

Debater Fact Files

This document contains 1-page fact files on key actors in the debate about Darwin's *Origin of Species* in the 10 or so years after its publication.

The debater fact files are designed to support your participation in the Darwinian debates.

Use the debater fact files to guide your choice of a character to “play” in the Darwinian Debate, and as a starting-point for character research.

Points to remember:

- Your choice of a character to “play” should reflect careful discussion and agreement with your TA and the other students in your discussion section, to ensure that all sides of the Darwinian debate are adequately covered in the debate on the day;
- It's not necessary (or even particularly desirable) that you should personally agree with the perspective of your chosen character; rather, your task is to “adopt” that character's point of view for the purposes of the debate;
- Once you've chosen your character, your task is to prepare agreed interventions in the debate in your own words, but in the spirit of the character's known views about Darwin's *Origin of Species*;
- Ideally, when you get up to speak in the debate you should be thinking “in role”, as if you were your character.

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FACT FILE #1	AGASSIZ, Louis
DATES	1807-1873
OCCUPATION/PROFESSION	Professor of Natural History, University of Neuchatel (Switzerland), then Professor of Natural History, Harvard University
AREAS OF EXPERTISE	Biologist, geologist, ichthyologist, glaciologist
BIOGRAPHY 	Born in Motier, near Freiburg (Switzerland). Studied medicine & natural history, & did early work on living and fossil fish of Central Europe under the guidance of French biologist Georges Cuvier. Agassiz was the first person to propose that the earth had been subject to a past ice age (1837). He undertook a lecture tour at the Lowell Institute in Boston in 1846, and then decided to re-locate to the U.S. He joined the faculty of Harvard University, where he established the Museum of Comparative Zoology (1859).
BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i>	Negative. He was Cuvierian in his thinking, viewing species as distinct natural kinds introduced successively during the history of life. For Agassiz, each species possessed functional integrity and “permanence of type”; one species could not be gradually transformed into another.
MAIN ROLE IN DEBATE	Agassiz was the most prominent opponent of Darwinism in the U.S. through to his death in 1873.
KEY QUOTATION(S) AND REFERENCES Louis Agassiz, <u>Evolution and Permanence of Type</u> , 1874	<i>“The world has arisen in some way or another. How it originated is the great question, and Darwin’s theory, like all other attempts to explain the origin of life, is thus far merely conjectural. I believe he has not even made the best conjecture possible in the present state of our knowledge.”</i>

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FACT FILE #2	FLEEMING JENKIN, Henry
DATES	1833-85
OCCUPATION/PROFESSION	Professor of Engineering, Edinburgh University
AREA OF EXPERTISE	Engineering and invention
BIOGRAPHY 	<p>Fleeming Jenkin was a friend and colleague of Lord Kelvin's, and he was heavily involved in the laying of the transatlantic cable. He shared Kelvin's views on the age of the earth (see Kelvin fact file), but added other criticisms of natural selection, not least based on his (and Darwin's) understanding of the nature of inheritance.</p> <p>A man of sincerely held religious convictions, which may have played a part in his generally skeptical attitude towards the <i>Origin</i>.</p>
BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i>	<p>Though an engineer rather than a scientist, in 1867 he published what is often seen as one of the most powerful critiques of the <i>Origin</i>.</p>
MAIN ROLE IN DEBATE	<p>A significant critic, to whom Darwin felt obliged to respond at length.</p>
KEY QUOTATION(S) and REFERENCES: http://www.victorianweb.org/science/science_texts/jenkins.html [NB: the terms in which the quotation opposite is written are offensive to us today; you should know that such terms were commonplace in the Victorian period.]	<p><i>"Suppose a white man to have been wrecked on an island inhabited by negroes, and to have established himself in friendly relations with a powerful tribe, whose customs he has learnt. Suppose him to possess the physical strength, energy, and ability of a dominant white race, and let the food and climate of the island suit his constitution; grant him every advantage which we can conceive a white to possess over the native... concede that in the struggle for existence his chance of a long life will be much superior to that of the native chiefs; yet from all these admissions, there does not follow the conclusion that, after a limited or unlimited number of generations, the inhabitants of the island will be white..."</i></p>

