

doomed to failure from the outset of his exhaustive genetical investigations by the methodology adopted. As he described in his *Autobiography*, he "worked on the Baconian principles, and without any theory collected facts on a wholesale scale". This approach to science as much as the idea of uniformitarianism was the legacy of his reading of Lyell's *Principles of Geology*.

Mendel's life and researches are treated adequately, although relatively briefly, the paper of 1865 being seen in the perspective of his later researches, particularly the unfortunate hybridizations as *Hieracium*. The incomplete experiments on the nature of sexual reproduction in *Mirabilis jalapa* might also have been described, since they were a direct attempt to undermine Darwin's ideas on reproduction, by proving that fertilization was effected by a single pollen grain.

In the Appendix, Olby most effectively challenges Fisher's well-known explanation for the extremely good ratios obtained by Mendel in the *Pisum* experiments. However, even if this alternative hypothesis is accepted, it remains true that Mendel allowed his sampling technique to be dictated by his theoretical presuppositions.

Olby's text ends with a most detailed examination of the causes for the neglect of Mendel's paper, in which the roles of Correns, Tschermak and De Vries are described in a most illuminating manner.

F. A. E. Crew's *Foundations of Genetics* is not primarily a work on the history of genetics. It aims to present sixth formers with a balanced view of the various aspects of contemporary genetics. This is most ably achieved in the second half of the book, which, with the aid of the short bibliographies, provides a guide to some of the most important modern researches.

The first half of the book is a stimulating account of classical genetics, which will be of considerable interest to historians of biology. Mendel's biography is given in considerable detail, in which the little-known *curriculum vitae* of 1850 is printed in full. Extracts from Mendel's paper of 1865 are given, together with a commentary by the author. This is an excellent way of introducing students to historical source material. Perhaps the most original part of the book is the history of Mendelism between 1900 and 1910. This contains a most interesting study of Bateson's researches.

Unfortunately, the historian will not be impressed by the first chapter, which surveys genetical theory before 1850. This has many elementary errors, providing a disappointing introduction to an otherwise excellent book.

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Charles Scott Sherrington. An Appraisal. By Ragnar Granit. Pp. xi + 188. London: Thomas Nelson, 1966. £2 2s.

Any competent journalist can write a good biography of a scientist. But an appraisal of his work demands a very special person. In the case of the greatest of all British neurophysiologists, Charles S. Sherrington (1857-1952), this person is Professor R. Granit of Stockholm, himself a distinguished physiologist of the nervous system and one of Sherrington's many outstanding pupils.

Only in the first chapter of the book resulting from this analysis does Professor Granit deal with any biographical details and these are a collection of impressions and facts rather than a strictly chronological account of his life. And herein lies the first criticism. Admittedly this book is concerned primarily with Sherrington's work and not with his life *per se*, but it would have been useful to have had more biographical information even if material in excess of that in Chapter I had to be arranged in an appendical chronological table. Nevertheless Professor Granit is able to portray his teacher skilfully in a small

amount of space and he has deliberately avoided "the well-known anecdotal flora of Sherringtoniana" (p. 91). He next describes Sherrington's scientific background and deals especially with the men who influenced him; much of this material has already been provided by another of Sherrington's pupils, E. G. T. Liddell (*The discovery of reflexes*, Oxford, Clarendon Press, 1960).

In the remainder of the book, Professor Granit discusses the remarkable contributions that Sherrington made to the physiology of the nervous system and points out that a considerable amount of our present knowledge in this area stems from basic concepts established by Sherrington. These latter resulted from attempts to provide newly-revealed anatomical data with physiological meaning. Thus Sherrington began his labours at a time when morphological evidence suggested that the neurone was the ultimate unit of nervous tissue. It soon became his analytical unit and many of his hypotheses concerning it have been proved to be correct. This was one of his greatest contributions to neurology and he spent the rest of his life in efforts to elucidate this unit further. In this regard his indulgence in what Granit calls "synaptic thinking" proved to be a decisive factor which led to a series of precise problem and classical experiments.

Sherrington's work dealt mainly with the spinal cord and medulla and probably his most outstanding contributions were the elucidations of spinal and reciprocal inhibition and of the ipsilateral, crossed and stretch reflexes. His book, the *Integrative action of the nervous system*, which appeared in 1906 embodied the results of his earlier investigations and has been justly compared with the *De motu cordis* of Harvey, for it introduced a new concept of integration into neurophysiology as well as providing much experimental data. Thirty years later his publications were still pouring forth.

Professor Granit's task, therefore, of appraising this splendid torrent has not been an easy one and he has concentrated mainly on the physiology of the nerve impulse, synaptic action, reflexes, and of tone. He does not include Sherrington's classical experiments on cerebral circulation, carried out in collaboration with C. S. Roy of Cambridge. Although the author takes the trouble to explain certain technical words and phrases, this portion of the book is suitable only for those with prior knowledge of neurophysiology. Furthermore he traces the influence of Sherrington's fundamental ideas on subsequent research and this is a highly technical account and on the whole too detailed. In Chapter 6, for example, Sherrington is mentioned only very occasionally in passing and the author seems to forget him as he delves into very recent history. He goes beyond the confines of the book's title and tends to concentrate upon areas of neurophysiology of especial interest to himself. Nevertheless it is an excellent discussion of recent advances, written by one who has been responsible for some of them. Many authors are referred to but only the publications of a few are cited in the "Notes and references"; documentation throughout the book could have been fuller.

The final chapter deals with Sherrington's literary works. *Man on his Nature* (1946) represents his *credo* although he never considered himself a philosopher as such. He was as Granit states an artist and an empiricist. He was also an able historian as can be seen from his *The Endeavour of Jean Fernel* (1946) and a poet of ability demonstrated in a book of verse, *The Assaying of Brabantius* (1925).

Professor Granit has provided us with the first detailed appraisal of Sir Charles Sherrington's remarkable achievements and despite its few shortcomings already noted, it will remain an invaluable addition to our knowledge of his influence on the advancement of neurophysiology and as a tribute of a pupil to his teacher.

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