Africa—are such that the report represents a most valuable, even essential, reference for all interested in the prehistory and paleoecology of this and adjoining regions.

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Origins of Agriculture

The Prehistory of the Tehuacan Valley. DOUGLAS S. BYERS, Ed. Vol. 1, Environment and Subsistence (viii + 331 pp., illus. $15); vol. 2, The Non-Ceramic Artifacts (xiv + 258 pp., illus. $12.50). Published for the Robert S. Peabody Foundation by the University of Texas Press, Austin, 1968.

In the New World, at the time of discovery, civilizations were found in two areas, Mesoamerica and the central Andes. A major debate in New World archeology has been carried on over the question whether the native population had independently evolved food production or whether domestic plants were introduced by migrants from the Old World. Between 1960 and 1964, under the direction of Richard MacNeish, a multidisciplinary team of researchers conducted an archeological research program in the Tehuacan Valley in central Mexico with the major objective of discovering the early phases of plant domestication in Mesoamerica. The project was spectacularly successful and has recovered an enormous body of data pertaining to the objective. The results are to be published in six volumes, of which the first two, the subject of this review, have appeared.

Volume 1 is entitled "Environment and Subsistence" and consists of a series of chapters by 14 authors, including, besides the introductory statements and the summary (written by MacNeish), a description of the contemporary settlement of the valley, geological and geographic descriptions of the valley, analyses of human skeletal remains, an analysis of vertebrate remains and aboriginal hunting patterns, and finally a series of detailed analyses of botanical remains, particularly of cultigens. There are also a study of human coprolites and a special chapter comparing the stylistic characteristics of the Codex Borgia to the ceramics of the final prehistoric phase in the history of the valley. Volume 2, "The Non-Ceramic Artifacts," is a detailed analysis of artifacts made of stone, bone, antler, shell, copper, wood, bark, and fiber. From a technical point of view, the Tehuacan Valley project was a monumental effort, and the two published volumes are models of archeological reporting.

This is the only project in all of Mesoamerica which provides us with a detailed history of technology, subsistence, and settlement patterns from the beginnings of human occupation to the present. The picture is particularly complete with respect to subsistence. The Tehuacan Valley was selected for intensive study because of its low rainfall and the presence of dry caves, and hence the high probability that perishable remains would be preserved there. Approximately 100,000 plant remains, 11,000 zoological specimens, and over 100 samples of human coprolites were collected. The project demonstrated conclusively that the food-producing revolution was indeed a native development, based on native flora, and that it was initiated perhaps as early as 7000 B.C., certainly by 5000 B.C. Particularly important was the finding of evidence of wild maize, the staple crop of the ancient population of Mesoamerica, and of an early domestic variety that dates at least as far back as 4000 B.C. A major methodological achievement of the project was an attempt to calculate, by percentages, the amounts of food of various kinds consumed by the ancient population. The Tehuacan data also present a picture of an almost imperceptible evolution of food production, related primarily to the evolution of the plants themselves, rather than an abrupt revolution. Even though the initial attempt at plant domestication may date back as far as 7000 B.C., it was not until 1500 B.C. that cultigens made up the majority of the diet of the population of Tehuacan. The entire process of development of food production, on the basis of the Tehuacan data, can be visualized as gradual evolution that involved an increasingly more effective adaptation to the food resources of the valley.

This reviewer does have a number of reservations about some of the conclusions of volume 1. First, there seems to be among many of the scholars in American archeology today a simplistic and naive assumption that the fact that cultural traits appear in an archeological sequence in one area earlier than in another automatically proves cultural diffusion. In a number of places in this monograph, for example, the simple fact that several of the pre-Hispanic crops appear earlier in Mexico than in Peru is used to prove that the crops were diffused from the former to the latter area. In fact, much of the Peruvian evidence for early plant domestication comes from the coastal desert, and we know virtually nothing about the agricultural history of the neighboring highlands. Coastal desert is an unlikely place for the origin of domestic plants, and it seems just as reasonable to assume that the coastal crops represent an introduction from the nearby highlands, where they may well have been cultivated earlier, as that they were brought in from places as far distant as Mexico. We cannot with certainty say, from the botanical side, that the wild ancestors of the specific plants in question were not native to both the central Andes and Mesoamerica, and there is a strong probability that domestication came about independently in several places.

Second, the data on the post-Conquest and contemporary population are rather thin and could stand considerable amplification. Particularly, I found the discussion of contemporary techniques of farming and irrigation inadequate. The project was, of course, concerned primarily with the prehistory of the valley, but data on more recent conditions and practices would seem to be of critical importance for the understanding of the earlier ones.

Third, although I heartily support the idea expressed by MacNeish of professional freedom of expression in the preparation of a report of this type, it seems to me that the project should have had a little more anthropological monitoring of the nonanthropological professionals involved. It would have avoided such incredible reconstructions of Classic and post-Classic society as that presented by Callen, who, on the basis of coprolite analysis, believes that there was a slave class that worked as agricultural laborers but was not provided with agricultural produce to subsist and was required to scrounge in the neighboring hills for wild foods. I also refer to the constant misuse of the word "urban" in various places in the report.

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