

On Field Methods in Archeology: Seton Lloyd

The practice of archeology, like that of any other science, is an art. As such it is an act of intelligence that combines imagination and knowledge of a tradition of technical proficiency. Such a tradition is built up through long years of experiment and experience, and its communication from generation to generation is essential to continued progress. The publication of a book which recounts the practical field experience of a senior practitioner is, therefore, always an important event. In the case of Near Eastern archeology, Seton Lloyd's new book **Mounds of the Near East** (Edinburgh University Press, 1963. 119 pp. Illus. \$6) is no exception.

From his wealth of experience on excavations in Mesopotamia and Turkey, Lloyd has selected memoirs related to the general problem of digging mounds, from the point of view that Wheeler has called "Tactics and Strategy." Lloyd leads the reader from one site to another, explains the difficulties encountered in deciding how to proceed with each, and then provides a comment on the results achieved at each. To anyone seriously concerned with archeology in the Near East, these reflections provide a very useful exposition of the intentions and logic of the excavators which gave rise to some of the major results obtained in excavations from 1930 to the present.

Beyond this aspect of reminiscences, however, the book also attempts to defend the field methods of the 1930's and the 1940's in the face of the criticisms made by Sir Mortimer Wheeler (in his *Archeology from the Earth*) and others. Wheeler's methods are now followed by a majority of the younger generation of excavators in the Near East. The rejection of these newer methods is implicit at a number of points in Lloyd's book, but the subject is dealt with obliquely most of the time and lacks sufficient specific discussion to be convincing. In fact, the general impression one has from reading Lloyd's book is that the argument is more apparent than

real. Lloyd's chief point is that no method developed in one area can be transplanted wholesale to another and work. This is certainly true, as any good field archeologist will acknowledge. Adaptation of particular methods to different sites is always necessary. The statement brings at once to mind Wheeler's major dictum—"There is no right way of digging, but there are many wrong ways." He also reminds us that the one rule in archeology is that there are no rules! Wheeler pleads for the use of systematic methods of recording, for reasoned "tactics and strategy" related to problem and to specific site, and for "an act of creative imagination" in presenting the results in terms of people rather than dead objects. With respect to such aims, Lloyd is in essential agreement.

The method of excavation in the Near East has gone through a stage of tunneling combined with arbitrary *niveau* or *levé* units, followed by a stage, between the two World Wars, when architectural levels alone were used as excavation units, and finally, since World War II, to a stage in which architectural levels are studied in conjunction with visible soil strata. With the latter method the history of soil deposition is reconstructed by the use of sections through the deposits. Wheeler has encouraged the use of sections as a working tool that allows the excavator to see the mistakes he has made in digging one area and one that he can use as a visible key in the prevention of mistakes in the next area. If this method is to be used successfully, the recorded layers must be labeled in the balk at the time of digging and the relationship of horizontal plans and vertical sections studied together periodically. The simple drawing of a section at the end of an excavation misses the entire point of its active use as a tool. Wheeler's emphasis is, however, on vertical stratigraphy and many of his students have yet to realize what he himself has pointed out—namely, that horizontal excavation is also essential if the pic-

ture of a given site is to be fleshed out. This aspect of excavation is emphasized quite naturally by Lloyd, who has a background in architecture and who also relies on sections at critical moments to clarify his problems. Lloyd's concern with the tactics of excavation relative to stratigraphy is presented in a useful although somewhat simplified discussion of types of mounds and their method of accumulation.

Other discoveries made by the younger Lloyd—for example, the obvious one of making a surface survey of sites and relating the material to stratigraphic test excavations—will hardly seem novel to American readers who have been brought up on such techniques (the plethora of shallow sites in North America has made this necessary).

In summary, Lloyd quotes Lord Acton to the effect that one should "Study problems, not periods." Wheeler, on the other hand, insists that "the archeologist is digging up not *things*, but *people*." They are in close agreement on the proposition that "Dead archeology is the driest dust that blows." They are not so far apart as the exaggerated statements used in argument would suggest, and students would be well advised to select from the experience of both to the benefit of future field work.

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Pre-Columbian Archeology

Prehistoric Man in the New World.

Jesse D. Jennings and Edward Norbeck, Eds. Published for Rice University by University of Chicago Press, Chicago, 1964. x + 633 pp. Illus. \$10.

During the month of November 1962, in celebration of its semicentennial year, Rice University sponsored an anthropological symposium on the subject of prehistoric man in the New World. The aim of the symposium was to present a review and appraisal of facts and theories concerning the prehistoric peoples and culture of North and South America. The results of the symposium are presented in this book.

To give adequate coverage and coherence to such a vast field was a task of no mean proportions. The basic

method used was to divide the New World into geographical areas and sub-areas and then to have each covered by a specialist on that region. Thus, North America was represented by seven writers, Meso-America by two, and South America by three; this apparent unbalance was due, in part, to the different degrees of information available for the two continents. In order to give more coherence to this mosaic, several chapters on special topics are relatively unconfined by geographic limits. These cover such subjects as geoanthropology, Early Man in the New World, transpacific contacts, North and South American cultural connections and convergences, and a linguistic overview.

