Charles Darwin and the "Beagle"

"If I live till I am 80 years old," Charles Darwin wrote after finishing his first book, "I shall not cease to marvel at finding myself an author." That book was *The Voyage of the Beagle* (1837), in which Darwin recorded his experiences and observations as a naturalist on the *Beagle*'s globe-circling journey, begun 150 years ago. From this trip came much of the raw material and inspiration for Darwin's great work, *On the Origin of Species* (1859), in which he first propounded his revolutionary theory of evolution. Scholars and laymen still debate Darwin's ideas, particularly his notion of "natural selection." Here, historian-philosopher Michael Ruse traces the story of Darwin, his critics, and his ideas, beginning with the *Beagle*.

by Michael Ruse

On the cold morning of December 27th, 1831, H.M.S. *Beagle*, a 10-gun brig commanded by Captain Robert Fitzroy, weighed anchor in Devonport harbor and put to sea. She was bound for South America and the Pacific Ocean, on a five-year, round-the-world voyage to chart and measure ocean depths. Below deck, swinging miserably in his hammock, Charles Darwin was violently seasick.

Captain Fitzroy had invited Darwin to join the *Beagle* in order to have on board a gentleman companion. What he did not realize was that this young man of 22 would be stimulated by the voyage into producing one of the great intellectual achievements of all time.

Spurred by what he saw and learned, Darwin would deny that the living world was the miraculous creation of an All-Wise Being. Instead, he would declare that animals and plants alike were the end product of a long, slow, "evolutionary" process.

And, in 1859, in *On the Origin of Species*, Darwin would suggest a mechanism for this process: natural selection through the struggle for existence. Not all organisms that are born can survive and reproduce; success is in part a function of distinctive features (whiter coat, greater speed, stronger sex drive), and thus there is a constant winnowing or "selecting."

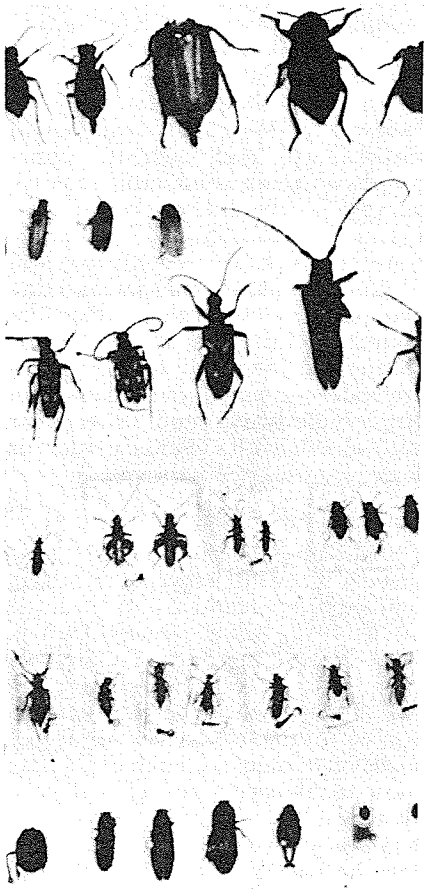
A less-likely candidate to sit at the high table of science, with Copernicus, Galileo, and Newton, would have been hard to imagine. Young Darwin had been born to a life of luxury (his maternal grandfather was Josiah Wedgwood, manufacturer of Wedgwood china), and he had shown all the marks of a young man from whom life expected very little. He had idled through school, had dropped out of the medical program at Edinburgh University, and had just finished a very comfortable three years at Cambridge University.

To get his degree, he had dabbled in the classics and mathematics, but not much more. Darwin later wrote, "During the three years which I spent at Cambridge my time was wasted, as far as the academical studies were concerned, as completely as at Edinburgh and at school." At Cambridge, he intended to become an Anglican parson—a perfect niche in life for the man with financial ease and little ambition.

It seemed an inauspicious beginning for one of our greatest scientists. Darwin appeared to have little training, preparation, or ambition for a life of science. Indeed, he did not have a degree in science. Yet it is clear that Darwin's achievement was not a matter of blind luck.

