and Alcock obviously recognize the importance of female evolutionary perspectives for sexual selection theory and for understanding the evolution of mating systems. For example, they point out (p. 398) that "insects are typical animals in that females have more control over the reproductive process than males." For this very reason both mate choice and male-male competition should be strongly influenced, if not governed, by the reproductive control females have. Perhaps much of the male bias comes from the literature being reviewed, but this book would have been a good place to expose the problem and to work toward its resolution.

The emphasis on male perspectives and the number of highly speculative hypotheses presented may cause some to dismiss the book as superficial or excessively adaptationist. I suggest that these people keep in mind the authors' intention to illustrate the power of a Darwinian approach in organizing a diverse and complex array of insect reproductive behavior and in generating exciting, if controversial, ideas about its evolution. It is in this that *The Evolution of Insect Mating Systems* will make its mark as one of the more important contributions to behavioral ecology, sociobiology, evolutionary theory, and entomology.

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Molecular Biology of Cancer

Genes and Proteins in Oncogenesis. I. BERNARD WEINSTEIN and HENRY J. VOGEL, Eds. Academic Press, New York, 1983. xxii, 403 pp., illus. $55. P & S Biomedical Sciences Symposia Series. From a symposium, New York, June 1982.

Recent years have seen a dramatic increase in understanding of several central aspects of oncogenesis, in particular the roles of viral and cellular *onc* genes and the multistep nature of carcinogenesis. A reading of this book makes it clear, however, that a complete merger of the traditions of virology and chemistry is not quite at hand (or at least wasn't in June 1982). Nonetheless, several key points have become generally accepted. First, abuse of certain normal cellular (c-*onc*) genes can be sufficient to transform a normal cell into a malignant one (as with v-*src*) or at least to initiate the process (as with c-*myc*). Such abuse can include incorporation of an *onc* gene into a retroviral provirus, insertion of a provirus in the vicinity of an *onc* gene, or simple point mutation in the absence of retroviral involvement. Second, mutagenic damage to DNA is the initiating event in most, if not all, chemical and physical carcinogenesis. Third, in most cases more than one event must occur before a fully malignant cell can arise, as is demonstrated most clearly by initiation-promotion models of experimental carcinogenesis.

Major gaps in our knowledge nevertheless remain. We do not know the particular DNA sequences that serve as targets for physical and chemical carcinogens or the exact nature of the key lesions. Both point mutations and DNA rearrangements affecting the well-characterized c-*onc* genes *myc* and *ras* have been identified in spontaneous and chemically induced tumors; it cannot yet be determined whether these changes were caused directly by the initiating agent or occurred as secondary events. The mechanism of action of tumor promoters such as the phorbol esters also remains elusive. General classes of models put forward to explain promotion include direct hormone-like stimulation of cell division or mutagenic effects mediated by active oxygen radicals or other compounds released as a consequence of membrane damage. Finally, both the normal function of c-*onc* genes and the deranged function of v-*onc* genes remain obscure, as is also the case with the analogous sequences that serve both transformation and replication functions in DNA tumor viruses, despite considerable advances in understanding the biochemistry of their products.

The 26 papers in this book contain many of the recent famous stories in the molecular biology of carcinogenesis as told by some of the major players. Roughly one-third of the papers are concerned with mechanisms of carcinogenesis and mutagenesis by chemical and physical agents; a similar number deal with oncogenic viruses, oncogenes, and their products; and the remainder are concerned with a variety of topics from cell biology that are of particular recent interest to cancer research. The first group includes papers on chemical and physical mutagenesis by Grunberger and Santella, Lo *et al.*, and Fuchs *et al.* as well as papers on tumor promoters by Cerutti *et al.*, Weinstein *et al.*, and Fujiki and Sugimura. Of the subjects in the book, this one is covered with the most success. Each paper is clearly written and well backed up with sufficient introductory material to make the subject comprehensible to the non-expert, and there is generally a good balance between breadth and detail so that a sense of both the relationship of the work to the field as a whole and the flavor of each experimental approach comes through. Also, the authors are well chosen so that the papers make a comprehensive set that provides an informative and interesting overview of current ideas about mutagenesis and chemical carcinogenesis.

