

national survey of drug addiction undertaken in Britain until the recent past. It is not only a point of departure for an understanding of modern British drug policy, but it is a culmination of certain nineteenth-century trends. Most significantly, the Rolleston Committee Report marks the political triumph of the “medical model” of drug addiction in Britain. However, that success was not inevitable. If Malcolm Delevingne, of the Home Office, had had his way, British drug policy would have very closely resembled American drug policy, which was based on a “criminal model” of addiction. The triumph of the medical model, then, is not just a story of medical ideology but of political struggle.

Without this twentieth-century conclusion, Griffith Edwards’ thoughtful essay on ‘The nineteenth century in relation to the present’ is punctured by anomalies. In explaining why British drug policy differs from American drug policy – surely a vital question to most readers – Edwards makes only cryptic references to the Dangerous Drugs Act and the Rolleston Committee Report. But one cannot understand the Victorian contribution to modern British drug policy without a full discussion of the mediating role of these developments of the 1920s.

Despite these reservations, I believe that Berridge and Edwards have written an illuminating book which is invaluable to historians, particularly those interested in the social history of medicine.

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MICHAEL RUSE, *The Darwinian revolution. Science red in tooth and claw*, Chicago and London, University of Chicago Press, 1979, 8vo, pp. xvi, 320, illus., £12.00.

NEAL C. GILLESPIE, *Charles Darwin and the problem of Creation*, Chicago and London, University of Chicago Press, 1979, 8vo, pp. xiii, 201, £9.90.

DOV OSPOVAT, *The development of Darwin’s theory. Natural history, natural theology, and natural selection, 1838–1859*, Cambridge University Press, 1981, 8vo, pp. xii, 301, illus., £20.00.

ADRIAN DESMOND, *Archetypes and ancestors. Palaeontology in Victorian London 1850–1875*, London, Blond & Briggs, 1982, 8vo, pp. 287, illus., £15.95.

The news that some biologists (and rather more Creationists) no longer set so much store by Darwin’s theory of evolution by natural selection has not dampened historical enthusiasm for the retiring naturalist of Down House. The historical community has elevated him to its Peerage, which entitles him to several books<sup>1</sup> and numerous articles

<sup>1</sup> Recent works on Darwin which cannot be noticed here include: James R. Moore, *The post-Darwinian controversies: a study of the Protestant struggle to come to terms with Darwin in Great Britain and America, 1870–1900*, Cambridge University Press, 1979; David R. Oldroyd, *Darwinian impacts: an introduction to the Darwinian revolution*, Milton Keynes, Bucks., Open University Press, 1980; Wilma George, *Darwin*, Glasgow, Fontana Paperbacks, 1982; Jonathan Howard, *Darwin*, Oxford University Press Paperbacks, 1982; and Peter Brent, *Charles Darwin, “a man of enlarged curiosity”*, London, Heinemann, 1981.

Darwin has even been treated in the style of a novel by Irving Stone, *The Origin. A biographical novel of Charles Darwin*, London, Cassell, 1981.

each year. Once a critical mass of production has been reached, new books are inevitable, since revision and comment can masquerade as new scholarship. In Darwin's case, the flood has been further swelled by the existence of the rich Darwin Archives in the Cambridge University Library, the 1982 centenary of his death, and his undisputed historical and contemporary significance. He is to biology what Freud is to psychiatry: a figure whose *historical* reality is difficult for some to grasp, since his legacy informs so much contemporary debate.

Two books published in the run-up to 1982 give some indication of the extent to which recent Darwin studies have changed since the establishment of modern Darwin scholarship by Gavin de Beer, Loren Eiseley, John Greene, and others a generation ago. Michael Ruse's *The Darwinian revolution* is a pungent survey of the subject by a philosopher who has since become a spokesman for evolution and science against the rising tide of contemporary creationism. Ruse concentrates on Britain between 1830 and 1875, i.e. from the publication of the first volume of Lyell's *Principles of geology* to the general acceptance by the scientific community of the cogency of Darwin's basic concepts. Although Ruse writes what is still essentially intellectual history, he pays attention to questions relating to science in the universities, scientific networks, professionalism, and social features of mid-Victorian culture. His concern is almost entirely with élite science: Herbert Spencer gets short shrift, and marginals like Robert Chambers and Hugh Miller are viewed largely through the eyes of Darwin, Owen, Lyell, Sedgwick, and the other principals of his story. Nevertheless, he has some shrewd comments on the similarities between Chambers and Miller, and is particularly illuminating on Whewell, Herschel, Mill, and others whose philosophical ideas (especially on the nature of causation and experimental proof) infused scientific discussions of the period. Although primarily preoccupied with synthesizing, Ruse incorporates a certain amount of original archival research, refreshing in a book aimed at the textbook market.

