On Revolutionising the Darwin Industry: A Centennial Retrospect

Jim Moore

The centenary of Darwin's death has come and gone amid perilous times. In 1882 England's leading naturalist was interred at Westminster Abbey as 'Fenian outrages' convulsed political opinion on the eve of the Phoenix Park assassinations (Moore, 1982). A century, later the Irish troubles persist, while Europe reels under the impact of cruise missiles and the Western world wallows in recession and political reaction. Meanwhile neo-creationism in America has come of age, sociobiology looks forward to its decennial, and the Left worldwide contemplates 'the fragments' after the centenary of Marx's death in 1983. Orwell's nightmare vision of a technocratic dystopia has not come to pass,but an urgent doubt remains as to where we are heading, as socialists, scholars, and citizens. Industry and its apologists continue to set the pace for better or worse, and the so-called 'Darwin industry' is no exception (Ruse, 1974). A spate of books has marked the recent centenary, no less than the outpouring at the hundredth anniversary of the Origin of Species and the sesquicentenary of Darwin's birth in 1959 (Loewenberg, 1959, 1963). In this essay I propose to assess some of the recent literature and to point the way towards an alternative future in Darwin scholarship.

Like any other industry

Darwin's is a potent name to conjure with at all levels of public opinion, now that the BBC has twice aired its seductively beautiful tale, 'The Voyage of Charles Darwin' (Ralling, 1978; cf. Keynes, 1979). Reactions to the great man's life, work, and theories may thus serve as a useful index of wider social and political trends. Not so, however, on the conventional scholarly assumption that the primary sources pipe the tune to which researchers are obliged to dance.

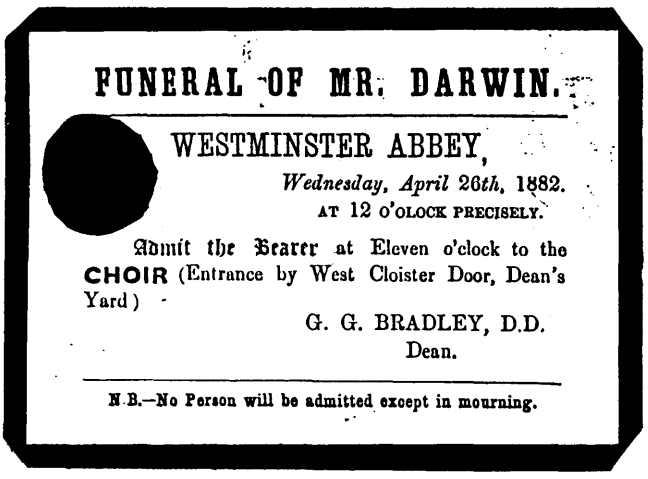
On this view, the history of the Darwin industry falls into two main periods. The first period lasted some 80 years, when Darwin's family and admirers published collections of letters, transcriptions of journals, notes, and notebooks, and a variorum text of the Origin of Species in its six editions. This period took in the Darwin centenaries of 1909 and 1959, and ended in 1967 with the publication of the addenda and corrigenda to Darwin's four species notebooks as transcribed under the suprvision of Sir Gavin de Beer, Director of the British Museum (Natural History). The second period, beginning in 1968, has seen the first-fruits of this devoted editorial work as well as its continuation. We now possess the text of Darwin's two crucial 'metaphysical' notebooks, which earlier editors neglected, together with a collection of notes that Darwin himself labelled 'old and useless' (Gruber and Barrett, 1974), a geological notebook (Herbert, 1980) and reading notebooks (Vorzimmer, 1977), the manuscript of Darwin's 'big book' on species, of which the Origin was an 'abstract' (Stauffer, 1975), a calendar of Darwin letters in the American Philosophical Society (Carroll, 1976), several transcriptions of letters scattered elsewhere (e.g. De Beer, 1968; Moore, 1977), two volumes of Darwin's Collected Papers (Barrett, 1977), and - inevitably - a full-blown concordance to the first edition of the Origin of Species (Barrett et al, 1981). On the basis of these invaluable sources, so 'professionalism' would have it, we may look forward confidently to a third major period of Darwin research beginning in, say, 1988, with the sesquicentenary of the 'discovery' of natural selection, the last Darwin bean-feast before the bicentenary in 2009. This 'third age' of the Darwinian spirit will find scholars vying to upstage their colleagues' ever closer interpretations of the primary documents with a vigour renewed periodically by the appearance of successive volumes of Fred Burkhardt and David Kohn's monumental Collected Letters of Charles Darwin (in preparation).

The history of the Darwin industry may of course be seen in an entirely different light. As the Grand Old Man of Darwin scholarship in North America, John C. Greene, indicated ten years ago in his 'Reflections on the Progress of Darwin Studies', the current efflorescence of research did not simply result from the increasing availability of primary sources or from the stimulus of the 1959 celebrations. No post hoc, propter hoc here. Rather, according to Greene, the growth of the Darwin industry (including the publication of its primary sources) must be seen in the context of '(1) the emergence of the history of ideas as an academic discipline in the 1930s, 1940s, and 1950s; (2) the crystallisation of the modern synthetic theory of evolution by natural selection in the same period; and (3) the rapid expansion and professionalisation of the history and philosophy of science as an academic discipline in the years following World War II' (Greene, 1975, pp. 247-48). To this helpful contextuating analysis should be added (4) the successful struggle for recognition in the history and philosophy of science of interpretations inspired broadly by a 'critical sociology' of knowledge that held appeal for younger scholars affected by the political upheavals of the mid-1960s and later (Shapin, 1982). Viewed in the light of these four trends, the history of the Darwin industry begins to look like the history of any other industry: an enterprise, or congeries of enterprises, that both expresses and

shapes the broader cultural movements of their time.

Thus, to put it provocatively, the Darwin industry as we know it would probably not have come into existence without: (1) the charismatic dualism of A.O.Lovejoy, who founded the Journal of the History of Ideas in 1940 as a bastion of America's liberal intellectual heritage in the face of totalitarianisms of the Left and Right; (2) the eugenic preoccupations of the Cambridge mathematician R.A. Fisher, who contributed decisively to the synthetic theory of evolution, and the 'proletarian science' of T.D. Lysenko, whose Lamarckism became a perfect foil for the neo-Darwinian synthesis once the Cold War had been joined; (3) the leadership of the neo-positivist historian George Sarton and President James B. Conant, a former director of the Manhattan Project, in teaching the history of science at Harvard during the early 1950s, the fillip given the subject about the same time by the Marxist scientists Joseph Needham and J.D. Bernal, and by their associates in Cambridge and London, and - most important - the 'expansion and professionalisation' of the history and philosophy of science on both sides of the Atlantic in new departments and new institutions funded by governments fearful of Soviet technological supriority after the launching of Sputnik in 1957; and finally (4) the impact in Britain of younger academics like Jerry Ravetz and Bob Young (both, not incidentally, American expatriates) on their students and colleagues beginning in the later 1960s, when many radicals found support in the writings of neo-Marxist theoreticians such as Herbert Marcuse for a relativist historical critique of scientific domination (Young, 1973).

No doubt these were just some of the necessary conditions for the emergence of the Darwin industry in the last 25 years. As if further evidence were needed to establish the historical contingency of this collective enterprise, not just on the publication of primary documents, or on centennials, but on fundamental social and economic forces, I need only mention the present plight of Darwin scholars: the contracting market for their academic monographs; the sweeping closure of history of science departments in Britain and America, the early retirement of senior academics, the freezing of posts, and the accompanying decline in enrolment of career-minded graduate students; and, last but not least, the direct threat to Darwin research projects, like the Collected Letters, from funding bodies susceptible to political influence by the religious and political Right. No one today can argue that the Darwin industry has its own inherent momentum or develops according to an internal logic of its own. The workforce is too vulnerable, their subject-matter is too controversial, their products too readily become obsolete.



FUNERAL OF MR. DARWIN.

WESTMINSTER ABBEY,

Wednesday, April 26th, 1882.

AT 12 O'CLOCK PRECISELY.

Admit the Bearer at Eleven o'clock to the **CHOIR** (Entrance by West Cloister Door, Dean's Yard)

G. G. BRADLEY, D.D.
Dean.

N.B.—No Person will be admitted except in mourning.