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FACT FILE #3	GRAY, Asa
DATES	1810-1888
OCCUPATION/PROFESSION	Botanist
AREA OF EXPERTISE	Botany, geographical distribution of plants in North America
BIOGRAPHY 	Gray was professor of botany at Harvard University for many years. He became America's foremost botanist, completing several floras. An early correspondent and confidant of Darwin's, he became the most important advocate for Darwin's <i>Origin of Species</i> in the U.S. after 1859. A sincere Christian, he also worked very hard to reconcile natural selection theory with Christian belief.
BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i>	Positive. Gray was an evolutionist, and he even acknowledged the role of natural selection as an important evolutionary mechanism. He developed a form of "theistic evolution", in which key individual variations were divinely engineering as the basis for important steps in the evolutionary process.
MAIN ROLE IN DEBATE	A significant friend and supporter of Darwin's in the U.S., who also represented an important influence in favor of accommodation between Darwinism and religious belief.
KEY QUOTATION(S) AND REFERENCES http://www.darwinproject.ac.uk/gray-essay-design-versus-necessity	<i>"Natural selection is not the wind which propels the vessel, but the rudder which, by friction, now on this side and now on that, shapes the course."</i>

FACT FILE #5

HUXLEY, Thomas Henry

FACT FILE #4

HOOKER, Joseph Dalton

DATES

1817-1911

OCCUPATION/PROFESSION

Botanist, explorer, Director of Kew Gardens

AREAS OF EXPERTISE

Botany, geographical distribution of plants

BIOGRAPHY



The second son of the distinguished botanist Sir William Jackson Hooker, Joseph Hooker studied medicine at the University of Glasgow before joining the Naval Medical Service and accompanying a scientific expedition to the Antarctic, on the basis of which he published *Flora Antarctica* (1844-7), *Flora Novae-Zelandiae* (1853-5) and *Flora Tasmaniae* (1855-60).

Hooker returned to London in 1855 to become first Assistant Director and then Director of the Royal Botanical Gardens, Kew, rising quickly to become Britain's most eminent botanist.

BASIC ATTITUDE TO
ORIGIN OF SPECIES

Very positive. From the outset, he was a key member of Darwin's "inner circle" of supporters

MAIN ROLE IN DEBATE

Hooker was Darwin's closest friend and confidante. He played a central part in arranging for the joint Darwin/Wallace paper of 1858; he participated with Huxley in the "Oxford debate" in 1860, and his support for Darwin – coming from the leading botanist in the country – was of great significance.

KEY QUOTATION(S) AND REFERENCES:

"I am a sinner not to have written you ere this, if only to thank you for your glorious book—what a mass of close reasoning on curious facts and fresh phenomena—it is capitally written and will be very successful.... Lyell, with whom we are staying, is perfectly enchanted, and is absolutely gloating over it."

(Letter to Darwin)

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DATES	1825-1895
OCCUPATION/PROFESSION	Academic professor, prolific essayist & advocate for science, became a first-generation (scientific)
FACT FILE #6	KINGSLEY, Charles
AREA OF EXPERTISE	Biology, geology, evolution, place of science in culture, education, including workers' education; science & public affairs
BIOGRAPHY	Extensively self-taught son of a school-teacher; undertook a voyage of exploration as Assistant Surgeon on <i>HMS Rattlesnake</i> ; Professor of Natural History, Royal School of Mines, 1854-1885; became very prominent in public life, serving on 8 Royal Commissions, and led the movement for the professionalization of science in Britain
	
BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i>	Positive; insisted that scientists should be free to develop naturalistic theories of origins free from the influence of theology
MAIN ROLE IN DEBATE	A member of Darwin's "inner circle", he was an influential supporter of the <i>Origin of Species</i> in public. However, he was consistently skeptical about natural selection as the principal cause of evolutionary change.
KEY QUOTATION(S) AND REFERENCES	<i>"Everybody has read Mr. Darwin's book, or, at least, has given an opinion upon its merits or demerits; pietists, whether lay or ecclesiastic, decry it with the mild railing which sounds so charitable; bigots denounce it with ignorant invective; old ladies of both sexes consider it a decidedly dangerous book, and even savants, who have no better mud to throw, quote antiquated writers to show that its author is no better than an ape himself; while every philosophical thinker hails it as a veritable Whitworth gun in the armoury of liberalism; and all competent naturalists and physiologists, whatever their opinions as to the ultimate fate of the doctrines put forth, acknowledge that the work in which they are embodied is a solid contribution to knowledge and inaugurates a new epoch in natural history."</i>
Huxley, 'The origin of Species', Westminster Review 17 (n.s.) 1860, pp. 541-70.	

