Book reviews

Parsons, A.: The Evolutionary Biology of Colonizing Species. Cambridge, London, New York, New Rochelle, Melbourne, Sydney: Cambridge University Press 1983. x + 262 pp., several figs. and tabs. Hard bound $ 29.95.

In "The Evolutionary Biology of Colonizing Species", Peter Parsons tries to take up where Baker and Stebbins left off in their 1964 book on the genetics of colonizing species. He does this by emphasizing that physiological and behavioral phenotypes must be assessed against various ecological backgrounds. Parsons uses data from many recent studies to show how they bear, or could bear if taken for the right characters, on qualities that characterize colonize species. Most of his examples involve *Drosophila,* particularly Hawaiian species. Examples involving mammals, other insects, and plants are sprinkled about, but only one chapter of the twelve is devoted to non-*Drosophila.* In this chapter, plants and parasites are lumped together, apparently because both have variable breeding systems that have been linked to success in colonizing new habitats. It is often difficult to see how the studies mentioned really bear on colonizing species (loosely defined as species that invade disturbed and man-made habitats or those taxa which shift with comparative ease into new ecological niches), but the last chapter manages to put much of the book into perspective by asking relevant questions and indicating the kinds of data that answer them. Among weak points of the book are the use of r and K selection and a somewhat slanted presentation or naive concept of the studies of non-drosophilids. On the positive side are the summary of much literature that has probably been overlooked by many scientists who are not ardent geneticists, a useful discussion of hard and soft selection, and an appendix dealing with quantitative genetics.

B. Simpson, Austin

Diercks, R.: Alternativen im Landbau. Stuttgart: Ulmer 1983. 380 pp., 88 figs. (27 color), 68 tabs. Hard bound DM 38,–.

The book differs from many similar publications in some respects. Above all, it regards modern agriculture in Europe without illusions and without bias.

First of all, the author elucidates that the fast development of agriculture in Europe was induced by the development of systematic crop rotation. In the 19th century, the cultivation of fallow land resulted in an increase in livestock numbers; higher amounts of organic fertilizers consequently increased yields. The invention of mineral fertilizers by Liebig, the development of chemical plant protection methods, and plant breeding, all contributed to the further increase of yields. On the other hand, agrochemicals interferred more and more with the natural regulation processes in the agro-ecosystem. Since 1950, human labour has been replaced step-by-step by modern agricultural machinery. This development resulted in a rationalization and specialization of farms. The effects were: a turning away from systematic crop rotations, enlargement of plots, and a diminution of organism numbers and species in the ecosystem. The natural "regulation powers" were further impaired or destroyed. As a result, the applied amounts of pesticides and other agrochemicals for securing high yields were increased. The limits of this development are seen in the following consequences: emergence of resistant and cross-resistant strains of crop pests, toxicological problems, increasing variable costs, and erosion. The author discusses two alternatives: "biological" agriculture and integrated plant production. The former does not use synthetic agrochemicals. But its yields are lower in comparison with the "conventional" farming system, and the input of labour is higher. Therefore, "biological" agriculture needs higher selling prices for its products. The integrated plant production tries to conserve the natural "regulation powers" by means of a suitable land utilization system, but it applies agrochemicals carefully directed and to a small extent for securing a high productivity. Growing crops in the field are controlled by low artificial impulses. This system requires a knowledge of economic harm thresholds, in the cases of weeds, diseases and pests, the existence of dynamical process models, and a good advisory service.

The book was written impartially and comprehensibly. It contains interesting economical analyses, but unfortunately also some small errors in the field of plant nutrition. All readers will find interesting new aspects in it.

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