A decade's diversification

Turning, then, to these products, the output of the Darwin industry, what sorts of literature have appeared in the decade since Greene magisterially surveyed the progress of Darwin studies? If we confine attention to researches that have reached the status of a separate monograph, as I intend to in this review, there are first of all the primary texts and reference works, as mentioned above. Second, there are a number of specialised studies dealing with periods or themes in Darwin's life and work. Individually I shall classify these, for lack of better terminology, as either 'hard' or 'soft', depending on how well each interacts with the appropriate range of published and unpublished manuscript sources. Third, there are the biographies, and fourth, a wide range of contextuating historical discussions that divide broadly into (a) general interpretations of the significance of Darwin's work and theories within various milieux and (b) interpretations that emphasise the particular social and political impacts of Darwinian evolution. Lastly, there is a group of collective works prepared in conjunction with the 1982 centenary, none of which falls neatly into any of the preceding categories.

All but one of these five categories are represented by the books listed at the end of this review, so let me begin with a word about the category unrepresented, namely, biography. I shall return to this subject later, but it is worth observing here that there is no lack of biographical studies of Darwin (cf. Churchill, 1982). Between 1967 and 1975 at least seven such works appeared (Olby, 1967; Moorhead, 1968; Marshall, 1970; Crowther, 1972; Chancellor, 1973; Bunting, 1974; Fletcher, 1975), excluding the Ladybird Books version of Darwin's career (Peach, 1973), which might well have served as the basis of the recent BBC series. Since 1980 there have been no less than five more studies, and all future biographers must be indebted to Richard Freeman for publishing in 1978 a most helpful, though error-prone, 'companion' to the Darwin corpus. The problem with these biographies is that they are either popular, sixth-form-oriented lives of a famous scientist, or lavishly illustrated decorative tomes suitable for the coffee table, or, at best, competent productions written by non-specialists.

The slim Darwin biographies in Oxford's 'Past Masters' series and Fontana's 'Modern Masters' series (no mistresses) were prepared by an animal physiologist and a zoologist respectively (Howard, 1982; George, 1982). Both are presentist in orientation, both stress ideas and theories at the expense of the rich texture of Darwin's cultural experience (cf. Jahn, 1982); and although the author of the latter book published a good biography of Alfred Russel Wallace twenty years ago (George, 1964), a gross factual error in the first sentence of her first chapter does not inspire the reader's confidence. The big biographies of the recent centenary have complementary limitations. After years of painstaking research, Irving Stone, the octogenarian master biographer of Jack London, Clarence Darrow, and many others, elected to publish the results as his eleventh 'biographical novel', The Origin (1980). Peter Brent, on the other hand, a novelist and sometime biographer, after only three years' work in the Darwin papers at Cambridge completed a book that the US publisher has had the temerity to tout on its dust jacket as the 'definitive' biography, Charles Darwin: 'A Man of Enlarged Curiosity' (1981). Like Stone's novel, but less fastidiously and engagingly, Brent's account brings to prominence some neglected aspects of Darwin's private life and offers a pen portrait or two of exceptional clarity and insight. But neither work, any more than those of the scientist-biographers, really gets to grips with the breadth and depth of the Darwinian literature.

Even less can be said for Bratchell's 140-page collection, which falls lightly into my first category of primary sources. Worse books of the genre (e.g. Daniels, 1968) as well as better ones (e.g. Vanderpool, 1973) appeared years ago in the United States, but The Impact of Darwinism seems especially remiss for perpetuating time-worn vanities and traditional misconceptions into the 1980s. It is doubtful, for example, whether evolution was 'the key concept' in 19th-century science (pp. 9, 13); it explains nothing to state that 'the time was ripe, the intellectual atmosphere was well prepared' in the 1850s for Darwin's theory of evo-

lution (p. 44). Bratchell offers a fair selection of primary texts to illustrate the background of Darwin's theory, the controversy that it engendered, and the prose and verse reflections of Victorian littérateurs. But several passages reprinted from the Origin of Species alone of Darwin's works tend to leave the false impression that Darwin was uninterested in human origins and people's place in nature. This editorial oversight may be no accident, for Bratchell holds that 'Darwin was saddled with many things of which he was completely innocent, and the relevance of theories, such as those of social Darwinism, to Darwin's own writing is tenuous indeed' (p. 70). Remarks like this in a book intended to foster (in students?) 'a clearer understanding of our own intellectual and literary inheritance and outlook' (p. 8) are simply irresponsible, the more so when only two of the numerous Darwinian authorities cited by the author were published since 1971 (cf. Shapin and Barnes, 1979). When will there be a practical collection of British texts to stand alongside the 460-page anthology edited by Diego Nunez, El Darwinismo en Espana (1977), with its lengthy editorial introduction and magnificent concluding 'Bibliografia y Cronologia del Darwinismo en Espana (1859-1900)'?

Durables and throwaways

We come now to my second category, which I have divided into 'hard' and 'soft'. Here the three outstanding books of the past decade are hard in both senses of the word: their close analyses and sophisticated use of manuscript sources require a high level of critical concentration from readers who wish to appreciate their arguments. To Be An Invalid (1977) by Ralph Colp, Jr., is likely to remain the definitive interpretation of Darwin's famous ill-health. Colp, a professional psychiatrist and long-time Darwin scholar, concludes that most of his subject's symptoms were psychogenic in origin, for Darwin experienced severe anxieties over the difficulty of proving his theory of natural selection and over some of its 'ideological implications'. This analysis is at least compatible with the conclusions of Edward Manier, a philosopher and historian of science, in The Young Darwin and His Cultural Circle (1978). Manier looks carefully at the influences on Darwin's metaphysical and moral beliefs as reflected in the logic and language of the first drafts of his theory. The 'cultural circle' is thus in reality a purely intellectual one, but this does not detract from Manier's highly nuanced assimilation of the young naturalist to early-Victorian times. In The Development of Darwin's Theory by Dov Ospovat, a Harvard-trained historian of science, who died tragically in 1980, aged 33, extends aspects of Manier's analysis to include the community of naturalists surrounding Darwin before the publication of the Origin of Species in 1859. Again, the Darwin that emerges is a man whose thought was 'shaped by the social and cultural conditions' under which he worked. Ospovat concludes hopefully that we should look at the change in Darwin's theory during these years 'as a microcosm of the more general development from a philosophy of nature and man appropriate for an agrarian and aristocratic world to one suitable for an age of industrial capitalism'.

The 'soft' literature of the last ten years merits less comment on the whole, but in some ways it is just as significant. Darwin in the New World (1981) by J.J. Parodiz is a curious production, without contents page, running heads, bibliography, or index. This would suggest that the publisher is a 'vanity press' were it not for the famous name of E.J. Brill emblazoned on the cover. Parodiz is an Argentine whose purpose in writing is 'to give a value of recency to the historical background' of Darwin's account of his travels in South America. The three pages of background to the situation in March 1833, when 'Darwin reached the Malvinas (Falkland Islands)', are additional evidence, if it were needed, that the Darwin industry does not work in a vacuum. Arnold Brackman's A Delicate Arrangement (1980) is also curious, but rather as an American attempt to tilt Darwin's halo by implicating him in a familiar political ploy, a 'cover-up and conspiracy'. The victim is Alfred Russel Wallace, from whom Darwin allegedly purloined the 'principle of divergence' on the eve of writing the Origin of Species. Brackman makes an ingenious case, and his bedevilling of a sainted scientist is worthy of emulation. But he rushed in where real angels fear to tread and he burnt his hands. It is not every week that Science prints a 3,500-word review of the historical monograph, let alone one contributed by a historian and editor of the Collected Letters of Charles Darwin (Kohn, 1981).

Neither ingenious nor curious is Barry Gale's 200-odd page Evolution without Evidence. Its significance lies chiefly in its amazingly reflexive analysis of Darwin's 20-year delay in publishing the Origin of Species.

> 'Given the limitations on space under which Darwin was working, the complex nature of many of the topics he was considering, our ignorance of so many of the phenomena he used to support his theory, the potentially fatal nature of the various objections that could be raised against his ideas, and the scant evidence Darwin was able to provide to suport some of his most basic premises, I think a reader might justifiably wonder how Darwin could conclude anything about the origin of species.'
> (p. 140)

For 'origin of species' read Origin of Species; for 'Darwin' read 'Gale'. Evolution without Evidence looks as though it reached its penultimate form about ten years ago and since then has had bits and pieces tacked on. Perhaps in another ten years it would have matured, if Gale made use of more manuscript evidence.