Around the time that Darwin was at Cambridge, 1828–31, there was no natural science in the curriculum of English universities, although there were a number of professorships in science. No knowledge of the relevant science was demanded for these posts.

In 1818, Adam Sedgwick (1785–1873) had been elected professor of geology, even though he hardly knew what a rock looked like. He campaigned under the slogan that "hitherto he had turned no stone, but if elected he would leave no stone unturned." He attributed his smashing victory to the fact that although he himself knew no geology, his opponent knew a lot that was all wrong.



Down House and The Royal College of Surgeons of England.

Part of Darwin's large specimen collection from the Beagle *voyage.*

Sedgwick kept his campaign promise, becoming a leading European field geologist. Nor was Sedgwick one of a kind. John Stevens Henslow (1796–1861), professor of

botany, was rescuing the herbarium from decades of neglect and plunging into his studies.

Similarly, the energetic William Whewell (1794–1866), professor of mineralogy, was writing monographs on gems, conducting massive surveys of the tides, writing textbooks on mechanics, preparing seminal works on the history and philosophy of science, formalizing economics, analyzing German church architecture, and generally setting everyone right on every matter under the sun. (Sydney Smith, an English clergyman and writer, once said of Whewell, "Science was his forte; omniscience his foible.")

Learning the Trade

These men used to meet weekly to discuss scientific issues, and Darwin was quickly accepted into the little circle. In his *Autobiography*, Darwin wrote, "Looking back, I infer that there must have been something in me a little superior to the common run of youths, otherwise the above-mentioned men, so much older than me and higher in academical position, would never have allowed me to associate with them." All the time that he was at Cambridge, Darwin received what amounted to personal tutoring from some of the best scientific minds in Britain.

Darwin was far from being a fully qualified scientist, even by the standards of the day, when he left Cambridge. But he had started to learn the trades—geology and biology—and, most importantly, he had set his sights on a life of science. "My love of natural science has been steady and ardent," he later wrote. "This pure love has, however, been much aided by the ambition to be esteemed by my fellow naturalists."

A Secret Heretic

To be a cleric, as Darwin planned, was not inconsistent with pursuing a scientific career. Most of the faculty at Oxford and Cambridge were ordained, including Sedgwick, Henslow, and Whewell. Indeed, taking orders in the Anglican faith was required for many university posts. Darwin might have traced the path down which many had gone before: a comfortable living, a curate to do the hard work, and ample leisure to devote to hard-nosed science.

The invitation to travel on the *Beagle* voyage came to Darwin through the scientists' old-boy network. He jumped at the chance, seeing it as a way to broaden his horizons and to make complete collections of minerals, plants, and animals that would be useful to scientists back in England. At first, his father was reluctant to let him go. But he finally gave his consent, thinking that the voyage would steady his son's character.

The voyage was supposed to have lasted only two years, but it took five. Fitzroy spent three exhausting years charting the Atlantic and Pacific waters around South America alone before proceeding to the Polynesian islands, New Zealand, and Australia, and then around the Cape of Good Hope at the tip of Africa.

I like to think of the time Darwin spent on the *Beagle* as equivalent to a

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Darwin in 1840, a year after his marriage. As a bachelor, he drew up a balance sheet, listing matrimony's merits and demerits. He concluded that he did not want to live the rest of his life "like a neuter bee."

stint in graduate school. (But Darwin's first book, the *Voyage of the Beagle,* is far too enjoyable and too well written to masquerade as a Ph.D. thesis!)

