goguery to shift from a very favorable comment about the distribution of "free oranges daily" among children in Moscow nurseries and kindergartens to several paragraphs about the prevalence of handicaps and disorders among the children of the disadvantaged in the United States, however regrettable these may be.

Apart from these issues, the book is quite readable, and the text is enhanced by photographs of Soviet children and by reproductions in color of ten agitation posters extolling the principles of model Young Pioneer behavior. But they remind us that Bronfenbrenner has not given us evidence bearing on his apparent conviction that American youth groups are mainly antisocial. And he doesn't show any pictures of the Boy Scouts.

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Festschrift in Biology

Essays in Evolution and Genetics in Honor of Theodosius Dobzhansky. MAX K. HECHT and WILLIAM C. STEERE, Eds. North-Holland, Amsterdam, and Appleton-Century-Crofts, New York, 1970. xviii, 594 pp., illus. $16. A Supplement to *Evolutionary Biology*.

The reviewer of a festschrift is in the position of a wedding guest required to comment objectively, and publicly, on the quality of the gifts. Perhaps this is why the volume in honor of Theodosius Dobzhansky has found its way to my remote trans-Atlantic desk.

Let me say at once that these essays add up to a fine gift indeed. They are nicely produced and elegantly wrapped, and if the contents of a few do not attain the standard of the packaging we must charitably remember the parable of the widow's mite. They are a timely and well-deserved tribute to one of the great names in evolutionary biology.

The first essay, "Theodosius Dobzhansky up to now," gives us some fascinating insights into the man behind the name. Its bibliography shows that at the age of 70 Dobzhansky publishes 20 papers a year and that his average productivity is still rising. The authors of the essay give an unconscious example of Dobzhansky's enormous influence when they discuss his discovery, in 1943, of seasonal fluctuations in the frequencies of *Drosophila* inversions. They state that "up to 1943 it was generally believed that the action of natural selection was so slow that no visible change could be detected in a lifetime, except perhaps when man had radically changed the environment." If this was true, it was so despite the work of Bumpus, di Cesnola, Dubinin, Fisher, Ford, and Timofeef-Ressovsky. Dobzhansky's observations must have convinced the world when others did not. If it was not true, the authors have fallen into the common trap of attributing too much to one great man, like undergraduates who think that Darwin invented evolution.

The two essays that follow this biographical sketch deal with philosophical subjects. The first, by G. G. Simpson on "uniformitarianism," provides a characteristically clear historical account of the wordy and complex pathways of geological theory. The second, by B. Rensch on the evolution of consciousness, is an example of what Simpson calls a "semasiological morass." Its conclusion, italicized for extra emphasis, is that "human thinking, successively developed phylogenetically, is a part of the reality of the entity." This delicate point is reached by a long series of apparent illogicalities. I hope that there have been errors in the translation.

The remaining essays bring us firmly down to earth. There are useful reviews by E. B. Spiess on the genetic basis of mating propensity in *Drosophila* and by G. L. Stebbins on variation and evolution in plants. F. Ayala neatly shows that the classical Lotka-Volterra equations do not adequately describe the competitive interactions between experimental populations of *Drosophila pseudoobscura* and *D. serrata*. M. J. D. White examines the occurrence of polymorphism in parthenogenetic animals and argues that in some situations parthenogenesis has been favored because it preserves heterozygosity. White's essay illustrates the need for surveys of protein polymorphisms in parthenogenetic forms.

E. B. Ford and his colleagues, bringing up to date their studies on the "boundary phenomenon" in the butterfly *Maniola jurtina*, report some of the most extraordinary observations in the history of population genetics. The number of spots on the hind wing of female *M. jurtina* varies from one to five. Throughout most of Britain different butterfly populations show similar distributions of spot numbers. In Cornish populations, however, there are relative deficiencies of single-spotted individuals. The change from the "English" to the "Cornish" spot distribution takes place literally within a few yards despite the apparent absence of any barrier and despite the widespread uniformity of populations on both sides of the boundary. Even more remarkably, the position of the boundary alters from year to year, sometimes by as much as 40 miles. Consequently the offspring of individuals showing the "English" distribution may develop the "Cornish," and vice versa. Ford and his colleagues categorically attribute these phenomena to the effect of powerful but unknown forces of natural selection. Their argument depends upon an experimentally observed heritability of about 75 percent for spot numbers in female *M. jurtina*. It is well known, however, that heritabilities measured in the laboratory are likely to overestimate the genetic component of variation in the field. Furthermore, the experiments used material from the Scilly Islands, rather from the region of change. It seems possible that this region represents a zone of hybridization between two races of *Maniola*, and that the individuals within it are particularly prone to developmental instability. Until this alternative explanation has been excluded, the conclusions of Ford and his colleagues must be treated with reserve.

The outstanding paper in the collection is an essay on the evolution of Hawaiian *Drosophila* by H. L. Carson, D. E. Hardy, H. T. Spieth, and the late W. S. Stone. Published alone it would be a powerful tribute to Dobzhansky, illustrating the many elegant uses to which his techniques can be applied. By means of a combination of comparative anatomy, comparative ethology, comparative ecology, and, in particular, comparative chromosomal morphology, the authors have begun to make sense out of the enormously complex and interesting evolutionary situation found among the 700 species of Hawaiian drosophilids. Their paper is too long and too full of good things for me to summarize, but it provides a fitting climax to the festschrift. In reading it you can join the multitude of people (this reviewer included) who wish "Happy Birthday" to Theodosius Dobzhansky and who look forward to the (extrapolated) 30 papers a year in 1990.

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