

between this treatment and Fried's *Evolution of Political Society* (1967), but Service has emphasized "origins" with regard to cultural processes and mechanisms.

Exceedingly up-to-date data from archaeology, ethnography, and history are utilized as illustrative material to explicate the origins and early development of political systems. A sample of nine states (Zulu, Ashanti, Kongo, Cherokee, Hawaii, etc.) and six primary civilizations (Mesoamerica, Peru, Mesopotamia, Egypt, Indus, and China) are detailed. Of note is the argument, following Gearing (1962), that the Cherokee chiefdom was actually an emerging state. The Shang-Chou civilization will undoubtedly interest Orientalists who follow Wittfogel's (*Oriental Despotism*, 1957) and Wheatley's (*Pivot of the Four Quarters*, 1971) treatises.

Service documents his thesis that states appeared whenever central leadership in chiefdoms became institutionalized or bureaucratized and that states also emerged from theocratic authority. A central power source capable of repressive force must be present for a state to exist, and it initially maintains the state. Service's critique of the premises that "urbanism is crucial to civilization" and "civilization must arise from states" demonstrates that neither need be true. Theoreticians will detect a disenchantment with Steward's "causal theory" of early civilizations (1949). All social scientists and data-seekers will enjoy this informative and stimulating volume. Some ideas are not new, but there is considerable merit in the way they are arranged and supported.—*Charles C. Kolb, Anthropology, Pennsylvania State University*

**The Environment of Early Man in the British Isles.** John G. Evans. 216 pp. University of California Press, 1975. \$12.95.

The study of prehistoric man-land relationships poses many of the same methodological problems inherent in the study of contemporary culture-environment interactions. It also presupposes a considerable body of multidisciplinary groundwork. Existing studies mainly focus on analysis and interpretation of either the environmental or archaeological evidence, touching on the interfaces in only a general and often simplistic way. John Evans has attempted an unprecedented diachronic study of a region, the British Isles, from the perspective of "environment archaeology." The chapters, essentially chronological, focus on exemplary sites but develop into a broader evaluation of climate, fauna, flora, soils, topography, archaeological evidence, and human impacts on the land. Scientific techniques are explained in the context of these various interpretations.

The Hoxnian (penultimate) Interglacial, the first theme, is exemplified by Swanscombe, a site complex on the lower Thames, with Acheulian and Clactonian industries. The nature of an interglacial environment is described on the basis of palynology and other paleobiological evidence. Treatment of the nature and impact of the last or Devensian Glacial ("Upper Pleistocene") uses Tornewton Cave, near the Devonshire coast, primarily a faunal site with a limited archaeological record and no isotopic dates. The British Mousterian and Upper Paleolithic are discussed briefly in this context. For the early Holocene, Evans focuses on Mesolithic Star Carr after outlining the standard postglacial vegetation sequence. Cultural impacts on vegetation and soils are emphasized for mid-Holocene, late Mesolithic occupation, such as at White Gill in northern Yorkshire.

The first Neolithic farmers arrived ca. 5500 B.P., and Evans draws a particularly comprehensive picture of late prehistoric and Roman agricultural systems and their persistent legacy in the landscape. Forest clearance, settlement location, field patterns, and soil changes are emphasized both here and in dealing with the Medieval period, as illustrated by the abandoned village of Whiteparish in Wiltshire. The 91 illustrations are well chosen, with the air photos of visible prehistoric field patterns particularly impressive.

Evans's volume is very welcome. It will be appreciated by a wide spectrum of the British academic community and educated lay public and form an important source and stimulus for students in archaeology and geography. Despite an almost total neglect of research trends outside of Britain, it will also be of considerable methodological interest to archaeologists and historical geographers elsewhere, both in terms of the impact of late prehistoric man on the environment and as an introduction to the pioneering research of a diverse group of British scholars on the theme of mid-Holocene environmental modifications. The less expert treatment of the Pleistocene time range will, by contrast, be of more parochial interest, and the discussions of Paleolithic sites, industries, and technology are particularly uninformative. Cave sediment studies are not developed, despite their potentials, and modern techniques of faunal analysis that emphasize the structure of animal communities are ignored. For the younger periods, one would have liked to see more integrative discussions, both of agricultural systems as such, and of a comparative nature, including the differences between Celtic-Roman and Saxon-Medieval land use.

Despite the shortcomings, Evans is to be commended for developing a theme of such timeliness. We can hope for a warm reception that will warrant a new, expanded edition, focused more explicitly

on the prehistoric communities themselves.—*Karl W. Butzer, Anthropology, University of Chicago*

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## Mathematics and Computer Science

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**Analysis of Queueing Systems.** J. A. White, J. W. Schmidt, G. K. Bennett. 532 pp. Academic Press, 1975. \$27.

**Transform Techniques for Probability Modeling.** Walter C. Giffin. 233 pp. Academic Press, 1975. \$24.50.

As an individual who has closely witnessed the growth of ideas and methods in queueing theory and in probability theory over the past quarter century, I can say that these two books are good illustrations of the depth and maturity that emerge in science through combining and extending the roots of mathematics into experience.

In *Analysis of Queueing Systems*, the authors show a mastery of mathematical tools and a creative outlook on problem solving, offering alternatives to the rigid formal approach to modeling congestions to which we have become accustomed. "We do not want to be guilty of slotting the heads of nails so we can use our new screwdriver, when a hammer is the appropriate tool," write White, Schmidt, and Bennett in their first chapter, which is essentially concerned with problem solving. This is followed by a better-than-conventional chapter on probability and transform methods, always (as in the rest of the book) supported by good examples and exercises. Chapters 1 and 4 deal with a variety of equilibrium cases of Poisson and non-Poisson queues, while Chapter 6 is given to transient queues. An amalgamation of theory and practice is provided in a particularly good discussion on decision models in Chapter 5, nicely balanced with ideas from optimization theory. In Chapters 7, 8, and 9 the authors cover problems of estimation and hypothesis testing and provide simulation alternatives to the solution of queueing problems. The contribution of this book would have been more far-reaching and up to date had it also treated complex networks of queues as one system. There is sufficient development in this area to provide good ideas and a useful contribution to general systems theory. I regard the book as a very useful text and a valuable work.

W. C. Giffin makes a worthwhile practical contribution to linear transform theory by examining Fourier series, integrals, and transforms; the Laplace transform as the focus of much of the analysis for drawing many parallel results to other transforms; the impulse function; the  $z$ -transform; the exponential and geometric transforms; and the Mellin transform. He studies applications of transforms to probability theory and "transforms and