But the reflexivity goes farther. Gale, although professionally trained as a historian of science is currently a senior government official in the research and development area of the Department of Energy in Washington, D.C. His last chapter introduces some 'new conclusions' under the title 'Darwin as Scientist-Manager'.

> 'He had an innate sense of, and aptitude for, planning and managing an enterprise - in my opinion, the quintessential element in all successful management efforts. He seemed to know instinctively what to do under a variety of circumstances and to be able to make the most of a given situation. He had what we today would call good "street sense".'
> (p. 151)

Combined with Darwin's 'salesmanship', 'strategic capabilities', and 'charm', Gale finds these traits 'crucially important' to the 'interim' achievement of the Origin of Species. 'Darwin,' he declares, 'was the scientist-manager par excellence' (pp. 5, 151, 152). Unfortunately the same traits do not necessarily make for credible interpretations in the history of science, and Evolution without Evidence, whatever else it may be, is striking evidence of the possible negative effects of the Darwin industry's acculturation.

Charles Darwin and the Problem of Creation (1979) by Neal C. Gillespie is made of tougher stuff, although it too relies on published sources alone. 'From a positivist or whiggish standpoint,' as I have written elsewhere,

> 'the book's interpretation is, on the whole, unimpeachable. Yet within that interpretation Gillespie refuses to proceed in a conventional manner and portray Darwin as a secular "hero", praising his vision of nature as "thoroughly naturalistic", and discussing his theological language "as merely poetic or rhetorical or as some sort of elaborate deception". Instead he presents a Darwin with all (or most) of the theology left in, a Darwin whose attack on special creation, from the outset of his researches up through the writing of the Origin of Species, was veritably in the interests of a "grander" conception of the Creator.'
> (Moore, 1981, pp. 192-93).

Much can be said against Gillespie's larger interpretation, which strikes me as an odd conflation of Comte and Foucault, but his book will remain a waymark in the hist-

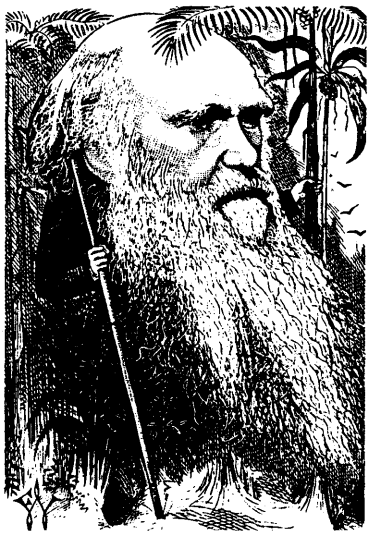
oriography of Darwin's metaphysical beliefs.

By far the most original, allusive, and profound discussion of the cultural matrix of Darwin's writing to appear in recent years - a work comparable in some ways to Manier's Young Darwin but less intimidating and more accessible - is Darwin's Plots by Gillian Beer. It is seldom recognised that women have occupied the vanguard of Darwin scholarship since the turn of the century, when Henrietta Darwin Litchfield edited her mother's personal and family letters. Between 1933 and 1967 Nora Darwin Barlow, a granddaughter, published five major editions of Darwin manuscripts, and in 1952 her cousin, Gwen Darwin Raverat, contributed her evocative family reminiscences, Period Piece. Further specialized research has been carried out by Jane Oppenheimer (1959), Gertrude Himmelfarb (1962), Barbara Beddall (1973), Yvette Conry (1974), Mea Allen (1977, 1982), and most recently by Sandra Herbert (1980, 1982), Karen Hunger Parshall (1982), and Janet Browne (1982, 1983a, 1983b). Collateral studies of Darwinian contexts have been published by Jill Conway (1972), Ruth Schwartz Cowan (1972), Gay Weber (1974), Carol Dyhouse (1976), Cynthia Eagle Russett (1976), Mary Winsor (1976), Jean Russell-Gebbett (1977), Lorna Duffin (1978), Donna Haraway (1978), Susan Sleeth Mosedale (1978), Elizabeth Fee (1979), Greta Jones (1980), Muriel Blaisdell (1982), and Ruth Barton (1983). What places Gillian Beer within this scholarly tradition and distinguishes her among its members is her thorough grounding both in the Darwinian corpus and in Victorian English literature. In these respects she probably has more in common with Darwin himself than do the great majority of his interpreters. Add to these qualifications her critical grasp of the multivalency of language, the function and complexity of metaphor, and the philosophy of narrative form, and the first 150 pages of her book seem quite equal to merging the Origin of Species once and for all into the literary discourse of its time.

Space prevents me from doing justice to this half of Darwin's Plots or to its later studies of George Eliot and Thomas Hardy. Beer moves easily from Faust to Feyerabend via Freud, from Whewell and Wordsworth to Virginia Woolf. She lingers over specifically feminist concerns and exemplifies her own commitment by editing the personal in. It is refreshing, though somewhat breathtaking, to read a discussion of the myth of 'metamorphosis' that begins with examples drawn from the speech of the author's infant child, then ranges through Ovid, Linnaeus, Goethe, and Von Baer up to C.H. Waddington, all within the space of one page. The affinities of Darwin's Plots with recent efforts at revising the history of evolutionary naturalism are perhaps best revealed in a passage that concludes a discussion of the Origin of Species as 'an unusually extensive fiction':

> 'There is ... a sense in which we hold Darwin responsible for his history of the world, as though he had created rather than simply recorded the processes he describes. There is some justice in that too, because the highly individualistic yet culture-bound language of The Origin with its terms like 'the struggle for life', 'the great family' and 'natural selection', its ransacking of contemporary ideologies, has had consequences beyond the control or cognisance of the text which engendered them. So Darwin is in a creationist dilemma. He wishes simply to record orders which in no way depend upon him. But because of his highly-charged imaginative language and the need to invent fresh terms and to forge new metaphorical connections, he appears to undertake an individual creative act. His text has a progenitive power. He seeks to express the equivalence of man with all other forms of life but the power of his writing and the novelty of his narrative make it appear that Darwin, man's representative, has as much created as described.'
> (p. 103).

For Beer, however, there is no creatio ex nihilo, no revolutionary disjuncture in Darwin's works. At most their discourse was destabilising. Darwin himself valued 'continuity of culture and insight' and the 'congruity of his images with previous myth-systems' (p. 37). Such views, I predict, will contribute much towards a fresh understanding of nature's place in Victorian society.



Fit for human consumption

This brings into purview the contextuating literature of the Darwin industry, to which numerous substantial additions have been made in the past decade. Cynthia Russett's Darwin in America (1976) is mainly about Darwinism and Herbert Spencer. 'Darwinism, as a set of ideas,' she begins rather tautologously, 'was an intellectual phenomenon first and foremost, whatever social consequences its popularisation may secondarily have caused. ... The challenge of Darwinism was not directed to practice but to thought.' Michael Ruse, a philosopher, scarcely improves on this analysis in The Darwinian Revolution (1979), where scientific, philosophic, religious, and socio-political 'factors' in mid-Victorian Britain are kept quite separate. Darwin, however, is the 'hero' of Ruse's 'story', so students of this textbook, like those of Russett's, will have a good deal of unlearning to do when one day they are furnished with a fully contextualist account of evolutionary naturalism in the 19th century. Meanwhile David Oldroyd's wider-ranging text, Darwinian Impacts (1980), and the essays collected in John Greene's Science, Ideology, and World View (1981) may prove more relevant to the needs of socialist scholarship in the classroom.

Other interpretations of the broader significance of Darwin's work and theories have been pitched to a narrower academic audience. The Eclipse of Darwinism (1983) by Peter Bowler has only just appeared, but it promises to shed much-needed light on the bewildering variety of anti-selectionist theories of evolution that proliferated in Europe and America at the end of the 19th century. My book The Post-Darwinian Controversies (1979) treats Protestant responses to Darwin in Great Britain and America in the context of some of these theories. The Edge of Contingency (1979) by Harry Paul discusses Roman Catholic reactions in France and Thomas Glick's Darwin en Espana (1982) contains a chapter on the Spanish celebration of Darwin's centenary in 1909, an epilogue on public opinion in Spain after the Scopes 'Monkey Trial' of 1925, and four important appendixes, all prefaced by a translation of the author's wide-ranging essay from The Comparative Reception of Darwinism (ed. Glock, 1974). Two exemplary studies have been published by Italian scholars, Darwinismo a Firenze (1977) by Giovanni Landucci and Charles Darwin's 'storia' ed 'economia' della natura (1977) by Giuliano Pancaldi, a modest volume that ranges lucidly from the roots of Darwin's theory in political economy, through the reactions of Marx and Engels, to an essay on 'Darwinismo ed evoluzionismo in Italia, 1860-1900'.

