

the possibility of a German-speaking migration of scientists other than those of the Hitler years.

One of the editors, Donald Fleming, does try to get into the postwar period with his "Émigré physicists and the biological revolution." This article comes close to meaning the migration of ideas, and the term "émigré" could well mean refugees from physics rather than from Hitler. Francis Crick and Maurice Wilkins are almost as much a part of the movement as Max Delbrück and Leo Szilard. Author Fleming's perceptive interpretation of the intellectual history of DNA, the "indispensable fostering environment for Watson and Crick," has to stretch the ground rules laid down by editor Fleming for the book as a whole. To complete his roster of émigrés he has to add to Delbrück and Szilard the names of Erwin Schrödinger, who migrated only to Dublin, and Salvador Luria, whose place in the German migration seems no more appropriate than those excluded, notably Enrico Fermi and Emilio Segrè. By making intellectual sense of the story he tells, Fleming raises the question whether, given a reasonably free flow of information, the migration of ideas follows the paths of the migration of persons except under acutely agitated circumstances.

If the assumption is tenable that German scholarship could survive in individuals who endured the Hitler years under diverse insignia, then the concept of the intellectual migration from German-speaking Europe, 1930-1960, must include groups not considered or even mentioned in this volume. Operation Paperclip occurred before 1960, and the veterans of Peenemuende have not only become fully functioning professionals in the United States, they have helped write chapters of American history that belong in the same series of volumes as the Manhattan project.

The incompleteness of their attempt only emphasizes the accomplishment of Fleming and Bailyn and their authors in sketching some of the main outlines of a movement which has at once transformed the history of Europe, the history of the United States, and the history of scholarship. The volume contains countless deeply moving personal chronicles, which add up to an epic.

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An Ecological History of a Culture Area

Mesoamerica. The Evolution of a Civilization. WILLIAM T. SANDERS and BARBARA J. PRICE. Random House, New York, 1968. xx + 266 pp., illus. Paper, \$3.95. Studies in Anthropology.

This book is a wonderfully stimulating preliminary statement that reflects the growing emphasis upon an ecological approach to the problems of prehistory. Although it will not win universal approval of either its total commitment to a single viewpoint or of many of its specific interpretations, it cannot be ignored by anyone dealing with Mesoamerica. In the preface, Sanders and Price announce their intention to be speculative and controversial. They have been both, and their efforts will have a profitable impact both upon those who look to ecology as the primary explanatory means to an understanding of cultural development and upon those who consider it only one among a number of necessary alternative approaches.

Mesoamerica is primarily a statement of the way in which environment, agricultural systems, and social systems interact in the formation of a civilization. The Mesoamerican culture area is used as a test case to demonstrate the applicability and operation of a set of principles and postulates. The result is not a standard culture history that attempts to give a rounded summary of facts and theories, but a view of Mesoamerican prehistory as it appears through a single analytical lens—that of cultural ecology.

The theoretical framework that structures Sanders and Price's viewpoint is evolutionary. They consider cultures to be adaptive subsystems reacting to biological and physical environments. Primary stimuli such as population growth necessitate readaptations that first affect subsistence systems and then relate outward to other facets of culture. Sanders and Price thus share Steward's concept of cultural core features directly related to subsistence adaptations surrounded by less directly pertinent, peripheral features. Responses, within the limits of environment and level of technology, may take a variety of forms, but the forms will differ in adaptive efficiency. The result of the operation of selective factors upon responses is the advance of culture through a series of levels of increasing complexity that culminates in the formation of state-level societies.

The vitality of the book, however,

does not spring from this fairly conventional theoretical structure, but from a series of recurring themes derived from it. These themes, each applicable to a number of different situations, are what seem to me to be most profitable to discuss.

Population growth is one of the processes repeatedly emphasized by Sanders and Price as an explanatory mechanism. It is presented as both a primary cause of change within the ecosystem and a measure of adaptive efficiency. Such diverse features as the early rise of the Olmec chiefdom and the increase of occupational specialization in areas of growing urbanization are convincingly related to demographic pressures.

Competition and cooperation are viewed as "derivative processes" that present alternative responses to demographic stimuli. Although the theoretical section discussing these responses is regrettably short, competition, at least, is an important explanatory principle in the substantive section of the book. To emphasize the effects of competition, both within and between societies, is a valuable contribution. Many of the applications of the principle are effective, but there are times when it seems to be one of those ever-present mechanisms that can be relied upon for explanation when all else has failed.

The book provides a thorough analysis of the contrast between the highland and lowland sections of Mesoamerica. The differing ecological possibilities of the two zones lead to distinct agricultural adaptations and ultimately to two kinds of civilization. True urban civilization results from the intensive agricultural systems of the highlands, while lowland swidden agriculture provides a stimulus toward a relatively rare form, nonurban civilization. The discussion of the highland system strikes me as more insightful than that of the lowlands, but this is simply a reflection of the fact that almost all of the recent wave of ecologically oriented research projects have concentrated upon the highland zone.