With 18 contributors, each a specialist in his field, it was inevitable that differences of opinion would crop up, but on the whole these differences are relatively unimportant and do not confuse the main issue, which is to present a consensus of current ideas. These differences also point up the need for more research in certain fields. Archeologists are usually impatient to construct theories and frequently do so with insufficient evidence, but this, in the long run, is a stimulant to progress.

Chronology is the backbone of archeology, and it is in this area that great progress has been made in the past 50 years, largely due to the contributions of other sciences such as physics, botany, geology, and the like.

The authors of the essays that deal with the various geographical areas have attacked their subject chronologically, beginning with the early hunters and carrying the story upward through various stages to the beginning of history in their particular region. It is in establishing the framework of stages through which prehistory passed in these different areas that we find the greatest difference of opinion among the various authors. This is largely a matter of nomenclature, since aboriginal conditions varied considerably in different parts of the New World. For example, it is obvious that in Southern Mexico and Peru, the prehistoric inhabitants passed through more stages on the road to civilization than did those of the Arctic or the Great Plains. It is apparent that there is not yet enough evidence to permit full agreement in defining a series of developmental periods into which all prehistoric American culture may be fitted.

One of the most intriguing problems connected with New World prehistory

is that of Early Man. In no single aspect has so much new evidence appeared, nor have ideas changed as radically with respect to any other. Not many years ago the mark of the reputable archeologist was his insistence that man was a comparative newcomer in the New World. Actually ideas have not changed as much as surface appearances indicate. Krieger points out that Hrdlicka, the leader of the conservative element in this respect, was not at fault in his anthropological reasoning, but was the victim of geological misconceptions about the duration of the Pleistocene. The basic concept—namely, that man came into the New World fully evolved—still has not changed. Allowing Early Man a tenure of 40,000 years rather than 6000 has given the archeologist more room in which to work and more time to account for the rather profound cultural changes that have taken place.

Twenty-five years ago it would have seemed absurd to state that linguistics would prove to be an important prop to archeology. But one of the most interesting chapters is the one on linguistics by Morris Swadesh, a pioneer in the field of glottochronology. Swadesh demonstrates that language studies can cast important light on the movements of peoples and their former connections over thousands of years of time.

On the whole, I feel that the symposium has achieved its purpose. *Prehistoric Man in the New World* will be a convenient and most valuable reference work for professional anthropologists, students, and interested laymen who wish to be informed as to the most up-to-date theories concerning pre-Columbian archeology in the Americas.

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Botany

The Flowering Process. Frank B. Salisbury. Pergamon, London; Macmillan, New York, 1963. xii + 234 pp. Illus. \$8.50.

In the preface the author clearly sets the limits (and limitations) of this book. This is not a review of the physiology of flowering but a broad discussion of the biological changes within the plant which lead to conversion

from the vegetative to the reproductive state and to the conversion itself, always centered around the cocklebur.

Throughout the book, but principally in chapters 1 through 4, the author presents the flowering process as a unifying concept of biology under these headings: Diversity and Uniformity of Biological Material; Response of an Organism to its Environment; Biological Timing; Biochemistry; and Morphogenesis or the Origin of Form. Uniformity is seen in the pigment system and in the flowering hormone; diversity is seen in the response to environmental stimuli, such as day length and red and far-red light. In chapter 2 and the appendix are listed the many response types to photoperiod, temperature, age, and flowering time, and their interactions, with suitable reservations. From this, the flowering response is developed, in some detail, as primarily an ecological phenomenon (chapters 3 and 4). These first four chapters are unique in outlook and very well presented, especially for the experimental ecologist.

The balance of the book (150 pages) is devoted to the mechanisms involved in floral initiation, but concentrated on a single species—the cocklebur. Chapter 5 details practical methods for studying photoperiodism, an excellent answer to the interminable queries related to high school science projects. Chapter 6 is concerned with the minimal age and high light intensity (photosynthesis or energy source) which are necessary preceding the inductive dark period. Chapter 7 discusses what is known about the plant's response to light—pigments and action spectra; phytochrome and its reversible nature; and the effects of light interruption and of light of different intensities, durations, and qualities. Chapter 8 introduces the biological clock idea—the manner in which the plant measures the length of light and dark periods. In this connection, the possible resolution of Könitz's observations (p. 123) with Bünning's theory (pp. 133 to 136) is extremely interesting (see note on pp. 217 and 218). From a physiological viewpoint, chapters 7 and 8 are the highlights of the book. Chapter 9 deals with the synthesis of flowering hormones. Experiments are cited to show that ATP production and amino acid and nucleic acid metabolism may be involved. The final chapter treats the movement and action of the flowering hormone. Detailed discussion includes: translocation rate; autocatalysis; the