Book Reviews

Unitary principle in physics and biology. Lancelot Law Whyte. New York (10): Henry Holt, 1949. Pp. xxiii + 162. $3.50.

The development of fundamental sciences during the first half of the present century was characterized on one hand by clarification of basic principles underlying physical phenomena (relativity, uncertainty, elementary particles), and on the other by much deeper insight into basic phenomena from the realm of biology (interpretation of genes and viruses as single molecules, etc.) which gives us promise of understanding the phenomena of life on a purely physical basis. This led recently to a much closer collaboration between physicists and biologists, and induced many theoretical physicists (for example, E. Schroedinger) to attempt an extension of the well-developed methods of physical theory into the virgin field of fundamental biology. Although, as could well be expected, the development of the theory of organic matter still represents tremendous difficulties, one can hope that further experimental studies of elementary biological phenomena, and more extensive work on their interpretation in the language of molecular physics, will lead in the future (maybe not so distant) to the complete solution of the ancient riddle of life.

That is why one witnesses with a deep chagrin the appearance of such books as one by Lancelot Law Whyte who claims to be able to turn upside down both physics and biology, and to arrange them into new order on the basis of a newly invented philosophical (in the bad sense of this word) principle of "unitarity."

It is hardly necessary to discuss in any details the contents of this book, which will be quite unacceptable to all physicists (even to those possessing a great sense of humor), and of little help to any biologist. Thus we will give only a few quotations typical for the entire presentation. The "Unitary Principle" from which all laws of physics and biology are to be derived reads:

"Asymmetry tends to disappear, and this tendency is realized in isolable processes." In applying this principle to physical phenomena, the author comes to a number of conclusions which, according to him "*offer a challenge to the theoretical physicists* either to justify them by quantitative confirmation, or to show that they contradict established facts." Here are two examples of such conclusions: "Atom is a stable pattern with one center of (latent) symmetry." "Electronic current (at temperatures not close to absolute zero) is a continued induction, by a chemical source of polarization, of an extended state of polarization (in a conductor) which continually collapses into disordered molecular polarization."

Having revolutionized physics by these and other similar statements, the author turns to biology and defines, for example, a green plant as: ". . . a continuous process of local chirol fields stabilized by hereditary units and supported by stationary structures conforming to an external axis."

Not being a botanist, the reviewer is unable to judge the merits of this definition.

The quotations are sufficient commentary on this book.

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Factors of evolution: The theory of stabilizing selection. I. I. Schmalhausen. (Theodosius Dobzhansky, Ed.; I. Dordick, Trans.) Philadelphia: Blakiston, 1949. Pp. xiv + 327. (Illustrated.) $6.00.

Although its dust jacket calls *Factors of evolution* the "first full discussion of new contributions to evolution in more than a decade," it fails to show any advantage of its recency. It was written six years ago, but the bibliography does not cite any non-Russian papers after 1940, and only a few Russian ones. However, a large body of data from the USSR is revealed, and most biologists should find a number of interesting notes on work in their own field.

This book is directed toward establishing the separation of natural selection into a dynamic role and a stabilizing one. Those factors which tend to change the average phenotype of a population are considered dynamic, while those which tend to preserve the population within a narrow range of variation are considered stabilizing. Schmalhausen focuses attention on that group of factors which have the effect of stabilizing the genetic and morphogenetic systems of organisms, and which, together with the elimination of harmful mutants, form the basis of stabilizing selection.

A broad background of work in genetics is used as an introduction to the book, followed by a discussion of natural selection and its consequences, and then a section on the evolution of morphogenetic reactions. The concluding section consists of a discussion of the factors involved in rates of evolution. In each case the facts are selected to fit into the general picture of stabilizing selection, little attempt being made to present a discussion of the whole field of evolution.

The main value of this book will undoubtedly be in the intensive discussion and work it will generate. This is because the number of interesting ideas presented is large, but often the evidence for them is sufficiently meager or the interpretation sufficiently questionable to warrant much further investigation. The publisher's suggestion for using the book as a text, or its use for any general purpose, should find little acceptance. The language is difficult and often obscure. Readers with a general knowledge of taxonomy or genetics will discover many errors and inconsistencies.

It should be noted that Schmalhausen's ideas come from within the framework of Mendelian genetics. Throughout the book the discussion of the roles of en-