In contrast, Neal Gillespie's *Charles Darwin and the problem of Creation* is based entirely on printed sources. It is a classic academic monograph, addressing itself to a specific intellectual problem, the variety of meanings which the word "creation" had for Darwin and his contemporaries. Taking his cue from Michel Foucault's notion of the "episteme", Gillespie suggests that two competing epistemes – creationism and positivism – vied for hegemony among Victorians concerned with that "mystery of mysteries", the origin of new species. It can be argued that Foucault merely provides a bit of pretentious window-dressing, for as a "lumper", Foucault has insisted that a single episteme "defines the conditions of possibility of all knowledge", in particular times and cultures. Foucault's epistemic framework can just about be stretched to accommodate competing epistemes, but Gillespie further refines creationism into four varieties, leaving a field of five positions on the species question espoused by scientists and theologians in Darwin's Britain. It is in the analysis of this multiplicity that the value of Gillespie's book lies, although some of his own groupings (like putting W. B. Carpenter into the positivist camp) need qualification. Some factual slips also mar his narrative: Leonard Homer was Lyell's father-in-law, not brother-in-law (p. 43), and most British scientists surely *did* continue to believe in the biblical Adam and Eve in the 1830s and 40s (p. 47).

Taken together, the Ruse and Gillespie volumes raise several issues. First, they point to the continued relevance of theological beliefs in our understanding of nineteenth-century evolutionary biology. But both authors prefer to see the science/religion nexus essentially as conflict. Gillespie contrasts a theologically grounded creationism with a secular metaphysic of positivism and often uses the traditional imagery of warfare. Ruse, too, finds many tensions between science and religion in his period. Neither is particularly sympathetic to the revisionist historiographical position championed by R. Hooykaas, Martin Rudwick, and others from the late 1950s, to the effect that Christian ideas of God and God's relation to Creation actually made possible the modern scientific world-view. Although Hooykaas may have laid to rest the older Draper-White version of the science-theology clash, many historians are unprepared to accept Hooykaas' own version, the product of a publicly-committed Christian. (A generation of historians committed to exploring the sociology of scientific knowledge should not be chary of admitting that there is a sociology of historical knowledge.) Ruse, in particular, is cognisant of the spectrum of religious belief in Victorian Britain, and of the importance of Broad Churchmen in the development of science in the ancient English universities. On the other hand, his own categorization of Lyell, Herschel, Babbage, and Baden Powell as "deists" (p. 67) stretches beyond all reasonable bounds any commonly-accepted definition of deism. "Liberals" they may have been; "deists" they were not. Ruse recognized the difficulties in using this term; it is a shame he nevertheless chose to employ it to describe a group who were all theists, although not necessarily of the same sort.

A second common theme in Ruse and Gillespie illustrates the extent to which our understanding of Charles Lyell has changed over the past decade, largely as a result of Leonard Wilson's publication of Lyell's *Scientific journals* (1970), and the uses to which Michael Bartholomew and others have put them. These private speculations of the ageing geologist, confronted with Darwin's *Origin* and its naturalism, have vastly enriched all serious interpretations of the period. Both Ruse and Gillespie assume, with Bartholomew, that Lyell's reflections in the 1850s permit an insight into the strategies behind the first edition of his *Principles of geology* (1830–33). Caution is in order, however, for it may be that Lyell the young Turk and Lyell the reflective sexagenarian had different preoccupations.

A similar note of caution can also be sounded in the case of Darwin, who is commonly followed in detail during his years of private speculation on transmutation (1837–44), and then picked up again only in the 1850s, when he returned to the subject, this time publicly. The relation of this to Darwin's theological beliefs is a difficult matter. Gillespie calls Darwin a theist up to 1859; Ruse sees the drift towards deism and agnosticism as beginning much earlier. Both assume that the young Darwin of the *Transmutation notebooks* and the 1844 'Essay' was one of the few thoroughgoing positivists among British scientists at the time, and that the theoretical structure of the *Origin of species* was in all important respects contained in the 1844 'Essay'. A sharper perspective on both these points is provided in Dov Ospovat's *The development of Darwin's theory*, a book which has tragically become that gifted young historian's epitaph.

A number of articles by David Kohn, Sandra Herbert and others, and a book by Howard Gruber<sup>2</sup> have already elucidated much about Darwin's ideas on transmutation between opening his notebooks and writing his 1844 'Essay'. To this body of scholarship, Ospovat's book adds three major points. First, Ospovat provides the fullest examination yet of the impact which Darwin's September 1838 reading of Malthus's *Essay on the principle of population* had on the genesis of his idea of natural selection. In particular, he shows that Darwin's autobiographical recollection of the sudden intuitive insight provided by Malthus must be substantially modified, since Darwin's theoretical ideas changed only gradually between late 1838 and early 1839. Second, he establishes that Darwin still accepted the natural theological idea of perfect adaptation of plants and animals to their environments as late as 1844. In the 'Essay' he still assumed that organisms respond quickly to the environmental, behavioural, and generational factors which cause speciation, keeping the idea of adaptation close to the natural theological idealizations of Paley and the authors of the *Bridgewater treatises*. By 1859, chance variation and relative adaptation were more integral to his theory. Case studies like this illustrate the practical manifestations of Darwin's theological beliefs, and their relationship to his science.