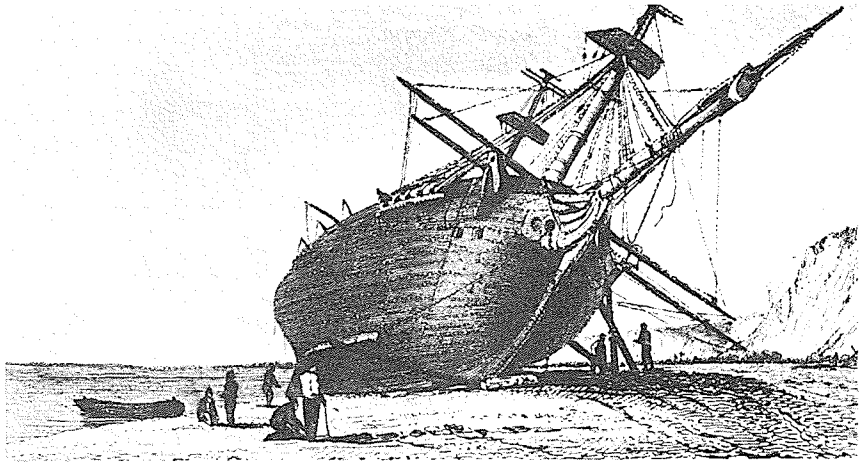
At this time, the hottest topic in Darwin's circle at Cambridge was the nature and history of the Earth. The orthodox position, strongly promoted by Sedgwick, was called "catastrophism." He argued that there are periodic, monstrous upheavals, on the scale of Noah's flood, following which God miraculously creates a whole new set of organisms. This explained why the fossil record (then very sketchy) seemed to show a progression from primitive to advanced forms of life.

Against this view of earth history, Charles Lyell (1797–1875), a lawyer by training, had argued in his *Principles of Geology*, published in three volumes after 1830, for what others called the "uniformitarian" position. Lyell saw the Earth in an ongoing steady-state, quoting the 18th-century Scottish geologist James Hutton that there was "no trace of a beginning, no prospect of an end." Rain, wind, snow, frost, erosion, earthquakes, sedimentation, and volcanoes produced all change on the face of the globe.

Organisms also fit the steady-state pattern. Somehow, they were created naturally, as Lyell saw it, on a continual basis: They flourished for a while, and then, like the late-lamented dodo bird, they became extinct. Lyell believed there was no genuine progressive development revealed in the fossil record.

But most important, Lyell argued that, given the universal unending struggle for existence, organisms would be driven to extinction before they would have time to change.

Evolution was not a new idea. Indeed, Charles's grandfather, Erasmus Darwin (1731–1802), a physician, had put forth a theory of



Courtesy Robert Harding Picture Collection, London.

Captain Fitzroy beached the Beagle *for repairs on Argentina's coast early in 1834. Later, Darwin would spend eight years engrossed in a study of barnacles.*

evolution in his 1794 book, *Zoonomia*. The French naturalist Jean Lamarck (1744–1829) had also argued for evolution. But Lamarck, like other evolutionists, did not have a credible explanation of how such a process might work. The French scientist argued that animals advanced by taking on new characteristics almost by force of will. (Darwin read Lamarck aboard the *Beagle* and remarked, "His theories delighted me more than any novel I ever read.")

Oddly enough, it is in Lyellian "uniformitarianism" that we find the clue to Darwin's becoming an evolutionist. All during the time he was carefully collecting plant and animal specimens and storing them aboard the *Beagle*, Darwin had in the back of his mind the nagging problem faced by any Lyellian. If new organisms are produced naturally, then how does this occur? If not evolution, then what?

The crucial experience that was to tip Darwin into evolutionism was the *Beagle*'s visit (in 1835) to the Galápagos Islands, stinking hot, inhospitable pieces of volcanic rock right on the equator, off the coast of Ecuador in the Pacific. There, the chief land animals are lumbering great tortoises, and many of the birds are drab-looking members of the finch family. After the *Beagle* had visited several of the islands, Darwin realized that, from one island to another, the tortoises and finches were different.

He mulled over this problem all the way back to England.

Was it necessary to think the unthinkable?

Had all the finches of the Galápagos come from one or a few founding ancestors, which had then evolved to different forms on different islands?

When an expert confirmed that the finches were of different species soon

after Darwin's return, Darwin concluded, almost reluctantly, that this had to be so. He crossed the divide and became an evolutionist.

