

“Post-Collapse Resurgence: Culture Process in the Dark Ages”. The 15 papers in these sections are short accounts of archaeological case-studies ranging in time from the Neolithic to the post-Roman world, and in space from England to central Europe to the Mediterranean. All of these contributions are relatively short, in much the same form they had during their 20 minute oral presentations.

American archaeologists have often focused on “nuclear areas” such as Mesoamerica, Peru and Mesopotamia where there was rapid rise from simple societies to complex civilizations. In these regions an evolutionary perspective — derived in part from ethnographic inferences about stages of development — has been very stimulating. In Europe, however, a similarly rapid transformation did not occur so that evolution is a less satisfying paradigm. On the other hand, Europe is an excellent laboratory in which to study variability in ranked agricultural societies in non-state settings over a period of some 5,000 years. Here, both growth and decline in social complexity can be studied in their own terms without an overriding concern for the place of any society on an evolutionary trajectory.

The collected papers do just that: they are brief and illustrative of the range of data and inferences that may be derived from them rather than being exhaustive or definitive. The tentative nature of most of the contributions is explicitly emphasized as the authors attempt to go beyond mere description of remains to an understanding of the social processes that underlie particular phenomena and their changes.

In the view of Robert Whallon, an

American commentator at the symposium, the papers uniformly fail to *explain* changes in the archaeological records, however well they may *describe* them. Thus, the inferences that are offered about processes leading to changes are more often than not merely reasoned assertions, based on limited ethnographic or historical analogy. These inferences are not based on “uniform principles of interpretation or argumentation”. Because of this, he says, “we are assured that the likelihood is high that other archaeologists would make something quite different of the data in any one of these cases”.

This volume must be counted a success, for it presents most clearly the current state of archaeological thought in Britain. Although markedly divergent approaches are discussed in Part V, the weight of archaeological opinion and effort is best illustrated by the papers that make up the body of this work. Here it is evident that the British, like most of their American counterparts, are diligently attempting to explain archaeological events in particular situations, through resort to analogies with historically known societies. That they are now interested in discerning something of the factors leading to changes in the organization of society rather than merely its subsistence or material remains is testimony enough that archaeology is responsive to changes in its intellectual environment. Cross-fertilization between American and European scholars will measurably enhance this process. □

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A geoelectric model of Earth's structure

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Geoelectromagnetic Investigation of the Earth's Crust and Mantle. By I.I. Rokityansky. Pp.381. ISBN 3-540-10630-8. (Springer-Verlag: 1982.) DM148, \$61.20.

DURING the past decade, there has been a growing awareness of the potential of electromagnetic induction techniques for the study of the structure, composition and physical state of the Earth's crust and upper mantle. In reflection of this, at least three monographs in English have appeared since 1980, all claiming to “fill the gap” in geophysical literature. Professor Rokityansky's text is the most recent and, in my opinion, it is the one which comes closest to success.

The aim of the book is to provide an account of the physical basis of geoelectromagnetic methods and to describe the problems of interpretation of experimental data, the emphasis being on deep-seated rocks. The author ack-

nowledges that he has drawn freely from a variety of sources — for example direct inversion is based on Weidelt (1972), impedance tensor determination on Hermance (1973), and principles of classification of distortions of magnetotelluric sounding curves on Berdichevsky and Dmitriev (1976) — but with his personal comments throughout and a unified presentation, the text has all the advantages one hopes for in a single-author monograph. Considering the scope and depth of its contents, he has undertaken a very substantial task.

The first chapter provides a useful summary of the morphology and origins of magnetic variations with periods ranging from atmospherics to the sunspot cycle, i.e. 10^{-5} s to 11 years. Throughout the text, the author stresses the need, frequently ignored by some solid earth geophysicists, to account for the dimensions of the source field in the interpretation of electromagnetic induction data. In the

development of the theoretical basis of induction techniques and the inverse problem in the subsequent five chapters, problems known to be of interest to Soviet colleagues, surface distortion and the asthenosphere for example, are dealt with at some length. Although most workers in this field have been aware of the significant contribution made to it by the few Soviet scientists who participate at international workshops, the reader of this monograph cannot but be impressed by the scale of activity in the USSR — for example, the numerous forward modelling studies and field programmes with as many as 300 magnetotelluric soundings. The book is not, however, only a survey of the development of the subject in that country, references to publications from both East and West being well balanced and remarkably up to date.

The author considers separately three techniques — geomagnetic deep sounding (GDS), magnetic variation profiling (MVP) and magnetotelluric sounding (MTS). A distinction between GDS and MVP is not normally made in Western literature but Rokityansky makes a good case for it, the former term being restricted to problems where it is assumed that conductivity is a function of depth only and the dimensions of the source field are comparable to that of the area under study. He warns against the improper use of GDS techniques in most regional and local studies for which MVP and MTS are appropriate. While about one-third of the text is devoted to the GDS and MVP methods, and only one of the eight chapters is specifically concerned with MTS, the author stresses the complementary nature of the MVP and MTS techniques. He also give examples of such an integrated approach.

On the whole the translation from the original Russian text is commendable but there is room for some correction in a later edition. With regard to content, I feel that the recent developments in audiomagnetotellurics merit more attention, especially as they should help resolve some of the ambiguities associated with surface distortion effects.

I anticipate that the active researcher will find more than enough in this book to merit the purchase of a personal copy. It can equally be recommended to the student, who will appreciate the careful development of ideas, the summaries at the end of each chapter and the general comments on the state of the art given in the final chapter. Here, Rokityansky provides a geoelectric model of the Earth's crust and upper mantle, lists six sources of electrical conductivity anomaly, such as partial melting zones and uprising flows of hot mantle matter, and presents a strategy for integrated MVP and MTS studies and for data interpretation. □

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