

The concept of the object is the invariant of all these aspects. From this point of view, the present universally used conceptual system, in which particles and waves occur at the same time, can be completely justified.

The most recent research on nuclei and elementary particles has, however, led us to limits beyond which this conceptual system in its turn does not appear to suffice. The lesson to be learned from the story I have told of the origin of quantum mechanics is that, presumably, a refinement of mathematical methods will not suffice to produce a satisfactory theory, but that somewhere in our doctrine there lurks a conception not justified by any experience, which

will have to be eliminated in order to clear the way.

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C. T. Brues, Zoologist

Charles Thomas Brues, professor emeritus of entomology at Harvard University, died in Crescent City, Florida, on 22 July 1955. He was born in Wheeling, West Virginia, on 20 June 1879. The family moved to Chicago in 1893, and the following year Brues, with a fellow-student, Axel Leonard Melander, attended the North Division High School in Chicago. This was a significant event, for under the tutelage of the principal, Oliver S. Wescott, and the biology teacher at the school, Herbert Eugene Walter, the boys were inspired to undertake a serious study of insects.

On graduation from high school Brues and Melander entered the University of Texas to study under W. M. Wheeler, who had just been appointed there. After taking his A.B. degree in 1901 and his M.S. degree in 1902, Brues went to Columbia University for 2 years, subsequently returning to Texas as a special field agent in entomology for the U.S. Department of Agriculture. It was at this time that he married Beirne Barrett, a former biology major at the University of Texas.

In 1905 he was appointed curator of invertebrate zoology at the Milwaukee Public Museum but left there in 1909 to join Wheeler, who was then professor of

entomology and dean of the Bussey Institution at Harvard University. Brues was appointed instructor in economic entomology and advanced through the several ranks, becoming professor of entomology in 1935. Just prior to this, in 1932, the Bussey Institution was abolished as a separate graduate school, and Brues and Wheeler moved their offices to the Biological Laboratories in Cambridge, the headquarters of the department of biology. In 1946 Brues was appointed professor emeritus and honorary curator of parasitic hymenoptera in the Museum of Comparative Zoology.

Brues was broadly interested in all aspects of insects and, indeed, in all biological phenomena. Although most of his research was of a taxonomic nature, his investigations also included such diverse subjects as the ecology of thermophilous animals, the food and feeding habits of insects, insect paleontology, medical entomology, fluorescent staining of insect tissues, and intracellular bacteroids of insects. His early publications were devoted mainly to the taxonomy and biology of myrmecophilous insects, especially phorid flies; later papers also dealt with taxonomic studies on parasitic Hymenoptera, including the fossil forms in Baltic amber and in the Florissant shales of

Colorado. His bibliography contains 280 titles. Several of his publications appeared in book form: *A Key to the Families of North American Insects* (with A. L. Melander), 1915; *Insects and Human Welfare* (1921 and 1947); *Insect Dietary* (1946); and the *Classification of Insects* (with A. L. Melander), which went through three printings in the first edition. The revised and enlarged edition of the latter (1954), with F. M. Carpenter as a third author, was the last of Brues' publications.

In connection with his investigations, Brues made a number of field trips; on these he was usually accompanied by Mrs. Brues, a biologist in her own right and the author of several botanical papers. In addition to many collecting expeditions in this country, he went to Jamaica in 1911–12, Peru and Ecuador in 1913 (Harvard Medical Expedition), Cuba in 1926–27, Hudson Bay in 1936 (amber insect collecting), Dutch East Indies, Sumatra, Java, Celebes, and Bali in 1937, and the Philippines in 1949.

Brues took great interest in the Cambridge Entomological Club and was the editor of *Psyche*, the club's journal, from 1910 to 1947. He took an active part in other scientific societies and served as president of the Entomological Society of America in 1929.

His teaching at Harvard was very effective, especially at the graduate level. He was unusually close to his students and was always available to them for friendly and informal discussions. He was a wise counselor whose greatest strength was in his humility and in his devotion to truth.

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