gro population. Most of the Creole form has been lost, but Stewart is able to present evidence that some of the grammatical variants of Negro dialect derive from Creole roots. He suggests that additional research may provide further evidence of the influences of pidgin English, Creole English, and also African language sources.

Other authors in this volume take less extreme positions or at least argue less forcefully on the two sides of these issues. In many cases the obvious implications for education are discussed. If the child is deficient then we must change the child but if the child is different then we must change our educational procedures. It is perhaps easier to attempt the former, as in the case of programs such as Head Start, but we may be more likely to achieve success if the latter approach is tried. In any case, this volume presents the issues in a form which is easy to read and enables nonspecialists to become acquainted with the questions and some answers. The final chapter provides an annotated bibliography of about 200 references for those who wish to dig deeper.

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A Recognition

Of Microbes and Life. Les Microbes et la Vie. JACQUES MONOD and ERNEST BOREK, Eds. Columbia University Press, New York, 1971. xx, 312 pp., illus. $12.50.

The practice of recognizing the merit, the contributions, and the place of eminent individuals in the development of our scientific culture has obvious importance. Volumes intended to provide such recognition have taken many forms. In the volume under review, a festschrift for André Lwoff, an extraordinary opportunity was available not only to honor a scientist of exceptional breadth and vision but to collect the thoughts and the perspectives of many who have themselves done much to lead and to fashion the development of some of the most important fields of science during the last 50 years. For the career of André Lwoff has spanned this exciting half-century. During this time he has managed to achieve world eminence in at least four separate fields, and to rub shoulders with many in other, related fields. Because of this, and because of the notable students and colleagues he has been able to attract around him, Paris, the Pasteur Institute, and André Lwoff have for many years been a mecca for foreigners from all over the world eager to partake of the ambience and to learn from the founts of knowledge and wisdom.

The list of contributors and contributions to this volume commemorating Lwoff's 50 years in science reads like a who's who and what's what. It is indeed rare to find a book that includes articles written by scientists of eminence in such a wide spectrum of fields and covering such a range of subjects. Such a book might have provided a chronicle, an overview, a philosophical perspective of some of the most important advances in microbiology that have occurred in the last 50 years. This is certainly what the editors had in mind when the book was conceived, but unfortunately, for reasons unknown, this goal is not achieved.

The editors have been very successful in collecting essays, articles, or reviews from a majority of those who have known André Lwoff well and who have worked with him. But they have not succeeded in developing a theme for the book, let alone the theme originally envisaged. The articles are extremely heterogeneous in content and in tone, and, as far as can be seen, little attempt has been made to relate them to each other. Some, such as those of François Jacob, Pierre Schaeffer, Niels Kjeldgaard, and Georges Cohen, are personal in nature and manage to reflect the respect and the devotion of the authors for "the patron." They also serve to provide a personal historical perspective of the ambience around Lwoff's laboratory and examples of the catalytic effect Lwoff has had on the development of others' careers. Other articles, such as those of Max Delbrück and Salvador Luria, are more philosophical, reflecting some of Lwoff's "outside" interests.

Some contributors have indeed attempted a general speculative and historical view of an area of biology of particular interest to themselves and to Lwoff. In this vein Seymour Cohen presents some interesting thoughts on the autonomy of mitochondria and chloroplasts, E. F. Hartree discusses the relationships of lysosomes and fertilization, Fazekas de St. Groth speculates on the place of antigenic variation of influenza viruses in disease, and Roger Stanier and Martin Pollock deal with particular aspects of evolution.

The volume includes papers more closely allied with the present scientific interests of the authors. Bernard Roizman's review on herpesviruses, man and cancer is both comprehensive and thoughtful, and L. Barksdale and A. Pappenheimer present an excellent perspective on the present situation in the field of diphtheria toxin.

Perhaps the article that comes closest to what I would consider should have constituted the theme of a commemorative volume for Lwoff is that by Jacques Millot, who was associated with Lwoff during his earlier years in science. Millot manages to evoke the spirit of the times, the atmosphere that prevailed around Lwoff and his colleagues at Roscoff and Banyuls, and the personality of Lwoff, while at the same time providing a view of developments in protozoology that were occurring at that time. Would that the other papers in the book had continued in this vein, so as to encompass Lwoff's associations, his leadership, his visions, and his contributions to the development of understanding of "facteurs de croissance," lysogeny, and temperature regulation of animal virus growth.

As it stands, the book will certainly be of interest to those who know Lwoff and who have known Roscoff, Banyuls, or "the Pasteur," for the personal touch is always there, the respect and love for André. For the general reader, it will be necessary to pick and choose from what seems at first glance a myriad of subjects and approaches. He will find it difficult to place all of this in proper historical perspective. All the more regrettable because of the grandeur of the man being honored and because he himself certainly could give us the overview we would like to have.

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Physics: Historico-criticism

Mach's Philosophy of Science. J. BRADLEY. Athlone, London, 1971 (U.S. distributor, Oxford University Press, New York). xii, 226 pp., illus. $13.