Alfred Kelly's compact book, The Descent of Darwin, takes its place among this international literature as the first substantial study of the popularisation of Darwinism to appear in any language. Kelly is interested in 'who the popularisers were, what their motives were, what they said, to whom they said it, how they changed Darwin's ideas, and what their impact was on German society' (p. 4). The chief popularisers to figure in the book are the 'medical materialists' Moleschott, Büchner, and Vogt, the zoologist Ernst Haeckel, and his own populariser Wilhelm Bölsche, whose Love-Life in Nature (1898-1901) transformed Haeckel's mechanistic monism into 'a new scientific folk religion' (p. 56) of erotic panpsychism. In analyzing the messages, audiences, and impacts of the popularisers, Kelly is conscious of writing the 'social history of ideas'. Popular Darwinism (or Darwinisms, as he suggests) can be seen as a 'cultural extension of the radical democratic spirit of 1848'. It began as 'a pseudopolitical ideological weapon for the progressive elements of the middle class', then in the 1880s it became 'a simple faith in the triumph of justice' among the workers. The bulk of its influence lay on 'the left half of the political, cultural, and social spectrum' (pp. 5-8).

Here Kelly conducts a sweeping revision that looks both convincing and controversial (Chapter 6). The neat link between the popularisers and Nazi ideology via Blut-und-Boden social Darwinism is, he argues, a figment of historians who fail to make clear distinctions. 'There was no way that the Nazis could fully accept Darwinism.' In the guidelines issued by the Nazi Propaganda Ministry in 1935 the literature of popular Darwinism was officially proscribed. Kelly does not deny any relationship between Darwinism and Nazi ideology but he insists that the connections are 'far more tenuous, indirect, and problematic than is commonly assumed (p. 122) - just the opposite, in fact, of the connections between popular Darwinism and socialism. The last chapter of The Descent of Darwin, 'Darwin, Marx, and the German Workers', is sobering. Working people typically achieved political awareness through the literature of popular science, i.e. popular Darwinism, which was consistently anti-establishment in tone. Marxism, an incompatible Weltanschauung, lacked effective popularisers, and theoreticians like Engels and Kautsky were making it into a science. So nature replaced history as the engine of social change Haeckel replaced Hegel. This adaptation of Marxism to mainstream intellectual life had 'a debilitating effect on revolutionary consciousness', for Darwinism tended to obscure the role of praxis. The German worker became a natural evolutionist rather than a political revolutionist. The promotion among the masses of evolutionary neo-Marxist thought, Kelly observes, reflected the 'larger failure' of the German Social Democratic party 'to develop real alternatives to bourgeois culture' (p. 135).

Kelly's analysis is not only sobering, but opportune. It helps us see the problems and the peril in books like Paul Heyer's Nature, Human Nature, and Society, books that reflect the failure of some left-wing intellectuals in the 20th century to develop real alternatives to bourgeois social science. The Descent of Darwin appeared too late for Heyer to benefit from its insights, as did a very clever piece of polemic by Yves Christen (1981), which exactly controverts his argument. But Heyer inexplicably ignores other important contextuating discussions of Darwinian social and political thought, including several with special relevance to his attempts to assimilate Marx to Darwin (Lecourt, 1976; Cravens, 1978; Bannister, 1979; Jones, 1980; Naccache, 1980). In fairness, however, Heyer does not claim to be a historian. He is an anthropologist and an apologist for an open-ended 'biosocial', rather than a narrowly reductionistic sociobiological, approach to the human sciences. He thinks that neither approach is a resurgent form of social Darwinism, for their belief in an innate human nature 'does not invariably lead to a justification of the status quo'. On the contrary, the work of Lionel Tiger and Robin Fox strikes Heyer as having 'more radical implications than ... they themselves suspect', and he gratefully expresses indebtedness to 'those oft misunderstood scholars' (pp. xv, 255).

Perhaps Heyer has in mind a passage like this one from Tiger and Fox's The Imperial Animal (1974):

> 'It is ... natural to man to create hierarchies, to attach himself to symbolic causes, to attempt to dominate and coerce others, to resort to violence either systematic or lunatic, to assert, to connive, to seduce, to exploit. ... It is difficult to envisage the possibility of human society without violence, disease, selfishness, oppression, and injustice.'

How views like this can be understood to have other than radically destructive implications for a social science that takes the name of Marx is quite beyond me. Rather, I find them fairly congruent with some of Darwin's own beliefs. If Heyer's politics is what I hope it is, I should have thought he would want to guard himself against these particular implications when citing the work of Tiger and Fox.

But above all Heyer wants 'a biosocial science with a Marxian focus, which might draw from sociobiology but not be governed by it' (p. 221). To this end his strategy is to get Darwin, Marx, Engels, Kautsky, and even Kropotkin ('probably the most authentically Darwinian political philosopher who ever wrote') on his side, while disposing of Marcuse and critical theory. This requires a willingness to hear the young Marx (especially in the Paris Manuscripts) and the elder Marx speaking with one voice, an attempt to patch up the Engels-Marx relationship, and generally a Whig historiography that ignores, minimises, or refutes views now disreputable and underscores those with which we now agree. The outstanding example of this last tactic is Heyer's handling of social Darwinism, that 'great misnomer' with which 'Darwin's ideas ... are invariably and wrongly linked' (pp. 23, 146). In the light of John Greene's 1977 article, 'Darwin as a Social Evolutionist' (reprinted in Greene, 1981), this interpretation can no longer be offered with impunity, any more than the statement, 'Marx's politics were predicated on the belief that in order to change the world, one must first understand it' (p. 23) can be uttered with conviction in the light of the Theses on Feuerbach of 1845.

Defective (collective) merchandise

The last category of literature churned out by the Darwin industry in recent years is the books of collective commemoration. No less than six such volumes will soon have appeared in the wake of the 1982 centenary, but as a contributor to most of them (Berry, 1982; Chapman and Duval, 1982; Conry, 1983; Kohn, 1984; Durant and Moore, in press), I must confine my remarks to Evolution from Molecules to Men. The dustjacket reproduces the photograph of a tense and rigid Darwin, aged 45, that a sensitive scholar once suggested shows 'the strain of the long years of delay' in publishing his theory (Gruber and Barrett, 1974, p.

96). I suspect it illustrates the requirements of mid-Victorian portrait photography, but the image serves nicely as a metaphor of the book. Here, cheek-by-jowl, thrown into strained propinquity by the editor, D.S. Bendall, just as they were during the Darwin Centenary Conference at Cambridge in July 1982, are the makers and shakers of modern evolutionary thought - Ernst Mayr and Richard Dawkins and François Jacob and E.O. Wilson; Maynard Smith, Stephen Jay Gould and Richard Lewontin among others - with a sprinkling of historians and philosophers of science for good measure and an introductory essay by Sir Andrew Huxley, the grandson of T.H. and President of the Royal Society.

When I was sent the proposal for this book by Cambridge University Press and asked for my evaluation, it made no provision for a humanistic reflection on the problems of evolution. I insisted on one or more contributions from social theorists or philosophers. These now appear in a very demanding essay by Bernard Williams on evolutionary ethics and in the Epilogue that immediately follows. John Passmore, a veteran of the 1959 centenary (Passmore, 1959) and the author of The Perfectibility of Man (2nd edition, 1972) prepared the Epilogue during the Darwin Conference as he listened to the papers. Although by no means radical, his urbane overview and assessment is the best way into the twenty-seven highly technical chapters of Evolution from Molecules to Men. I shall return to it in due course. But some of the chapters are important and accessible enough to deserve particular comment.