More accurately, he became a *secret* evolutionist. On his arrival in England, Darwin was greeted with open arms by his scientific colleagues, proud of the rising new star they had produced. (A large part of Darwin's collections and notes, and many letters, had been sent back to England during the voyage.) He was urged to play an active role in scientific societies, treated as an equal by his old professors, and helped in many ways with his *Beagle* collections and his writings. Darwin loved every minute of it, and he had no intention of ruining things by announcing his conversion to evolutionism, a doctrine that his old circle regarded with horror.

Publicly orthodox, privately heret-

A DARWIN READER

The Charles Darwin who set off on the *Beagle* in 1831 was not quite the same man who returned five years later. Alan Moorehead writes in his lavishly illustrated **Darwin and the Beagle** (1969) that the young scientist spent 40 days of "wonderful exuberance" roaming the Argentine pampas with a group of Gauchos. Darwin wrote in his **Autobiography** (1892), however, that he developed his meticulous scientific habits while on board the *Beagle*. Not long after his return, a mysterious illness ended Darwin's carefree days. As historian Gertrude Himmelfarb observes in her masterful biography, **Darwin and the Darwinian Revolution** (1959), "suffering was the motif of Darwin's life, as surely as science was its motive." Another biography is Gavin DeBeer's **Charles Darwin** (1964). The controversy that greeted **On the Origin of Species** in 1859 is recounted in **Apes, Angels, and Victorians** (1955) by William Irvine. Darwin himself played only a minor role in the debate. "Metaphysical ideas made him uncomfortable," writes Irvine, "and unpleasant metaphysical ideas made him ill." David Hull's **Darwin and His Critics** (1973) contains a fascinating selection of reviews of the *Origin*, revealing that contemporary thinkers rejected natural selection even as they embraced evolution. Indeed, natural selection remained out of favor until Theodosius Dobzhansky applied the lessons of Gregor Mendel's studies in genetics to Darwin's theories, in **Genetics and the Origin of Species** (1937). More recently, E. O. Wilson has extended natural selection to human behavior, notably in **On Human Nature** (1978). Others continue to question the theory. Paleobiologist Steven M. Stanley argues in **The New Evolutionary Timetable** (1981) that man did not evolve gradually, as natural selection requires, but appeared suddenly between 40,000 and 100,000 years ago. Stephen Jay Gould, a Marxist, puts forth a similar "punctuational" view in **The Panda's Thumb** (1980), but concedes in **Ever Since Darwin** (1977) that "we'll have Charles Darwin to kick around for some time."

ical, Darwin worked hard on his evolutionary theory. The problem was to find a causal mechanism.

Darwin found his answer in the barnyard and pigeon coop. Farmers and animal fanciers breed from the best of their stock, creating new, desirable forms through artificial selection. Darwin saw that one might have a *natural* selection, creating new forms among wild animals.

But what would power such a process? At the end of September 1838, two years after his return, Darwin read Robert Malthus's *An Essay on a Principle of Population*, in which Malthus argued that population, expanding geometrically, would inevitably outstrip food supplies, causing a destructive struggle for existence. Darwin turned Malthus upside-down, using the struggle as the power behind evolution through natural selection.

Settling Down

"One may say there is a force like a hundred thousand wedges trying [to] force every kind of adapted structure into the gaps in the economy of nature, or rather forming gaps by thrusting out weaker ones," he wrote in his notebook.

Darwin was settling down even as his career was taking off. In 1839, he married his cousin, Emma Wedgwood. Eventually, they had 10 children, three of whom died at an early age. Three years after their marriage, the Darwins moved to an isolated house in Downe, 30 miles outside London, where they spent the rest of their lives.

By 1844, Darwin had worked out his position in detail and written it up in a fairly long manuscript. But to publish would have made him a scientific pariah. Instead, he spent eight years diligently working on a study of barnacles.

By this time, Darwin had also fallen ill with some still-unidentified debilitating malady. It plagued him for the rest of his life, limiting his working day to just a few hours.*

Thus, for 15 years, Darwin's work went unpublished, although it was stored with careful instructions for its publication should he die. Darwin was cautious, but he had no desire to be ignored by posterity.