The papers dealing explicity with viral carcinogenesis and oncogenes include offerings by Hayward, Rovigatti and Astrin, Wigler *et al.*, Erikson *et al.*, Hinuma, and Woodworth *et al.* This group is distinctly less successful than the first. It includes papers that are significantly more parochial than those in the first group and not as well written or as clearly illustrated. The topics covered are rather scattered and do not present a unified whole. Many of the papers, particularly those dealing with human T-cell lymphoma virus or with oncogenes directly (such as *myc* and *ras*), are badly out of date. These subjects have advanced very rapidly during the past year, and the papers dealing with them are of little more than historical interest.

The remaining papers include some rather nice short reviews of topics such as transforming growth factors (Todaro *et al.*), receptor-mediated endocytosis (Willingham and Pastan), and gene amplification and methotrexate resistance (Schimke *et al.*). The authors of these three papers are closely associated with major contributions to the subjects and present here clear, concise summaries of recent and ongoing work. Also in this category but of less obvious significance are papers on possible roles of the nuclear matrix in carcinogenesis, mutations in β-actin genes, and studies of mitochondria with rhodamine-123.

The volume is introduced by a brief paper by Temin. Although it doesn't provide much in the way of a general introduction to the subject, the paper does provide an interesting, if rather brief, exposition of some of the possible mechanistic aspects of oncogene acquisition by retroviruses. Some additional introductory material, with a short background on the major topics in each section, would have been a useful addition to the book, as would abstracts of the papers.

Considering the pace with which some of the subjects covered in the book have progressed in the last few years, the

book provides a reasonably up-to-date overview and could well be a useful acquisition for scientists wishing to broaden their perspective in the molecular biology of cancer.

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Some Other Books of Interest

Darwin's Finches. DAVID LACK. Introduction and notes by Laurene M. Ratcliffe and Peter T. Boag. Cambridge University Press, New York, 1983. liv, 208 pp., illus., + plates. $39.50; paper, $13.95. Reprint, 1961 edition.

In their introduction to this augmented reprint Ratcliffe and Boag write that "few books have had as great an impact on evolutionary ecology as David Lack's *Darwin's Finches*," which, they state, "has remained a classic for . . . its extremely accurate descriptions of geospizine ecology and behaviour . . . and for its original, cogent formulation of the adaptive radiation model." The book, which draws on field studies conducted by the author during an expedition to the Galápagos in 1938–39, first appeared in 1947 and was reissued in 1961. To the present edition Ratcliffe and Boag, themselves biologists whose research has been concerned with the Galápagos finches, have added, in addition to the introduction describing the origins and impact of the work as a whole, a section of chapter-by-chapter notes indicating the present state of knowledge concerning various matters dealt with by Lack or placing his observations in the context of his other work. Material from the Lack archives at Oxford has been used in preparing the notes, and a list of some 150 "modern references" has been provided.—K.L.

Vulture Biology and Management. SANFORD R. WILBUR and JEROME A. JACKSON, Eds. University of California Press, Berkeley, 1984. xxii, 550 pp., illus. $35. Based on a conference, Santa Barbara, Calif., March 1979.

Vulture Biology and Management consists of 32 contributions about half of which were presented at an international conference on the subject. The others were solicited by the editors to round out the coverage. Two opening papers on the fossil history (P. Rich) and the systematics (A. Rea) of the vultures are followed by 20 on the conservational status and the biology of vultures in various parts of the world. The 12 biological papers, which are equally divided between Old and New World vultures, include general discussions of adaptive radiation (D. Houston), competition for food (C. König), and nesting habits and reproductive success (Jackson) in various groups; the remainder are predominantly reports of field studies conducted by their authors. Five papers are then devoted to research and management techniques; two, both reports of studies on North American specimens, to effects of environmental contaminants; and two to the theme "vultures and man" in Old and New World prehistory. The final contribution is a 29-page bibliography supplementing one published by Wilbur in 1978. The book includes subject, author, geographical, and taxonomic indexes.