The opening contributions by Huxley and Mayr distil the complacent authority of the neo-Darwinian establishment. To the critic of natural selection Huxley replies first, 'Have you read the Origin of Species?' then, 'Have you read Fisher's Genetical Theory of Natural Selection?' If either answer is No, Huxley instructs us, 'You are entitled to disregard anything he says' (pp. 9-10). Huxley claims that Darwin 'kept off mental phenomena' in the book. 'Darwinism as expressed in the Origin and the Descent of Man' relates 'only to bodily features' (pp. 14, 16). Since Darwin devoted between three and four chapters to mental evolution in the Descent (Chapters 3-5, 19), we are presumably entitled to disregard anything Huxley says about the history of modern biology. This is a mistake that Mayr would not have made, although the historical expositions for which he is justly famous tend to serve the same prerogatives that Huxley defends. Darwin to Mayr was an 'intellectual revolutionary', a 'great man', 'pioneering' and 'bold', whose anti-essentialism, gradualism, and population thinking make him the perfect precursor of scientists like Ernst Mayr. 'Socio-economic conditions' had little or no impact on Darwin's scientific thinking: 'the uniqueness of individuals, ... the superfecundity of reproducing individuals, and ... the struggle for existence among animals and plants' are, after all, not Malthusian, but 'natural history concepts' (p. 33). 'Ideology,' indeed, has always furnished barriers to evolution, but Darwin penetrated them all 'empirically'.

After this preliminary genuflecting - Richard Burkhardt, writing on ethology, suggests that we view it as ritual self-legitimation (pp. 441-42) - it is a relief to encounter historians and philosophers of science who remain somewhat sceptical of current orthodoxies. Jonathan Hodge draws on the latest Darwin scholarship in a rich, judicious, and characteristically iconoclastic discussion of 'Darwin's general biological theorising'. He proposes that the mediating context between Darwin's theorising and early-Victorian society should be found in the social sphere of '"radical" dissent from national and metropolitan orthodoxies in politics and religion' rather than in 'any direct tie to capital through laissez faire' (although radical dissent and laissez faire were, I would suggest, quite inseparable at the time). David Hull points out that Darwin and his followers 'continued to treat species as natural kinds, albeit very peculiar ones' that could not be characterised by their common 'natures'. This analysis has a political payoff, and Hull puts it bluntly to all would-be Darwinians:

> 'If species in general lack natures, then so does Homo sapiens as a biological species. If Homo sapiens lacks a nature, then no reference to biology can be made to support one's claims about "human nature". Perhaps all people are "persons", share the same "personhood", etc., but such claims must be explicated and defended with no reference to biology (p. 76).

The passage is one of the highlights of the book. Another comes in the essay by Garland Allen, in some ways a man after Hull's own heart. Allen concludes his study of mechanical, holistic, and dialectical materialism in post-Darwinian biology with a personal note on 'how to develop our own thought processes beyond the obvious and necessary limitations of the prevailing philosophical view':

> 'Darwinian theory was born and has developed in an age founded on the principles of temporal gradualism and mechanistic philosophy. This was historically in tune for a theory developing out of mid-19th century industrial society. It need not be a view appropriate to what has been learned in the intervening century since Darwin's death - either in the biological or in the social/philosophical realm. In our traditional mind-set, gradualism is comfortable, rapid change - revolution in the political, social or philosophical sense - is uncomfortable. Even on the microscale we seek consistent theories and views. We try to ignore, shove under the rug, or minimise contradictions, or opposing tendencies within what we think are the realities we try to describe. Perhaps another way of viewing ourselves, our thought processes, and our actions, is to seek out contradictions, to look for a change, even rapid change, and thus to see such change (and this means sometimes rapid, qualitative change) as inevitable in the real world, a component of the reality in which we live. Perhaps in this way we will be able to grasp the dynamics of the evolutionary process - biological and social - in a more holistic, and ultimately more realistic way.'
> (p. 101).

I offer this extended passage not only for its congeniality but because it is so rare in books of this kind, or in any other Darwinian books for that matter, to find a committed scholar addressing himself and ourselves so personally and practically.

Among the more strictly scientific contributors, Richard Lewontin has produced one of the clearest, boldest, and most provocative essays in the volume. He resumes a theme enunciated by Allen, the dialectical interaction of gene, organism, and environment, in which 'each is both cause and effect in a quite complex, though perfectly analysable way' (p. 276). Conventional Darwinism has objectified these elements and thus testifies to 'the power of a long-held ideology', the mechanistic reductionism of Newtonian science. 'If the hundredth anniversary of the death of Darwin is not to mark the death of Darwinism', Lewontin warns, 'we need to struggle for its transformation' (p. 284). In a remarkable example of 'applied' history of science, Stephen Gould also addresses a theme of Allen's by analysing the fruitful contradiction between an independent macro-evolutionary theory based on paleontology and a reductionistic micro-evolutionary theory grounded in population genetics. The way out of the impasse for Gould is the concept of hierarchy, or levels of organisation. This implies a new essentialism in which the essences are materially contingent 'genetic and developmental coherences ('programs' or 'systems') that resist selective pressures of the moment, and impose a higher level, or macroevolutionary, constraint upon change within local populations' (p. 362). Gould, a paleontologist, agrees with Lewontin, a population geneticist, that 'external selection and internal production and constraint' may furnish a new metaphor to replace the 'trial-and-error' metaphor of anti-essentialistic

neo-Darwinism.

But soon the critics descent. Francisco Ayala argues that, although macro-evolution cannot be reduced to micro-evolution '(at least at the present state of knowledge)', this is not because of a hierarchical organization of life with emergent properties at higher levels. 'The issue of emergent properties is spurious' - 'ill-founded, or at least unproductive' - he says. 'It cannot be settled by discussion about the "nature" of things or their properties, but it is resolvable by reference to our knowledge of those objects'. Since scientific theories consist of propositions about the natural world, 'only the investigation of the logical relations between propositions can establish whether or not one theory or branch of science is reducible to some other theory or branch of science' (pp. 398, 399). Epistemological considerations such as these do not, however, constrain Gould and Lewontin's other major critic, Richard Dawkins (of The Selfish Gene), who seems to have had the advantage of access to the published version of Gould's paper before he completed his own modest piece, entitled 'Universal Darwinism'. In this 'preliminary contribution to a new discipline of "evolutionary exobiology"', Dawkins tries to show that 'Darwinism rests on a securer pedestal than that provided by facts alone'. It is by far the most overtly theological contribution to Evolution from Molecules to Men, for in opposing Gould, Dawkins confesses himself a strict pan-adaptationist.

> 'I suppose people like me might be labelled neo-Paleyists, or perhaps "transformed Paleyists". We concur with Paley that adaptive complexity demands a very special kind of explanation: either a Designer as Paley taught, or something such as natural selection that does the job of a designer.'
> (p. 404)

Dawkins's point is that natural selection is quite able to usurp the Divine attributes, including omnipresence. (His next book, I am reliably informed, is entitled The Blind Watchmaker.) He wagers that 'life all around the universe ... will always be recognisable as Darwinian life'. Natural selection 'may be as universal as the great laws of physics' (p. 423).

Finally, E.O. Wilson explains the significance of his theory of 'gene-culture coevolution'. Over against 'a few modern Luddites', he calls for an extension of 'new scientific procedures into the deeper reaches of human nature in order to provide solutions to those residual problems that combine to defy simple economic and technological solutions' (p. 552). Whereupon William weighs in with his argument that a 'correct understanding' of human evolution has the effect of discouraging attempts to construct a naturalistic ethics. Then Passmore has the last word. He is surprised to find 'the ideas of those paradigmatic nineteenth-century figures, Hegel and Marx, resuscitated as a twentieth-century methodology' (p. 571) in Lewontin's work. He is also worried about the standard charge that Darwinism is a tautology. Dawkins claims universality for Darwinism in terms that might suggest that it is 'logically inconceivable' for evolution to occur in a different way on a different planet, that natural selection is implicit in the very definition of evolution. In which case the tautology charge would stick.

