



CHARLES S. ELTON
Eminent Ecologist

Charles S. Elton was born March 29, 1900 in Manchester, England. He took his B.A. with first class honours at Oxford University in 1922 and was appointed to the teaching staff in 1923. In 1936 he was appointed University Reader in Animal Ecology and was later elected a Senior Research Fellow of Corpus Christi College. He has been Director of the Bureau of Animal Population, Oxford University since 1932 when the Bureau was founded. He was elected a Fellow of the Royal Society in 1953. Mr. Elton is an Honorary Life Member of the New York Zoological Society, an Honorary Member of the British Ecological Society and an Honorary Member of the Wildlife Society.

Charles Elton's early interest in natural history and ecology was directed largely by his eldest brother, Geoffrey Elton, who died prematurely at the age of 33 in 1927. Geoffrey Elton, though not a trained scientist, was an original and brilliant field observer and an excellent naturalist. While he was certainly drawn to natural history by its external beauty, he also had a deep appreciation for the underlying patterns of organic nature. His enthusiasm and guidance started Charles Elton on a career which has been remarkable in its achievement and of inestimable value to the science of ecology.

At the age of 19 Elton began a series of investigations of the species relationships in sixty marl-pit ponds, an estuarine stream, and the sand-dune systems in the Liverpool region. Later, during his undergraduate years at Oxford, he also participated in a series of expeditions to Spitsbergen; he was a member of the Oxford University Expedition to Spitsbergen in 1921, the Merton College (Oxford) Arctic Expedition in 1923, and the Oxford University Arctic Expedition in

1924. These studies and the inspiration of Shelford's **Animal Communities in Temperate America**, which he first read in 1920, led him to the realization that the dominant characteristic of animal communities is the transfer of organic matter through a network of connections between species populations. He was able to visualize a connected ecosystem functioning as an organic unit, and to recognize systems of food chains, consumer layers, ecological niches and pyramids of numbers as the basis for energy transfer among the ecosystem components.

In 1927 these pioneer concepts were elaborated in his textbook, **Animal Ecology**. The importance of this one text can hardly be over-emphasized, nor has its impact been confined to the science of ecology by any means. It brought a new, dynamic perspective to ecology and in spite of the progress that has taken place in ecology in the 34 years since its publication, it is still widely read for its insight into the interrelations which form the basis of our understanding of ecology and evolution. Its emphasis upon population dynamics and interspecies relationships meant turning away from the main trend which existed at the time; in which physiology, behavior and other adaptations were used as indicators of environmental relationships; but Elton's ability to foresee new dimensions has added repeatedly to the vigor and quality of ecological research and theory.

While it became evident that ecosystems could be studied as single units, or organic machines, Elton also recognized that the respective roles of the components of such a system cannot be evaluated without measurements of their population characteristics. This realization led naturally to investigations of fluctuations in the numbers of "key species" and for a period of about 20 years, beginning in 1923, Elton's attention was directed toward research on vertebrate populations. He was Biological Consultant to the Hudson's Bay Company from 1925 to 1930, when he directed research missions in Canada and the United States and initiated a series of enquiries which provided the first documentation of fluctuations in wildlife populations. Charles Elton's pioneer work on cycles and fluctuations again heralded new trends in ecology. His paper in 1924 on the causes and effects of periodic fluctuations in the numbers of animals was the first news of fluctuations available to academic zoologists. The results of several years of investigation in this field were summarized in his book **Voles, Mice and Lemmings**, published in 1942.

In 1932 Charles Elton was responsible for two more milestones in the development of animal ecology. Animal ecologists had become aware that the controlling processes in animal populations are brought about by density-dependent factors and their research had reached a point where intensive study of both interspecific and intraspecific relations in populations was necessary to an understanding of natural control. The Bureau of Animal Population was established to sponsor such intensive research on species selected for their properties of importance in natural communities and their fluctuations in numbers. For almost 30 years, since it was founded in 1932,

the Bureau has been a mecca for a continual stream of students and visitors who have been stimulated by the exchange of ideas and critical evaluation that have become a "B.A.P." trademark.

In 1932 he also founded the **Journal of Animal Ecology**, which he edited for almost 20 years. To judge the importance of this contribution, one need only turn to the literature on any of several major research developments in animal ecology to note the number of "key papers" and new ideas which have appeared in the **Journal of Animal Ecology**.

In 1942 he resumed an active interest in ecological surveys of whole communities while other specialists at the Bureau of Animal Population continued the population studies begun earlier. When the University acquired Wytham Woods in 1943 this area became the natural center for field work in ecology and Elton felt that, if the increasing number of intensive population studies being done in Wytham Woods could be combined with a continuing survey of the ecology of the natural communities in this area, something of a new character might be developed. The results of several years of the Wytham survey promise a level of information which has not previously been available to students of community ecology. Some of the first results of this survey will soon appear in a book which Elton is now writing.

Charles Elton's recent book, **The Ecology of Invasions by Plants and Animals** is further evidence of his unusual versatility. While faunal history is an established subject of wide academic interest, it has often failed to recognize more than the barest elements of ecological relationships and has almost entirely neglected its relationship to conservation and man's place in the mechanisms of animal distribution. With his usual blend of erudition and perception, Elton has injected fresh ideas and a new insight into another field of study.

This brief sketch of Charles Elton's activities is sufficient to show his wide range of interests and almost uncanny qualities of perception and insight. Remarkable powers of intuition based on a firm foundation of knowledge have kept him steadily in the ranks of the pioneers in theoretical ecology. His work has consistently shown imagination and quality and it is, indeed, fitting that we should honor him as Eminent Ecologist, if only in recognition of the considerable debt we owe to his presence in the science of ecology. But to his students and associates and the many ecologists who have visited him at the Bureau of Animal Population over the years, his personal qualities add immeasurably to his eminence. He is a man of warmth and rare personal charm whose impressive talents as a teacher and leader are enhanced by his willingness to look for and respect qualities in other people which are different from his own. The Bureau of Animal Population is typically populated by ecologists of diverse abilities and, often, divergent theoretical faiths. But Elton's leadership is freely acknowledged in the loyal admiration and respect of his students and colleagues.

The criteria for eminence and greatness in men cannot always be defined objectively, or without personal bias. Outstanding contributions to scientific fact and theory provide a starting point and Charles Elton's position as a leader in the science of ecology is firmly established. But we are occasionally privileged to associate with men whose wisdom and human qualities inspire as well as instruct, whose eminence can be measured by their impact on others. Such a man is Charles Elton. The Ecological Society of America is proud to honor him as Eminent Ecologist.

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