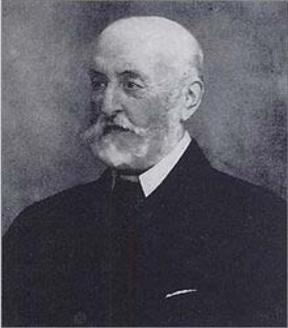
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DATES	1819-1875
OCCUPATION/PROFESSION	Anglican clergyman, Regius Professor of Modern History, University of Cambridge, novelist
AREAS OF EXPERTISE	Christianity, history, natural history, social reform
BIOGRAPHY	 <p>Second son of Rev. Charles Kingsley, he followed his father into the Anglican ministry as Rector of Eversley in Hampshire (1844). In 1860, he was appointed Regius Professor of Modern History at Cambridge. He was a prolific and popular author, and had interests that spanned natural science, literature, the arts and social questions. Generally friendly with the Darwin circle, he had a significant correspondence with Huxley.</p>
BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i>	Positive. He was quickly persuaded to accept Darwin's general approach.
MAIN ROLE IN DEBATE	As a respected Anglican clergyman, Kingsley was an extremely significant early supporter of the <i>Origin</i> (see his letter to Darwin, below)
KEY QUOTATION(S) and REFERENCES:	<p><i>"All I have seen of [the Origin] awes me; both with the heap of facts, & the prestige of your name, & also with the clear intuition, that if you be right, I must give up much that I have believed & written. In that I care little. 'Let God be true, & every man a liar'...I have gradually learnt to see that it is just as noble a conception of Deity, to believe that he created primal forms capable of self development into all forms needful pro tempore & pro loco, as to believe that He required a fresh act of intervention to supply the lacunas w^h. he himself had made. I question whether the former be not the loftier thought."</i></p> <p><i>"Darwin is conquering everywhere and rushing in like a flood, by the mere force of truth and fact."</i> (1863)</p> <p>http://www.darwinproject.ac.uk/entry-2534</p>

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FACT FILE #7	LYELL, Charles
DATES	1797-1875
OCCUPATION/PROFESSION	Lawyer by training, gentleman geologist by profession
AREA OF EXPERTISE	Historical geology; antiquity of man
BIOGRAPHY 	The son of a wealthy Scottish landowner, Lyell trained as a lawyer in Oxford but there fell under the influence of William Buckland. He undertook important geological field excursions in Britain and continental Europe, and authored the <i>The Principles of Geology</i> (3 vols., 1831-4), arguably the most influential geological work of the mid-19 th century. Lyell was a close friend and supporter of Darwin's; he was involved with Hooker in arranging for the joint Darwin-Wallace publication in 1858.
BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i>	Positive. The principal advocate of "uniformitarianism" in geology, Lyell quickly accepted Darwin's idea of descent with modification as a logical extension of uniformitarian principles into biology. He was seriously concerned about squaring evolution with his religious beliefs, and was reluctant to accord natural selection the principal role in evolution. He was also concerned about man's place in nature, and only gradually accepted a naturalistic account of human origins in the late-1860s.
MAIN ROLE IN DEBATE	Friend, confidant and advisor of Darwin's, Lyell also authored an important early work on human prehistory, <i>The Antiquity of Man</i> (1863).
KEY QUOTATION(S) AND REFERENCES Charles Lyell, <i>The Antiquity of Man</i> (1863), 470.	<i>"The question now at issue, whether the living species are connected with the extinct by a common bond of descent, will best be cleared up by devoting ourselves to the study of the actual state of the living world, and to those monuments of the past in which the relics of the animate creation of former ages are best preserved and least mutilated by the hand of time."</i>

