parental income increases children become more expensive. Under some circumstances the response to this increased cost can be so great that fertility falls when parental income increases. The implications that are derived from the analysis are used to explain a wide variety of fertility behavior.

Chapter 6 concerns the relationship between family background and the opportunities of children. Parents are assumed to have an objective function that takes into account not only their own material standard of living but also the standard of living their children will be able to achieve in the future. The latter is seen as depending on the extent to which the parents invest in a child's skills, the amount of direct monetary transfers from the parents to the child, the child's luck, and the child's "endowment." Concerning the notion of "endowment" Becker writes, "Children are assumed to receive endowments of capital that are determined by the reputation and 'connections' of their families; the contribution of the genetic constitutions of parents to the ability, race, and other characteristics of children; and the learning skills, and goals acquired through belonging to a particular family culture" (p. 117).

The analysis has a number of implications, some of which are discussed in a fascinating section entitled "compensation and reinforcement of differences among children." That section contains the most politically potent result in the book, an explanation of why public compensatory education programs are likely to appear to fail. The result may be simply stated. Public expenditures on some children in poor families "induce parents concerned with equity to redistribute time and other expenditures away from these children" (p. 125), and the resulting redistribution could largely offset the program's benefits for the enrolled child.

Chapter 7 builds on the material presented in the previous chapter to provide a theory of the distribution of income that "incorporates the effects of luck, family background, assortative mating, and cultural, biological, and financial inheritance of the distribution of income" (p. 166). The approach presented unifies the theory of income distribution within a generation and the theory of intergenerational income mobility.

Chapter 8 provides a theory of altruistic family behavior. A person is said to be "altruistic" if his or her well-being depends on the well-being of other people. The chapter contains a number of interesting theorems on altruism and envy. Perhaps the most remarkable is one called the "rotten kid theorem," which relates the behavior of the altruistic person, called "benefactor," and the behavior of possibly selfish people, called "beneficiaries," whom the benefactor cares about. The theorem states: "Each beneficiary, no matter how selfish, maximizes the family income of his benefactor and thereby internalizes [read "takes into account"] all effects of his actions on other beneficiaries" (p. 183). This intriguing theorem implies that in households with an altruistic head there will be little conflict over the strategies for acquiring family income, although there may well be substantial conflict over the distribution of income within the family. The chapter ends with a discussion of why altruism is a common mode of behavior within families but selfishness appears to be the norm in market behavior.

Chapter 9 deals with variations across nonhuman species in reproductive patterns and in mating systems. It is assumed here that natural selection leads to a process where genetic fitness, which is assumed to depend upon both the quantity of offspring and the reproductive value of each offspring (quality), is maximized. The constraints on fitness are specific to each species, but certain regularities can be found. The analysis has implications that provide some insight into the biological underpinnings of variations in reproductive patterns (for example, *r*-strategists and *K*-strategists). The chapter also discusses the relationship between mating systems and reproductive patterns. One finding here is that "monogamy would be common when males contribute significantly to child care if differences between males were not large" (p. 211).

Chapter 10 deals with "imperfect information, marriage, and divorce" (p. 219). It adds a new dimension to the prior analysis by considering the effects of imperfect information on marital behavior. With respect to marriage, the chapter concerns the acquisition of better information through a search process. The analysis of divorce focuses on a concept called the "gain from divorce." An implication of the analysis here is that, other things being held constant, women with higher earnings should be more prone to divorce than those with lower earnings—an implication that is indeed supported by empirical evidence. The analysis is applied to a number of different cases, most important from my perspective the differences in divorce rate between white and black couples in the United States. Becker's formulation provides a sort of insight here that is unique and potentially important for the development of social policy.

The final chapter of the book is entitled "The evolution of the family." It is a nontechnical discussion of some of the implications of the theory for an understanding of the evolution of the family from the form it took in more traditional societies to its present form and to its possible future forms. It is substantive, provocative, and easily accessible to the lay reader. It is worth reading, and I will not give away the punch lines here.

Becker's book is quite controversial. There are those who believe that the family is too complex an institution to be studied with formal mathematical models, and there are others who believe that the sort of economic methodology used by Becker is inappropriate for the study of the family. Yet Becker's volume is to be judged ultimately not on whether people believe in its appropriateness but on the extent to which the theoretical implications are borne out by observation. I suspect we will be reading about the results of various tests of those implications for many years to come.

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Threatened Plants

The Biological Aspects of Rare Plant Conservation. Proceedings of a conference, Cambridge, England, July 1980. HUGH SYNGE, Ed. Wiley-Interscience, New York, 1981. xxviii, 558 pp., illus. $71.50.

This collection of 42 papers approaches the subject of plant conservation in a variety of ways. The papers range from reports of restricted local studies, such as that of a reserve of a fourth of an acre for single species of *Ranunculus* in England, to presentation of broad generalizations about the fate of the world's tropical forests. There are subjects pertaining to temperate and tropical countries treated by authors with various geographical experience.

The papers are grouped into six sections, the first of which includes 11 papers on survey and assessment of rare and threatened species. After a general paper on the work of the Threatened Plant Committee of the International Union for Conservation of Nature and Natural Resources (IUCN) by G. Lucas and H. Synge, examples are given from the United States, India, the Soviet

Union, New Zealand, Australia, Sweden, West Germany, and England. This section concludes with an important chapter on lower plants. This reports a panel discussion between several symposium participants in which it is concluded that cryptogamic plants have been neglected and that their conservation must proceed through conservation of good habitats for them.

