dimensions,'' should engender lively discussion. Perhaps ''the methods employed by bacteriologists rather than the biological material'' are defined by the microscopic size of the bacteria which impose certain physical and chemical characteristics, rather than the biological material.

In speaking of the phylogeny of bacteria, if we accept with the author the principle of ''retrograde evolution by loss of certain characters,'' one may beg the question in reasoning that heterotrophs preceded autotrophs. The latter possess so many physiological abilities, e.g. formation of vitamins and enzymes, that the argument works both ways, and no conclusion is reached. Apparently we have not determined what are the essential losses which constitute ''retrograde evolution'' or ''loss variation.''

Until the Twentieth Century bacteriology was a science of new forms of life without much regard to activities. The great productivity era in bacteriology came with the realization that bacteriological phenomena constitute events of great importance to man—transformation of organic matter and parasitism. During the past few decades the problems of bacteriology have been stated in terms of the classical sciences and of the prevalent biological, physiological, and biochemical philosophies. Dubos points out that much of our theoretical knowledge was a by-product of the solution of practical problems by empirical methods, and examples are given of the practical advantage of theoretical knowledge, e.g. development of vaccines, therapeutic sera.

Bacterial specificity is discussed from the point of view of its various levels, *i.e.* strain, species, genus, etc., and of its type, *i.e.* immunologic, enzymic, structural, or biochemical.

The author points out that a too narrow interpretation of the dogma of the fixity of bacterial species led to a neglect for nearly 50 years of one of the most intriguing and important characteristic properties of the bacterial cell, namely, its ability to undergo environmental and hereditary transformations. Final recognition of this phenomenon suggested powerful and original techniques for the study of cellular organization and provided new points of view which define the place of bacteriology among the biological sciences.

Pertinent to the systematic chaos occurring in the classification of bacteria is the statement to the effect that in the description of bacterial groups (e.g. species) descriptive characters are used which are precisely those that have been found to undergo variation. It seems likely that the progress of bacterial taxonomy and the study of evolutionary trends among bacteria will require that cultures be described in terms of their multiple potentialities and not of an accidental phenotype.

The chapters are well organized and interestingly written. The reviewer appreciated particularly the author's discussions of bacterial variability (Chap. V) and bacteriostatic agents (Chap. VIII). This book is essential to bacteriologists, biochemists, and biologists.

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