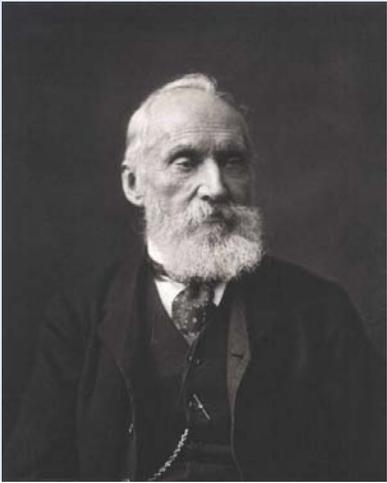
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FACT FILE #8	MIVART, St George Jackson
DATES	1827-1900
OCCUPATION/PROFESSION	English biologist
AREA OF EXPERTISE	Biology, evolutionary theory, science and religion
<p data-bbox="261 569 464 600">BIOGRAPHY</p> 	<p data-bbox="800 569 1396 1035">Brought up an evangelical, Mivart converted to Catholicism. Professor of Zoology, St Mary's Hospital Medical School, he was twice Vice-President of the Zoological Society of London. Mivart was a colleague and acquaintance of Huxley's, but there was a personal rift between them as Mivart's view of the <i>Origin</i> became more negative. Mivart was a zoologist with a keen interest in the relationship between science and religious belief (especially Catholicism).</p>
<p data-bbox="261 1047 740 1119">BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i></p>	<p data-bbox="800 1047 1349 1312">Changed from positive to negative. Mivart initially responded favorably to the <i>Origin</i>. But he became skeptical about natural selection as a principal cause of evolution, and wrote increasingly negative reviews of the <i>Origin</i> and the <i>Descent of Man</i>.</p>
<p data-bbox="261 1325 647 1356">MAIN ROLE IN DEBATE</p>	<p data-bbox="800 1325 1393 1434">A significant critic, to whom Darwin felt obliged to respond at length in later editions of the <i>Origin of Species</i>.</p>
<p data-bbox="261 1446 670 1518">KEY QUOTATION(S) AND REFERENCES</p> <p data-bbox="261 1562 764 1711">Mivart, <i>On the Genesis of Species</i>, 1871, available at: http://www.gutenberg.org/ebooks/20818</p>	<p data-bbox="800 1446 1377 1635">"As to 'natural selection', I accepted it completely and in fact my doubts & difficulties were first excited by attending Prof. Huxley's lectures at the School of Mines."</p>

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FACT FILE #9	OWEN, Richard
DATES	1804-1892
OCCUPATION/PROFESSION	Medically trained, biologist, paleontologist,
AREA OF EXPERTISE	Comparative anatomy, biology, geology, evolution, natural history museums
BIOGRAPHY 	Trained in medicine at Edinburgh, worked in comparative anatomy first at Royal College of Surgeons & then as Superintendent of Natural History at British Museum; oversaw plans for new Natural History Museum in South Kensington, London. Renowned for his work on extinct reptiles, coining the term “Dinosauria”. Much honored, he was nonetheless seen as ungenerous towards his colleagues and was involved in controversy over not properly acknowledging the work of others in his publications.
BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i>	Negative. Though inclined towards an evolutionary view of the history of life, he denied that Darwin had made a significant contribution to understanding the nature of the evolutionary process. He “schooled” Samuel Wilberforce in his critique of the <i>Origin</i>
MAIN ROLE IN DEBATE	A principal early critic of the <i>Origin of Species</i> , he became a particular target of Thomas Huxley, especially in the debate about the “hippocampus minor”.
KEY QUOTATION(S) AND REFERENCES http://www.victorianweb.org/science/science_texts/owen_review_of_origin.html http://darwin-online.org.uk/content/frame.set?itemID=A30&viewtype=ext&pageseq=1	<i>“But, as we have before been led to remark, most of Mr. Darwin’s statements elude, by their vagueness and incompleteness, the test of Natural History facts.”</i>

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FACT FILE #10	THOMSON, William (1 st Baron Kelvin)
DATES	1824-1907
OCCUPATION/PROFESSION	Physicist, engineer & inventor
AREA OF EXPERTISE	Physics, mathematics, engineering innovation
BIOGRAPHY	<p>Born in County Antrim, Ireland, the son of an academic mathematician and engineer, Thomson studied at Glasgow and Cambridge Universities and was appointed Professor of Natural Philosophy at Glasgow at age 22. He worked in electro-magnetism and thermodynamics, was a prolific inventor, and was heavily involved in the laying of the transatlantic cable. Multiply honored, he became the leading British physical scientist of the mid-Victorian period. A man of sincerely held religious convictions, which played a part in his generally skeptical attitude towards Darwinian evolutionary theory.</p>
	
BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i>	<p>Kelvin published calculations concerning the sun's heat that suggested the earth was not anywhere near so old as the uniformitarian geologists (and Darwinians) claimed. These calculations proved to be one of the most challenging of all the technical criticisms faced by Darwin after 1859.</p>
MAIN ROLE IN DEBATE	<p>A significant critic, to whom Darwin and Huxley felt obliged to respond at length.</p>
KEY QUOTATION(S) AND REFERENCES	<p><i>"But I think we may with much probability say that the consolidation [of the earth] cannot have taken place less than 20,000,000 years ago, or we should have more underground heat than we actually have, nor more than 400,000,000 years ago, or we should not have so much as the least observable underground increment of temperature."</i></p>
<p>Kelvin, On the Secular Cooling of the Earth, <i>Transactions of the Royal Society of Edinburgh</i>, Vol. XXIII, pp. 167-169, 1864. Read April 28, 1862. Available at: http://Zapatopi.net/kelvin/papers/on_the_secular_cooling_of_the_earth.html</p>	

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FACT FILE #11	WALLACE, Alfred Russel
DATES	1823-1913
OCCUPATION/PROFESSION	Naturalist, writer
AREA OF EXPERTISE	Evolutionary theory, natural history, biogeography
<p data-bbox="261 552 462 583">BIOGRAPHY</p> 	<p data-bbox="743 552 1404 940">Largely self-taught; son of an unsuccessful lawyer; undertook 2 major voyages of exploration; co-founder of theory of evolution by natural selection; strong supporter of “survival of the fittest” as the principal mechanism of organic evolution; espouser of many radical causes, including religion (especially spiritualism), politics (socialism; land nationalization), women’s suffrage, anti-vaccination.</p>
<p data-bbox="261 993 609 1066">BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i></p>	<p data-bbox="743 993 1404 1140">Positive. Wallace was an immediate supporter of Darwin’s book, and wrote some of the most persuasive popular accounts of his and Darwin’s theory in the late-19th century</p>
<p data-bbox="261 1150 651 1182">MAIN ROLE IN DEBATE</p>	<p data-bbox="743 1150 1404 1308">A principal supporter of ‘Darwinism’ in natural history, in the mid-1860s he became a skeptic about Darwinism’s ability to explain crucial features of human evolution</p>
<p data-bbox="261 1318 673 1392">KEY QUOTATION(S) AND REFERENCES</p> <p data-bbox="261 1434 722 1623">Wallace, <i>Darwinism, An Exposition of the Theory of Natural Selection with some of its applications</i>, London, Macmillan, 1901, pp 8-9.</p>	<p data-bbox="743 1318 1404 1764"><i>“Before Darwin’s work appeared, the great majority of naturalists...held firmly to the belief that species were realities, and had not been derived from other species by any process accessible to us...But now all this is changed. The whole scientific and literary world, even the whole educated public, accepts, as a matter of common knowledge, the origin of species from other allied species by the ordinary process of natural birth. The idea of special creation...is absolutely extinct!”</i></p>

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FACT FILE #12	WILBERFORCE, Samuel
DATES	1805-1873
OCCUPATION/PROFESSION	English Bishop in the Church of England, Bishop of Oxford
AREAS OF EXPERTISE	Christian religion, public speaking
BIOGRAPHY	<p>Third son of William Wilberforce, the evangelical renowned for his work on behalf of the abolition of the slave trade. A graduate of Oxford, Samuel rose quickly in the Church of England, serving as Chaplain to Prince Albert and Subaltern to the Queen. He became Dean of Westminster and Bishop of Oxford in 1845.</p> <p>Renowned as a public speaker. He was known as “Soapy Sam” after Prime Minister Benjamin Disraeli described his manner as “unctuous, oleaginous, saponaceous”.</p>
BASIC ATTITUDE TO <i>ORIGIN OF SPECIES</i>	<p>Negative; he is renowned, above all, for leading the charge against the <i>Origin of Species</i> in a public debate at the annual meeting of the British Association for the Advancement of Science in Oxford in the summer of 1860. His run-in at the debate with Thomas Huxley became the talk of the town.</p>
MAIN ROLE IN DEBATE	<p>Following the Oxford debate, Wilberforce became a symbol of theological opposition to the <i>Origin</i>.</p>
KEY QUOTATION(S) AND REFERENCES	<p>“Was it through his grandfather or his grandmother that he claimed his descent from a monkey?” (Addressed to Huxley in the Oxford debate)</p> <p>“A rotten fabric of guess and speculation” (on Darwin’s theory)</p> <p>http://darwin-online.org.uk/content/frameset?itemID=A19&viewtype=text&pageseq=1</p>



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STS.009 Evolution and Society
Spring 2012

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