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REVIEW

Chronologies du Proche Orient, Chronologies in the Near East, Relative Chronologies and Absolute Chronology 16,000–4,000 BP; edited by Olivier Aurenche, Jacques Evin and Francis Hours. Oxford, 1987. CNRS International Symposium, Lyon, France, 24–28 November 1986. Maison de l'Orient Méditerranéen, Archaeological Series No. 3. BAR International Series 379 (i), 744 pages, £ 45.

The Centre Nationale de la Recherche Scientifique sponsored an international symposium on Near Eastern chronology in Lyon in 1986. The purpose of this meeting was to bring scientists and archaeologists together to discuss the dating techniques applicable to the Near East between 16,000 and 4000 BP and to evaluate the archaeologic and chronometric evidence for the chronology of the period. Participants submitted their papers in advance so that they could use the conference time to discuss the subject matter.

This two-part publication contains 32 papers submitted prior to the conference as well as 5 summary papers intended to synthesize the symposium discussions. The articles are organized in 5 unnumbered sections, of which 3 are in part i and 2 in part ii. Each section contains a series of related articles and a summary paper. Articles are in French or English, while the prefatory matter and abstracts for individual papers are in both languages.

The first section, on dating methods, offers papers dealing with the calibration of radiocarbon dates (Damon; Mook, Hasper, and van der Plicht), the reliability of ^{14}C samples (Evin), AMS dating in Near Eastern archaeology (Gowlett and Hedges), the graphic treatment of radiocarbon dates (Gasco), thermoluminescence dating (Valladas), and thermoluminescence and optical dating (Aitken). Other articles deal with climatology and chronology (Rognon), the analysis of groups of radiocarbon assays (Waterbolk), and a chronologic sequence of Near Eastern radiocarbon dates from 14,000–5700 BP (Aurenche, Evin and Gasco). The last-mentioned paper is accompanied by a ^{14}C date list (placed at the end of part ii) containing basic information on 598 assays. The summary paper by Aitken presents an overview of the various dating methods and discusses the calibration of the radiocarbon time scale.

The second section, on Near Eastern chronology from 16,000 to 10,000 BP, includes papers on the Epipalaeolithic period in the northern Levant and Anatolia (Cauvin) as well as in the southern Levant (Bar Yosef and Vogel), the Natufian period in the Levant (Valla), chronology and climatic phases (Bottema), and Late Pleistocene fauna in western Asia (Faure and Guérin). The summary paper by Vogel proposes that ^{14}C assays obtained from prehistoric samples be quoted in radiocarbon years, not calendar dates.

The third section, on the Near East from 10,000 to 8000 BP, includes articles on the Pre-Pottery Neolithic period in the northern Levant and Anatolia (Cauvin) as well as in the southern Levant (Gebel), and the Neolithic period in Iran (Hole) and at the site of Mehrgarh in Baluchistan, Paki-

stan (Jarrige). These are followed by a paper by Kromer and Becker, which surveys the data bases for calibrating ^{14}C assays before 7200 BP. In the summary paper, Cauvin synthesizes the chronological data for the period in the Levant and the Middle East eastward from the Zagros range.

The fourth section, on the Near East from 8000–6000 BP, includes articles on the Halafian period in northern Syria and the Levant (Copeland and Hours) as well as in Mesopotamia (Watkins and Campbell), the Ubaid period in Mesopotamia (Calvet; Oates), the chronology of Chalcolithic Mesopotamia (Vértesalji), Cyprus in Neolithic times (Le Brun), and archaeomagnetism and Near Eastern chronology (Hesse). The concluding paper by Hole outlines the major chronological issues of the period for Mesopotamia and Iran.