Finally, Ospovat examines Darwin's relationship to von Baer, Milne-Edwards, and other apostles of the idea of a branching taxonomic order of nature, and shows that this central pillar of Darwinian evolution was only gradually incorporated into the theory. Along the way, he gives a clear exposition of the significance of von Baer's work for British natural history, and of Darwin's place within the natural historical community in the 1840s. The parallels he draws between Darwin and Richard Owen are particularly illuminating.

While all three of these books are contributions to Darwin studies, they are all best seen as examples of intellectual history. They are concerned with the shift in British biology, beginning in the 1830s, from a functional to a structural orientation. They are in essence working within the historiographical tradition pioneered by E. S. Russell, who wrote in his still valuable study *Form and function* (1916), "The contrast between the teleological attitude, with its insistence upon the priority of function to structure, and the morphological attitude, with its conviction of the priority of structure to function, is one of the most fundamental in biology." (Quoted by Ruse, p. 148.) In important ways, Darwin and Owen, Carpenter and Huxley were all on the same side of the fence, although it was certainly Darwin's rather than Owen's worldview whence Monod's *Chance and necessity* and the Central Dogma of contemporary molecular biology derive. Russell's comment just quoted could serve as a starting-point for Ruse, Gillespie, and Ospovat, all of whom are most successful at the analysis of ideas and beliefs of individual naturalists, even though Ruse goes some way towards locating those beliefs in social and professional contexts.

But it is to Adrian Desmond's new book that we must turn for a study which takes

<sup>2</sup>David Kohn, 'Theories to work by: rejected theories, reproduction, and Darwin's path to natural selection', *Studies in History of Biology*, 1980, 4: 67–170; Sandra Herbert, 'Darwin, Malthus, and Selection', *J. Hist. Biol.*, 1971, 4: 209–217; H. E. Gruber, *Darwin on Man: a psychological study of scientific creativity*, London, Wildwood House, 1974.

seriously the newer sociology of knowledge approach. His reconstruction of palaeontology in London from 1850 to 1875 takes its cue from the work of Barry Barnes, Steven Shapin, and others at the University of Edinburgh who have been concerned with the social construction and uses of scientific ideas in past and present societies. Desmond's own strategy is "to investigate how far abstruse debates over mammal ancestry or dinosaur stance reflected the cultural context and the social commitment of the protagonists, and as a result to determine the extent to which ideological influences penetrated palaeontology to shape it at both the conceptual and factual level." (p. 12.) This is an ambitious undertaking: how far is he successful?

The answer is: extremely so. Desmond's work must be seen as a pioneering attempt to write a genuinely social history of one aspect of the "Darwinian revolution". It is meticulously researched in the relevant printed and archival sources (Desmond makes particularly good use of the Owen Papers at the British Museum (Natural History)), and engagingly written. Some of his subject-matter is familiar: the Owen-Huxley disputes on the hippocampus minor; *Archaeopteryx*; dinosaurs. Much of it is relatively new territory (English phylogenetic reconstructions, Harry Seeley's work on pterosaurs, etc.), and even the familiar is treated in a fresh light.

The strength of Desmond's study derives from two main attributes. First, his researches have considerably enlarged our notions of the "scientific community" in mid-Victorian London. Seeley, J. W. Hulke, George Rolleston, Robert Grant, E. R. Lankester, and W. H. Flower people it as much as their more famous contemporaries like Huxley, Owen, Lyell, Carpenter, Darwin, and Spencer. And these "minor" characters emerge as individuals, enriching our sense of the interplay of professional, social, ideological, and scientific forces at work. Desmond insists that psychological factors are ultimately inadequate to explain the nuances of networks, professional rivalries, and competing explanatory stances. Nevertheless, he has so immersed himself in the social and epistolary worlds of his subjects that they become more than disembodied mouthpieces for fixed ideological positions. The interplay of the biographical and the social gives the book an exceptional richness.

Second, Desmond actually brings off his analysis in sociological categories. He shows how debates about fossil reconstructions, "missing links", and the order of fossil remains were inextricably bound up with the social and professional allegiances of his individuals. In particular, he demonstrates the continuing impact and fruitfulness of Owen's own position. He takes Owen, Mivart, and Seeley seriously, rather than treating them as foils to the more efficient and triumphant positivistic machine of Huxley and Darwin.

Desmond's book bids fair to become the new darling of sociologically inclined historians of science. And well it might, for it brings a persuasive new dimension to evolutionary studies. Anyone interested in what the social history of science might look like would do well to start with *Archetypes and ancestors*.

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