A Reluctant Celebrity

Finally, in 1858, Darwin's hand was forced. A young English naturalist in the Far East, Alfred Russel Wallace (1823–1912), sent Darwin a copy of a short essay he had written —containing a perfect cameo of Darwin's own position. Depressed, Darwin turned to his friends for advice. They suggested that Wallace's essay be published along with extracts from Darwin's earlier writings. This was done at once, and then Darwin set about writing a fresh "abstract" of his position, which did not turn out to be much different from the original.

Toward the end of the next year, Darwin's great evolutionary tome was presented to the world. The first edition's press run was 1,250 copies, and booksellers snapped them all up on the day of publication. (*The Origin of Species* went through seven editions in Britain by 1872, selling 16,000 copies and becoming a minor best seller.)

Darwin and the *Origin* were instant celebrities. Controversy swirled around them, and it continues even

*The symptoms of Darwin's illness included nausea, headache, and insomnia. The slightest effort exhausted him, making him a semi-invalid. Yet Darwin's illness did not prevent him from publishing 20 books and monographs during his lifetime.

today. Although Darwin said virtually nothing in the *Origin* about the evolution of man, hoping to avoid an uproar, at once he became known as the "father of the monkey theory."*

Probably the most famous clash between his supporters and critics occurred in 1860, at the annual meeting at Oxford University of the British Association for the Advancement of Science. For the defense (of the biblical explanation) was the Bishop of Oxford, known because of his eloquence as "Soapy Sam" Wilberforce. Leading off for the prosecution was a brilliant young supporter of Darwin, Thomas Henry Huxley (1825–95).

Cambridge Surrenders

Wilberforce haughtily asked Huxley if he claimed descent from monkeys through his grandfather or through his grandmother. Starting a debate at that level with Huxley was not a wise move. As Huxley later recounted the incident, he replied: "Would I rather have a miserable ape for a grandfather, or a man highly endowed by nature and possessed of great means and influence, and yet who employs these faculties and that influence for the mere purpose of introducing ridicule into a grave scientific discussion—I unhesitatingly affirm my preference for the ape."

At the back of the room, adding to the melee, Darwin's old shipmate, Fitzroy (now an admiral), strode back and forth, brandishing a Bible above his head, shouting: "The Book! The Book! We must have the Book!"

Benjamin Disraeli, the future Prime Minister, pondered the question of evolution in a speech in the House of Commons and was happy to reassure his listeners of his orthodox religious convictions. And, in a similar vein, the wife of the Bishop of Worcester worried about the malign effects of Darwinism on the lower classes: "Descended from monkeys? My dear, let us hope that it is not true! But if it is true, let us hope that it does not become widely known!"

Despite all the controversy, one thing stands out very clearly. Although many lay people were reluctant to accept evolution, and although virtually everyone had trouble with natural selection, almost overnight most professional scientists became evolutionists. At staid old Cambridge, where students had once been asked to give "evidence of design" on their examination papers, the examiners began asking students in the 1860s to analyze the struggle for existence.

Stacking the Deck

Several factors worked in Darwin's favor. By 1860, the older, more prominent scientists, Darwin's teachers, were long past their prime and unable (or unwilling) to lead the opposition to his ideas. (Darwin's old mentor, Whewell, had, however, refused to allow a copy on the shelves of the Trinity College library when it was first published.) The younger generation, less tied by religion, desperately wanted a "natural" solution to the problem of organic origins. Darwin's carefully marshalled arguments and mountains of evidence seemed to reconcile all the puzzling elements: fossils, geographical distributions, homologies, and embryologic similarities between species.

Nor were Darwin's supporters beyond politicking. Huxley and many other Darwinians, particularly the

*Darwin addressed human evolution in his other great work, *The Descent of Man*, published in 1871. By then, the furor had died down. "Everybody is talking about it without being shocked," remarked a puzzled Darwin.

botanist Joseph Dalton Hooker (1817–1911), were among the most influential figures in the scientific community, constantly refereeing papers submitted for publication in scientific journals. Papers that were favorable to Darwinism got a friendly nod; those that were not, did not. Darwin himself published a few anonymous reviews of work that supported his theory.