The fifth and final section, on the Near East from 6000–4000 BP, contains papers on isotopic dating and geomorphologic studies in the Persian Gulf region (Dalongeville and Sanlaville), a new series of radiocarbon assays from monuments of the Egyptian Old Kingdom (Haas *et al*), Mesopotamia and western Iran in protohistoric and early historic times (Nissen), Iran from 6500–3500 cal BC (Voigt), and Tepe Hissar II and the Proto-Elamite period in northern Iran (Dyson). In his brief summary, Nissen reflects on the Egyptian ^{14}C dates as well as those from 4th-millennium Mesopotamia and Iran.

Overall, this is a work of impressive scholarship, one that contains an extraordinary mass of archaeologic and chronometric data. Many of the contributors were faced with the unenviable task of making sense out of archaeologic and radiocarbon evidence that was inadequate, confusing and even contradictory. That so many of the authors were successful in organizing and analyzing the complex data and presenting it in a clear and logical fashion is a testimony both to their dedication and to the progress being made in the field. The papers on the Epipalaeolithic and Pre-Pottery Neolithic periods in the Levant, the Halaf period in Syria and Mesopotamia, the Ubaid period in Mesopotamia, and the Neolithic and Chalcolithic periods in western Iran will be especially valuable to Near Eastern prehistorians. As for the papers in the section on dating methods, the reviewer wishes to single out the paper by Waterbolk, who employs a series of case studies of prehistoric and Bronze Age dates to demonstrate the importance of studying sets of radiocarbon assays rather than single analyses.

As one whose interests lie primarily in the Bronze Age, the reviewer wishes that the conference participants had been able to confront the major problem now emerging in radiocarbon dating for the late prehistoric and early historic periods, namely, the incompatibility between calibrated radiocarbon dates and the archaeologic/historic dates of Mesopotamia and Egypt. (The absence of any papers on the relationship between the radiocarbon data and the historic chronologies on Egypt and Mesopotamia was evidently due to certain invited scholars having been unable to attend the symposium.) Hole (p 562), for example, points to the "giant enigma" in Mesopotamian chronology where a gap of ca 1000 years now separates the end of the Ubaid period (ca 4500 cal BC) from the beginning of the succeeding Uruk period. Regarding the Nile Valley, Egyptologists were finally

beginning to accept the idea that calibrated dates of archaeologic materials agree with the historic chronology for the late 4th and early 3rd millennia BC, but the sad fact is that they may not.

The article by Haas *et al* presents 72 new radiocarbon dates associated with Old Kingdom Egyptian monuments. These samples were dated by liquid scintillation counting (LSC) of benzene at the Radiocarbon Laboratory at Southern Methodist University and by accelerator mass spectrometry (AMS) at the Eidgenossische Technische Hochschule in Zürich. On average, the assays diverge by some 300–400 years from Egyptian chronologic dates determined from historic sources, Egyptian radiocarbon measurements obtained from other laboratories, and Palestinian Early Bronze Age chronology determined by radiocarbon assays and archaeologic correlations with Egypt. Compounding this problem is the fact that Near Eastern archaeologic chronologies in the late 4th–3rd millennia BC are sufficiently intertwined that one cannot radically adjust the chronology of one region without changing the dates of the others. As such, acceptance of the Haas *et al* data effectively requires a substantial redating of the entire Near East for the 4th and 3rd millennia BC. This will not be palatable to many Near Eastern historians or Egyptologists.

The book has several obvious deficiencies. One is the lack of balance in the attention given to different regions and periods. Iran and Mesopotamia receive excellent coverage for nearly all periods, for example, but there is not a single paper on Palestine after 8000 BP, nor any on Egyptian prehistory. Another defect is the lack of any index, an absolute necessity in a symposium volume nearly 750 pages in length. There are also numerous infelicities of style, grammatical and typographical errors, and words inappropriate to the English language (eg, "*datation*" instead of "dating").

Offsetting these problems are the promptness with which the volume was published, the generally high quality of the articles, and the large amount of new information that is presented here. This book will be a valuable reference tool for all Near Eastern prehistorians.

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