and hydroboration, for example—are not included, but for such specific topics it is hard to evaluate the influence of the time element.

As a book from Russia, there are points of interest—the presentation of the Butlerov theory of structure, for example. But even in this aspect many possibly interesting comparisons are lost because we lack information on the background and purpose of the original Russian editions.

ROBBIN C. ANDERSON
*Department of Chemistry,
University of Texas, Austin*

Russian Monograph in Translation

Organic Chemistry (Gordon and Breach, New York; Noordhoff, Groningen, 1965. 568 pp., \$16), by B. Pavlov and A. Terentyev, is a 1965 issue in translation, but the book itself is much older. The translation is presumably based on a revised and enlarged edition of the original Pavlov text, which was prepared by Terentyev and first printed in 1958, with a second edition in 1960. The volume reviewed here was translated from the Russian by Boris Belitzky.

Even with allowance for these dates, however, Western readers who compare this volume with modern organic textbooks will find that it seems quite old-fashioned. The general choice of topics seems sound and the coverage of the field reasonably extensive, but the approach is one that we would class "traditional," with the emphasis placed on the study of organic compounds on the basis of the nature of functional groups.

The change in organic chemistry, beginning about 1930 with the growing influence of concepts of chemical kinetics and molecular structure, to the

systematic consideration of the types of transformations organic chemicals undergo and thus to the field of reaction mechanisms, finds little reflection here. The introductory material emphasizes theories of structure, but says nothing of reaction rates or mechanisms. The "lariat" system of notation to show the groups apparently involved in reaction is frequently used. The existence of free radicals is mentioned, but their role in such reactions as polymerization is not discussed. The only reference to Diels-Alder reactions is a brief mention of diene synthesis. The transition-state is not discussed.

The approach to structure has the same flavor of times past. The text notes that optical and electrical properties may give information on strengths of bonds, distances between atoms, and the like, but the author notes that one can only "touch upon" these topics. Thus, there is brief mention of dipole moments, molecular refraction, and the rotation of polarized light, but no discussion, for example, of infrared spectra.

The concepts of σ and π bonds are

New Books

Economics and the Social Sciences

The Arctic Frontier. R. St. J. Macdonald, Ed. Univ. of Toronto Press, Toronto, Canada, 1966. 321 pp. Illus. \$7.50. Eleven papers: "The Arctic setting" by Moira Dunbar; "Resources and communication in the Arctic" by Michael Marsden; "The administration of northern peoples: The USSR" by Terence Armstrong; "The administration of northern peoples: Canada and Alaska" by Margaret Lantis; "The administration of northern peoples: America's Eskimos—pawns of history" by Diamond Jenness; "Administrative and constitutional changes in Arctic territories: Canada" by F. B. Fingland; "Administrative and constitutional changes in Arctic territories: The USSR" by Neil C. Field; "Sovereignty in the north: The Canadian aspect of an international problem" by Gordon W. Smith; "The strategic significance of the Canadian Arctic" by R. J. Sutherland; "International scientific relations in the Arctic" by G. W. Rowley; and "The international implications of Arctic exploitation" by George W. Rogers.

Abstraction and Concept Formation. An interpretative investigation into a group of psychological frames of reference. Anatol Pikas. Harvard Univ. Press, Cambridge, Mass., 1966. 319 pp. \$7.

Brief Separations. Christoph M. Heinicke and Ilse J. Westheimer. International Universities Press, New York, 1965. 367 pp. Illus. \$8.50. This is a report of the work of the Child Development Research Unit of the Tavistock In-

(Continued on page 464)



A Fluid Handling Innovation!

Rugged, compact unit transfers, circulates and dispenses fluids dependably, safely!

Since no parts of this unique pump are ever in contact with the fluid, it may be used even with abrasive slurries or sterile solutions conducted through appropriate tubing.

The ingenious design employs an encapsulated electrical induction coil which imparts 7,200 vibrations per minute, through an adjustable pressure-pedal, to the wall of the fluid-conducting flexible tubing. The result is a controllable, peristaltic, unidirectional flow of the liquid.

The CRC Pump has only one moving part . . . requires no lubrication . . . operates on 115 volt A.C. current.

CATALOG NO. S-33 Each \$37.50

Available only from the manufacturer:

THE
**CHEMICAL
RUBBER**
CO.

