Reviews

Behavior

SOCIOBIOLOGY: THE NEW SYNTHESIS, by Edward O. Wilson. 1975. Harvard University Press (Cambridge, Mass. 02138). 697 p. $20.00 hardback.

This is one of the most thought-provoking of the scientific books to be published this year. Wilson proposes to investigate the *possibility* that the evolution of human behavior in society is a direct result of the relation of genetic structures to environmental pressures. The synthesis referred to in the subtitle of the book is that of biology and sociology. Wilson examines three major aspects of biology: (i) population genetics, with emphasis on the identification of genetic characteristics that equip individual organisms and populations to function in a unit or social group, (ii) social behavior—communication, territoriality, sexual and parental behavior among species and populations, and (iii) evolutionary ecology—habitat adaptations which exert a selecting pressure causing the evolution of specific adaptive behavior patterns in a society and contributing to the survival of the population.

The book is meticulously researched. The three sections abound in compilations of experimental evidence. Wilson is an eminent entomologist and much of the experimental evidence cited in the book comes from research in entomology done by him and his associates at Harvard. To this he adds literally hundreds of references of studies in other specialities, ranging from microbiology to primatology. The bulk of the work cited was done in the last 15 years, much of it since 1970. The three major sections are beautifully organized, profusely illustrated, and can be read individually as reference studies of their subject areas.

However, the book is much more than just another scientific study of the evolution of behavior. The uniqueness of Wilson's book is in the central thesis of synthesis—that the social behavior of organisms in a society is due to and can be studied as the modification of genetic endowment for population survival under evolutionary selective pressure. He suggests that habitat adaptation controls behavior and that social evolution, the progressive development of increasingly complex social units is governed by habitat adaptation.

No one would take exception to this thesis, had the author not included man. Wilson takes an intellectual quantum leap—he proposes to show that social behavior in man has a genetic basis. The evolution of society has traditionally *not* been a subject of quantitative scientific study. There is no eyewitness record of the history of man's social evolution over the last four million or, if you will, over the last ten million years. It is all inference. Wilson proposes to explore this history in the scientific synthesis of the three areas he examines—to quantify evolutionary anthropology. He is well aware of the difficulties this presents. In a discussion of the evolution of animal communication, he states:

"Social behavior comprises the set of phenotypes farthest removed from DNA" and later, in the concluding chapter, he calls for a new field of study: "a discipline of anthropological genetics."

In this last chapter which relates biology to sociology, the author takes the step from scientific study to speculation: "Suppose, for example, there are two classes [in a society], each beginning with only a 1% frequency of the homozygote of the upwardly mobile gene." An upwardly mobile gene! That is an interesting supposition, indeed, but we have no evidence to date, nor does Wilson provide us with any, that such a gene exists.

Most controversial and most disturbing, especially to teachers of biology who have begun to stress the scientists' social responsibilities, is Wilson's call on page 562: "Scientists and humanists should consider together the possibility that the time has come for *ethics* to be *removed temporarily* from the hands of the philosophers and biologized." It is dangerous to say that biologists should have a monopoly on truth and ethics. The study of the evolution of society ought to be the province of both biologists and humanists—working together.

Wilson concludes the book with a discussion of the future. He states explicitly that a thorough, scientific examination of behavior must wait until molecular biology has attained a full explanation of neuronal processes. He emphasizes that only when we can understand the biophysics of judgment and emotion can we begin to study the evolution of man's social behavior.

To summarize, this is an important book, beautifully researched and beautifully organized. Its language is complex and technical. It should be read—carefully—by all science teachers, indeed, by all scientists and sociologists. Wilson writes well; he provides an excellent glossary of terms used; the many references to current publications are immensely valuable. The reader is left richer in knowledge, whether he agrees with the author's central thesis or not.

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THE VAMPIRE BAT: A FIELD STUDY IN BEHAVIOR AND ECOLOGY, by Dennis C. Turner. 1975. Johns Hopkins Press (Baltimore, Md. 21218). 155 p. $12.00.

This book is an account of an 18-month study of bats on a large ranch in Costa Rica. It is, in fact, a doctoral dissertation, but it is fascinating reading. The focus of the study is the predator-prey relationship between vampire bats and cattle, but many other related rami-