BOOK REVIEWS

Darwin Socially Situated

Darwin. ADRIAN DESMOND and JAMES MOORE. Warner, New York, 1992. xx, 808 pp., illus. $35.

Whereas previous biographers have studied Darwin's mind, Adrian Desmond and James Moore consider his body, his family, and his network of friends and collaborators. No previous study so clearly demonstrates how Darwin's private research and thinking challenged the social ideology supported by the scientific establishment whose patronage and support he required. Furthermore Desmond and Moore provide important background materials on what the working class and politically radical press were saying about respectable science symbolized by the British Association for the Advancement of Science. Scholars and students will debate this portrait for years, but they will read and reread it as the now standard work.

The story seems at first the familiar one. Here is Darwin the second son of a relatively well-off Shrewsbury Whig physician, himself the son of a minor 18th-century philosophical poet with radical connections. After studying in Edinburgh and Cambridge, the representative of the third generation is headed toward a career in the Church of England. Then the opportunity arises for the trip on HMS *Beagle*. The Church can wait until the adventure of a lifetime has been pursued. Five years pass as the *Beagle* circumnavigates the globe. The young Darwin arrives back in England more interested in nature than in nature's God. He spends several years in London classifying his collections, recording the story of the voyage, and privately keeping notebooks in which he begins to harbor daring thoughts about transmutation. He marries a Wedgwood cousin and eventually settles in the country. There in 1842 he formulates his first sketch of evolution by natural selection and formulates it more fully in 1844. The project is put in a drawer as he continues to collect evidence while hesitantly over the years telling a few of his closest confidants about his theory. Then in 1858 arrives the fateful letter from Alfred Russel Wallace outlining virtually the same theory of transmutation. Darwin is thus spurred to publish *On the Origin of Species* in 1859. Over a decade of controversy follows. He publishes other works culminating in *The Descent of Man* (1871). Darwin dies in 1882 and is interred with honor in Westminster Abbey not far from the tomb of Newton.

The Desmond-Moore retelling of the narrative is full of novel nuances. Darwin is born into a well-to-do family with close ties to late 18th-century political and religious radicals as well as Whigs. Grandfather Erasmus is a great womanizer as well as a poet of philosophical evolution. The Darwins and the Wedgwoods visit frequently so that Charles is thoroughly familiar with manufacturing and business. Moreover, his father is a very shrewd landowner and financier within the local neighborhood. The period in Edinburgh introduces Darwin to a radical new scientific and medical thought that includes materialism and the possibility of transmutation of species. While loathing medical education, he is strongly attracted to the radical philosophy. At Cambridge he meets the Whig parson-scientists who will dominate British science for the next generation. It is they who help him gain his position on the *Beagle*. This is the first of a series of patronage doors that are opened to him through his Whig sympathies. He is constantly smart enough to know that he will need such patrons, and well into adulthood he will trim any public statements so as not to impair these necessary relationships. He had witnessed among medical community friends the price that outspoken materialism exacted.

The voyage of the *Beagle* opens his eyes to the worlds of slavery, savages, rain forests, high mountains, and specimen collecting. But for the entire voyage he is dreadfully seasick. This seasickness marks the beginning of what can only be called the retching theme of Desmond and Moore's account. From those days on the deck of the *Beagle* through the end of his life Darwin has stomach problems that lead to severe vomiting. Numerous writers have speculated about the reason for Darwin's ongoing illness; Desmond and Moore simply keep repeating the facts chapter after chapter without themselves opining on the cause.

Darwin's now-famous transmutation notebooks of the late 1830s are written while he is living in London in close association with his radical brother Erasmus and the latter's politically and religiously radical friends and reflect those intellectual associations. A brake of sorts is placed on Charles's thinking in 1839 when he marries Emma Wedgwood, whose religious faith is more or less traditional. As they establish their household and move to Down, where Darwin assumes a local social role that resembles that of a squire-parson, Darwin knows that his new social role and expectations are at odds with his transmutationist thought and his earlier radical associations; hence the secretness of his sketches on natural selection during the 1840s. Children follow with very considerable regularity. His father invests for him, and his income grows from his Lincolnshire landholdings. Like others of his social position, the younger Darwin believes in competition and the protection of property.

But illness continues—his own and that of his family. Darwin goes to Malvern to take the water cure. He thus enters a world of respectable quacks and pseudoscience. Then Annie, his eldest daughter, is stricken with a mysterious illness. She is taken to Malvern, where after much suffering she dies in 1851. Thereafter Darwin will see no loveliness in the universe, no justice, no smiling face of nature. To his last days he will look upon Annie's picture and weep and believe there is nothing left in the Christian justification of life and suffering. Nor does the birth of a retarded child late in the marriage do anything to change those sentiments.

In the radical press of London and the provinces there appear numerous attacks on natural theology, respectable science, and the stratified social worldview with which they are associated. Darwin realizes how far his evolutionary thinking stands from the social world that he inhabits and enjoys. He can find few people with whom to share his radical thoughts, though he recognizes in Joseph Dalton Hooker and Thomas Henry Huxley like-minded spirits. They themselves need patronage and good relationships with the government. The patronage is controlled by clergymen scientists or their friends or conservative government ministers.

Throughout the 1840s and 1850s Darwin develops a vast network of scientific correspondents and another network of social acquaintances from the working class. He becomes nothing less than fanatical in his search for barnacle specimens and manages to wheedle them from correspondents all over the world. In the mid-1850s he becomes interested in pigeons and develops a broad range of acquaintances with working-class pigeon fanciers throughout southern England. He also personally slaughters large numbers of pigeons to inspect their bone structures. He is by this time working on his great project of a study of transmutation. He has the insight that ongoing

Vignette: Genetics Edwardian Style

After a while I became something of an expert and was written to for advice on guinea pig habits and ailments. We got some new kinds, as we wanted to see not only how colour and brindling was inherited, but also long and short hair, and the whorls of show guinea pigs, though I never entered the show world....

