ogies based on ceramic cross-ties or stylistic criteria, for the Toltec capital at Tollan (modern Tula, Hidalgo) and for other sites, such as Chichen Itza in Yucatan, where Toltec influence is supposed to have prevailed sometime during the Early Postclassic. As a result of this situation, Davies is obliged to match conjectural reinterpretations of calendrical dates available in the historical sources with the still highly uncertain dates suggested by archeology. Many of his interpretations appear to be well founded, but in most instances the argument aims at persuasion rather than proof.

Insofar as the use of history to clarify developmental sequences of the type most clearly represented in the archeological record is concerned, the results are not a great deal better. The historical texts, most of which now exist only in versions composed in Aztec times (around 1300 to 1521), describe Tollan as a magnificently wealthy city that controlled a vastly powerful imperial system. Archeology indicates that it was at least a well-populated urban center (population estimates cited by Davies range up to 60,000 inhabitants), but its ceremonial center was less than imposing by Mesoamerican standards, and there is little physical evidence elsewhere to indicate whether or not territories not in the immediate vicinity were subjected to a Toltec empire. Davies suggests that Aztec historians greatly exaggerated the status of Tollan because their rulers, who claimed lineal descent from a dynasty that included the celebrated priest-ruler-god Topiltzin Quetzalcoatl ("our prince plumed serpent"), hoped to legitimize their own imperialism by right of succession to a previously established hereditary domain. Once again, the argument rests on circumstantial grounds compatible with more than one interpretation.

The most serious weakness in Davies's predominantly historiographic approach, it seems to me, is that the questions posed require definitive answers of a type that cannot now be achieved. It is impossible to quarrel with the idea that history and archeology should be combined whenever possible. *The Toltecs* at least singles out those questions concerning which further research (especially leading to refinements in archeologically based chronologies) may ultimately yield more convincing results.

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Axonal Conduction Processes

Physiology and Pathobiology of Axons. STEPHEN G. WAXMAN, Ed. Raven, New York, 1978. xiv, 448 pp., illus. $32.50.

Although the basic molecular details underlying the generation of nerve impulses in axons have yet to be resolved, many modern neurobiologists seem to feel that the phenomenological description of ionic conductances provided some 25 years ago by Hodgkin and Huxley is all the knowledge of axonal physiology that is necessary for the understanding of "higher functions" of the nervous system.

This volume questions this perspective by suggesting that axons, rather than being merely conduits carrying signals between distant parts of an organism, may actually play significant roles in information processing and that in pathological states many phenomena observed clinically might eventually be traced to alterations in axonal conduction processes. There is an elegant demonstration of the relationships between geometrical features of axons (including variations in their branching patterns) and transmission of nerve impulses and between postactivity threshold changes and alterations in temporal patterns at regions of low safety factor. The book not only contains ample discussion of the origin of pathological states, it also considers changes in axonal conduction under such conditions. There is extensive treatment of the immunobiology and pathophysiology of demyelination and of peripheral neuropathies, with speculation concerning a possible link to aberrations of axoplasmic transport, and the anatomy and physiology of regenerating and remyelinating axons are covered. Introductory material dealing with structural features of normal central and peripheral nervous system fibers is quite complete, including a discussion of the application of freeze-fracture techniques to the study of myelinated nerve, and provides the necessary framework within which to approach the later material. Evidence is presented for the morphological specialization of the membrane of the node of Ranvier as well as of the initial segment. Finally, there is a speculative but interesting chapter that attempts to deal with the relationship between axon and Schwann cell in myelin formation.

The only serious defect in the volume lies in its coverage of biophysical topics. Although there is an excellent treatment of the basic electrophysiology of normal nodes of Ranvier, the other chapters concerning what have been termed "gating currents" and the use of optical probes are narrow in scope and too self-serving to be generally useful. It is probable that as a molecular scheme the Hodgkin-Huxley formulation has serious defects, and it would have been interesting to try to deal with the implications for neurobiology of recent improvements in our understanding of membrane conductance mechanisms.

Nevertheless, the book is fundamentally sound and should find a wide audience, including not only the majority of neurobiologists, but also neurologists, immunologists, and cell biologists concerned with nervous system diseases. Although the book contains 25 chapters by 34 authors, the overall integration of topics is unusually good, and with a few exceptions the chapters are well written and relatively free of bias and contain quite exhaustive references to the literature through much of 1977.

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The Bases of Economic Geography. Ronald R. Boyce. Holt, Rinehart and Winston, New York, ed. 2, 1978. xiv, 434 pp, illus. $14.95.

Basic Biogeography. Nigel Pears. Longman, New York, 1977. xii, 272 pp., illus. Cloth, $16.50; paper, $8.50. *To order this book circle No. 391 on Readers' Service Card*

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Behavioral Tolerance. Research and Treatment Implications. Papers from a meeting, Rockville, Md., June 1977. Norman A. Krasnegor, Ed. National Institute on Drug

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