

that the relatively high frequency of the recessively inherited sphingolipidoses (Tay-Sachs, Gaucher's, and Niemann-Pick diseases) among Ashkenazi Jews is caused by chance. A rare mutation for each one of these diseases is postulated to have occurred in a reduced Ashkenazi population following persecution and extermination. Whether such chance events or natural selection was at work is being contested hotly in the current literature, with proponents of natural selection asking how chance can explain why three different genes affecting sphingolipid metabolism occur in the Ashkenazi population. Mourant and his coauthors do not enter the argument.

The book is a brilliant and sweeping synthesis of historical and genetic information and can serve as a model for future research of this type on Jewish and other populations. Half of the book is taken up by extensive and detailed tables listing the results of gene frequency studies for many genetic markers in different Jewish populations. These tabulations alone make the book of lasting value.

The book is short and easy to read. It will be of interest to a wide variety of scientists interested in human biology and should attract many others interested in this unique set of populations.

ARNO G. MOTULSKY

*Departments of Medicine and Genetics,
Center for Inherited Diseases,
University of Washington,
Seattle 98195*

References

1. B. Bonne-Tamir, S. Ashbel, R. Kenett, in *Genetic Diseases Among Ashkenazi Jews*, R. M. Goodman and A. G. Motulsky, Eds. (Raven, New York, in press).
2. A. Szeinberg, in *ibid.*
3. L. L. Cavalli-Sforza and D. Carmelli, in *ibid.*
4. A. G. Motulsky, in *Population Genetic Studies on Isolates*, A. W. Eriksson, Ed. (Academic Press, London, in press).
5. D. Carmelli and L. L. Cavalli-Sforza, *Hum. Biol.*, in press.

Auditory Systems

The Reptile Ear. Its Structure and Function. ERNEST GLEN WEVER. Princeton University Press, Princeton, N.J., 1978. xii, 1024 pp., illus. \$50.

In this work Wever, who is one of the pioneer investigators of electric potentials generated in the ear, presents an extensive study of the structure and function of the reptilian peripheral auditory system. The investigations were carried out over the past 20 years, and much of the material in the book is presented for the first time.

After a description of the methods used and a general description of the anatomy of the reptilian ear, Wever surveys the structure and sensitivity of 250 species. Included among these are representatives of the major living groups of reptiles—lizards, snakes, amphisbaenians, turtles, crocodiles—and the only surviving species of the primitive rhynchocephalians, *Sphenodon*. The structure of each ear is described and illustrated with drawings based upon dissection and reconstruction of serial histological sections. Wever compares the structure with the cochlear electric potentials recorded on the round window of each species and speculates about the possible correlation of the morphology with the cochlear potential. The fact that the same techniques were used for all the ears permits easy comparison of a large number of different reptiles. Comparing the anatomy of these ears illustrates well the extensive experimentation that occurred among reptiles in the evolution of the ear. There are, however, limitations to these techniques. For example, the structure of the tectorial membrane and its fine connections to the cilia of the receptor cells are important considerations in Wever's interpretations. Because of the differential shrinkage of the auditory tissue and the overlying extracellular tectorial substance that is inherent in all histological procedures, it is difficult to convincingly demonstrate the relation of the tectorial membrane with the cilia in vivo. This same technical limitation is the crux of the current controversy about the relation of the tectorial membrane to the inner hair cells in the mammalian organ of Corti. Another limitation is the assumption that thresholds and frequency range of hearing can be precisely determined from sensitivity curves derived from cochlear potentials. These potentials are complex and not completely understood. Wever himself, in a section devoted to "some open horizons," points out the necessity of supplementing the sensitivity curve determined by the cochlear potentials methods with those obtained by recording neural responses and behavioral audiograms.

This book will be appreciated by biologists who are interested in the comparative structure and function of the ears of the different groups of reptiles as an aid to determining the taxonomic and phylogenetic relations between those subgroups of reptiles about which controversy still exists. It should also be of value to otolaryngologists, audiologists, and auditory scientists. As Wever readily demonstrates, the evolution of the

reptilian ear has supplied us with many variations on the basic vertebrate ear which should stimulate our thoughts and be useful as experimental models for investigating the basic peripheral mechanisms of hearing.