2310 Superior Ave.
Cleveland, Ohio 44114

A-5472

26-27. **Engineering Management**, 14th annual joint conf. (JEMC), Washington, D.C. (H. M. Sarasohn, IBM Corp., Armonk, N.Y. 10504)

26-27. **Prospects for Simulation and Simulators of Dynamic Systems**, symp., Baltimore, Md. (S. Burik, MS 452A, Westinghouse Electric Corp., P.O. Box 746, Baltimore 21203)

26-28. **Colloid Stability in Aqueous and Nonaqueous Media**, mtg., Faraday Soc., Univ. of Nottingham, Nottingham, England. (The Society, 6 Gray's Inn Sq., London W.C.1, England)

26-28. **Nonconventional Energy Conversion Applications**, first conf., Los Angeles, Calif. (R. E. Henderson, Research Manager, Applied Sciences, Allison Div., General Motors Corp., Indianapolis, Ind. 46202)

26-28. **Organic Geochemistry**, 3rd intern. mtg., Imperial College of Science and Technology, London, England. (G. D. Hobson, Geology Dept. Imperial College of Science and Technology, London S.W.7)

26-28. **Point Defects in Non-Metallic Solids**, mtg., British Ceramic Soc., Falmer, England. (J. P. Roberts, Houldsworth School of Applied Science, Univ. of Leeds, Leeds 2, England)

26-30. **Animal Care Panel**, 17th annual mtg., Chicago, Ill. (J. J. Garvey, 4 E. Clinton St., Joliet, Ill. 60434)

26-30. **Health Physics**, 2nd autumn symp., Pecs, Hungary. (Eötvös Loraánd Fizikai Társulat, Szabadtság ter 17, Budapest 5)

26-3. **Bionic Models of the Animal Sonar System**, symp., Frascati, Italy. (R. G. Busnel Laboratory of Acoustical Physiology, Domaine de Vilvert, Jouy-en-Josas, Seine-et-Oise France)

27-29. **Analytical Chemistry in Nuclear Technology**, conf., Gatlinburg, Tenn. (L. J. Brady, Oak Ridge Natl. Laboratory, P.O. Box X, Oak Ridge, Tenn. 37830)

27-29. **Society for General Microbiology**, mtg., Bristol, England. (Soc. for Visiting Scientists, 19 Albemarle St., London W.1, England)

27-29. **Vestibular and Kinaesthetic Mechanisms**, symp., London, England. (Ciba Foundation, 41 Portland Pl., London W.1)

28-30. **Energy Beams**, conf., Univ. of York, York, England. (Meetings Officer, Inst. of Physics and the Physical Soc., 47 Belgrave Sq., London S.W.1)

28-30. **Marine Geodesy**, Present and Future, intern. symp., Columbus, Ohio. (A. G. Mourad, Columbus Laboratories, Battelle Memorial Inst., 505 King Ave., Columbus 43201)

28-4. **Macromolecular Chemistry**, intern. symp., Tokyo and Kyoto, Japan. (Organizing Committee, C.P.O. Box 1966, Tokyo)

29-1. **Association of Clinical Pathologists**, autumn mtg., London, England. (Dr. Sandler, Queen Charlotte's Maternity Hospital, 339-351 Goldhawk Rd., London W.6)

29-2. **American Medical Writers' Assoc.**, mtg., New York, N.Y. (J. E. Bryan, 2000 P St., NW, Washington, D.C. 20036)

30-1. **Medical Library Assoc.**, southern regional group mtg., Winston-Salem, N.C. (The Association, 919 N. Michigan Ave., Chicago, Ill.)

NEW BOOKS

(Continued from page 406)

stitute of Human Relations and the Tavistock Clinic and deals with brief separations of children from their parents.

Central Places in Southern Germany. Walter Christaller. Translated from the German edition by Carlisle W. Baskin. Prentice-Hall, Englewood Cliffs, N.J., 1966. 240 pp. Illus. \$9.95.

Le conditionnement operant. Une introduction et un guide à la recherche de laboratoire. Marc Richelle. Delachaux and Niestlé, Neuchâtel, Switzerland, 1966. 221 pp. Illus. Paper. Actualités Pédagogiques et Psychologiques.

Daydreaming: An Introduction to the Experimental Study of Inner Experience. Jerome L. Singer. Random House, New York, 1966. 256 pp. Paper, \$2.25. Studies in Psychology Series.

The Economics of Delinquency. Belton M. Fleisher. Quadrangle Books, Chicago, 1966. 127 pp. Illus. \$4.50.

Education for Positive Mental Health. James A. Davis. Aldine, Chicago, 1965. 206 pp. Illus. \$6.95. National Opinion Research Center Monographs in Social Research Series.

