

like the book as a whole, packed with interesting information and examples. The taxonomic coverage is broad, including aphids, guppies, rotifers, bryozoans, and many groups of both flat and rounded worms. A glossary at the end of the book is useful in easing the way through a specialized terminology.

The four last chapters deal with issues that should be ripe for discussion and synthesis—life histories, population genetics, obligate cloning, and modular colonies. The life history chapter includes some theoretical approaches to the evolution and consequence of clonal life histories, but the treatment of the models is too superficial. Sibly and Calow's life history model is not adequately presented for a reader unacquainted with the original model. Then the transition to Caswell's model is awkward because it is treated as an alternative to that of Sibly and Calow, rather than as having a different purpose. Finally, the Sackville *et al.* model is presented descriptively and with so little information about techniques and assumptions that it too is impossible to evaluate.

Both the chapters on population genetic and obligate cloning list topics with little attempt to synthesize but the taxonomic survey of obligate cloning stands out as an informative and up-to-date review of a rapidly accumulating literature. The conclusions from this section give some sense of the topics treated: (i) obligate cloners are primarily parthenogens, rather than agametic fissioners like anemones; (ii) parthenogenesis arises often from hybridization and is usually apomictic; (iii) parthenogens lose heterozygosity more slowly than sexual inbreeders; (iv) clones do evolve and variance is provided by mutation.

The chapter on modular colonies offered the greatest opportunity to develop issues about the functional biology of clonal organisms, and yet it brushes lightly over the issues that seem to me most challenging: how colonies are integrated and the conflicts of clonal unit and colony level in function, the role of somatic mutation in the evolution of clonal animals, and the consequences of chimera formation. Surely there should have been some discussion of the relative rates of evolution of clonal and aclonal organisms as developed in Buss's *The Evolution of Individuality* (1987).

The ecological and evolutionary consequences of cloning in both plants and animals have been of enormous interest over the last 10 years as it has been realized that the population dynamics, demography, and maybe even evolution of clonal organisms are unusual. At the same time there has been intense interest in the evolution of sex, stimulating a reexamination of asexual re-

production in its many forms. This book does update existing work, such as Bell's *The Masterpiece of Nature* (1982), and provides a few new details, but it is not very synthetic. It is a handy reference book, well-produced and generously illustrated, that provides a useful entree to the literature on clonal organisms, but it does not offer inspiration for future research.

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Some Other Books of Interest

Some Mathematical Questions in Biology.

Sex Allocation and Sex Change: Experiments and Models. American Mathematical Society, Providence, RI, 1990. x, 205 pp., illus. Paper, \$41. Lectures on Mathematics in the Life Sciences, vol. 22. From a symposium, Toronto, Canada, Aug. 1989.

In its history the series of annual symposiums headed "Some Mathematical Questions in Biology" has addressed a considerable range of topics, among them circadian rhythms, muscle physiology, the dynamics of excitable media, and, in this latest volume, the evolutionary biology of sex. As Marc Mangel notes in the preface to the volume, "sexual selection, sex determination and sex allocation have been at the center of evolutionary ecology since its inception," "many key questions remain to be investigated through a combination of empirical and theoretical work," and "questions of sex provide a natural mechanism for . . . allowing plant and animal researchers to focus on similar kinds of questions." The seven papers that follow present and evaluate various models and hypotheses bearing on such questions. In the opening papers M. L. Stanton and L. F. Galloway consider sex allocation in plants and P. Bierzychudek discusses selective factors that favor a sexual mode of reproduction. Among the conclusions reached in these papers are that because "the modular nature of plant reproduction allows an individual's sexual investment to be partitioned in many ways . . . future models may need to adopt a more dynamic view of sex allocation" and that "demonstrations of an ecological advantage for genetically-variable progeny may be scarce simply because they have been so rarely sought." C. M. Lively then presents models designed to assess the cost of biparental sex in a parasitic worm and its implications regarding sexual reproduction in the worm's host, and S. Lessard presents covariance formulas for gene frequencies as an

approach to determining optimal sex allocations. The next two papers deal with animals that undergo sex change, P. S. Petraitis discussing male reproductive success and probabilities of sex transition in a polychaete worm and D. M. Fernandes presenting results of a study concerned with the role of size advantage in sex change in terrestrial slugs. The final paper, by C. W. Petersen, describes tests of local mate competition theory as an explanation for allocation of resources to male and female function in six species of simultaneous hermaphrodites (seabasses).—K.L.

The Cerebral Cortex of the Rat. BRYAN KOLB and RICHARD C. TEES, Eds. MIT Press, Cambridge, MA, 1990. xii, 645 pp., illus. Paper, \$35. A Bradford Book.

In compiling this work the editors have had especially in mind the concerns of behavioral and comparative neuroscientists, and they introduce the volume with a discussion of the history and rationale of the use of the rat as a "representative mammal," noting both the existence of "class-common" features of the mammalian cortex and uncertainties whether class-common and species-typical behavior patterns can be associated with class-common and species-typical cortical features. The volume proper consists of 25 chapters whose authors have been "encouraged to be integrative and to speculate" rather than present details of individual experiments. The opening section is devoted to the organization of the neocortex. In addition to containing, as do all the sections, an introduction by one of the editors, it includes accounts of prenatal and postnatal development (Uylings *et al.*), cyto- and myeloarchitecture (Zilles), neurochemical organization (Zilles *et al.*), and electrical activity (Vanderwolf). Aspects of the motor system are treated by Neafsey, Bures and Bracha, and Whishaw, the last of whom summarizes results of work on decorticated rats. The treatment of sensory cortex includes chapters on visual perception and visuomotor control (Dean; Goodale and Carey), the somatic sensory cortex (Chapin and Lin), and auditory and gustatory cortex (Kelly; Braun). The three chapters on association cortex are all contributed by Kolb. The volume concludes with a set of chapters on cortical plasticity, including effects of gender and environment (Juraska), experience and perceptual competences (Tees), sparing and recovery of function (Kolb), motor plasticity (Castro), and results of neural transplantation (Dunnett). The chapters have individual reference lists, with subject and author indexes rounding out the volume.—K.L.