

Obituary

## George Ledyard Stebbins (1906–2000)

George Ledyard Stebbins, whose synthesis of genetics and evolutionary theory from the plant world was central to formulating the modern synthesis of evolution, died on 19 January at the age of 94. As well as being a renowned researcher, he was a prolific writer, a popular teacher and an outspoken conservationist.

One hundred years ago, Hugo de Vries, Carl Correns and Eric von Tschermak independently rediscovered Gregory Mendel's insight that each parent contributes to each segregating character only one genetic unit, later called the 'gene'. Historians of science designated this epoch-making event the 'rediscovery of Mendel' because it led to the birth of genetics, a powerful new science that transformed the biological sciences in the twentieth century. Within only two decades of the rediscovery, most of the major principles of the transmission of genetic traits were worked out by an army of converts to the science.

Unfortunately, advocates of the new science such as de Vries believed that genetic changes or 'mutations' were discontinuous and large-scale. These theories of evolution by sudden, large changes undermined darwinian theories, which instead stressed gradual evolution through natural selection operating on small, individual differences. As a result, advocates of darwinian evolution, including many natural systematists who studied geographical variation and were aware of populational variation, turned away from mendelian genetics. What ensued was what Ernst Mayr subsequently described as a "deplorable communication gap" between two opposing "camps of biologists".

This gap began to close with the integration of mendelian genetics and darwinian evolution during the period 1920–1950. First through the work of mathematical population theorists such as R. A. Fisher, J. B. S. Haldane and Sewall Wright, and then through the coordinated efforts of Theodosius Dobzhansky, Bernhard Rensch, Ernst Mayr, Julian Huxley and George Gaylord Simpson, a view of evolution emerged in which major evolutionary phenomena including speciation, the origin of evolutionary variation, large-scale evolutionary trends and systematic hierarchy could be understood in terms of genetics. Natural selection was restored as the primary mechanism responsible for evolution.

Most of the leading 'architects' of the



### Botanical architect of the evolutionary synthesis

'evolutionary synthesis' were zoologists. Only one was a botanist who concentrated on understanding variation and evolution in plants. This was George Ledyard Stebbins. In 1950 Stebbins brought botany into the evolutionary synthesis through his own monumental book, *Variation and Evolution in Plants*. It served a dual purpose: not only did it demonstrate how evolutionary mechanisms operated in plants at the genetic level, thereby bringing plant evolution into line with animal evolution as it emerged from Dobzhansky's 1937 *Genetics and the Origin of Species*, but it also organized a disparate set of disciplines into a new field, plant evolutionary biology. Stebbins's book was the longest and the last of the works that formed the evolutionary synthesis and is one of the most influential books in the history of modern botany. From 1950 onwards, Stebbins was the botanical architect of the evolutionary synthesis.

Stebbins was descended from a wealthy New England family, which supported his interest in natural history. He began his botanical career at Harvard University, studying taxonomy, biogeography and cytology. After an appointment at Colgate University in 1931, Stebbins joined the University of California, Berkeley, in 1935 as a junior geneticist. In 1950 he left Berkeley for the Davis campus, where he was instrumental in founding the genetics department. He remained there until his death and was one of the most celebrated figures at the university.

Stebbins's knack for synthesis accompanied life-long wide-ranging interests and an unusual career path. Whereas other botanists of his generation were specialists who concentrated on one plant group, Stebbins worked on a staggering number of organisms, including grasses, peonies and the latex-producing plant guayule. His contributions began in floristics (the taxonomic study of flora) and then progressed much as biology did in the twentieth century to include systematics, cytogenetics, plant evolutionary biology, plant breeding and, finally, developmental and molecular biology. He was a laboratory worker, microscopist, agriculturist, theorist, keen naturalist and even a pioneering conservationist. In addition to original research articles and scientific monographs, he wrote many influential textbooks of general biology and evolution, and semi-popular books. He excelled at the technical review article and included an extraordinary number in his long bibliography.

Stebbins had much in common with Mayr, Huxley and the other architects: all had similar wide-ranging interests and diverse careers. All were voracious readers with an ability to see the larger picture and all were prolific writers. Through the 1960s and the 1970s, all became public champions of evolution. Stebbins actively fought scientific creationism in the United States, and echoed Dobzhansky's famous assertion that "nothing in biology makes sense except in the light of evolution".

All who had contact with Stebbins became aware of his endless energy and infectious enthusiasm. He had an exceptional memory with an agile and curious intellect. He was unafraid of provocative ideas or unorthodox interpretations. He was exceptionally articulate and spoke with a crisp New England accent in perfect paragraphs; often he both delighted and annoyed colleagues with his tendency to dominate conversations or to break out unexpectedly into funny verse or song. His temper tantrums became the topic of amused conversation and one incident involving a typewriter thrown out of a window became the stuff of urban legends.

Even at an advanced age, Stebbins took an active interest in following scientific developments. Right up to his death, he demonstrated a resilience and love of the subject more characteristic of younger people.

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