Professor Leone's throw light on the actual scientific problems treated in the passage considered, and as such they are of great help for a reader not closely acquainted with the modern developments of embryology.

Dr. Castellani has provided a lengthy introduction which, though occasionally verbose, is of great interest for the student of eighteenth-century embryology. Dr. Castellani, who approaches the interpretation of Spallanzani's work from a viewpoint highly sympathetic to Kuhn's theory of scientific paradigms, outlines not only Spallanzani's contributions to embryology, but also his relationship with other leading biologists of his time, such as Bonnet, Needham, Fontana, and Roesel. One of Dr. Castellani's major points is that, when Spallanzani came on to the scene, there was no such thing as an epigenetic paradigm, but only an epigenetic theory shared by "philosophers" rather than scientists, whereas the current scientific paradigm was a preformist one.

At least one example of the use one can make of direct access to Spallanzani's manuscripts through this book is worth noting, and is reported by Dr. Castellani in his introduction. It concerns the well-known question of Spallanzani's failure to recognize the function of the spermatozoa in the process of fertilization, although the evidence in his possession was sufficient for a correct interpretation of the phenomenon. In his published *Ricerche* Spallanzani claims to have been able to fertilize frogs' eggs with sperm devoid of spermatozoa; but in his diary he reports that "the seed, as seen on the microscope, had no spermatozoa, *at least alive*" (16 March 1777). This hitherto unknown remark makes it clear that the sperm used by Spallanzani was not *totally* devoid of spermatozoa, but he thought that even though some spermatozoa actually *were present* in the sperm, they were not alive. Dr. Castellani suggests that those spermatozoa were not dead, as Spallanzani thought, but simply immobile; thus Spallanzani examined a specimen of sperm, and, after seeing that there were no mobile spermatozoa and noticing that that sperm indeed fertilized the eggs, quite logically concluded that sperm without spermatozoa does fertilize eggs.

Though published by a very small publishing house, the typographical presentation of the book is attractive enough, and there are no dramatic misprints. The price (about £10) is reasonable for a book of limited circulation. This book should be available to scholars in Great Britain and the U.S.A. Italian is a language known to few, and Spallanzani's vocabulary in these notes, which he did not of course expect to see published, is extremely unapproachable for those who are not perfectly conversant with Italian. This book seems to me important and ought to be read by all who are interested, especially professionally, in eighteenth-century biological science. It surely deserves an English translation.

JAMES G. PARADIS, *T. H. Huxley: Man's place in nature*, Lincoln, Nebr., and London, University of Nebraska Press, 1978, 8vo, pp. xi, 226, £8.10.

Reviewed by Mario A. Di Gregorio, M.A., Ph.D., F.L.S., Darwin College, Cambridge.

Amongst Victorian scientists, T. H. Huxley is perhaps the most often quoted and the least satisfactorily known. A relatively large number of studies has been dedicated to him, but, on the one hand, we have no clear insight into his real scientific outlook, beyond his official image of "Darwin's bulldog", and, on the other, most biographies

have been unable to depict satisfactorily his multi-sided and often contradictory personality.

Professor Paradis' study attempts a reconstruction of Huxley's intellectual biography within the context of "Victorian culture". Therefore his book does not deal with the "internal" minutiae of Huxley's scientific work, but endeavours to outline his views of the relations involving science, philosophy, and society; quite clearly, this study is along the lines of W. Irvine's well-known *Apes, angels and Victorians*.

Professor Paradis successfully places Huxley in the intellectual and political life of nineteenth-century Britain. His thesis is that Huxley moved from the early influence of Carlyle's Romantic thought to rationalism and scientific humanism. Professor Paradis bases his conclusions upon evidence largely obtained from Huxley's *Collected essays* and his private correspondence. For once we have a clear outline of Huxley's youth and of his difficult relationship with his family about which both T. H. Huxley and his son Leonard in the *Life and letters of Thomas Henry Huxley* were reticent.

The best part of the book is probably the chapter which considers Huxley's debt to Carlyle's views – the connexions between the ideas of the two thinkers are outlined with extreme clarity, and Professor Paradis does not fail to point out the very different views of "heroism" held by Carlyle and Huxley in their maturity, as their disagreement apropos the Eyre affair proves. Moreover we are convincingly told about the clash between the internal disorder of Huxley's personality and his desire to find external order in the world of science. The book vividly describes Huxley's philosophical position, which moved closer and closer to that propounded by J. S. Mill, and the connexions between Huxley's ideas and the non-scientific intellectual world. The most original view proposed by Professor Paradis is that Huxley's concept of organic dualism somehow foreshadowed some of Freud's ideas:

> Huxley's application of the concept of organic dualism to the problems of civilization was a step, however limited, in the direction of what was to become the cultural theory of Freud. While Huxley had no clear concept of the subconscious mind, and while he lacked a specific theory of sexuality and the relationship of instinct to consciousness, he grasped the idea that instinct was an agent somehow competing with consciousness in the determination of human behaviour. (pp. 153–54)

Professor Paradis is weaker on the scientific aspects of Huxley's work. He tends to overstate the importance of *Man's place in nature*, in fact a less revolutionary book than most scholars think, and fails to point out that Huxley never entirely rejected the type-concept in his science. He considers Huxley's *Scientific memoirs* only occasionally, and erroneously claims that Huxley's *first* public criticism of Comte's system took place in the *Westminster Review* of 1854, whereas he had in fact previously attacked Comte in a footnote to his review of the cell-theory of 1853, a work in fact quoted by Professor Paradis (*Scientific memoirs*, vol. 1, p. 242*n*). But these are minor faults which do not affect one's appreciation of this monograph.

GWYN MACFARLANE, *Howard Florey. The making of a great scientist*, Oxford University Press, 1979, 8vo, pp. xix, 396, illus., £7·95.

Reviewed by J. Z. Young, M.A., F.R.S., Wellcome Institute for the History of Medicine, 183 Euston Road, London NW1 2BP.

The facts about the origin of this book are as interesting for the history of medicine as the contents themselves. Professor Macfarlane, a distinguished medical scientist