Honour and Shame: The Values of the Mediterranean Society. J. G. Peristiany, Ed. Univ. of Chicago Press, Chicago, 1966. 266 pp. Illus. \$5. Nature of Human Society Series. Six papers: "Honour and social status" by Julian Pitt-Rivers; "Honour and shame: A historical account of several conflicts" by Julio Caro Baroja; "Honour and the devil" by J. K. Campbell; "Honour and shame in a Cypriot highland village" by J. G. Peristiany; "The sentiment of honour in Kabyle society" by Pierre Bourdieu; and "Honour and shame among the Bedouins of Egypt" by Ahmed Abou-Zeid.

Input-Output Economics. Wassily Leontief. Oxford Univ. Press, New York, 1966. 269 pp. Illus. \$8.50.

Intelligence and Affectivity in Early Childhood. An experimental study of Jean Piaget's object concept and object relations. Thérèse Gouin Décarie. Translated by Elisabeth Pasztor Brandt and Lewis Wolfgang Brandt. International Universities Press, New York, 1966. 246 pp. Illus. \$5.

The Intelligence of Democracy: Decision Making Through Adjustment. Charles E. Lindblom. Free Press, New York, 1965. 360 pp. \$7.50.

Modernization and the Structure of Societies: A Setting for International Affairs. vols. 1 and 2. Marion J. Levy, Jr. Princeton Univ. Press, Princeton, N.J., 1966. vol. 1, 394 pp.; vol. 2, 492 pp. Illus. \$22.50 set.

New Horizons in Psychology. Brian M. Foss, Ed. Penguin Books, Baltimore, 1966. 447 pp. Illus. Paper, \$1.65. Twenty-one papers on the following topics: Perception, Thinking, and Communication (8 papers); Origins of Behaviour (3 papers); Physiological and Psychological States (3 papers); Learning and Training (4 papers); and Personality and Social Psychology (3 papers).

Operant Behavior: Areas of Research and Application. Werner K. Honig, Ed.

Appleton-Century-Crofts (Meredith), New York, 1966. 877 pp. Illus. \$12. Century Psychology Series, edited by Richard M. Elliott, Gardner Lindzey, and Kenneth MacCorquodale. Nineteen papers.

Pattern Recognition: Theory, Experiment, Computer Simulations, and Dynamic Models of Form Perception and Discovery. Leonard Uhr, Ed. Wiley, New York, 1966. 405 pp. Illus. Paper, \$5.95. Twenty-two papers on the following topics: Conceptual Framework: The Psychology and Philosophy of Perception and Discovery (4 papers); Empirical Background, Summaries, Reviews, and Integrations of Experimental Findings (4 papers); Theoretical Developments (4 papers); Experimental Results from Neurophysiology and Psychology that are Pertinent to Model Building (4 papers); and Computer Simulations of Complex Models (6 papers).

Poverty Amid Affluence. A report on a research project carried out at the New School for Social Research. Oscar Ornati. Twentieth Century Fund, New York, 1966. 224 pp. Illus. Paper, \$3.25.

Progress in Experimental Personality Research. vol. 2. Brendan A. Maher, Ed. Academic Press, New York, 1965. 341 pp. Illus. \$9.50. Six papers: "Research in the personal construct theory of George A. Kelly: Role construct repertory test and basic theory" by J. C. J. Bonarius; "Cognitive complexity and impression formation" by Walter H. Crockett; "An interpersonal approach to personality" by Paul F. Secord and Carl W. Backman; "Personality and audience influence" by Allan Paivio; "The study of ordinal position: Antecedents and outcomes" by Edward E. Sampson; and "Toward a theory of classical conditioning: Cognitive, emotional, and motor components of the conditional reflex" by Roscoe A. Dykman.

Science and Economic Development: New Patterns of Living. Richard L. Meier. M.I.T. Press, Cambridge, Mass., ed. 2, 1966. 295 pp. Illus. Paper, \$2.45.

Social Change in Developing Areas. A reinterpretation of evolutionary theory. Herbert R. Barringer, George I. Blanksten, and Raymond W. Mack, Eds. Schenkman, Cambridge, Mass., 1965. 334 pp. Paper, \$2.95; cloth, \$7.95. Twelve papers on the following topics: Theories of Social Evolution (3 papers); Studies of Political and Social Change (5 papers); and Economic Development, Technological Change, and Evolutionary Theory (4 papers).

The Social System of Science. Norman W. Storer. Holt, Rinehart, and Winston, New York, 1966. 192 pp. Illus. Paper, \$3.95.

The Structure of Associations in Language and Thought. James Deese. Johns Hopkins Press, Baltimore, 1966. 232 pp. Illus. \$6.50.

Technological Change: Its Conception and Measurement. Lester B. Lave. Prentice-Hall, Englewood Cliffs, N.J., 1966. 250 pp. Illus. \$6.95. Prentice-Hall Series in Mathematical Analysis of Social Behavior, edited by James S. Coleman and James March.