MICHAEL J. MULROY

*Department of Anatomy,
University of Massachusetts Medical
School, Worcester 01605*

Social Behavior

Social Play in Primates. Proceedings of a symposium, University Park, Pa., 1977. EUCLID O. SMITH, Ed. Academic Press, New York, 1978. xii, 324 pp., illus. \$18.

Play has remained one of the most enigmatic categories in animal behavior and development. Despite a plethora of studies and more than two dozen major reviews of the subject, there is no consensus concerning the definitions and functions of play. As Bateson (1955) indicated in his insightful essay on the role of metacommunication in play, the major problem resides in the simple question, how do we know when play is play? This perceptual problem for observers can also exist for the participants in play: if two monkeys are play-fighting, how do they discern the thin line between play and aggression when the behavioral acts can look so much alike?

Social Play in Primates, a compilation of papers from a symposium of the Animal Behavior Society, deals with such questions and attempts to elucidate the structural characteristics and functions of play in primates. The book consists of several theoretical papers, which provide overviews of the history and progress of research in this area, and a number of data-oriented papers. It is an important addition to the libraries of those interested in play and development, but in general it fails to have significance for a wider audience.

The most interesting and valuable chapters are the theoretical ones, which offer extensive literature reviews and reveal the state of the art. The editor, Euclid Smith, opens with an excellent history of the study of play. Frank Poirier, who has been an important reviewer of play studies, and his colleagues have written a good paper on the variables that affect the manifestation of play, such as age, sex, and environmental context. Poirier *et al.* also attempt to show that play has benefits for both the individual and the group, a point vehemently contested by Donald Symons in another

paper. Symons devotes many pages to definitions of function and to the validity of individual vs. group selection arguments. Here the reader has an opportunity to view the different orientation that a sociobiologist brings to the study of play. Marked differences in orientation are also apparent in the paper by John and Janice Baldwin. They chose to focus on the individual's immediate motivations to play and set forth the important role of general arousal in play behavior.

The theoretical papers repeatedly indicated the need for further research on the long-term consequences and evolutionary functions of play, and the data papers confirm the need. The results reported in these papers reveal our general inability to analyze the more complex and provocative issues of play behavior in a quantitative manner. Two papers are devoted to methodological approaches and demonstrate that the problem of defining and categorizing play continues to plague this area of research. At present, there is no agreement about how to develop terminology or behavioral taxonomies across species and environments. The other chapters focus on the more obvious issues in the study of play: the decline in play that occurs with age, and sex differences in the occurrence of play. There is one attempt at making interspecific comparisons, which should be applauded because the book suffers from too little comparative perspective. These studies indicate that there is still much work needed to meet the challenge of the theoretical questions.

CHRISTOPHER COE

*Department of Psychiatry,
Stanford University Medical Center,
Stanford, California 94305*

Books Received

Aging in Muscle. George Kaldor and William J. DiBattista, Eds. Raven, New York, 1978. x, 234 pp., illus. \$17.50. Aging Series, vol. 6.

Die Akademie der Wissenschaften der UdSSR. Überblick über Geschichte und Struktur; Verzeichnis der Institute. Wolfgang Kasack. Deutsche Forschungs-gemeinschaft, Bonn-Bad Godesberg, Germany, ed. 3, 1978. 158 pp. Paper.

Album of Science. The Nineteenth Century. L. Pearce Williams. Scribner, New York, 1978. xiv, 414 pp., illus. \$40.

American Court Systems. Readings in Judicial Process and Behavior. Sheldon Goldman and Austin Sarat, Eds. Freeman, San Francisco, 1978. xiv, 648 pp. Cloth, \$19.95; paper, \$9.95.

The Analysis of Practical Skills. W. T. Singleton, Ed. University Park Press, Baltimore, 1978. xiv, 334 pp., illus. \$24.50. The Study of Real Skills, vol. 1.

