Book Reviews

Indian Life in the Upper Great Lakes. 11,000 B.C. to A.D. 1800. George Irving Quimby. University of Chicago Press, Chicago, Ill., 1960. xv + 182 pp. Illus. $5.95.

For almost 13 millennia the Indians of the Upper Great Lakes region lived in adjustment to their natural environment and to each other. This adjustment was dynamic: glaciers scoured the continent, forests were ground away, lake basins filled and drained, and the great Pleistocene animals roved across the scene and became extinct. All the while man kept pace with events. Shifting residence in response to climatic change, he took up new weapons for new game and invented and learned to use different tools. Although he fought with his neighbors, sufficient numbers survived the battles to fight again. Outside tribes invaded the region, and their customs were borrowed, adapted, or rejected. In turn, the newcomers did the same.

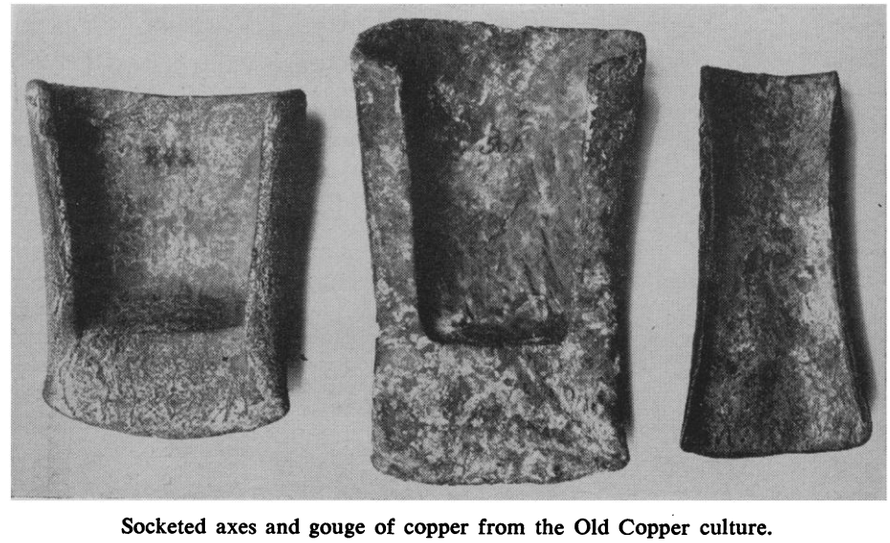
The story is alive with the resilience of man's struggle. Perhaps it was that changes whose cumulative effect was drastic, such as the retreat of the ice and the disappearance of the big game animals, were slow, and there was the opportunity to adjust. Or perhaps it was that when situations, such as tribe-to-tribe contacts, made for more rapid change, these changes were ameliorated by basic cultural similarities, and neither side was mortally hurt. But beginning about A.D. 1600 the Great Lakes Indian began to feel the impact of the European. By 1760 his capacity for adjustments to the innovations and pressures of this other world was nearing a breaking point. By 1820 it had snapped. His old way of life was no longer a coherent whole but a scattering of broken remnants on the white man's westward-moving frontier. Thus, in a little more than two centuries, changes had been wrought on the biological-cultural continuum of Indian existence which were more profound than any that had taken place in this region in the previous 13,000 years.

Quimby's book tells this history of an environment, peoples, and continuity of cultural traditions with clarity and directness. His work has the fine, and deceptive, simplicity of the mastered subject well-loved by its author. The book is addressed to the interested layman and the beginning student; however, in taking, and maintaining, this position Quimby has also produced an excellent synthesis for any reader. American archeology lacks good regional monographs. This is one.

The book is impressive in its interweaving of geological and archeological findings and in the explication of cultural-natural environmental relationships. The region is defined as the drainage basins of Lakes Superior, Michigan, and Huron. This composes the state of Michigan, parts of the states of Wisconsin, Minnesota, Indiana, and Illinois, and much of the province of Ontario. The geological time span begins with the Port Huron glacial advance (11,000 to 10,000 B.C.), comes up through the Two Creeks interstadial (10,000 to 9000 B.C.), the Valders advance (9000 to 8500 B.C.) and the Valders retreat (8500 to 6000 B.C.), what Quimby calls the "Terminal Glacial" (6000 to 3000 B.C.), and through the Postglacial to present times.

In this framework the author dates fluted Clovis points of the region in the Two Creeks and Valders eras (10,000 to 7000 B.C.). This was the time of the mastodon, the great forest browsers of the East. Following this, lanceolate point forms similiar to the Plano group of the West are associated with fossil beaches and water planes of glacial and ancient postglacial lakes. Apparently the conjunction of "Plano" and "water-planes" was too much for Quimby to resist, for he applies the term "Aqua-Plano" to this manifestation, which is dated fom 7000 to 4500 B.C. Deer, elk, and caribou were the principal game of these Aqua-Plano hunters. The beginnings of the Archaic cultures also fall in this chronological interval, but Boreal Archaic has its best expressions later, in the period from 5000 to 500 B.C. The Boreal Archaic adjustment is expressed in the fine polished stone tools used on wood: axes, adzes, and gouges. Pine and hardwoods were worked with these implements in making houses, canoes, and utensils.