But even if Dawkins were more circumspect, there remains the anthropological view that Darwinism is a cultural myth. This concerns Passmore as well. He admits that many biologists and popularisers of Darwin in the last century have read him, and reported him, to be presenting a new form of the 'classical myth in which through a series of terrible vicissitudes, the hero - Homo sapiens - finally emerges, triumphant'. Or Darwinism has simply been seen as occupying 'a societal niche, left empty by the decline of Christianity, as a creation-story' (p. 573). Much of the material in Evolution from Molecules to Men is, Passmore insists, intended to counter this interpretation by stating Darwinism so precisely that it will be seen 'as a science replacing myth, rather than as a rival myth'. Darwin's 'true scientific accomplishment' is thought to be best revealed by the removal of 'metaphysical accretions' (pp. 574, 575). Whether or not the entire enterprise to which he refers amounts to a new kind of myth-making Passmore does not say, but my overwhelming impression of the book is that evolutionists today are no less helped, or hindered, by metaphysics than they were in Darwin's time.

Socially useful products

The Darwin industry cannot be revolutionised in the ordinary sense of the word. A collective enterprise pursued by a thousand individuals in a thousand places in a thousand different ways is invulnerable to a board-room coup. Workers' control is irrelevant in a traditional craft-based cottage industry, and an alternative corporate strategy devised by Darwinian shop stewards would never take effect. The labour process might be altered through more genuinely collaborative research, but so far only the editors of Darwin manuscripts - De Beer and his crew, Gruber and Barrett (1974), and recently Kohn, Smith, and Stauffer (1982) - have demonstrated the long-term advantages of working together rather than competing apart. Indeed, with the isolation and increasing vulnerability of academic Darwin specialists, it seems unlikely that collaborative research will lead to any less arcane results in the immediate future. A more feasible form of revolutionary historical practice, therefore, might be for individuals to concentrate on creating some revolutionary new products. 'Much as we would like to slip into an unconcerned condition and describe historical events as they really were,' Greene told his fellow-liberals ten years ago, 'our concern for the present and future fortunes of mankind prevents us and makes us shape the past in the light of some desired future' (Greene, 1975, p. 252).

What society today needs from the Darwin industry above all else are two books: (1) a general introduction to the so-called 'Darwinian Revolution' that will hold its place for a generation as a textbook in universities across the world; and (2) a subtle, textured and thoroughly accessible portrait of Darwin that will command the respect of Darwin scholars, meet the demands of professional biographers and historians, and grip the imagination of the general reading public.

The first of these books could be written today. Students are not well served by existing textbooks, which are either too broad in their coverage (Oldroyd, 1980) or too narrow and naive (Ruse, 1979) or simply too old (Eiseley, 1958). None of them, of course, is written from a socialist standpoint. But there are difficulties in constructing a new general introduction to the so-called Darwinian revolution. The first one is the concept of the Darwinian revolution itself. I maintain (although I cannot argue here) that a measure of the revolutionising of the Darwin industry will be the extent to which the concept of a Darwin-

ian revolution drops from the minds and vocabulary of students of history. This, however, is not likely to occur overnight, least of all among those who would appear best qualified to tackle the problem of Darwin's place in the historical transformation of Western views of nature, society, and humankind over the last 150 years: namely, the many Darwin scholars for whom 'revolution' is an approbative catchword (intellectual revolutions only need apply) with which to associate Darwin's name.

So a second problem in furnishing a new account of the 'Darwinian transformation' (for lack of a better term at present) is finding someone to do it. With the increasing specialisation of the Darwin industry, the old-style generalists have almost vanished from the field. Gone are the days when English littérateurs like Basil Willey or even specialists in Victorian studies like Philip Appleman would offer scholarly interpretations of Darwin's life and work. The subject has been professionalised, and the ritual humiliation of Gertrude Himmelfarb twenty-five years ago for daring to fault the great scientist's theory in a book entitled Darwin and the Darwinian Revolution is still a cautionary reminder to those who would offer critical reflections on Darwinian history. Yet, ironically, historical generalists, students of Victorian studies, English littérateurs - these are precisely the people best qualified to contextuate Darwin's life and work, and to disabuse us of self-congratulatory notions like the Darwinian revolution. This is why Darwin's Plots is so significant. Beer is the first such person in a very long time to have combined a specialist understanding of Victorian culture with an insider's knowledge of the technicalia of the Darwin industry, and to have brought her research to a book-length conclusion. We can only hope for more from her, and for more researchers like her.

MISAPPREHENSION.

Mary Jane (indignant). "Come along, 'Liza. Don't stand looking at that— Which I call it shameful o' them profane Darwinites! I don't believe it's a bit like Her!" *[Dedicated to Hanging Committee*

Would-be writers of the new textbook that, it seems to me, society today requires could do worse than consult two recent volumes intended for the popular academic market. Philip Kitcher's Abusing Science is as its title suggests, not the place to look for a radical critique of the scientific community and the construction of scientific theories. Evolutionary theory has been enlisted in support of numerous appalling causes, Kitcher states (p. 196), but 'this fact says very little about evolutionary theory itself'. (How little?) 'Virtually any morally neutral, or even morally good, doctrine can be misused for evil purposes.' (So is Darwinism neutral or good? What about 'Creation-Science'?) But, such matters aside, Abusing Science is a model of simple, direct pellucid prose. Its 'case against creationism' is all the more powerful for its sheer accessibility, and writers of historical texts, who equally have cases to make (albeit not always against such formidable popular opponents), would do well to emulate Kitcher's style.

The other popular book worth looking at is Darwin for Beginners by Jonathan Miller and Borin Van Loon. Here accessibility is achieved by a racy and sometimes hilarious text (replete with annoying errors) built around delightful cartoon illustrations. I have long believed that a musical comedy based on the life of Darwin could do the subject - and its stuffier historians - enormous good. This is the nearest we possess to my desideratum, although I have seen lyrics and heard music for just such a production, which an accomplished American writer has been preparing over the last ten years. Certainly a producer of the BBC Shakespeare might also entertain the project, but to get my support he would have to transcend 'the conventional, not to say "conservative" approach' that he 'deliberately adopted' in the text of Darwin for Beginners 'in an effort to make this difficult subject accessible'. 'It could be argued,' Miller writes almost abashedly in the last paragraph of the last page of text, 'that I have culpably overlooked the social implications of evolutionary thought and the concealed class-interests in the various theories' (p. 176). Then he refers his readers inter alia to scholarly articles by Bob Young. It is a pity that he could not also have mentioned an authoritative popular book that does for the Darwinian transformation what the collected essays of Stephen Gould have done for contemporary evolutionary theory.

The second socially useful product that the Darwin industry should undertake is an engaging portrait of Darwin. Janet Browne asked in 1983, 'Why ... is there still no good biography?' and her question becomes more urgent in view of the numerous substantial biographies of notables like Marx and Freud (Browne, 1983a, p. 285). The answer, however, should be obvious by now. The Darwin industry has become specialised to such an extent that Darwin studies (to change the figure) are a historical minefield. Even the angels among us fear to tread where interpreters like Brackman can be exploded in a flash by the sensitive and powerful devices of Darwin experts. And since these experts possess hard-won insights into a vast store of unpublished manuscripts, their division of labour is impregnable until the major transcriptions are completed, texts and scholarly apparatuses are edited, and all the evidence is on the table. One would be ill-advised, for example, to publish a major biography of Darwin before the multivolume Collected Letters has appeared.

But in another centennial article Janet Browne waxes hopeful. She looks forward to 'new developments in the "industry" - by historiographic invention, not necessity' (Browne, 1982, p. 280). Chronological accounts of Darwin's life could easily give place to a narrative structured, say, by the public and private dimensions of his career or by the shifting 'cultural circle' of which Darwin was a member. 'Ingenuity,' she stresses, will be a positive advantage to the biographer. I want to underscore these remarks without, at the same time, subscribing to Brown's assessment that 'evolutionary theory has been overused as an example of the way social and political ideas (such as Malthus' account of population) can be translated into biological debate' (p. 279). On the contrary, I think the Darwin industry has only begun to show its ingenuity in contextuating Darwin's life, work and theories. Further progress will be indicated by the degree to which the pure waters of Darwin's science are muddied by the rich surrounding soil of political economy, natural theology, urban radicalism, and provincial Dissent. Equally, the Darwin industry will only produce something of benefit to society if in a new biography Darwin's affective life is shown to modulate his theories: his affinities for romantic poetry no less than his notorious ill-health and - a subject surprising-

ly neglected - his sexual politics.