A Textbook of Psychology. Donald Olding Hebb. Saunders, Philadelphia, ed. 2, 1966. 369 pp. Illus. \$5.75.

The Tropical World: Its Social and Economic Conditions and Its Future Status. Pierre Gourou. Translated from the French edition by S. H. Beaver and E. D. Laborde. Wiley, New York, ed. 4, 1966. 208 pp. Illus. \$5.

Ulithi: A Micronesian Design for Living. William A. Lessa. Holt, Rinehart, and Winston, New York, 1966. 130 pp. Paper, \$1.75. Case Studies in Cultural Anthropology, edited by George Spindler and Louise Spindler.

Unobtrusive Easures: Nonreactive Research in the Social Sciences. Eugene J. Webb, Donald T. Campbell, Richard D. Schwartz, and Lee Sechrest. Rand McNally, Chicago, 1966. 239 pp. Paper, \$3.50. Rand McNally Sociology Series.

Vyzkumné metody v sociologii: Teorie a praxe sociologických výzkumu. Frantisek Kahuda. Státní Pedagogické Nakladatelství, Prague, 1965. 389 pp. Illus. Paper, CK. 17.30.

Word Associations of Young Children. Doris R. Entwisle. Johns Hopkins Press, Baltimore, 1966. 611 pp. Illus. \$12.50.

Miscellaneous Publications

The Annals of Applied Biology. Index to volumes 1 to 50. Compiled by D. Akenhead. Cambridge Univ. Press, New York, 1965. 240 pp. 40s. Indexes arranged by author and by subject.

Catalogue of Radioactive Products. The Radiochemical Centre, Amersham, England, 1965. 203 pp.

Digital Logic Laboratory Workbook. Barbera W. Stephenson. Digital Equipment Corp., Maynard, Mass., 1965. 137 pp. Illus. Paper, \$5.

Evolution of Physical Control of the Brain. José M. R. Delgado. American Museum of Natural History, New York, 1965. 58 pp. James Arthur Lecture on the Evolution of the Human Brain.

Glossary of Terms Frequently Used in Cosmology. Harold H. Rogers, Ed. American Inst. of Physics, New York, 1966. 17 pp. Paper, \$1.

InterDok. vol. 1, No. 8, April 1966. InterDok Corp., White Plains, N.Y., 1966. By subscription, \$38 per year. A list of currently available published proceedings of conferences, meetings, symposia, and congresses. The following entries are typical: "June, 1964. Congress on Antibiotics: *Biogenesis of Antibiotic Substances*; Prague, Czechoslovakia. [Publisher] Czechoslovakia Academy of Sciences, Prague, Czechoslovakia. \$14." and "November, 1965. Nuclear Power, Seminar on; New York, N.Y. [Publisher] Atomic Industrial Forum, 850 Third Avenue, New York, N.Y. \$7.50."

The Krater and the Grail: Hermetic Sources of the Parzival. Henry Kahane and Renée Kahane. Univ. of Illinois Press, Urbana, 1965. 270 pp. Paper, \$6.50. Illinois Studies in Language and Literature, No. 56.

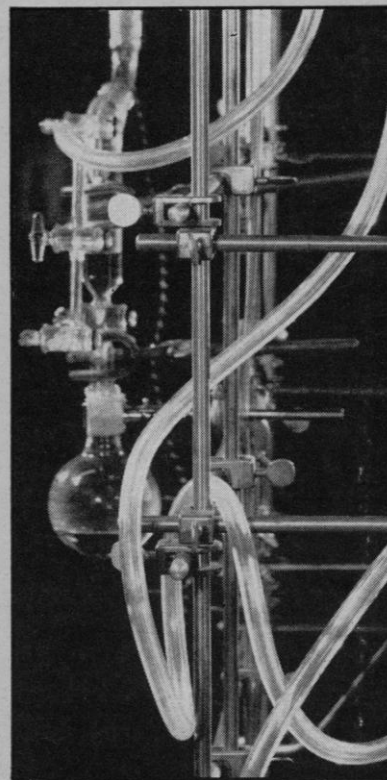
Rainfall in Burma. Robert E. Huke. Geography Publications, Dartmouth College, Hanover, N.H., 1965. 93 pp.

Space Electronics. S. H. Fairweather and J. E. Mortimer and others. Radio Corp. of America, Camden, N.J., 1965. 72 pp. Sixteen papers.

TYGON[®]

Flexible Plastic TUBING

- Flexible
- Chemically inert
- Glass-clear



At Laboratory
Supply Houses Everywhere

Plastics & Synthetics Division

U. S. STONEWARE
AKRON, O. 44309

319-J