opening paper Joel Cracraft defines evolutionary innovations broadly as "the appearance of new characters or structural/functional complexes" and considers the concept of "key innovations" from ontological, methodological, and empirical points of view, rendering (in apparent opposition to some subsequent contributions to the volume) an unfavorable judgment on its utility. Under the heading Genetics and Development Brian Charlesworth traces and comments on ideas about the evolutionary genetics of adaptations, Rudolf Raff *et al.* discuss heterochrony with reference to current studies of sea urchins, and Gerd Müller presents a "side-effect hypothesis" according to which qualitatively new structural features arise as "by-products of epigenesis that appear when quantitative modifications of developmental processes reach a threshold of the affected system." A section headed Morphology and Physiology contains four papers, in the first of which James Cheverud discusses genetic constraints on the appearance of new trait combinations and presents some results of a study of papionin primates that bear on the matter. Karel Liem then takes up the issue of key innovations with reference to genealogical and ecological hierarchy, proposing the integrative approach "symecomorphosis." Jeffrey Jensen also discusses key innovations, expounding the procedure of "historical testing" as an alternative to reliance on "subjective adaptive arguments." Warren Burggren and William Bemis conclude the section with a discussion of the potential of comparative physiology in evolutionary studies. In the final pair of papers in the volume Adolf Seilacher discusses "the sand-dollar syndrome: a polyphyletic constructional breakthrough" and David Jablonski and David Bottjer discuss the ecology of evolutionary innovation from a paleobiological point of view. The volume opens with an introduction in which the editor recounts some earlier history of the subject and gives an overview of the contributions. It concludes with an index.—**K.L.**

Insect Defenses. Adaptive Mechanisms and Strategies of Prey and Predators. DAVID L. EVANS and JUSTIN O. SCHMIDT, Eds. State University of New York Press, Albany, 1990. xvi, 482 pp., illus. $73.50; paper, $24.95. SUNY Series in Animal Behavior.

This treatment of insect survival strategies is arranged in four sections, on the evolution of "major defensive ensembles," on strategies and tactics of predation, and on prevention of predation by avoidance or escape and by counterattack. The first section contains chapters by Malcolm Edmunds on crypsis ("the color resemblance of an animal to its background so that predators . . . have difficulty in distinguishing it") and Tim Guilford on aposematism ("the coincidence between conspicuous coloration in potential prey animals") and a consideration by Scott Sakaluk of the balancing of reproductive and survival needs. In the second section, predatory behavior and defense strategies are discussed by George Uetz with respect to web-building spiders and by Werner Schuler with respect to birds, and Michael Robinson expounds the hypothesis that the origins of intelligence are to be found in complex information-processing tasks such as are involved in food-finding. Looking at survival strategies from the point of view of potential prey, Robert Lederhouse discusses primary defenses of lepidopteran caterpillars, David Evans discusses the timing of life-history and daily events as a means of avoiding predation, and James Fullard discusses sensory interactions between moths and bats as "one of the most parsimonious predator-prey relationships ever discovered." Then Theodore Sargent and Kevina Vulinec respectively discuss startle and aggregation as anti-predator mechanisms, Douglas Whitman *et al.* and M. Deane Bowers discuss uses of repellent and toxic chemical compounds (allomones and "recycled" plant natural products), and, with respect to hymenopterans, Justin Schmidt and Christopher Starr discuss venoms and colony defenses. The editors have provided a brief introduction to each section of the book but no introduction or conclusion to the work as a whole. Author and subject indexes are included.

—**K.L.**

Books Received

Applied Mineralogical Thermodynamics. Selected Topics. N. D. Chatterjee. Springer-Verlag, New York, 1991. xvi, 321 pp., illus. Paper, $59.

Aquatic Weeds. The Ecology and Management of Nuisance Aquatic Vegetation. Arnold H. Pieterse and Kevin J. Murphy, Eds. Oxford University Press, New York, 1990. xviii, 593 pp., illus. $135.

Atlas of the Developing Rat Brain. George Paxinos *et al.* Illustrations by Alicia L. R. Fritchle. Academic Press, San Diego, CA, 1991. Variously paged. Spiral bound, $99.50.

Biosphere 2. The Human Experiment. John Allen. Anthony Blake, Ed. Penguin, New York, 1991. iv, 156 pp., illus. $29.95, paper, $16.95.

Biotechnology, Microbes and the Environment. Steven C. Witt. Center for Science Information, San Francisco, CA, 1990. vi, 219 pp., illus. Paper, $17.50. Brief Book.

The Byzantine Shops at Sardis. J. Stephens Crawford. Harvard University Press, Cambridge, MA, 1990. xxii, 156 pp., + plates. $50. Archeological Exploration of Sardis, monograph 9.

Case Studies in Family Violence. Robert T. Ammerman and Michel Hersen, Eds. Plenum, New York, 1991. xvi, 406 pp., illus. $59.50.

Chromatography and Isolation of Insect Hormones and Pheromones. A. R. McCaffery and I. D. Wilson, Eds. Plenum, New York, 1990. xiv, 376 pp., illus. $89.50. Chromatographic Society Symposium Series. From a symposium, Reading, U.K., March 1989.

