are ancient in Australia (Keast), and some extant groups clearly (ratites, megapodes) or probably (parrots) so; about other groups of birds the evidence of time or direction of arrival in Australia is inconclusive.

The origins and ecology of aboriginal humans are treated in part 7 (147 pp.). Aboriginal occupation of Australia certainly began more than 35,000 years ago (A. G. Thorne), probably much earlier. It seems to have been associated with the extinction of large marsupials and birds, as well as of other animals. Fire clearly became more important in the Australian environment after the arrival of humans (N. B. Tindale). Recent studies of the cultural anthropology of the aborigines, which have provided a rich array of new insights into their hunter-gatherer economy, are reviewed.

This is a landmark volume of the greatest importance in understanding the natural world of the island continent, Australia. It will long repay careful study and will doubtless help to stimulate whole new cycles of investigation of the fields with which it deals.

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## Medical Institutions

**The Invention of the Modern Hospital.** Boston, 1870–1930. MORRIS J. VOGEL. University of Chicago Press, Chicago, 1980. x, 172 pp. $15.50.

Today the general hospital forms the center of America's medical system. Patients expect to go to the hospital when they are ill; physicians insist that modern medicine can be practiced best in these central institutions where laboratories and expensive equipment are located. The visibility of the hospital today, however, should not blind us to the fact that the hospital's position at the pivot of medicine is a relatively new phenomenon. Traditionally physicians practiced in the homes of patients, and only the poor and solitary sought treatment among strangers in hospitals. Morris Vogel's concise analysis of the evolution of the modern hospital in Boston between 1870 and 1930 places the hospital in its rightful historical perspective and provides insight into how and why the institution took its modern form. Vogel rejects an analysis of hospital growth based solely on the advancing techniques and capabilities of medical science. Instead, he emphasizes the social and economic factors that transformed charity hospitals into modern scientific institutions that serve all classes of people.

In 1873, when Vogel's study begins, a survey of the United States identified only 120 hospitals; by the 1920's there were more than 6000. The typical patients in the early hospitals were people with limited resources. The medical procedures these patients received could have been administered at home, were it not that their rooms were unheated or dirty or crowded and they had no one at home to care for them. The physicians who attended these charity institutions, in marked contrast to their patients, formed the medical elite of Boston, socially well-positioned people who sought hospital appointments to develop their skills and reputations and who expected no remuneration for their services. A diverse set of factors gradually made this model of hospitalization obsolete. Vogel analyzes in turn the political influences in a city with a large immigrant population, the impact of new medical and surgical procedures, the developing professionalization and specialization of physicians, the effects of urbanization and industrialization on the family's ability to care for its sick, the clinical needs of medical education, the costs of the new medicine, and the tensions between private nonhospital physicians and their hospital-based colleagues. Vogel argues that the modern hospital developed out of identifiable needs and desires of physicians, lay hospital boards, patients, and public officials. His research is based squarely on hospital records, medical society papers, newspapers, private archives, and interviews.

Vogel's most important contribution is his analysis of middle-class motivations and patterns for moving to the hospital. Unable to make the transition directly into hospitals they regarded as repositories of the socially marginal, yet feeling increasingly unable to take care of sick friends and relatives in cramped urban apartments or alone in lodgings, middle-class urban dwellers first found refuge and medical attention in new private hospitals that appeared at the end of the 19th century. Initially little more than boarding houses for the sick, these institutions catered to the affluent and eased their transition ultimately to the better-equipped general hospital. The book's weakest aspect is its assumption that the new hospital medicine necessitated a view of patients as mere physiological entities. Vogel ignores the humanizing influences of medical social work, which flourished in the new hospitals, and unjustifiably credits traditional medicine with more concern for the whole patient than it frequently exhibited.

Although Vogel concentrates on Boston in his analysis of the evolving American hospital, he is aware, with Oliver Wendell Holmes, whom he quotes, that "to write of 'Medicine in Boston' is not unlike writing of the tides in Boston Harbor. Boston is a fraction of the civilized world, as its harbor is part of the ocean." Vogel's book is the best available historical account of the development of modern hospitals in America. It is also a good reminder that some institutions we take for granted today developed only in the recent past and may in time themselves give way to new forms.

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## Biochemistry

**Biology of Carbohydrates.** Vol. 1. VICTOR GINSBURG and PHILLIPS ROBBINS, Eds. Wiley-Interscience, New York, 1981. 320 pp., illus. $49.50.

Though carbohydrates have been studied extensively for several decades, significant progress has been made in recent years, and thus the series this volume initiates is timely.

In chapter 1, Vincent C. Hascall, whose work over the past decade or so has dramatically clarified the complex organization of proteins, proteoglycans, and glycosaminoglycans in connective tissues, discusses the development of his research as well as the work of others in the field. His chapter provides a clear and concise picture of the current understanding of the biochemistry of mucopolysaccharides and includes sufficient information concerning the experiments to enable the reader to follow the strategy and the development of conclusions. The emphasis is on carbohydrate-containing macromolecules and proteins in cartilage, although those in other connective tissues are also discussed. As Hascall points out, this field has now reached the stage at which important questions concerning the function of connective tissue polymers can be addressed.

In the second chapter, Enrico Cabib and Eleanor M. Shematek discuss the structures of cell wall polysaccharides of selected species of yeast, fungi, and plants as well as the general organization of polymers in the cell matrices. The biosynthetic pathways for several of the