Contemporaneous with Boreal Archaic is the distinctive Old Copper Culture (5000 to 1500 B.C.), one of the most unique of aboriginal North American developments, and related to, and perhaps a specialization out of, the Boreal Archaic. People of the Old Copper culture extracted copper from around the shores of Lake Superior by pit mining. By cold-hammering and by annealing (heating and hammering)



Socketed axes and gouge of copper from the Old Copper culture.

they fashioned some amazingly sophisticated socketed spear points, pikes, knives, and harpoons as well as axes, adzes, chisels, awls, needles, and drills. The gamut of tools implies a woodworking tradition similar to that of the Archaic people. Although not, technically, a true metallurgy, the copper industry of the Great Lakes region was the earliest use of metals in the New World, long antedating the metal industries in Peru and Bolivia. Unlike those areas, where gold was the first metal worked and ornaments were the first artifacts, the ancient Lake Superior Indians began with a utilitarian employment of copper.

Whether the idea of burial mounds originated locally or was diffused into eastern North America from the Old World, the earliest burial mounds of the Upper Great Lakes region appear to be derivative from the Ohio-Mississippi territory to the east and south. Pottery comes at about the same time (500 to 100 B.C.). Some of it is thick-walled, cord-marked or fabric-impressed, conoidal-bottomed ware, while another style is thinner walled and features dentate and rocker-dentate designs. Similar Woodland pottery seems to be earlier in the northeastern United States than it is in the Upper Great Lakes or elsewhere in North America; presumably it was diffused from east to west in the last half of the last millennium B.C. Hopewellian culture held the field in the Upper Great Lakes region from about 100 B.C. until A.D. 700. Sites of this affiliation are clearly restricted to the southern part of the region and are not found north of a line that marks a modern 150-day growing season. Agriculture was undoubtedly known from this time forward. Among the Hopewellian manifestations are big earthwork sites in the St. Joseph River valley and near Grand Rapids.

From A.D. 700 until 1600 a series of subregional archeological cultures are found which all adhere, more or less, to a similar pattern of life. Effigy Mound, Peninsular Woodland, Michigan Owasco, Lalonde, Fisher, Lake Winnebago, and Blue Island cultures are grouped into a general Late Woodland period. They show, in varying degrees, influences from contemporaneous Mississippian cultures to the south. They were the archeological cultures ancestral to the Great Lakes Indian tribes identified after A.D. 1600, including such groups as the Menomini, Chippewa, and Winnebago. In chapters that follow his archeological presentation, Quimby has written a series of descriptive essays about these tribes as they were recorded in the period from 1600 to 1760. In a final chapter he summarizes the breakdown of the native societies and cultures after 1760.

A summary, simplified statement of the kind that Quimby has made points up the major weaknesses in the prehistoric record. For example, archeologists do not know what happened in the late Paleo-Indian to Archaic transition. This is true for most of North America. Events of this time (7000 to 5000 B.C.) must have been related closely to important environmental changes, and since these changes were by no means the same in all parts of the Americas, we may hardly expect that all cultural reactions were the same. Surely, some Paleo-Indian groups must have adapted to the disappearance of Pleistocene fauna and conditions by taking up new ways of life. But to what extent these adaptions were sparked, abetted, or controlled by new immigrations and diffusions from Boreal Asia is, perhaps, the major question. A second puzzle is the source of Early Woodland pottery. Is it of Asiatic inspiration? Curiously, some of the closest correspondences are between northwestern Europe and northeastern North America. Finally, from whence came the elements that were drawn together and fused into the Hopewell florescence? And what was the role of maize agriculture in Hopewell? Quimby's geographical distributions of Hopewellian sites in the Upper Great Lakes region suggest a greater importance for agriculture than Caldwell has been willing to allow.

GORDON R. WILLEY

Peabody Museum,
Harvard University

Elements of the Theory of Markov Processes and Their Applications. A. T. Bharucha-Reid. McGraw-Hill, New York, 1960. xi + 468 pp. $11.50.

The staggering range of applications for Markov processes covers almost every subject from astronomy to zoology. Hence, the appearance of a book which brings together between its covers an introduction to most of these applications is indeed welcome.

Although the choice of topics in this book is fascinating, it is probably a necessary corollary that not all topics are treated equally well. Some, such as the discussion of stochastic models in biology, fare quite well; while others, such as applications in astronomy and chemistry, are discussed only superficially and seem to have been transported unchanged from the original papers to the book.

The book begins with an exposition of the theory of Markov processes in continuous time with a denumerable infinity of states, but discussion of finite state Markov processes in discrete time is omitted. A good deal of space is devoted to branching processes; here, as in many other parts of the book, the author quotes rather than proves many important results. There is an account of birth and death processes and results in the theory of random walks. A large portion of the theoretical section of the book is devoted to diffusion processes and the Fokker-Plank equation, including recent work by Darling and Siegert and by Feller.

The major part of this work is devoted to applications. In the section on biology, an obvious forte of the author, the list of topics includes birth and death models for population growth, the deterministic and stochastic theory of epidemics, the theory of genetic propagation, and areas of radiobiology. The chapter on the cascade theory of cosmic ray showers is of interest mathematically; of course it does not include more practical treatments of the problem. An account of the theory of Geiger counters as developed by Feller and Takacs is then given, and there are several miscellaneous topics in physics. The subjects in astronomy include work by Chandrasekhar and Munch on brightness fluctuations and by Neyman and Scott on the spatial distribution of galaxies. The final chapter, on queueing theory, includes accounts of all the principal formulations of the theory and several of the results.

The author is to be complimented on the unusual completeness of the bibliographies. However, there are an overly large number of typographical errors (for example, the startling interchange of Fig. 7.1 and Fig. 9.1). In summary, although no single subject can be learned completely from it, the book provides an excellent introduction to a wide scope of applications.

GEORGE WEISS

Institute for Fluid Dynamics and Applied Mathematics,
University of Maryland