Huxley, Thomas Henry (1825-1895) is an English biologist and essayist, a leading advocate of Charles Darwin's theory of evolution. Huxley combined his philosophical ideas with scientific exposition. He wrote essays from an 'agnostic' viewpoint (a term he introduced) and held that scientific discoveries had neither given support to, nor discredited, religious faith.

Within a short time of its 1859 publication, Charles Darwin's *On the Origin of Species by Means of Natural Selection* evoked a wide variety of reactions. Many of his readers enthusiastically embraced natural selection as the elusive mechanism that explained the process of evolution, while others recoiled from Darwinian naturalism, which seemed to obviate divine involvement and purpose. Responses came from all quarters scientists, philosophers, theologians and the concept of evolution soon made its way into almost every academic discipline. Because of his temperament and bad health, Darwin shunned the limelight, especially public confrontation. Thomas Henry Huxley, one of Darwin's closest friends and confidants, entered the debate about evolution with a more combative spirit and quickly earned the nickname “Darwin's Bulldog.” No epithet was given more deservedly. Though he did not agree with every aspect of Darwinism, Huxley advanced the arguments that related to evolutionits tempo and modethrough his knowledge of comparative anatomy and paleontology. In Charles Lyell and the writings of other geologists, he and his peers found the long stretches of geological evolutionary time needed to produce the vast, fascinating array of extinct and living species. As Huxley conducted research on several broad fronts, he promoted an agenda of change and made a significant impact in science, education, and society at large.

Thomas Henry Huxley (usually referred to as T H. Huxley) was born in 1825 in Ealing, a small village west of London, and grew up under humble circumstances. Like Dickens, Huxley obtained most of his early education through voracious and wide reading. After a medical apprenticeship, he received a scholarship to study medicine at Charing Cross Hospital (London). Huxley gave special
attentive to anatomy and physiology and completed this preparation in 1845. In a manner that has some parallels with Charles Darwin’s experience on the *Beagle*, Huxley entered the Royal Navy as an assistant surgeon on the *HMS Rattlesnake*, which sailed to Melanesia and surveyed Australia’s coast. On a cruise that lasted nearly 4 years (1846–1850), he also took on the duties of amateur naturalist, observed a wide range of wildlife and human cultures. While on this journey, Huxley sent detailed studies of invertebrates back home and, upon returning to England, was elected a Fellow of the Royal Society. In 1854, he left the navy and became a lecturer in Natural History at the School of Mines, in London, where he launched his lifelong study of and writing about various topics in comparative anatomy, paleontology, and related disciplines. Over the next 4 decades, T. H. Huxley held many positions in educational and scientific organizations and institutions (including the Anthropological Institute and the British Museum); he also accepted a number of government appointments that drew upon his expertise. Huxley won many awards and promoted scientific research (especially in the lecture hall and laboratory) and publications (and helped start the journal *Nature*). Throughout his career, he identified enemies (scientists, churchmen, and politicians) and attacked them vigorously through the spoken and written word. Along the way, Huxley, known in his intimate circles as “Hal,” was devoted to his family, loyal to his scientific colleagues, and committed to improving the situation of the working class.

As was true for many scientists of his era, T. H. Huxley was interested in later observing with the lively discussion concerning evolution, even before Darwin published *On the Origin of Species*. Many participants in this dialogue influenced Huxley, one way or the other, at some point in his own intellectual development (e.g., Chambers, Cuvier, Etienne Geoffroy Saint-Hilaire, Haeckel, Hooker, Lamarck, Lyell, Marsh, Spencer). K. E. von Baer, the father of embryology, helped Huxley bring order to his biological worldview through the study of fixed types. Even though he became Darwin’s ardent defender and champion, Huxley never fully accepted his friend’s fundamental claim that the slow process of natural selection could transform one species to another. Huxley, the scientist, insisted that he needed experimental proof that this mechanism could produce such a powerful transmutation. He also thought that Darwin restricted himself too much by insisting on gradual changes, since Huxley believed that changes could occur “by jumps” (*per saltum*). (Though based on considerably less data, this debate anticipated in some ways the modern discussion concerning “punctuated equilibrium,” itself a form of natural selection.)

