American Languages

The Languages of Native America. Historical and Comparative Assessment. LYLE CAMPBELL and MARIANNE MITHUN, Eds. University of Texas Press, Austin, 1979. vi, 1034 pp. $22.50.

At the time when Columbus landed, several hundred American Indian languages were spoken in North America, and probably even more in South America. These soon became topics of serious interest to Europeans, as Spanish missionaries in Mexico and Peru began to produce descriptive (synchronic) studies—that is, grammars and dictionaries—for languages such as Aztec and Quechua; somewhat later, we have parallel efforts in the English-speaking colonies, beginning with Roger Williams's grammar of a New England Algonkian dialect. It was soon apparent that, although some Native American languages clearly bore family relationships to others, a number of independent families had to be recognized; for example, no significant similarities are apparent between the Algonkian and the Iroquoian families. In the 19th century, efforts at historical (diachronic) studies of American Indian languages were begun, aimed particularly at classifying languages into groups that could be defined "genetically," that is, as derived from a common parent language (as French, Spanish, and Italian are derived from Latin). The landmark work that resulted in 1891 was produced mainly by the ornithologist H. W. Henshaw, under the direction of the geologist J. W. Powell: a classification of the languages north of Mexico into 58 families. This was, in general, a conservative classification. In the 20th century, initially under the leadership of the anthropologist Franz Boas, more and better synchronic data have become increasingly available; and diachronic scholarship has been concerned, first, with the "lumping" of families into bigger groupings—the largest of which have been called "phyla" or even "macrophyla"—and, more recently, with a certain amount of "splitting" to correct the excesses of earlier lumping. The present volume—based on papers given in a conference at the State University of New York at Oswego in 1976—is, above all, a history of research on the genetic classification of North American languages and a survey of current opinion in the field.

The scholarly study of American Indian languages has been generally recognized as having two types of broader relevance. First, since these languages present a wide range of very diverse linguistic structures, and a similarly interesting range of diverse associations between language and nonlinguistic culture, synchronic study of them has provided a laboratory in which scholars could refine their techniques for recognizing unfamiliar structures and test their hypotheses concerning universal characteristics of human communication. Second, their diachronic study, specifically the recognition of genetic relationships and the reconstruction of features of prehistoric languages, ancestral to those known in historic times, has made available much information that, in combination with archeological findings, can yield insights into the early history of humans in the Western Hemisphere, and so into human history in general. Against this background, it must be recognized that the contents of the volume under review are circumscribed in several ways. First, in spite of the "America" of the title, the book is limited to North (including Central) America. Second, as the subtitle indicates, the book is concerned only with diachronic study. In fact, its coverage is still more limited. First, one prominent type of diachronic relationship—the borrowing of words or of structures between languages (which may or may not be genetically related)—is seriously neglected. Thus the phenomenon of the "linguistic area," in which structural borrowing results in convergence of neighboring but genetically distinct languages—and may, indeed, totally block attempts to recognize genetic groupings—receives only brief attention; and Joel Sherzer's important book, *An Areal-Typological Study of American Indian Languages North of Mexico* (1976), is not even cited. Second, the relevance of historical linguistic findings to the broader field of American Indian prehistory is seriously slighted in most of the volume—although coeditor Campbell, in his chapter on "Middle America" (that is, Mexico and Central America), reports his own valuable findings on the prehistory of that region. What this book contains, then, is 19 state-of-the-art reports, by 15 authors, on the genetic classification of North American native languages—organized partly by geographical areas and partly by putative genetic groupings—with some details on linguistic reconstruction in the better-studied families such as Algonkian and Iroquoian.

The work invites comparison with another bulky collection of American Indian linguistics published not long ago under the editorship of Thomas Sebeok—first divided between the two volumes constituting volume 10 of *Current Trends in Linguistics* (1973) and later reprinted as *Native Languages of the Americas* (1976). The Sebeok compilation covers synchronic as well as diachronic fields, but many of its sections are mainly surveys of the literature. In Campbell and Mithun's volume, some chapters cover much the same ground as the earlier volume, with updated bibliographies; other chapters, however, present very welcome original research, such as a historical phonology of Northern Iroquoian by Mithun, or Ives Goddard's meticulous survey of the mysterious and long-extinct languages of southern Texas and the lower Rio Grande. Unfortunately, neither Sebeok nor Campbell and Mithun have provided us with something that has long been needed: a modern textbook of American linguistics, such as exists in German (Heinz-Jürgen Pinnow, *Die nordamerikanischen Indianersprachen*, 1964) but has not yet been written in English. The present volume also differs from Sebeok's in reflecting the increasing pendulum-swing from lumping to splitting in language classification. In 1929, Edward Sapir proposed that all languages north of Mexico could be put into six groupings. By 1964, a conference chaired by Carl and Florence Voegelin proposed 15 groupings, including several "isolates"—languages for which no genetic affiliations could be seen. The Sebeok compilation of 1973 did not seriously challenge that system; but Campbell and Mithun, in their introduction, now present a position "more conservative than any since Powell" (p. 37). In fact it might be called slightly more conservative than Powell's system, since it counts 59 genetic groupings (with a larger number of isolates), where Powell had 58. Campbell and Mithun suggest that they are presenting "an encapsulation of current received opinion" (p. 39); however, I doubt that any overall view is yet well enough established to be called "received." Thus Campbell and Mithun withhold endorsement of Sapir's "Ho-

kan" and "Penutian" groupings, or even of his narrower "California Penutian"; but they include a chapter on "Hokan inter-branch comparisons" by William H. Jacobsen, Jr., who speaks of "the Hokan family" as "rather comparable to Indo-European in its time depth" (p. 545), and a chapter in which Michael Silverstein states that "California Penutian . . . is established or at least virtually certain" (p. 675). On the whole, the book shows too much insistence on genetic pigeonholing, whether of the lumping or the splitting school, and too little recognition of the possibility—frequently referred to by Franz Boas and by more recent students of areal linguistics—that some similarities between languages may reflect shared history, but at such a remote historical period that we cannot distinguish the effects of borrowing from those of common origin.