My favorite example of the scientific politics of the day is the case of William Dawson, principal of McGill College and noted paleobotanist—the only Canadian link I have been able to find with the Darwinian revolution. Invited to give a prestigious lecture at the Royal Society in London, Dawson treated his audience to 50 dense pages on the Carboniferous era in Nova Scotia. Then, for three more pages, Dawson spoke out against evolution.

Previously, all such lectures were automatically published in the society's journal. But both of the referees were Darwinians. One remarked that "the author does not appear to be aware of the British opinions upon persistent species." In the end, Dawson had to be content with a mere two-page abstract in the society's equivalent of a newsletter.

"Higgledy-Piggledy"

Of course, what made Darwinism more than "just a theory" were the extrascientific implications. Many laymen rejected natural selection because they could not really bring themselves to believe that blind law could result in a world that seemed so well designed—or could produce something so obviously important as *Homo sapiens*. Even many of those who became evolutionists believed that God must work through special "creative" laws.

Sir John Herschel, the great astronomer, argued that we must introduce the "idea of Jumps . . . as if for instance a wolf should at some epoch of lapine history take to occasionally littering a dog or a fox among her cubs. This would allow for *mind, plan, design,* and to the . . . obvious exclusion of the haphazard view of the subject and the casual concourse of atoms." Herschel called natural selection "the law of higgledy-piggledy."

Pecking Order

But not all the extrascientific factors went against Darwinism. Many religious people, including not a few very conservative churchmen, liked the idea of evolution, even the idea of evolution through natural selection. After all, to a good Scottish Elder of the Kirk (Presbyterian Church), natural selection was but the secular expression of what he had long been preaching about God's choosing an elect!

At the other end of the spectrum, we find liberal theologians drawn to evolution and selection because they preferred the notion of a God who could work through unbroken law, rather than one who had to keep interfering miraculously in His creation. The Reverend Baden Powell (father of the founder of the Boy Scout movement) wrote in 1855:

> Precisely in proportion as a fabric manufactured by machinery affords a higher proof of intellect than one produced by hand; so a world evolved by a long train of orderly disposed physical causes is a higher proof of Supreme intelligence than one in whose structure we can trace no indications of such progressive action.

Darwin himself had been able to reconcile evolutionism with a belief in God. He was never an atheist, al-

though toward the end of his life he drifted toward agnosticism (a word coined by Huxley in 1869).

In addition to religious trends, there were social beliefs that aided Darwin. Although very few could totally accept Darwin's claims about the power of natural selection, his general position on the struggle for existence struck a responsive chord in the political and business milieu of mid-Victorian England.

"Social Darwinists" such as the philosopher Herbert Spencer argued that society and nature were alike: The rich were rich because they were better adapted to succeed in the economic "struggle for existence." The poor were poor because they were inferior—there was no helping them.

The progressive aspect of evolutionism, particularly as it was taken to apply to our own species, seemed merely to confirm what everyone in Britain knew already. At the top of the evolutionary heap, one had the English and Scots, and then one worked down through the colored races, until one reached the miserable savages at the bottom of South America, the Tierra del Fuegians (whom Darwin had visited aboard the *Beagle*). Depending on one's perspective, the Irish, then under British rule, could be placed just above or just below these wretches.

In the years after the *Origin*, newspaper cartoonists, developing their own bastardized version of Darwinism, almost invariably gave their Irish figures distinctly simian features. Englishmen (and others) now enjoyed scientific "justification" of their prejudices. Yet Darwinism, in fact, does not have such implications. All humans are the same species, in Darwin's view, and there is no evidence that one group is "higher" or "lower" than another.

Darwin died of a heart attack in

This 1861 Punch *cartoon, entitled "The Lion of the Season," satirized Darwin's new theory. It shows a tuxedo-clad ape being received into London society.*

Courtesy of Punch.

1882 in his home at Downe at the age of 73. By then, the initial furor caused by his ideas had subsided. Indeed, he was recognized by scientific friends and foes alike as one of the great figures of the age. The Victorians loved a hero, and so, against the wishes of his own family, he was accorded the ultimate accolade. His coffin was borne by two dukes, an earl, past, present, and future presidents of the Royal Society, and the American Minister. He was laid to rest in "the English Valhalla," Westminster Abbey. He lies next to his old friend Lyell, and a few feet from Sir Isaac Newton.