Analytical Chemistry in Nuclear Fuel Re-processing. Proceedings of a conference, Gatlinburg, Tenn., Oct. 1977. Science Press, Princeton, N.J., 1978. viii, 376 pp., illus. Paper, \$28.

Analytical Methods for Pesticides and Plant Growth Regulators. Gunter Zweig, Ed. Vol. 10, New and Updated Methods. Gunter Zweig and Joseph Sherma, Eds. Academic Press, New York, 1978. xviii, 594 pp., illus. \$45.

Analytical Profiles of Drug Substances. Vol. 7. Klaus Florey, Ed. Academic Press, New York, 1978. x, 504 pp., illus. \$24.

Annual Reports in Medicinal Chemistry. Vol. 13. Frank H. Clarke, Ed. Academic Press, New York, 1978. xii, 338 pp., illus. Paper, \$17.

Annual Reports in Organic Synthesis—1977. R. Bryan Miller and L. G. Wade, Jr., Eds. Academic Press, New York, 1978. xiv, 458 pp., illus. Paper, \$17.50.

Annual Review of Astronomy and Astrophysics. Vol. 16. Geoffrey Burbidge, David Layzer, and John G. Phillips, Eds. Annual Reviews, Palo Alto, Calif., 1978. x, 652 pp., illus. \$17.

Annual Review of Phytopathology. Vol. 16. Raymond G. Grogan, George A. Zentmyer, and Ellis B. Cowling, Eds. Annual Reviews, Palo Alto, Calif., 1978. xii, 528 pp. \$17.

Anti-diuretic Hormone. Vol. 2. Mary L. Forsling. Eden Press, St. Albans, Vt., 1977. viii, 206 pp. \$20.

Applicability of Brookhaven National Laboratory's Energy Models to Electric Utility R & D Planning. Prepared by Systems Control, Inc. Electric Power Research Institute, Palo Alto, Calif., 1978. Variously paged. Paper, \$7.50. EPRI EA-807.

Applied Time Series Analysis. Proceedings of a symposium, Tulsa, Okla., May 1976. David F. Findley, Ed. Academic Press, New York, 1978. xii, 346 pp., illus. \$18.

Blowing on the Wind. The Nuclear Test Ban Debate, 1954-1960. Robert A. Divine. Oxford University Press, New York, 1978. xii, 394 pp. \$14.95.

The Bochner Integral. Jan Mikusiński. Academic Press, New York, 1978. xii, 234 pp. \$22.50. Pure and Applied Mathematics.

Botany. Basic Concepts in Plant Biology. Terry L. Hufford. Harper and Row, New York, 1978. xviii, 536 pp., illus. \$16.95.

Bubbles, Drops, and Particles. R. Clift, J. R. Grace, and M. E. Weber. Academic Press, New York, 1978. xvi, 380 pp., illus. \$32.

Calcium in Drug Action. George B. Weiss, Ed. Plenum, New York, 1978. x, 366 pp., illus. \$37.50.

Cancer. A Comprehensive Treatise. Vol. 6, Radiotherapy, Surgery, and Immunotherapy. Frederick F. Becker, Ed. Plenum, New York, 1978. xvi, 544 pp., illus. \$42.50.

Cancer: The Wayward Cell. Its Origins, Nature and Treatment. Victor Richards. University of California Press, Berkeley, ed. 2, 1978. xx, 408 pp., illus. \$12.50.

The Cell Nucleus. Vol. 4, Chromatin, Part A. Harris Busch, Ed. Academic Press, New York, 1978. xxviii, 422 pp., illus. \$39.50.

Central Mechanisms of Anorectic Drugs. Papers from a symposium. Silvio Garattini and Rosario Samanin, Eds. Raven, New York, 1978. xiv, 488 pp., illus. \$35. Monographs of the Mario Negri Institute for Pharmacological Research, Milan.

