

transportation, and so on.

Dr C. J. Mackenzie was Acting President while McNaughton was on leave to command the Canadian Army overseas. After the War the laboratories returned to peacetime activities and Mackenzie was made President. Some of the scientists were transferred to the new Defence Research Board. Some went to private industry engaged in the development and manufacture of optical, radar and electronic equipment that resulted from their research with NRC. The physicists who remained were mainly in the Physics Division under Gerhart Herzberg and the Applied Physics Division under L. E. Howlett.

By limiting attention mainly to research in Ottawa, Middleton may have left the wrong impression that there was very little other research in physics in NRC laboratories. Almost all nuclear energy research in Canada until 1952 was carried out within the organisation of its Atomic Energy Division. It administered the Montreal Laboratory where the joint UK — USA — Canada nuclear research programme was carried out from 1942 to 1946, and the nuclear research at Chalk River until 1952.

The author reveals the personalities of the scientists while describing their work. I think he is unkind to their first Divisional Director, Dr R. W. Boyle, by dwelling more on his increasing ineffectiveness before he retired in 1946 than his good qualities in earlier years. Some of us who were with him as young scientists when the Division began remember him as a very likable person who encouraged us and did much to create the comradeship, enthusiasm and high morale that inspired the Division.

Because this history ends in 1952 it misses the less happy years when the NRC was unfairly attacked by a Committee of the Senate; the Government then deprived it of some of its responsibilities and has supported it inadequately since. Its critics claimed that its research was predominantly in esoteric fundamental science and that it neglected work of immediate application to problems of national importance. The claim is quite untrue. Dr Middleton's history shows that, although the research included brilliant work in basic science by Gerhart Herzberg and Keith Macdonald, there was far greater activity in applied research and that it was far more strongly supported. It should be read by every Canadian who is deeply interested in national science policy.

The War work was secret at the time. Each scientist knew very little about the activities of others except his close associates. The author has been surprisingly successful in uncovering so much information on the work outside the Optics Section (where he worked) that was buried in a variety of documents and in the memories of the scientists involved. He may fairly be excused for omissions which

members of other Sections might think important. In any case, they will be fascinated in learning about their colleagues' work.

This book should interest students who plan careers in scientific research. It illustrates how research may change in purposes, tools and organisation to meet new demands, that good scientists can adapt to such changes, and that they are often very effective in new fields because they bring to it knowledge acquired in their former specialist fields. It shows that scientists who are well informed in fundamental science can find satisfaction

also in applying it to problems of more obvious and urgent need.

It will have particular interest for Canadian readers because it tells a part of their country's history in the Second World War that is scarcely known. For physicists of other nations it provides an opportunity to compare their own experiences with those of physicists in Canada.

George C. Laurence

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Darwin the writer

Charles Darwin. By L.R. Stevens. Pp.159. (Twayne Publishers/G.K. Hall: Boston, 1979.) \$8.95.

THIS text in Twayne's English Author's Series by Professor Stevens is devoted to Charles Darwin as a prose writer. A specialist in, and teacher of English, he seeks to integrate Darwin's scientific works with his more discursive biographical writings. The limitation of space to a mere 159 pages, and the even more crippling lack of insight into the range and subtlety of Darwin's natural history seriously prejudice the outcome. Nevertheless, the attitudes of authors such as Carlyle, George Eliot, Matthew Arnold and the Brownings are most informatively set out to reveal an all too frequent incomprehension and, in Carlyle's case, inexcusably arrogant dismissal. There is much perceptive and sympathetic comment and it is relatively infrequently that the author is betrayed into extravagance by the lunatic fringe psychoanalyst usefully particularised in the bibliography.

A chance discovery in the so-called "Edinburgh" notebook (concealed — as are all his quotations from manuscript — under the invariable note "Cambridge Manuscript") coincided with Professor Stevens' illusion that "anxiety and freedom are the two poles between which Darwin's life oscillated" and his consequent reading of Darwin's "assured" as "afraid", to make Darwin's factual note "In Australia I was assured wild dog copulate freely with tame . . ." into "In Australia I was afraid. Wild dog copulates freely with tame . . ." The reference to Australia must be post 'Beagle'. This is but one example of disasters precipitated by a poetic imagination and an insecure grasp of detail. Some few more examples herewith: page 19, flustra (*sic*) (as a genus it should have a capital) is not a parasite, the so-called 'ova' are developing larvae of a marine leech, an ectoparasite; page 30, Chagas disease is caused by a protozoan blood parasite conveyed by an infected

blood sucking bug, *not* a bacterium as here implied; page 33, John Herschel, famous son of a famous father (William), wrote the book which inspired Darwin's enthusiasm as well as directing the Observatory at the Cape. He also made a notable collection of Cape bulbous plants.

Professor Stevens' recognition of Darwin's considerable merit as a prose stylist with a highly developed complex use of metaphor should have been backed up by better proof reading. All the notes to "Life and Letters" refer to the two-volume USA edition; the bibliography only gives the three-volume English edition, leaving the ordinary reader completely baffled. It is a good point that (page 95) Darwin "saw more and more wonderful things packed into more and more compressed spaces." Man was seen "dwelling within nature, a completely integrated part of the rhythm and flow of things." Darwin neither courted nor feared a mechanical materialistic view; indeed, the scale ranged from the earthworm to major earth movements as early as 1837. It was not until the last two years of his life that he returned to the manageable scale of the earthworm as earth mover. Professor Stevens (page 102) makes a shrewd counter to Geoffrey West's view of Darwin as the "Anaesthetic Man" by remarking that in the "Descent of Man" Darwin realised "that aesthetics held a crucial and ambiguous place in his argument, and that ambiguity generated in him a lively curiosity, richer in its consequences than a mere one-dimensional utilitarianism can account for."

For some twenty years, Lord Snow's concept of the two cultures and its militant rebuttal by Dr Leavis have confronted the common reader. The peaceful and perceptive middle way chosen by Professor Stevens seems the more profitable route for today, and reveals Darwin's creative imagination to both scientist and humanist. Scientists have much to learn from this study.

Sydney Smith

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