—K.L.

Higher Mathematics from an Elementary Point of View. H. RADEMACHER. D. Goldfeld, Ed. Notes by G. Crane. Birkhäuser, Boston, 1983. viii, 138 pp., illus. $29.95.

Hans Rademacher (1892–1969) is known for his work in analytical number theory. Also an expositor of mathematics to general audiences, he was the author, with Otto Toeplitz, of a popular work (1933) that has been translated into English as *The Enjoyment of Mathematics*. The present volume is based on 11 lectures, also for a general audience, given by Rademacher at Stanford University in 1947. The subjects covered are prime numbers, Farey fractions, decimal fractions, the approximation of irrational numbers by rational numbers, the exclusion-inclusion principle, Ford circles, the modular group and modular functions, and linkages. The source of the text is not clearly specified but is presumably notes taken by Crane at the time the lectures were delivered. To seven of the chapters, the editor, Goldfeld, has appended brief (one-paragraph) notes pointing out more recent results on the topics in question or otherwise indicating the context of the discussions. A brief updated bibliography and a subject index are included.—K.L.

Books Received

Acid Deposition. S. Beilke and A. J. Elshout, Eds. Reidel, Boston, 1983 (distributor, Kluwer Boston, Hingham, Mass.). x, 235 pp., illus. $32.50. From a workshop, Berlin, Sept. 1982.

The Acquisition of Symbolic Skills. Don Rogers and John A. Sloboda, Eds. Plenum, New York, 1983. xii, 623 pp., illus. $79.50. NATO Conference Series III, vol. 22. From a conference, Keele, England, July 1982.

Advanced Synergetics. Instability Hierarchies of Self-Organizing Systems and Devices. Hermann Haken. Springer-Verlag, New York, 1983. xvi, 356 pp., illus. $40. Springer Series in Synergetics, vol. 20.

Advances in Child Development and Behavior. Vol. 17. Hayne W. Reese, Ed. Academic Press, New York, 1982. xii, 304 pp. $32.

Advances in Cognitive-Behavioral Research and Therapy. Vol. 2. Philip C. Kendall, Ed. Academic Press, New York, 1983. xvi, 310 pp. $34.50.

Advances in Experimental Social Psychology. Vol. 15. Leonard Berkowitz, Ed. Academic Press, New York, 1982. viii, 296 pp. $29.50.

Advances in Hamiltonian Systems. J. P. Aubin, A. Bensoussan, and I. Ekeland, Eds. Birkhäuser, Boston, 1983. viii, 195 pp. $19.95. Annals of the CEREMADE. From a conference, Rome, Feb. 1981.

Advances in Image Pickup and Display. Vol. 6. B. Kazan, Ed. Academic Press, New York, 1983. xiv, 261 pp., illus. $62.50.

Advances in Librarianship. Vol. 12. Wesley Simonton, Ed. Academic Press, New York, 1982. xviii, 300 pp. $32.

Advances in the Study of Behavior. Vol. 13. Jay S. Rosenblatt *et al.*, Eds. Academic Press, New York, 1983. xiv, 262 pp., illus. $29.50.

Aggressive Behavior. Genetic and Neural Approaches. Edward C. Simmel, Martin E. Hahn, and James K. Walters, Eds. Erlbaum, Hillsdale, N.J., 1983. xiv, 201 pp., illus. $24.95. Based on a symposium, Oxford, Ohio, Sept. 1981.