Changes in the Global Carbon Cycle and the Biosphere. Jerry S. Olson, Helen A. Pfuderer, and Yip-Hoi Chan. Oak Ridge National Laboratory, Oak Ridge, Tenn., 1978 (available

from the National Technical Information Service, Springfield, Va.). xvi, 170 pp., illus. Paper, \$9; microfiche, \$3. Environmental Sciences Division Publication No. 1050. ORNL/EIS-109.

The Chauvenet Papers. A Collection of Prize-Winning Expository Papers in Mathematics. J. C. Abbott, Ed. Mathematical Association of America, Washington, D.C., 1978. Two volumes. xxvi, 596 pp., illus. + index. Each volume, \$16; the set, \$27.

Chemical Pathways in the Brain. Leslie L. Iversen, Susan D. Iversen, and Solomon H. Snyder, Eds. Plenum, New York, 1978. xvi, 410 pp., illus. \$29.50. Handbook of Psychopharmacology, vol. 9.

The Children of Santa María Cauqué. A Prospective Field Study of Health and Growth. Leonardo J. Mata. MIT Press, Cambridge, Mass., 1978. xx, 396 pp., illus. \$19.95. International Nutrition Policy Series.

Chromatography of Synthetic and Biological Polymers. Vol. 2, Hydrophobic, Ion Exchange and Affinity Methods. Papers from a symposium, Birmingham, England, July 1976. Roger Epton, Ed. Published for the Chemical Society Macromolecular Group by Horwood, Chichester, England, 1978 (distributor, Halsted [Wiley], New York). x, 354 pp., illus. \$47.50.

Coherent Cooperative Phenomena. N. G. Basov, Ed. Translated from the Russian edition (Moscow, 1976) by Donald H. McNeill. Consultants Bureau (Plenum), New York, 1978. viii, 154 pp., illus. Paper, \$29.50. The Lebedev Physics Institute Series, vol. 87.

Color Atlas and Textbook of Human Anatomy. W. Kahle, H. Leonhardt, and W. Platzer. Vol. 2, Internal Organs. Helmut Leonhardt. Translated from the German edition (Stuttgart, 1975) by H. L. and A. D. Dayan. E. Palmer, Ed. Year Book Medical Publishers, Chicago, and Thieme, Stuttgart, 1978. viii, 354 pp. Paper, \$10.95.

Color Vision. An Historical Introduction. Gerald S. Wasserman. Wiley-Interscience, New York, 1978. xvi, 224 pp. \$18.95. Wiley Series in Behavior.

Comprehensive Study of the Operating and Testing Experience. During the Startup and Initial Operation at the Fort St. Vrain HTGR. Phase 3, Initial Startup and Operation at Power Phase. Prepared by S. M. Stoller Corporation. Electric Power Research Institute, Palo Alto, Calif., 1978. Variously paged, illus. Paper, \$8. EPRI NP-760.

Computer Applications in the Analysis of Chemical Data and Plants. Papers from a meeting, Espoo Korpilampi, Finland, June 1977. Science Press, Princeton, N.J., 1977. 278 pp., illus. Paper, \$20.

Computers in Mass Spectrometry. J. R. Chapman. Academic Press, New York, 1978. x, 266 pp., illus. \$20.25.

Concepts of Reduction in Physical Science. Marshall Spector. Temple University Press, Philadelphia, 1978. xii, 114 pp. Cloth, \$15; paper, \$10. Philosophical Monographs.

Critical Periods. John Paul Scott, Ed. Dowden, Hutchinson and Ross, Stroudsburg, Pa., 1978 (distributor, Academic Press, New York). xvi, 384 pp., illus. \$29.50. Benchmark Papers in Animal Behavior, vol. 12.

Crustal Evolution in Northwestern Britain and Adjacent Regions. Proceedings of a conference, Glasgow, Apr. 1977. D. R. Bowes and B. E. Leake, Eds. Seel House Press, Liverpool, England, 1978. xvi, 492 pp., illus. £30. Geological Journal Special Issue No. 10.

Deinstitutionalization of Developmentally
(Continued on page 1170)