Ernst Mach (1838–1916), physicist, mathematician, philosopher, and historian (to list only the subjects he professed ex cathedra), is perhaps best known for his insistence that physics should aim solely at an economical description of the facts, avoiding quan-

tities not directly measurable and, in particular, the illustrative mechanical models esteemed since the time of Descartes. Mach's most influential work, his "historico-critical" *History of Mechanics*, tries to show that our fondness for such models rests mainly on historical accident and that thereby much that is useless and even harmful has crept into science. As examples of expendables Mach pointed to the structured atom and the theory of relativity.

In the book under review Bradley gives an appropriately economical exposition of the elements of Mach's philosophy and of the chief products of his historico-criticism. Among the latter, Mach's celebrated interpretation of Newton's "laws" of motion, his analyses of inertia and of time, his electrical analogy to Carnot's engine, his temperature clock, and other ideas can still be studied with profit and even with excitement. Bradley's exposition ought to be easily intelligible to advanced undergraduates. He has simplified here, extended there, and not hesitated to criticize—with the help of Campbell, Braithwaite, Popper, *et al.*—what he finds faulty in Mach's philosophical position. One regrets that his vigilance did not extend to the historical order. Mach studied the history of science in order to prove a point; he not unnaturally exaggerated and distorted, as recent historiography amply demonstrates. Bradley ignores this literature, follows and sometimes embroiders Mach, and occasionally slips from criticism into mythology.

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American Prehistory

Archaeological Survey in the Lower Yazoo Basin, Mississippi, 1949–1955. PHILIP PHILLIPS. Peabody Museum of Archaeology and Ethnology, Cambridge, Mass., 1970. In 2 parts. xxviii, 1000 pp., illus. Paper, $30. Papers of the Peabody Museum, vol. 60.

As archeological research in the eastern United States began to expand in the 1930's, a joint endeavor of three large universities saw the initiation of an intensive survey of the prehistoric sites of the Lower Mississippi River Valley. This impressive two-volume study is another in the series of reports that have resulted. The author, long associated with Harvard Peabody Museum, has been actively interested in the area since before 1940, and no scholar has a greater grasp of the details of the prehistory of the Mississippi Valley from the mouth of the Ohio River to the Gulf. The Lower Yazoo Basin is a small part of the great valley and its tributaries, but it is a highly significant cultural hearth in the total prehistory of the area.

This monograph represents the accumulation of survey and field data plus laboratory analyses that were begun about 1950. Part 1 is concerned with the method and theory involved, with the description of the pottery types, and with the location and situation of the sites that are the basis for the study. Part 2 is devoted to the site excavation program and to the delineation of the various cultural periods that the author could establish on the basis of this information.

In the Mississippi River Valley, from the Great Lakes to the Gulf, the prehistoric residents evolved several great pottery traditions, and the near-imperishable fragments of these vessels constitute the tools of the archeologists who attempt to unravel the relationships or even the methodologies used. In an introductory section of part 1, Phillips briefly but masterfully treats of the problems relating to ceramic typology. He not only sets forth what has been done in the past but clearly states why he has selected some of the arbitrary types that he uses. Phillips is an advocate of a method of viewing aboriginal pottery called the "type-variety concept." He describes a basic type according to mode of manufacture and decorations, then uses all the local deviations from that type as variants or regional manifestations. These nuances of manufacture enable judgments of geographic spread of ideas about pottery making. However, Phillips is careful to state that he does not think analyses of potsherd collections from archeological sites will ever "tell us very much about cultural and social behavior." His pottery types and their recognized varieties have been selected from "an endless number of possible variations," but they are ones judged "to reveal significant relationships."

There is much written today about the "New Archeology," as though the old archeology were rather pedantic and useless. What is implied by the former is that the archeological data are directed to illumination of the total lifeway of a people. The New Archeology does not reject "data" per se, but it exalts the statistical treatment of information in order to make possible a greater confidence in the conclusions drawn. This work represents a happy blending of the old and the new. It is in part a compilation of raw data—field results from excavations—that probably will not be surpassed and will but rarely be approached again in American archeology. The information from the 157 sites studied is a data bank usable for generations to come. Although the author denegates archeology as history and purports to be doing "science," the work is that of an artist. It is distinguished by the individualistic manner in which he handles the materials. In his particularistic style, he shares with other scientists his interpretations of the data. Happily his style is highly literate and embellished with touches of lightness that encourage the closest reading.

The detailed descriptions of the pottery types will serve as a guide and catalog for archeologists working in the Lower Mississippi Valley for many years to come. No area professional's library can be without these volumes. Students of the development of archeology in the eastern United States will read with profit the evolution of many of the ideas embodied in this study.

Even a brief perusal of the volumes gives one an indication of the tremendous amount of labor involved in their preparation. The hundreds of illustrations enhance the site reports and the beautiful plates of the pottery types make them invaluable. But ultimately the great value of this work is in the philosophical treatment of many of the fundamental ideas involved—the nature of theory in archeology, the validity of typology, and the reconstruction of regional chronologies. This publication will be the foundation and fountainhead of many future works on the archeology of the southeastern United States.

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Books Received

Actions Chimiques et Biologiques des Radiations (The Chemical and Biological Actions of Radiations). Quinzième série. M. Haïssinsky, Ed. Masson, Paris, 1971. 216 pp., illus. 120 F.

An Advanced Organic Laboratory Course. Melvin S. Newman. Macmillan,

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