A notice on the verso of the title page states: "For reasons of economy and speed this volume has been printed from camera-ready copy furnished by the editors and contributors, who assume full responsibility for its contents." In fact, the goal of economy is poorly served by the format, which is mostly that of double-spaced typescript: the purchaser of the volume is paying for too much white space, and for a correspondingly bulky volume. In some sections, faults of typing, spelling, grammar, and style are fairly numerous. On the positive side can be mentioned the full and useful index of language names. Apart from such technical matters, and in spite of its more substantive shortcomings, this book is an essential and authoritative reference guide to current research on the historical study of North American Indian languages.

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Molecular Genetics

Genetic Recombination. Thinking about It in Phage and Fungi. FRANKLIN W. STAHL. Freeman, San Francisco, 1980. xiv, 334 pp., illus. $25.

Bacteriophage and fungi provide most of the best systems for studying genetic recombination. Their respective contributions are complementary. The fungi are an unrivaled source of detailed information about the end results of meiotic recombination in what we hope are representative eukaryotes. Some aspects of the data on fungi, especially those relating to gene conversion, postmeiotic segregation, and the correlation of these with crossing-over, invite speculation about molecular mechanism—speculation that, however, is difficult to check at the molecular level. Bacteriophages, with their readily accessible genomes of more tractable size, provide unrivaled opportunities for the physical isolation of recombination intermediates and even for the reconstruction in vitro of some of the steps through which these intermediates are formed and resolved. The hope is that the physical and enzymic mechanisms revealed in phage experiments will eventually be found to apply to eukaryotes also. Conversely, genetic phenomena revealed by data on fungal tetrads may be found to have their counterparts in phage; gene conversion, interpreted as heteroduplex correction, is a case in point.

There are few better qualified than Stahl to pull these different threads together, and in this book intended for "anyone with some background in genetics and a willingness to work" he attempts to do so.

The book contains more algebra than biochemistry, even though the latter aspect is not neglected. The author is mainly concerned with exploring the logic of the models that have been advanced from time to time to explain recombination in its various aspects. He shows in a number of instances that a rigorous working through of the algebra can sometimes uncover implications of the models different from the ones that intuition initially suggested. So as not to overburden the text, many relevant sets of data and working examples are presented in the form of problems at the ends of the chapters. A novel feature is the inclusion of a number of problems arising from the published mistakes of the author's (former?) friends and colleagues. Stahl does something to preserve his reputation for fair play by including an error of his own. In spite of some effort, this reviewer has so far been unable to discover any more errors in the present book.

This is hardly a book for mass purchase by college undergraduates. The issues dealt with are often difficult (though the author makes them as clear as possible), and the subject matter may strike some as too esoteric for a wide readership. But the book will be valuable at at least three different levels. It will be compulsory reading for specialists in the genetic analysis of recombination mechanisms, who number perhaps only a few hundred worldwide. It will be attractive to a much wider audience of biologists with a liking for puzzles and elegant reasoning. And it will be of value as a means of providing bright students with some insight into the value and limitations of precise model-building as a means of coming to grips with a complex piece of cellular mechanism.

The book is excellently illustrated and written in a style that, though never sloppy, is pleasantly informal. It comes as close to being light reading as its subject matter allows.

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Paleobotany: Lives and Works

The Fossil Hunters. In Search of Ancient Plants. HENRY N. ANDREWS. Cornell University Press, Ithaca, N.Y., 1980. 442 pp., illus. $28.50

This book is an unusual and engaging history of paleobotany based on Andrews's 40 years of collecting at innumerable localities, visiting laboratories, using the literature, and studying biographical accounts, diaries, and letters. It is a sampling both of workers and of their contributions. It is the antithesis of a ponderous chronological account. Its style is informal, presenting our predecessors as human beings variously adapted to their roles in science and viewed sympathetically in the light of their times. This results in many human interest stories that can be used advantageously by teachers seeking to enliven the historical aspect of the subject. Andrews's fondness for reminiscences adds an intriguing autobiographical flavor to the narrative.

Forgoing the work of the Ancients, Andrews commences with the late 1600's, when fossils were regarded by many as "formed stones" or "freaks" or "sports of Nature," although some, such as Robert Hooke, understood that fossils had been living plants that were petrified in water. There are numerous accounts of the struggles of several less well known workers and of the early interpretations of the time of year in which the Great Flood occurred. Those who found fossils preserved in the vernal state were convinced that it was spring; those who collected mature seeds or fruits knew autumn was the answer.

The relatively sparse work of the 1700's is followed by the remarkable productivity of the 19th and 20th centuries. Chapters are devoted to men and their