Once, going out to feed them, I heard the scream for help, ran and found Titi, whose cage I always left open so that she could forage, her hackles up, facing a weasel, while her family scuttled for shelter in the hedge.... I snatched Titi up and the weasel looked at me with wicked little eyes, humped ready to jump. Knowing they go for the neck vein I was frightened, but held Titi tightly covered in my hands, feeling her poor little heart racing, and kicked out at the weasel with my solid school-boy shoes. It went away and I put Titi down to call to her family, gather them up and get back into her hutch. One had to look out, too, for owls and hawks, especially if any of my flock were in open-topped runs on the croquet lawn grass.

—*Naomi (Haldane) Mitchison*, in *Small Talk* (Bodley Head, 1973; reprinted in *As It Was*, Richard Drew Publishing, 1988)

unrelenting competition in nature drives diversity as he also believes it drives the growing British economy. Then arrives the letter from Wallace. Huxley, Hooker, and Lyell quickly arrange a joint presentation of the materials at the Linnaean Society because that was politically the group most likely to allow the event.

During the 1860s there is indeed a struggle between men of science and the clergy. They are fighting over social and professional status as much as ideas. Darwin's theory is but one element in the larger social dispute. Darwin's writings of the 1860s are really quite polemical. His volume on the cross-fertilization of orchids is a piece of natural theology in which natural mechanisms are developed without the hand of God present. The study of the domestication of animals displays his vast knowledge of breeding and his wide acquaintance with breeders. In *The Descent of Man* he returns quite openly to the materialism of the medical community in Edinburgh and London. Throughout these years Hooker rather than Huxley seems the more important friend.

During these same years Darwin becomes even more prosperous thanks to the wisdom by now of his own investments. He can leave his children well off. Illness continues to plague him. Natural selection is actually accepted by very few people. Even Huxley does not believe in it. Darwin becomes for all intents and purposes openly agnostic, though quietly so. There is a final illness and he dies. He is to be buried at Down, but his scientific circle intervene. His friends and admirers achieve the last bit of patronage for him as they petition the Dean of Westminster for a grave in the Abbey. It is a monument to the social respectability of professional science rather than to the radicalism of evolution by natural selection.

Notwithstanding the cohesiveness of this story, there are some omissions that are curious from a biography so determinedly revisionist. For all the discussion of Darwin's health, there is no discussion of his sexual activity or preoccupations. Despite the emphasis on the climate of political radicalism surrounding Darwin's experience, the biography displays an almost Victorian reticence about sexuality in the life of a man who wrote hundreds of pages about breeding, cross-fertilization, and sexual selection. Darwin clearly expended more professional and no doubt more private thought on sex than he did on politics. Desmond and Moore provide no consideration of Darwin's possible sexual encounters on the *Beagle* voyage, of the impact on his thought of the sexual relations in his marriage, or of the large number of children, including an unexpected one.

The discussion of Darwin's family life is warm and moving so far as the loss of his daughter is concerned. Yet there is little discussion of the relationship with Emma Wedgwood Darwin save ongoing regret over her religious orthodoxy. The latter was hardly unusual, nor is there any indication that it was extreme. Emma was the most constant figure in Charles Darwin's life. The marriage seems to have been happy. She deserves more attention.

The account of the decade of the 1850s is curious in two ways. Desmond and Moore tend to downplay the very real hesitancy that Darwin had about the validity of natural selection until it provided the same account of nature found in natural theology. Here as elsewhere they discount too much the long-term influence of the Cambridge experience and the influence of his clergyman-scientist friends. Furthermore, the Darwin-Wallace story is told with too little skepticism. The relevant letters are missing from Darwin's correspondence. Darwin and his friends moved as quickly as possible to assure his claim for originality and simply informed the deferential Wallace afterward. For all their concern with politics Desmond and Moore do not emphasize that Darwin, the landowner, and his middle-class friends were determined to see that the working-class Wallace received little attention. Wallace for his part displayed almost a textbook example of deference to his social betters.

Finally, in a work of radical history of science there is still a strongly Whiggish bias in discussing Darwin's opponents, and perhaps too much anti-clericalism. Many of Darwin's opponents struck important and not obscurantist blows. Indeed evolution triumphed in the second half of the century, but not natural selection. The authors would have served both Darwin and their readers better had they spun out the vast confusion over evolution that reigned by the time of Darwin's death.

Nonetheless, whatever the shortcomings, Desmond and Moore have written the best biography of Darwin since his son's.

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Molecular Panselectionism

The Causes of Molecular Evolution. JOHN H. GILLESPIE. Oxford University Press, New York, 1991. xvi, 336 pp., illus. $35. Oxford Series in Ecology and Evolution.

It is 25 years since Motoo Kimura first proposed the neutral theory of molecular evolution. The theory asserts that variation in protein and DNA sequences within populations, and the evolution of sequence differences between populations, are mostly caused by chance fluctuations in allele frequencies due to finite population size (random genetic drift). As Kimura has stressed, this view of molecular evolution is in marked contrast with the conclusion of the modern evolutionary synthesis of the 1930s and '40s, that natural selection is the primary guiding force of evolution. Though Kimura recognizes the validity of this "panselectionism" for the evolution of mor-