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Professor Harry Whittington

Professor Harry Whittington, who died on June 20 aged 94, was the former Woodwardian Professor of Geology at Cambridge and the world's leading authority on fossil trilobites; in later life he led painstaking research which revealed a "Cambrian explosion" and raised disturbing questions about the processes of evolution.

Trilobites were hard-carapaced creatures, which thrived, in the Cambrian period, beginning 542 million years ago, until they died out nearly 300 million years later. Very distantly related to horseshoe crabs, they lived in the sea and crawled on land, evolving into more than 20,000 different species, ranging in size from a millimetre to nearly two feet. Many known species are ones which Whittington himself discovered on field trips around the world.

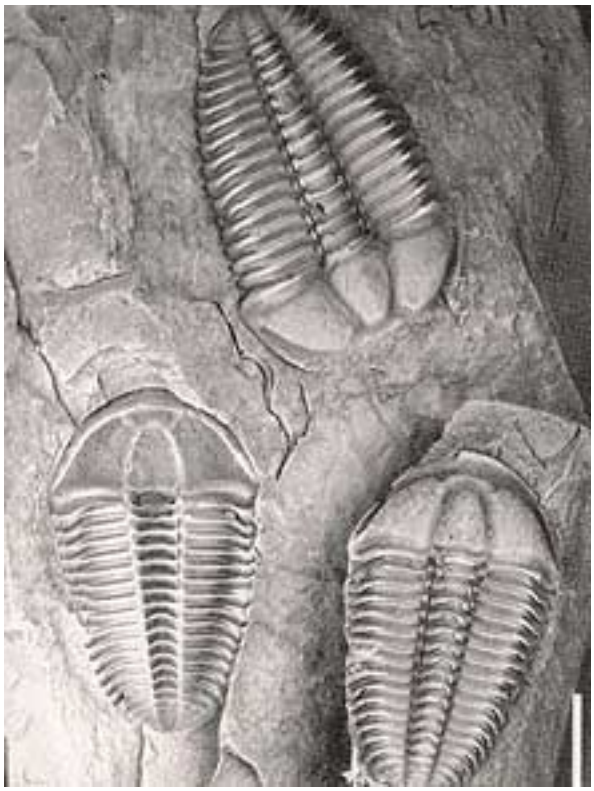
Usually it is difficult to extract the fossils from the surrounding rock, but in the 1940s Whittington and his colleague Bill Evitt investigated beds in Virginia where the carapaces of the animals had been replaced by insoluble silica.

By throwing samples into acid, they were able to recover thousands of perfect specimens, ranging from fully-grown adults to microscopic larvae. These fossils enabled Whittington, in a series of monographs published in the 1950s and 1960s, to revolutionize what we know about trilobites — how they grew from larva to maturity through successive

molts, how they moved and articulated their bodies, and how they evolved and migrated.

Later in his career, in 1966, Whittington was invited by the Canadian Geological Society to chair a group commissioned to examine the Burgess Shale deposits discovered by CD Walcott during the building of the Canadian Pacific Railway in 1909. The shale, a shelf of rock in British Columbia, contained a time-capsule of fossils from the Middle Cambrian era — 505 million years ago. The flattened fossils hinted at something outlandish, but Walcott had originally classified them as familiar animal types.

Whittington made two expeditions to the site, in 1966 and 1967, and recruited two assistants, Derek Briggs and Simon Conway Morris, to help him re-examine the entire collection.
Beavering away at the Sedgwick Museum of Geology at Cambridge, they patiently reconstructed the fossils in three-dimensional form, revealing a weird bestiary so different from anything now living that 15 to 20 organisms might rank as separate trunks of the evolutionary tree.



The most common organism, Marrella splendens, the subject of Whittington's first report, published in 1971, had been identified by Walcott as a trilobite. Whittington saw that while it was clearly an arthropod, it was not a member of any known arthropod class. Organisms such as the five-eyed Opabinia and spiny, slug-like Wiwaxia were so different from anything else known that Whittington's team assumed they must represent different phyla, only distantly related — if at all — to anything known today.

The implications of the Burgess Shale were colossal and disturbing, particularly as most of these creatures became victims of a mass extinction soon after, and such a prolific evolutionary flowering has never been repeated in nature. What became known to scientists everywhere as the "Cambrian explosion" raised the possibility that evolution may have worked by different rules at different times in Earth's history.

Whittington's work was brought to widespread popular attention by Stephen Jay Gould in his 1989 bestseller Wonderful Life: The Burgess Shale and the nature of history. Gould argued that although the Burgess animals were all adapted to their environment, most of them left no modern descendants and, more importantly, that the surviving creatures did not seem better adapted than their now extinct neighbors.

He proposed that, given a chance to flip the coin of natural selection again, we might find ourselves living in a world populated by descendants of Whittington's "weird wonders", and concluded that the survival of many species depends more on chance events than on environmental adaptation.

The theory remains controversial, and the full significance of Whittington's work has yet to be established. Nonetheless, few would dispute Gould's observation that, in his description of the Burgess Shales, Whittington had undertaken some of the most elegant technical work ever accomplished in paleontology. Gould added that if there was a Nobel Prize in the subject, Whittington and his research team should be the first recipients.

Harry Blackmore Whittington was born at Handsworth in Birmingham on March 24 1916 and educated at Handsworth Grammar School and Birmingham University, where he took a degree in Geology followed by a doctorate on the Ordovician rocks of the Berwyn Hills of north Wales. His north Wales researches led to his being awarded a two-year Commonwealth Fund fellowship in 1938 to Yale University — the first of what was to become a long series of "emigrations" to North America. It was at Yale that he began to focus on trilobites and also met, and in

1940 married, his wife, Dorothy Arnold, a botanist.

A condition of Whittington's fellowship was that the holder had to return home or to some other part of the British Empire when it came to an end. As war had broken out and Whittington was a conscientious objector, he accepted the offer of post as a lecturer at Judson College at the University of Rangoon, Burma.

The advance of the Japanese army into Burma in December 1941 caused the Whittingtons to make a traumatic journey which culminated in their arrival, in January 1943, at Chengdu, in China's Szechuan Province, where Whittington was appointed lecturer and later professor in the Ginling Women's College, a refugee college from occupied eastern China that had come to join the West China Union University. While there he carried out a geological reconnaissance into the Tibet border mountains of Szechuan.

After a spell back in England as a lecturer in Birmingham, in 1949 Whittington left for Harvard, where he remained for the next 17 years, becoming Professor of Paleontology and curator of vertebrate paleontology at the Museum of Comparative Zoology.

In 1966 he returned to Britain to take up the Woodwardian chair in Geology at Cambridge. During his tenure his department was merged with the departments of Geodesy and Geophysics and of Minerology and Petrology to form a new Department of Earth Sciences, whereupon he stepped down from his position as head of department. The removal of an administrative burden probably came as something of a relief to Whittington, who was in any case too modest a man to care much about status.

His official retirement from the Woodwardian professorship in 1983 made no difference to Whittington's routine and he continued to put in a steady morning's work at the Department of Earth Sciences every day until shortly before his death.

Of some 200 published papers, around 50 were published after his retirement, the last in 2009 shortly before his 93rd birthday.

His books include a major work on the Burgess Shales and another on Trilobites.

Whittington, a Professorial Fellow of Sidney Sussex College, was elected a Fellow of the Royal Society in 1971. His many awards include the Palaeological Society Medal (1983); the Wollaston Medal of the Geological Society of London (2000); the Palaeological Association's Lapworth Medal (2000); and the Emperor of Japan's International Prize for Biology (2001).

Harry Whittington's wife predeceased him in 1997.