

is, in many cases, for the scientific worker in embryo—and though of the ‘popular’ kind, it will prove extremely stimulating to the student of any branch of science; but this, our second book under review, is of an entirely different sort, and takes a wider range. The editors may perhaps feel that it does not strictly belong to what is commonly understood as ‘popular’ scientific literature; yet, from what has already been said above, they will assuredly not have any ground for mortification or scent any sort of stigma or degradation.

The work, a collection of essays by eminent thinkers on both sides of the Atlantic, including H. G. Wells, Dean Inge, Sir Richard Gregory, Ray Stannard Baker, Edwin E. Slosson, will provide an intellectual treat for any man, whether scientific worker or layman, and for the specialist it will be a welcome and refreshing diversion. The editors are justified in their hope that the book will meet the needs not only of technical students for whom it is directly intended, but also will appeal to a far wider circle. Sir Richard Gregory writes on “Practical Purpose”—science justified by its works, a favourite theme, with which he deals in a masterly manner; H. G. Wells and others write on specialisation; Ernest Dimmet on the art of reading; Dean Inge on success—one of the most cheerful disquisitions in the book; M. Luckiesh on “Men, Atoms, and Stars”, which makes us shrivel into nothingness; and Maurice Holland on the “Voice of Research”, which makes us swell into visibility once more. As a combination of great science and great literature, the book is unique, and wonderfully exhilarating.

(3) With “Master Minds of Modern Science” we feel on surer ground, at least, as regards categories and classifications. This is unmistakably a popular science book, rather of the older than the newer type, and describes the work of leading modern scientific workers; but, though fairly comprehensive, it is evident that someone or other is bound to find gaps. It is no doubt a useful contribution to the history and biography of scientific achievement. The chapter on Luther Burbank and his work, the wizard of the garden, is of particular interest, for his work is not perhaps so well known in Great Britain as it should be, especially when we reflect that we are a nation of enthusiastic amateur gardeners. The book has some excellent illustrations, is well printed in large type, and for those who wish to gain a general idea of some of the recent achievements of science it can be thoroughly recommended. W. G. L. C.

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### Our Bookshelf.

*Up and Down in California in 1860–1864: the Journal of William H. Brewer, Professor of Agriculture in the Sheffield Scientific School from 1864 to 1903.* Edited by Francis P. Farquhar. (Published on the Foundation established in Memory of Philip Hamilton McMillan of the Class of 1894 Yale College.) Pp. xxx + 601 + 32 plates. (New Haven, Conn.: Yale University Press; London: Oxford University Press, 1930.) 27s. net.

THE author was the well-known professor of agriculture in the Sheffield Science School of Yale, and sometime president of the National Academy of Sciences. In 1860, as a young man, he joined J. D. Whitney as principal assistant in the new Geological Survey of California, which it was hoped would advise as to the future development of the mining industry, then in dire distress. A second part of the work was to report on the plants and animals, and to Brewer was assigned the former. Whitney, with a love of thoroughness, made it primarily into a topographical survey, upon which the geology could be charted. His action here undoubtedly trained the men and set the standard on which the whole United States was mapped. Brewer led the first field party, and his letters now published show him directing and carrying out every class of work, except botany. This he continued to do until 1865, the survey being continued to 1873, dying itself but giving birth to the Federal Geological Survey Department in 1879.

Brewer was a voluminous letter-writer, and he numbered his letters serially, as he did his plants. He zigzagged across California from south to north, and he always wrote what he saw, seldom what he heard. Consequently, we have an account here of California as it was in 1860–65. It tells of the mountains and valleys, of the mines and of the plantations, of the old Latin civilisation and of the Indian missions, of the Indians themselves and of the westerners, of the animals and of the plants. It is all simple, the life and work of a camping party and of the people they met. There are no striking adventures, no sensational discoveries, merely an account of trails and conditions in a yet unopened country. As an example may be mentioned Brewer's letter on the Yosemite Valley and its waterfall of 2600 feet, a far simpler but more compelling account than any of the numerous, often exaggerated stories of this famous canyon. The letters are a record beyond price to future historians of California; but they are too local to be of general interest, too domestic to allow scope for wider deduction or speculation. They serve their purpose in the history of the United States, and this is further served, for their editor has chosen to illustrate them by contemporary drawings and prints.

*The Balancing of Engines.* By Prof. W. E. Dalby. Fourth edition. Pp. xii + 321. (London: Edward Arnold and Co., 1929.) 21s. net.

THE necessity of balancing steam engines was first felt in connexion with locomotives, and so long ago as 1834 Bodmer patented a method