Although he argued with scientist and churchman alike, Huxley saved some of his most potent venom for the church. He rejected any form of special creation and insisted that a logical, scientific approach would not allow any sort of divine involvement or plan (as held by Adam Sedgwick, Louis Agassiz, Asa Gray, and many others). As a student and admirer of Hume, Huxley’s rational, scientific naturalism supported by his self-professed “agnosticism” (a term usually attributed to him, though others defined it differently) brought mixed reactions from Rome and the Anglican Establishment. Huxley successfully devoted himself to the task of detesting the church’s power and influence in certain aspects of British society, including the universities (Oxford and Cambridge, in particular) and scientific education and research. Indeed, one of the most famous events in the history of science took place at Oxford’s Museum of Natural History in the summer of 1860, when Darwin’s Bulldog briefly debated Bishop Samuel Wilberforce about evolution. Much (though not all) of Huxley’s (and Darwin’s) disdain for Richard Owen, a leading comparative anatomist and paleontologist at the British Museum, resulted from the latter’s stubborn reference to a divine planwhat some might call intelligent design today.

Whatever course the 1860 Huxley-Wilberforce debate took, accounts vary a bit is clear that sparks flew with reference to the subject of human descent from apes. This subject remained pivotal for T. H. Huxley, as evident in the 1863 publication of what many regard as his most important book, *Evidence as to Man’s Place in Nature*. In this same year, Charles Lyell published a volume on this topic, *The Geological Evidence of the Antiquity of Man*. Both Huxley and Darwin counted on Lyell’s earlier discussion of “geological time” (though Lord Kelvin objected to Lyell’s uni-formitarianism) but, of course, nobody in that era had access to the inventory of fossil specimens known today much less the modern science of genetics. Huxley’s study anticipated Darwin’s 1871 book, *The Descent of Man and Selection in Relation to Sex*, though the former writer said little about the causes of change. Huxley defeated Owen in a debate concerning human and gorilla brain anatomy and insisted, as he did in his encounter with Wilberforce, that the ape’s human descendants should feel no shame because of their common ancestors. He held this view at a time when Europeans had limited knowledge of the gorilla. Nevertheless, from Huxley’s perspective, human beings were part of the animal kingdom and shared a “pedigree of prodigious length,” and the frontispiece in *Man’s Place in Nature* (which depicts a human skeleton followed by a gorilla, chimpanzee, orangutan, and gibbon) secured its place in the iconography of science. For Huxley, and his contemporaries, whose outlook was formed, in part, by the place they occupied in the British Empire, the “savages” who lived in remote corners of that empire served as more recent, albeit stone-age, specimens in the same human family tree.

Huxley’s study of paleontology led him to accept the transmutation of species, though he did not believe that Darwin’s gradualism was reflected in the fossil record. Darwin also recognized this weakness in his argument. The *Archaeopteryx* and *Compsognathus* fossils offered intriguing illustrations of the transition from reptiles to birds, and other aspects of the fossil record helped Darwin and Huxley identify similarities and delineate the continuity between species. Othniel C. Marsh, paleontologist at Yale’s Peabody Museum, introduced Huxley to *Hesperornis*, another bird fossil that fueled the latter’s speculation about dinosaur-bird evolution. Huxley’s knowledge of fossils (including other dinosaurs) and a close reading of Ernst Haeckel’s two volumes on *Morphologie* allowed him to see family treesa genetic connection between the past and the present. T. H. Huxley found special significance in his proposed sequence of horse fossils, also contained in the Peabody collection.
In his 1859 letter to Charles Darwin, Huxley expressed his willingness “to go to the stake” (figuratively speaking by their day!) in support of evolution. He remained loyal to his good friend and continued to promote the cause after Darwin’s death, in 1882. Indeed, Huxley’s entire career reflects the curiosity and tenacity that allowed him to achieve greatness from such a humble start in life. For Darwin’s Bulldog, even the piece of chalk (formed from the remains of countless microorganisms) that a carpenter carried in his pocket reflected the earth’s antiquity; his enthusiasm for learning about that past provides a good example even today.

See also

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Harvard

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