All this will require greater efforts to alter the division of labour than have hitherto been made in the Darwin industry. Here socialist scholars could surely take the lead. But our job cannot be merely to 'shape the past in the light of some desired future', even if Greene found this inescapable. The Darwin industry, and much else besides, will only begin to be revolutionised as we allow the present to set the agenda for constructing interpretations of the past that appear both more hopeful and more authentic than those by which historians flatter and condone the present. The future of humankind could depend on our success.

The major sources used in this retrospect are:

D.F. Bratchell, The Impact of Darwinism: Texts and Commentary Illustrating Nineteenth Century Religious, Scientific and Literary Attitudes, Avebury Publishing Co., 1981, 140pp, £8.99 pb

Dov Ospovat, The Development of Darwin's Theory: Natural History, Natural Theology, and Natural Selection, 1838-1859, Cambridge University Press, 1981, 301pp, £25.00 hb

Barry G. Gale, Evolution without Evidence: Charles Darwin and 'The Origin of Species', Harvester Press, 1982, 238pp, £18.95 hb

Gillian Beer, Darwin's Plots: Evolutionary Narrative in Darwin, George Eliot and Nineteenth-Century Fiction, Routledge and Kegan Paul, 1983, 303pp, £17.95 hb

Alfred Kelly, The Descent of Darwin: The Popularization of Darwinism in Germany, 1860-1914, University of North Carolina Press, 1981, 185pp, £15.95 hb

Paul Heyer, Nature, Human Nature and Society: Marx, Darwin, Biology, and the Human Sciences, Greenwood Press, 1982, 266pp, £23.95 hb

D.S. Bendall (ed.), Evolution from Molecules to Men, Cambridge University Press, 1983, 594pp, £18.00 hb

Philip Kitcher, Abusing Science: the Case against Creationism, Open University Press, 1983, 213pp, £5.95 pb

Jonathan Miller and Borin Van Loon, Darwin for Beginners, Writers and Readers Publishing Cooperative Society, 1982, 176pp, £2.95 pb

References

Allan, Mea, 1977, Darwin and His Flowers: The Key to Natural Selection, London, Faber & Faber

Allan, Mea, 1982, 'Charles Darwin and the Botanical Sciences', in Chapman and Duval, 1982, pp. 259-90

Bannister, Robert C. 1979, Social Darwinism: Science and Myth in Anglo-American Social Thought, Philadelphia, Temple University Press

Barrett, Paul H. (ed.), The Collected Papers of Charles Darwin, 2 vols., Chicago, University of Chicago Press

Barrett, Paul H., Weinshank, Donald J. and Gottleber, Timothy T., 1981, A Concordance to Darwin's 'Origin of Species', First Edition, Ithaca, NY, Cornell University Press

Barton, Ruth, 1983, 'Evolution: The Whitworth Gun in Huxley's War for the Liberation of Science from Theology', in The Wider Domain of Evolutionary Thought, ed. D. Oldroyd and I. Langham, pp. 261-87, Dordrecht, Holland, D. Reidel Publishing Co

Beddall, Barbara G., 1973, 'Notes for Mr. Darwin' - Letters from Charles Darwin to Edward Blyth in Calcutta: A Study in the Process of Discovery, Journal of the History of Biology, 6, pp. 69-95.

Berry, R.J. (ed.), Charles Darwin: A Commemoration, 1882-1982, London, Academic Press

Blaisdell, Muriel, 1982, 'Natural Theology and Nature's Disguises', Journal of the History of Biology, 15, pp. 163-89.

Bowler, Peter J., 1983, The Eclipse of Darwinism: Anti-Darwinian Evolution Theories in the Decades around 1900, Baltimore, Md., Johns Hopkins University Press

Brackman, Arnold C., 1980, A Delicate Arrangement: The Strange Case of Charles Darwin and Alfred Russel Wallace, New York, Times Books

Brent, Peter, 1981, Charles Darwin: 'A Man of Enlarged Curiosity', London, Heinemann

Browne, Janet, 1982, Essay Review: 'New Developments in Darwin Studies', Journal of the History of Biology, 15, pp. 275-80

Browne, Janet, 1983a, Review of Darwin by Wilma George and Darwin by Jonathan Howard, British Journal for the History of Science, 16, pp. 284-85

Browne, Janet, 1983b, The Secular Ark: Studies in the History of Biogeography, New Haven, Cn., Yale University Press

Bunting, James, 1974, Charles Darwin, Folkstone, Kent, Bailey Brothers & Swinfen

Carroll, P. Thomas, 1976, An Annotated Calendar of the Letters of Charles Darwin in the Library of the American Philosophical Society, Wilmingtin, Del., Scholarly Resources

Chancellor, John, 1973, Charles Darwin, London, Weidenfeld & Nicolson

Chapman, Roger G. and Duval, Cleveland T. (eds.), 1982, Charles Darwin, 1809-1882: A Centennial commemorative, Wellington, NZ, Nova Pacifica

Christen, Yves, 1981, Marx et Darwin: Le grande affrontement, Paris, Albin Michel

Churchill, Frederick B., 1982, 'Darwin and the Historians', in Berry, 1982, pp. 45-68.

Colp, Ralph, Jr., 1977, To Be an Invalid: The Illness of Charles Darwin, Chicago, University of Chicago Press

Conry, Yvette, 1974, L'introduction du darwinisme en France au XIX^{e} siècle, Paris, J. Vrin

Conry, Yvette (ed.), 1983, De Darwin au darwinisme: science et idéologie, Paris, J. Vrin

Conway, Jill, 1972, 'Stereotypes of Femininity in a Theory of Sexual Evolution', in Suffer and Be Still: Women in the Victorian Age, ed. Martha Vicinus, pp. 140-54, Bloomington, Indiana University Press

Cowan, Ruth Schwartz, 1972, 'Francis Galton's Contribution to Genetics', Journal of the History of Biology, 5, pp. 389-412.

Cravens, Hamilton, 1978, The Triumph of Evolution: American Scientists and the Heredity-Environment Controversy, 1900-1941, Philadelphia, University of Pennsylvania Press

Crowther, J.G., 1972, Charles Darwin, London, Methuen Educational

Daniels, George (ed.), 1968, Darwinism Comes to America, Waltham, Mass., Blaisdell Publishing Co

De Beer Gavin, 1968, 'The Darwin Letters at Shrewsbury School', Notes and Records of the Royal Society of London, 23, pp. 68-85.

Duffin, Lorna, 1978, 'Prisoners of Progress: Women and Evolution', in The Nineteenth Century Woman: Her Cultural and Physical World, ed. Sara Delamont and Lorna Duffin, pp. 57-91, London, Croom Helm

Durant, John D. and Moore, James R., in press, Evolution, Religion, and Society: Historical Perspectives on the Centenary of Darwin's Death, Urbana, University of Illinois Press

Dyhouse, Carol, 1976, 'Social Darwinistic Ideas and the Development of Women's Education in England, 1880-1920', History of Education, 5, pp. 41-58

Eiseley, Loren, 1958, Darwin's Century: Evolution and the Men Who Discovered It, New York, Doubleday

Fee, Elizabeth, 1979, 'Nineteenth-Century Craniology: The Study of the Female Skull', Bulletin of the History of Medicine, 53, pp. 415-33.

Fletcher, F.D., 1975, Darwin: An Illustrated Life of Charles Darwin, 1809-1882, Princes Risborough, Buckinghamshire, Shire Publications

George, Wilma, 1964, Biologist Philosopher: A Study of the Life and Writings of Alfred Russel Wallace, London, Abelard-Schuman

George, Wilma, 1982, Darwin, London, Fontana

Gillespie, Neal C., 1979, Charles Darwin and the Problem of Creation, Chicago, University of Chicago Press

Glick, Thomas F., 1982, Darwin en Espana, Barcelona, Ediciones Peninsula

Glick, Thomas F. (ed.), 1974, The Comparative Reception of Darwinism, Austin, University of Texas Press

Greene, John C., 1975, 'Reflections on the Progress of Darwin Studies', Journal of the History of Biology, 8, pp. 243-73.

Greene, John C., 1981, Science, Ideology, and World View: Essays in the History of Evolutionary Ideas, Berkeley, University of California Press

Gruber, Howard E. and Barrett, Paul H., 1974, Darwin on Man: A Psychological Study of Scientific Creativity ... together with Darwin's Early and Unpublished Notebooks, London, Wildwood House

Haraway, Donna, 1978, 'Animal Sociology and a Natural Economy of the Body Politic, Part I: A Political Physiology of Dominance; Part II: The Past is the Contested Zone: Human Nature and Theories of Production and Reproduction in Primate Behavior Studies', Signs, 4, pp. 21-36, 37-60

Herbert, Sandra, 1980, The Red Notebook of Charles Darwin, Ithaca, NY, Cornell University Press

Herbert, Sandra, 1982, 'Remembering Charles Darwin as Geologist', in Chapman and Duval, 1982, pp. 231-58.