During the hundred years since his death, Darwin's ideas have continued to stir debate. What Darwin did not develop, and what he needed most, was an adequate theory of heredity: a science explaining how new plant and animal characteristics originate and are transmitted through the generations. In fact, even during Darwin's lifetime, the secrets of genetics were being unlocked by an obscure Moravian monk, Gregor Mendel (1822–84). But no one knew of Mendel's work, and it was not until the 20th century that his ideas were discovered and extended.

The course of science is never a straight line: The earliest Mendelians saw their theory as a *rival* to Darwinism! After decades of dispute, during the 1930s scientists realized that Darwinism and Mendelism together hold the key to a full picture of the evolutionary process. The two subjects were melded together in the "synthetic theory of evolution," or "neo-Darwinism." (Julian Huxley, grandson of "Darwin's bulldog," Thomas Huxley, helped rejuvenate Darwinism with his 1942 book, *Evolution: The Modern Synthesis.)*

During the last decade, controversy has once again exploded around Darwinism. As in the 19th century, extrascientific factors continue to spur the critics. In America, the most prominent of these are the so-called scientific Creationists. They would have us reject evolutionism entirely and return to biblical literalism. The Old Testament's account of the Creation, they argue, should be the only one taught in the schools.

Marx vs. Darwin

The Creationists focus on "missing links" in the fossil record and exclude all other evidence of evolution. Duane T. Gish's *Evolution? The Fossils Say No!* (1973) is representative.

A more serious intellectual challenge to Darwinism comes from the very opposite end of the spectrum. Again, it is natural selection that comes under attack. There are a number of very good scientists, committed evolutionists, who reject Darwinism mainly because it does not suit their Marxist ideology.

These are not crude, doctrinaire ideologues of the kind that supported Trofim Lysenko in Soviet Russia in the 1930s, but they do try to mold their science to fit their politics.*

Two of them are leading Harvard biologists, Richard Levins and Richard Lewontin. They declared in a 1976 essay, "As working scientists in the field of evolutionary genetics and ecology, we have been attempting with some success to guide our own research by a conscious application of Marxist philosophy."

The Marxists have spearheaded criticisms of the attempt by sociobiologists such as Edward O. Wilson, also of Harvard, to extend Darwin's

*Trofim Denisovich Lysenko, chief of agriculture under Stalin, rejected natural selection in favor of a kind of Lamarckism. This had disastrous consequences for Soviet crops.

ideas into the sphere of animal *behavior*, including human behavior. The Marxists see any proposals to view human beings as a product of an evolutionary past, molded by natural selection, as deeply reactionary. Instead, they argue that humans must be seen apart from the animal world, as beings who have in some sense escaped their evolutionary heritage. The old fears about Darwin's ideas threatening human uniqueness die hard. (Marx himself, more impressed by what he saw as Darwin's evidence for continual human progress, wrote that he wished to dedicate *Das Kapital* to Darwin—who politely declined the offer.)

More positively, some Marxist biologists, particularly Stephen Jay Gould (also of Harvard), have tried to provide an alternative to Darwinism. Darwin's version of natural selection implies that evolution will proceed in a smooth, gradual way. Gould's theory of "punctuated equilibria" supposes that evolution proceeds by fits and starts: There are periods of calm, and then, suddenly, organisms switch into new forms. One thus has the kind of revolutionary changes predicted by Marx.

Most important, Gould's theory implies that all humans are at the same point of evolutionary development. Any differences between individuals are the product of environmental influences such as schooling or class background. Human nature remains highly malleable, so there are no theoretical barriers to transforming society into the worker's paradise that is supposed to follow Marxist revolution.

The debate over Darwinism will not cease. Yet I suspect that 50 years from now, on the bicentennial of the H.M.S. *Beagle*'s departure for unknown shores, scientists will be celebrating the continuing triumph of Darwin's theory of evolution through natural selection.