

form. The authors point out that the transform "reduces the order of transcendence" of many types of equations, notably linear equations and equations involving convolutions. They recommend solving these simpler problems numerically and then numerically inverting the transform to obtain a numerical answer to the original problem. They discuss a variety of approximate linearizing methods of an iterative sort, such as Picard iterations and the method of quasilinearization, as means of extending their solution methods to certain nonlinear equations.

As for the numerical inversion of the Laplace transform, the authors suggest a procedure which amounts to replacing the relation defining the transform with a system of linear equations which are obtained by evaluating the integral by a method of numerical quadrature of Gaussian type. The authors also include a section on dynamic programming. Numerous examples are included in the text.

The authors suggest that this book is well suited to the purposes of certain nonmathematicians, such as biologists, who want to get answers to equations arising in their work. These methods, they claim, will enable such investigators to relegate the onerous task of computation to assistants. In my opinion the authors have succeeded in their aims, which were to convey a superficial understanding. I strongly recommend this book to those whose needs will be satisfied by superficiality. To those who want something else, the book is a poor investment of time.

W. L. MIRANKER

International Business Machines Corporation, Yorktown Heights, New York 10598

Paleoecological Study

The Prehistoric Animal Ecology and Ethnozoology of the Upper Great Lakes Region. CHARLES EDWARD CLELAND. *Anthropological Papers, Museum of Anthropology, University of Michigan*, No. 29. Ann Arbor, 1966. 304 pp., illus. Paper, \$3.

This doctoral dissertation reflects the present archeological concern with the relationship of prehistoric man to his environmental setting, as opposed to the earlier almost exclusive preoccupation with problems of chronology and culture description. Cleland's study, a component part of an integrated ap-

proach of Michigan's Museum of Anthropology to the changing patterns of environmental adjustment of the prehistoric Upper Great Lakes peoples, takes its departure from the analysis of the faunal remains found at a series of sites in the region. He moves from a general account of the paleoecology of the region beginning at 12,000 B.C. to a treatment of the ethnozoology of the cultures of this broad time range, ethnozoology being defined as the study of the relationship between animal species and man within particular cultures. A useful distinction is made between focal and diffuse economies as two polar types, focal economies being highly specialized ones which are seen as tending to produce cultural stability. Diffuse economies exhibit an ability to exploit a variety of resources, and it is suggested that societies practicing them are relatively flexible and adaptable. These hypotheses deserve further testing and elaboration. The conclusions summarize the ecological relationships of the prehistoric culture periods of the region, and appendices present detailed faunal analyses of sites and useful maps of animal distributions.

The new data on faunal remains from prehistoric sites made available by this study are particularly welcome because of the present paucity of such material. The summary of climatic, vegetational, and cultural changes is also welcome as an early approximation of the situation. From a climatic point of view Cleland places too great reliance on simple temperature changes, to the neglect of the equally important precipitation shifts which inevitably accompany changing patterns of atmospheric circulation. Failure adequately to consider circulation patterns is also evident in a tendency to assume that climatic changes in other regions will be paralleled by identical changes in the Upper Great Lakes area. From the cultural point of view, there is still substantial difference of opinion over the time placement and relations of some of the prehistoric groups. However, differences of opinion in regard to interpretative detail should not obscure the fact that this approach and synthesis from an archeological perspective ably demonstrate the contribution this discipline can make to the general area of paleoecology.

DAVID A. BAERREIS

Department of Anthropology, University of Wisconsin, Madison

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