Finally, to explain the rise of state-level societies, the authors turn to two mechanisms, irrigation and economic symbiosis. Since it was first proposed by Wittfogel, the "irrigation hypothesis," suggesting that the need to organize and control irrigation systems calls forth centralized authority systems, has had a

checked career. An initial belief that irrigation was neither common nor early in Mesoamerican prehistory has been refuted by an increasing quantity of data. Two key questions remain unanswered, however. The first is whether the Gulf Coast Olmec culture, which was certainly nonhydraulic, reached a state level of organization. Sanders and Price consider the Olmec to have been organized as a chiefdom, but admit the possibility that many investigators will consider them to have reached civilization. If they did, the hydraulic argument is inapplicable to the origin of the earliest of the Mesoamerican states. The second unresolved problem is whether the irrigation systems of highland Mesoamerica were of large enough scale to account for the astounding degree of urbanization and the centralization that can be inferred therefrom. Sanders and Price offer little more than the assertion that they were, indeed, large enough. Those of us who believe that they were not will remain unconvinced.

The emphasis upon symbiosis as a cause of social complexity is a fresher argument than the hydraulic theory. The striking ecological diversity of Mesoamerica is impressive, and the importance of both local and long-distance trade in the area is attested by the archeological record. The authors' comments about the effect of unequal distribution of resources on social stratification and the contribution of distributive institutions to the organization of social systems, as well as their concept of symbiotic regions including complementary highland and lowland zones, demonstrate the utility of the symbiotic principle.

When they turn to lowland Mesoamerica, however, Sanders and Price encounter serious difficulties in explaining the origin of the state. Since irrigation is impossible in the region and the stimulus for local symbiosis is low, they are forced to see lowland states as an adaptive response to contact with highland hydraulic states. Like diffusionistic arguments, which are rejected in chapter 3, this explanation is not really explanatory since it does not make clear "the function and configuration of the entire socioeconomic systems" (pp. 68-69).

The general weakness of this and other ecological attempts to deal with lowland Mesoamerica is disturbing. A consideration of specifics, however, suggests that the problem lies not in the approaches but in the quality of the

available data. To make inferences about lowland ecology, one must resort to a series of simplistic, and generally untested, assumptions—the lowlands are ecologically homogeneous; the only possible agricultural adaptation is the purest of swidden systems; permanency of settlement is difficult or impossible to maintain. Are such generalizations adequate for understanding adaptation in lowland Mesoamerica? The awkward results achieved by using them suggests that they are not. Until more thorough investigations like that of Flannery and Coe on the Pacific coast have been undertaken, the ecological approach will continue to operate under handicaps in lowland Mesoamerica.

The foregoing summary falls short of providing an impression of the wealth of stimulating ideas presented in *Mesoamerica*. In choosing points to emphasize, I have neglected a large range of equally worthy topics. An almost endless series of problems for discussion among students and for testing in the field can be generated by a careful reading.

Statements of the ecological approach to archeology that are far more detailed and sophisticated than the preliminary effort reviewed here will doubtless be forthcoming. I doubt, however, that any of them will produce more discussion and intellectual stimulation.

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Metaphor in Sociology

Social Change and History. Aspects of the Western Theory of Development. ROBERT A. NISBET. Oxford University Press, New York, 1969. x + 342 pp. \$6.75.

From Aristotle's day down to our own times, Robert Nisbet tells us, Western thought has been in the grip of a metaphor—"development"—which has warped and stunted our capacity to chart and explain social change. To see how influential the residues of the largely Victorian variants of this biological metaphor are today, one has only to look into the pages of Reinhold Niebuhr, Arnold Toynbee, Teilhard de Chardin, "the reigning theorists of the Soviet Union," among philosophers of history and theologians; Talcott Parsons, Marion Levy, Neil Smelser, Robert Bellah, among sociologists; Julian Steward and Elman Service among an-

thropologists; W. W. Rostow among political economists—and there are many, many others, mainly but not exclusively linked to the so-called functionalist point of view. These spokesmen, at once the propagators and victims of the myth and mystique of "development," readily identify themselves by their commitment to doubtful ideas of "stages of growth," "progress," "purpose," "continuity," "direction," "evolutionary universals," "uniformitarianism," "comparative method," "civilization"—images which, in Nisbet's view, inevitably subserve parochial ethnocentric interests.

If we would escape toppling into the abyss of these evolutionist metaphors, Nisbet warns, we must start at once to build new foundations. Realistic assessments of change will only become ours when we execute strict studies of determinate forms of the social behavior of individuals in specified contexts during defined times. Today, Nisbet explains, sociology confronts the same choice as the one which the great Maitland put to anthropology at the beginning of the century, namely, the choice between "being history or being nothing." "Fluxes of empirical circumstances" and sequences of "events" have once again to be accepted as the stuff of actual histories; indeed, we must regain the courage to admit the prime significance of "intrusions" (exogenous variables) as the key agencies of change, and to see Fixity rather than Change as the root social fact.

Long before Nisbet has come to the end of these far-flung historical-analytical reflections, the conclusion becomes inescapable that he has here issued one of the most extraordinary challenges presented by a contemporary social theorist to so-called "forward-looking" modern sensibilities. In their own way, Nisbet's attacks on renowned American social scientists are more startling, and his proposals for a reform in our approaches to social change are even more sweeping, than were C. Wright Mills's barbs in his *The Sociological Imagination*. Indeed, Nisbet's book has the ring of a prophetic summons to abandon evangelical immanentism as the American public philosophy in favor of a strictly nonethnocentric historical view of social change, one allegedly grounded in superior metaphysical and sociological awarenesses which are luckily found to provide to cultural conservatism the firm foundation too long denied to it by the developmental mys-