Animal Disease Control. Regional Programs. Robert P. Hanson and Martha G. Hanson. Iowa State University Press, Ames, 1983. x, 331 pp., illus. Paper, $22.50.

Annual Review of Phytopathology. Vol. 21. Raymond G. Grogan, George A. Zentmyer, and Ellis B. Cowling, Eds. Annual Reviews, Palo Alto, Calif., 1983. x, 429 pp. $27.

Annual Review of Sociology. Vol. 9. Ralph H. Turner and James F. Short, Jr., Eds. Annual Reviews, Palo Alto, Calif., 1983. xii, 610 pp. $27.

Antibiotics Containing the Beta-Lactam Structures. Part 2. A. L. Demain and N. A. Solomon, Eds. Springer-Verlag, New York, 1983. xviii, 479 pp., illus. $125. Handbook of Experimental Pharmacology, vol. 67/II.

Automation. John Diebold. American Management Associations, New York, 1983. xl, 181 pp. $14.95. Reprint, 1952 edition.

Automation in Animal Development. A New Theory Derived from the Concept of Cell Sociology. Rosine Chandebois, with Jacob Faber. Karger, Basel, 1983. xii, 204 pp., illus. $99. Monographs in Developmental Biology, vol. 16.

Avian Biology. Vol. 7. Donald S. Farner, James R. King, and Kenneth C. Parkes, Eds. Academic Press, New York, 1983. xxiv, 542 pp., illus. $69.50.

Before It's Too Late. A Scientist's Case for Nuclear Energy. Bernard L. Cohen. Plenum, New York, 1983. xviii, 292 pp., illus. $16.95.

Briggs' Information-Processing Model of the Binary Classification Task. Samuel Mudd. Erlbaum, Hillsdale, N.J., 1983. xii, 136 pp., illus. $19.95.

Building Controls into Structured Systems. Alan E. Brill. Yourdon Press, New York, 1983. xviii, 149 pp., illus. Paper, $29.

CBE Style Manual. A Guide for Authors, Editors, and Publishers in the Biological Sciences. 5th ed. Council of Biology Editors, Bethesda, Md., 1983. xx, 324 pp. $24.

Calculator Programs for the Health Sciences. J. H. Abramson and E. Peritz. Oxford University Press, New York, 1983. xx, 407 pp. $42.50; paper, $24.95.

Cancer: Etiology and Prevention. Ray G. Crispen, Ed. Elsevier, New York, 1983. xiv, 463 pp., illus. $67.50. From a symposium, Chicago, Oct. 1982.

Catalysis in C_1 Chemistry. Wilhelm Keim, Ed. Reidel, Boston, 1983 (distributor, Kluwer Boston, Hingham, Mass.). xii, 312 pp., illus. $58.50. Catalysis by Metal Complexes, vol. 4. From a course, Aachen, Germany.

Catechol Estrogens. George R. Merriam and Mortimer B. Lipsett, Eds. Raven, New York, 1983. xx, 279 pp., illus. $44. From a workshop, Bethesda, Md., 1982.

Cerebrovascular Diseases. E. I. Gusev, N. N. Bogolepov, and G. S. Burd. Mir, Moscow, 1982 (U.S. distributor, Imported Publications, Chicago). 192 pp., illus. $6.95. Translated from the Russian edition (Moscow, 1979) by Michael Burov.

Chemical Graph Theory. Nenad Trinajstić. CRC Press, Boca Raton, Fla., 1983. Two volumes. Vol. 1. xii, 147 pp., illus. $67.50. Vol. 2. xii, 166 pp., illus. $69.

Chemicals from Synthesis Gas. Catalytic Reactions of CO and H_2. Roger A. Sheldon. Reidel, Boston, 1983 (distributor, Kluwer Boston, Hingham, Mass.). xx, 216 pp., illus. $48. Catalysis by Metal Complexes.

The Child's Construction of Social Inequality. Robert L. Leahy, Ed. Academic Press, New York, 1983.

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