of the universe. Both exhaustive review papers and briefer papers on special topics are included. Some of the review papers cover key topics far better than they have been covered in review journals or elsewhere, and the coverage is up to date. Gösta Lyngå provides a particularly helpful review of how stellar associations and clusters relate to the local structural pattern in our galaxy. Ivan King presents an eloquent and gratifyingly frank appraisal of present dynamical models of star clusters. Gretchen Harris presents a wide-ranging discussion of our progress in understanding stellar evolution through the study of star cluster color-magnitude arrays. S. C. B. Gascoigne gives a particularly clear discussion of the older, puzzling clusters in the Magellanic Clouds. Several contributors take up the difficult and hotly debated issue of elemental abundances in clusters. These contributions and careful consideration of many other topics fill out the portrayal of our present understanding of star clusters in our galaxy and elsewhere in the universe.

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Mesolithic Europe

The Early Postglacial Settlement of Northern Europe. An Ecological Perspective. PAUL MELLARS, Ed. University of Pittsburgh Press, Pittsburgh, 1979. xii, 412 pp., illus. \$36. New Approaches in Archaeology.

The early postglacial period, once considered to represent a hiatus in European prehistory or to show, at best, an impoverished "Mesolithic" remnant of Paleolithic glory, is now viewed as a time of dynamic cultural adaptation by hunter-gatherers to changing environments following the retreat of the last great ice sheets. This postglacial warming was but the most recent of a series of dramatic climatic alterations punctuating the Pleistocene, and the Mesolithic is archeologically the most accessible period for studies of human adjustment to such profound environmental change.

This collection of papers is an important contribution to these studies because the area it deals with has long been a major focus of Mesolithic research. A concise historical overview of this research is presented by Clark, who is largely responsible for bringing Mesolithic studies into the mainstream of archeology. The succeeding 13 papers are specific studies that range in scope from investigations of single sites to surveys of entire national areas. Despite this diversity, the papers show a common emphasis on subsistence and settlement—a welcome change from traditional preoccupations with typology and chronology. In the papers on regions where relatively few surveys or excavations have been done, such as Ireland (Woodman), Norway (Indrelid), northern Sweden (Broadbent), and the northeast Baltic (Zvelebil), the focus is indeed on the establishment of chronological and typological frameworks, but even in these papers an attempt is made to suggest economic and settlement systems by posing hypotheses amenable to future testing.

The most stimulating studies are those conducted in areas where there has been sufficient previous research to allow investigation of specific problems. As the book's subtitle indicates, these problems are approached through "an ecological perspective." Consequently, much attention is devoted to environmental reconstruction, resource distribution and behavior, and the costs, benefits, and effects of exploiting specific resources.

The basis of at least two of the papers (Bailey; Bay-Petersen) is the idea that big game animals are such large food packages that hunting must have been significantly more energy-efficient and therefore more important than gathering, fowling, and fishing (Bay-Petersen) or shellfish collecting (Bailey). Bay-Petersen supports this idea with the scarcity of plant, bird, and fish remains at Danish sites, even though such remains would typically show poorer preservation than large bones of big game. Bailey, by contrast, argues for the dominance of hunting in coastal Denmark and Spain despite the scarcity of big game remains relative to mollusk shells by emphasizing the low meat yield of shellfish and the exceptional preservation of shells (he assumes in one example that shells showed 100 percent preservation, in contrast to an estimated 2.8 percent for mammalian bone). The emphasis on the energetic efficiency of hunting ignores other possible determinants of resource selection, such as the reliability of particular resources. The uncertainties of hunting have been noted in many ethnographic contexts, and in this volume Welinder suggests something of the risks of Mesolithic hunting in Denmark by citing evidence (healed wounds) of repeated unsuccessful attacks upon the same animals. Despite the fact that plants, fish, and shellfish represent small and possibly dispersed food packages, they may have constituted a reliable dietary component in many situations, and the evidence should be analyzed with this in mind.

Common to several of the papers is a tendency to argue against the appearances of the data. As noted, Bailey downplays the economic importance of shellfish in areas characterized by huge shell mounds. Jacobi suggests communal summer hunting by large groups in the uplands of northern England despite small site sizes. Indrelid emphasizes the importance of terrestrial resources in coastal Norway despite the predominance of fishing equipment. In each case the interpretation derives from an attempt to go beyond site-specific data to examine the broader context of behavior and site formation.