Himmelfarb, Gertrude, 1962, Darwin and the Darwinian Revolution, revised edition, New York, W.W. Norton & Co

Howard, Jonathan, 1982, Darwin, Oxford, Oxford University Press

Jahn, Ilse, 1982, Charles Darwin, Leipzig, Urania-Verlag

Jones, Greta, 1980, Social Darwinism and English Thought: The Interaction between Biological and Social Theory, Brighton, Sussex, Harvester Press

Keynes, Richard Darwin, 1979, The Beagle Record: Selections from the Original Pictorial Records and Written Accounts of the Voyage of H.M.S. Beagle, Cambridge, Cambridge University Press

Kohn, David, 1981, 'On the Origin of the Principle of Diversity', Science, 213, pp. 1105-1108

Kohn David (ed.), in press, The Darwinian Heritage, Princeton, N.J., Princeton University Press

Kohn, David, Smith, Sydney and Stauffer, Robert C., 1982, 'New Light on "The Foundations of the Origin of Species": A Reconstruction of the Archival Record', Journal of the History of Biology, 15, pp. 419-42.

Landucci, Giovanni, 1977, Darwinismo a Firenze: tra scienze e ideologia (1860-1900), Florence, Leo S. Olschki Editore

Lecourt, Dominique, 1977, Proletarian Science? The Case of Lysenko, London, New Left Books

Loewenberg, Bert James, 1959,'Darwin Scholarship of the Darwin Year', American Quarterly, 11, pp. 521-33.

Loewenberg, Bert James, 1965, Darwin and Darwin Studies, 1959-1963, History of Science, 4, pp. 15-54.

Manier, Edward, 1978, The Young Darwin and His Cultural Circle: A Study of Influences Which Helped Shape the Language and Logic of the First Drafts of the Theory of Natural Selection, Dordrecht, Holland, D. Reidel Publishing Co

Marshall, A.J., 1970, Darwin and Huxley in Australia, Sydney, Hodder & Stoughton

Moore, James R., 1977, 'On the Education of Darwin's Sons: The Correspondence between Charles Darwin and the Reverend G.V. Reed, 1857-1864', Notes and Records of the Royal Society of London, 32, pp. 51-70

Moore, James R., 1979, The Post-Darwinian Controversies: A Study of the Protestant Struggle to come to terms with Darwin in Great Britain and America, 1870-1900, Cambridge, Cambridge University Press

Moore, James R., 1981, 'Creation and the Problem of Charles Darwin', British Journal for the History of Science, 14, pp. 189-200

Moore, James R., 1982, 'Charles Darwin Lies in Westminster Abbey', in Berry, 1982, pp. 97-113.

Moorhead, Alan, 1969, Darwin and the 'Beagle', New York, Harper & Row

Mosedale, Susan Sleeth, 1978, 'Science Corrupted: Victorian Biologists Consider the "Woman Question"', Journal of the History of Biology, 11, pp. 1-55.

Naccache, Bernard, 1980, Marx critique de Darwin, Paris, J. Vrin

Nunez, Diego (ed.), 1977, El darwinismo en Espana, Madrid, Editorial Castalia

Olby, Robert C., 1967, Charles Darwin, London, Oxford University Press

Oldroyd, D.R., 1980, Darwinian Impacts: An Introduction to the Darwinian Revolution, Milton Keynes, Buckinghamshire, Open University Press

Oppenheimer, Jane, 1959, 'An Embryological Enigma in the "Origin of Species"', in Forerunners of Darwin: 1745-1859, ed. B. Glass et al., pp. 292-322, Baltimore, Md., Johns Hopkins Press

Pancaldi, Guiliano, 1977, Charles Darwin's 'storia' ed 'economia' della natura, Florence, La Nuova Italia

Parodiz, J.J., 1981, Darwin in the New World, Leiden, E.J. Brill

Parshall, Karen Hunger, 1982, 'Varieties as Incipient Species: Darwin's Numerical Analysis', Journal of the History of Biology, 15, pp. 191-214

Passmore, John, 1959, 'Darwin's Impact on British Metaphysics', Victorian Studies, 3, pp. 41-54.
Paul, Harry W., 1979, The Edge of Contingency: French Catholic Reaction to Scientific Change from Darwin to Duhem, Gainesville, University Presses of Florida
Peach, L. Du Garde, 1973, Charles Darwin, Loughborough, Leicestershire, Ladybird Books
Ralling, Christopher (ed.), 1978, The Voyage of Charles Darwin: His Autobiographical Writings Selected and Edited ..., London, BBC Publications
Ruse, Michael, 1974, 'The Darwin Industry - A Critical Evaluation', History of Science, 12, pp. 43-58.
Ruse, Michael, 1979, The Darwinian Revolution: Science Red in Tooth and Claw, Chicago, University of Chicago Press
Russell-Gebbett, Jean, 1977, Henslow of Hitcham: Botanist, Educationalist, and Clergyman, Lavenham, Suffolk, T. Dalton
Russett, Cynthia Eagle, 1976, Darwin in America: The Intellectual Response, 1865-1912, San Francisco, W.H. Freeman & Co
Shapin, Steven, 1982, History of Science and Its Sociological Reconstructions, History of Science, 20, pp. 157-211
Shapin, Steven and Barnes, Barry, 1979, 'Darwin and Social Darwinism: Purity and History', in Natural Order: Historical Studies of Scientific Culture, ed. B. Barnes and S. Shapin, pp. 125-42, Beverley Hills, Ca., Sage Publications
Stauffer, R.C. (ed.), 1975, Charles Darwin's 'Natural Selection': Being the Second Part of His Big Species Book Written from 1856 to 1858, Cambridge, Cambridge University Press
Stone, Irving, 1980, The Origin: A Biographical Novel of Charles Darwin, New York, Doubleday & Co
Vanderpool, Harold Y. (ed.), 1973, Darwin and Darwinism: Revolutionary Insights Concerning Man, Nature, Religion, and Society, Lexington, Mass, D.C. Heath & Co
Vorzimmer, Peter J., 1977, 'The Darwin Reading Notebooks (1838-1860)', Journal of the History of Biology, 10, pp. 107-53
Weber, Gay, 1974, 'Science and Society in Nineteenth-Century Anthropology', History of Science, 12, pp. 260-83.
Winsor, Mary, 1976, Starfish, Jellyfish, and the Order of Life: Issues of Nineteenth-Century Science, New Haven, Cn., Yale University Press
Young, Robert M., 1973, 'The Historiographical and Ideological Contexts of the Nineteenth-Century Debate on Man's Place in Nature', in Changing Perspectives in the History of Science: Essays in Honour of Joseph Needham, ed. M. Teich and R. Young, pp. 344-438, London, Heinemann

THESIS ELEVEN

Subscriptions
Single Issue A$5.50
3 issues A$15
(overseas) A$18
Institutional A$36

Please make cheques payable to Thesis Eleven

Send to:
Thesis Eleven,
c/- Sociology Dept.,
Phillip Institute
of Technology,
Bundoora 3083
Australia

Number 9 July 1984

The prospects for socialism

SOCIAL MOVEMENTS AND SOCIOLOGY
Alain Touraine
A DEFENCE OF CORPORATISM
Stewart Clegg, Geoff Dow & Paul Boreham
CORPORATISM, DEMOCRACY & MODERNITY
Julian Triado
HABERMAS & GIDDENS ON MARX
Johann Arnason
SOCIALIST LABOUR & COMPUTERS
G. Carchedi
R.W. CONNELL — A CRITIQUE
Rob White

plus Ann Gouley and Phil Hind on the CPA split, Patricia Springborg on democracy, Ulysses Santamaria on Marx against Marx, discussion and reviews.

Number 8 Feb 1984

Marx and Politics
with articles by Agnes Heller, Ferenc Feher and Immanuel Wallerstein, plus John Keane on CND and Ariel Kay Salleh on feminism and difference.