The Cult of the Cat. Nicholas J. Saunders. Thames and Hudson, New York, 1991 (distributor, Norton, New York). 96 pp., illus. Paper, $14.95.

The Development and Treatment of Childhood Aggression. Debra J. Pepler and Kenneth H. Rubin, Eds. Erlbaum, Hillsdale, NJ, 1991. xviii, 470 pp., illus. $69.95. From a symposium, Toronto, Canada, June 1988.

Distribution and Taxonomy of Birds of the World. Charles G. Sibley and Burt L. Monroe, Jr. Yale University Press, New Haven, CT, 1991. xxiv, 1111 pp. $125.

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Ecological Responses to Environmental Stresses. J. Rozema and J. A. C. Verkleij, Eds. Kluwer, Boston, MA, 1990. xiv, 311 pp., illus. $190. Tasks for Vegetation Science, 22.

Electromagnetism. I. S. Grant and W. R. Phillips. 2nd ed. Wiley, New York, 1991. xvi, 525 pp., illus. Paper, $34.95. Manchester Physics Series.

Electron Deficient Boron and Carbon Clusters. George A. Olah, Kenneth Wade, and Robert E. Williams, Eds. Wiley, New York, 1991. xvi, 379 pp., illus. $59.95. A Wiley-Interscience Publication. From a symposium, Los Angeles, CA, Jan. 1989.

Electronic Processes on Semiconductor Surfaces during Chemisorption. T. Wolkenstein. Roy Morrison, Transl. Ed. Consultants Bureau (Plenum), New York, 1991. xvi, 444 pp., illus. $115. Translated from the Russian edition (Moscow, 1987) by E. M. Yankovskii.

Electronic Properties of Multilayers and Low-Dimensional Semiconductor Structures. J. M. Chamberlain, L. Eaves, and J.-C. Portal, Eds. Plenum, New York, 1990. xiv, 477 pp., illus. $105. NATO Advanced Science Institute Series, vol. 231. Series B, Physics. From an advanced study institute, Castera-Verduzan, France, Sept. 1989.

Essential Medical Genetics. J. M. Connor and M. A. Ferguson-Smith. 3rd ed. Blackwell, Boston, MA, 1991 (U.S. distributor, Mosby-Year, Chicago, IL). viii, 259 pp., illus. Paper, $29.95.

Evaluation of Environmental Data for Regulatory and Impact Assessment. S. Ramamoorthy and E. Baddaloo. Elsevier, New York, 1991. x, 466 pp., illus. $171.50. Studies in Environmental Science, 41.

Excursions in Geometry. C. Stanley Ogilvy. Dover, New York, 1990. viii, 178 pp., illus. Paper, $4.95. Reprint, 1969 ed.

The Expendable Future. U.S. Politics and the Protection of Biological Diversity. Richard J. Tobin. Duke University Press, Durham, NC, 1990. x, 325 pp., illus. $45; paper, $18.75.

Experimental Embryology in Aquatics Plants and Animals. Hans-Jürg Marthy, Ed. Plenum, New York, 1990. x, 407 pp., illus. $95. NATO Advanced Science Institute Series, vol. 195. Series A, Life Sciences. From an advanced study institute, Banyuls-sur-Mer, France, Sept. 1989.

Fluorine in Bioorganic Chemistry. John T. Welch and Seetha Eswarakrishnan. Wiley, New York, 1991. xx, 261 pp., illus. $59.95. A Wiley-Interscience Publication.

Fluxes Between Trophic Levels and Through the Water-Sediment Interface. Daniel J. Bonin and Han L. Golterman, Eds. Kluwer, Boston, MA, 1990. xviii, 342 pp., illus. $172. Developments in Hydrobiology, 62. From a congress, Marseille, France, June 1989. Reprinted from *Hydrobiologca*, vol. 207 (1990).

Free to Be Foolish. Politics and Health Promotion in the United States and Great Britain. Howard M. Leichter. Princeton University Press, Princeton, NJ, 1991. xviii, 281 pp., illus. $35.

From Industry to Arms. The Political Economy of High Technology. Anthony DiFilippo. Greenwood, New York, 1990. xvi, 205 pp., illus. $42.95. Contributions in Economics and Economic History, no. 114.

A Guide to SPSS for Analysis of Variance. Gustav Levine. Erlbaum, Hillsdale, NJ, 1991. xviii, 151 pp., illus. $39.95; paper, $22.50.

Handbook of Clinical Sociology. Howard M. Rebach and John G. Bruhn, Eds. Plenum, New York, 1991. xxiv, 410 pp., illus. $55.

Handbook of Thin-Layer Chromatography. Joseph Sherma and Bernard Fried, Ed. Dekker, New York, 1991. viii, 1047 pp., illus. $165. Chromatographic Science, vol. 55.

Insect Neuropeptides. Chemistry, Biology, and Action. Julius J. Menn, Thomas J. Kelly, and Edward P.