This collection addresses many questions of the relative value of different types of data. Faunal remains are examined in light of problems of differential preservation, sampling, and the representation by age and body part. In this connection, Bailey's economic interpretations from shell midden samples could take note of Mellars's description of the nonuniform distribution of materials within Scottish shell mounds. Bay-Petersen interprets the predominance of adult males among Danish red deer remains in terms of energetic returns and long-term herd conservation, whereas Jacobi relates a similar age distribution in north English sites to the need for large antlers as raw materials.

Lithics receive less attention. The papers deal largely with gross functional categories such as points and scrapers, although Whallon stresses the lack of adequate attention yet given to relating form and function and to differentiating multipurpose from specialized tools. Jacobi attempts to determine social groupings on the basis of patterns of association between microlith forms (styles?) and raw materials.

Site and artifact distribution is stressed in these studies. Whallon's discussion of intrasite patterns raises the problems of differential life-span, curation, and deposition for various tools and suggests the examination of lithic waste and food debris as a more profitable approach to the determination of activity areas. Topographic differences in site locations are interpreted in terms of seasonal altitudinal movements by several authors, although Price, working in the relatively undifferentiated topography of Holland (perhaps a reasonable approximation to a uniform plain?), must utilize theoretical modeling techniques to suggest hypothetical patterns of settlement

and subsistence. Site proximity to lakes and marshes is variously interpreted in terms of the grazing potential for herbivorous prey (Bay-Petersen) or of the concentration of plant and fish resources (Welinder). In a stimulating study, Mellars and Reinhardt examine the distribution of three different artifact types in southern England in relation to resources, lithic raw material outcrops, and transportation routes. Their interpretations could, in addition, take into account the probability that such tools as axes would be curated and reworked to a greater extent than microliths not only because of limited distribution of suitable raw materials but also because of the greater labor investment in making an ax.

Because of the many theoretical issues raised and the emphasis on developing hypotheses about prehistoric behavior rather than a history of artifacts, this is an exciting book. It is a welcome addition to the archeological literature and an outstanding contribution to European prehistoric research.

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Developmental Biology

Maternal Effects in Development. Papers from a symposium, Exeter, England, Sept. 1978. D. R. NEWTH and M. BALLS, Eds. Cambridge University Press, New York, 1980. viii, 420 pp., illus. $77.50.

This volume contains 18 papers that were presented at the fourth symposium of the British Society for Developmental Biology. The book begins with a felicitous essay by J. Cohen, which is partly a history of and commentary on the kind of attention that biologists have paid to the possible roles of maternal constraints on development and partly a survey and classification of the diverse ways maternal factors can influence the course of development. The other papers in the volume describe the effects these factors have on development.

Eight papers deal with various aspects of oogenesis and early development in laboratory amphibians. These stages of development have probably been studied in more detail in amphibians than in any other group of animals. The papers provide a review of much of this material; the topics covered include transcription during oogenesis, stockpiling of proteins and organelles used during early development, the action of maternal-effect genes, and the function of cytoplasmic determinants laid down during oogenesis. As one reads through these papers one is struck by the paucity of experimental work that relates events that occur during oogenesis to the early development of the embryo. However, a paper by M. R. Dohmen and N. H. Verdonk on cytoplasmic localization in mosaic eggs and one by A. D. Lees on the maternal environment and control of morphogenesis in insects describe several situations in various animals where special features of development make them amenable to experimental studies linking a particular feature of oogenesis to embryogenesis. One situation that Dohmen and Verdonk describe concerns an RNA-rich structure called the vegetal body, which becomes located at the vegetal pole of the oocyte during vitellogenesis in the snail *Bithynia*. During the first cleavage of the egg the vegetal body is incorporated into a small polar lobe and segregated to only one of the blastomeres. If the polar lobe containing the vegetal body is removed during the first cleavage development does not proceed normally, but if the vegetal body is displaced from its original site by centrifugation prior to the first cleavage deletion of the polar lobe has no effect on development. One situation that Lees describes concerns maternal control of polymorphism in aphids. In these animals, maternal effects frequently cause progressive changes that can be followed over two or more generations.

The last five papers deal with mammals. British developmental biologists are currently doing much of the best and most imaginative work on mammalian development. Because of the special environment in which mammals develop they are a natural in any symposium on maternal effects. One particularly interesting paper in this group is by the late E. M. Deuchar on the effects of maternal diabetes on embryonic mammals. Her review of the work on animal models that have been used to study the subject points up the subtlety of this nutritional effect. The other papers on mammals are concerned with utero-placental circulation, teratogenesis, and immunological interactions between mother and fetus, in addition to the more traditional oocyte-mediated maternal effects.

The book has a feature that is rapidly disappearing from the scientific literature; the full title of each paper cited is given.

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