The second section contains four papers on tropical forests that reiterate the now-familiar theme of the desperate plight of this habitat. Ashton emphasizes the need for biological and demographic study and appeals for an integrated system of inviolate reserves. Tracey reviews the types of rain forest of Australia and points out that only a fourth remains, and Dransfield provides interesting biological data about the rattan palms. Threats to economically important plants that are subject to over-exploitation and whose preservation poses special problems are often neglected in books on conservation.

Section 3, Understanding Rarity and Monitoring Rare Plant Populations, treats various local examples and has two outstanding theoretical discussions of rarity by Harper and Rabinowitz. This section contains the newest information for conservation in this volume.

Section 4 consists of ecological studies of rare plants, including case studies from the British flora, two from South Africa, and one from Ghana. Information on individual species can often be more widely applied elsewhere. It is good to see population biology techniques discussed in a conservation symposium, as in a paper by Wells on orchids. Hartmann's good paper on Mesembryanthemaceae introduces data from leaf anatomy and anatomical adaptations to different environmental conditions. Ward discusses *Juniperus communis* in Britain and provides data on predation by rabbits and arthropods. Consideration of predators and plant-animal interactions is most important for conservation, and there is relatively little on the subject in this book. Boucher's paper on *Orothamnus zeyheri* from South Africa treats pathogens, representing another important interaction. He discusses the threat to the survival of the species presented by pathogenic fungi.

Section 5 contains three papers on introductions and reintroductions in Britain, and section 6 has seven papers about protected areas for plant conservation. The last section has mainly examples of conservation areas and organizations in Britain and the United States, and one paper on nature reserves in Yugoslavia by Godich and one on phytosociological parameters for the definition of conservation areas by Medwecha-Kormas.

Three appendixes contain short notes and abstracts of additional papers received, a useful bibliography of Red Data Books and lists of threatened plants, and the IUCN Red Data Book categories.

This volume is broad in its coverage and furnishes some new data and ideas. Emphasis on species rather than habitat preservation is apparent. Profits from the sales will go to the Fauna and Flora Preservation Society to support plant conservation projects, so the purchase of the information contained in this volume will have the practical value of contributing to conservation. It is a volume that all plant conservationists should own.

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Protozoology

Parasitological Topics. A Presentation Volume to P. C. C. Garnham, F.R.S., on the Occasion of His 80th Birthday, 1981. ELIZABETH U. CANNING, Ed. Published for the Society of Protozoologists by Allen Press, Lawrence, Kans., 1981. viii, 290 pp., illus. Paper, $35. Society of Protozoologists Special Publication No. 1.

The first part of this volume reviews the life and outstanding work of P. C. C. Garnham, whose varied topics of study include relapsing fever, plague, yellow fever and other viral maladies, and especially protozoan infections of animals and humans (*Leishmania*, Coccidia, Haemosporidia), which remains his topic of predilection. This part of the volume includes a list of his 305 publications, dating from 1922 to 1981.

The second, much larger, part of the book contains 41 papers covering a broad spectrum of topics. The underlying homogeneity in the volume is that almost all of the papers concern subjects that Garnham has studied or encouraged others to study. There are papers on taxonomy, parasitic life cycles, the physiology of parasites and their vectors, biochemistry, parasite genetics, immunology, the behavior of infected hosts, epidemiology, and parasite ecology.

The taxonomic papers are worth emphasizing. New genera, subgenera, and species are described in papers on *Encephalitozoon* (Elizabeth U. Canning), *Novyella* (A. Gabaldon and G. Ulloa), *Cyrilia* (R. Lainson), *Hepatocystis* (Irene Landau), and *Haemaphysalis* (H. Hoogstraal and Hilda Y. Wassef). There are also papers redescribing species and others on general classification.

A second important topic discussed in several papers (W. E. Collins *et al.*, A. Corradetti, and L. H. Schmidt) is that of relapses in certain malarial infections in humans and other animals. These papers deal with the latest hypotheses on dormancy of hypnozoites in hepatic cells, which although quite probable are still contested by some authors.

Thus, in spite of the great diversity of topics treated, the volume is of interest to all parasitologists and illustrates to what extent the works of Garnham have been decisive in many sectors of parasitological research. It also shows the influence Garnham has had and still has on the directions of research, notably that on *Plasmodium*. The large number of papers on comparative parasitology is demonstrative of his ability to share with his students and friends his enthusiasm for fundamental biology.

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Epithelial Electrophysiology

Ion Transport by Epithelia. Papers from a symposium. STANLEY G. SCHULTZ, Ed. Raven, New York, 1981. xviii, 270 pp., illus. $32. Society of General Physiologists Series, vol. 36.

Our understanding of the mechanism of ion and fluid transport by epithelia has been limited by the apparent diversity of these tissues as well as by our lack of knowledge of the details of the intraepithelial transport events. As evidenced by the papers in this book and the lively discussions that follow each from the symposium of which the book is the proceedings, general principles of epithelial transport have emerged. Common systems for ion absorption have been identified in intestine, kidney, and gallbladder; secretion of salt and water seems to occur by the same mechanism in the tracheal epithelium of mammals as it does in the rectal gland of the shark. Given this commonality of transport mechanisms, investigators are free to study similar processes in any of several tissues, with the choice being determined by the specific requirement of the experiment.

Significant advances in the analysis of