

## Our Bookshelf.

*Biological Principles: a Critical Study.* By J. H. Woodger. (International Library of Psychology, Philosophy and Scientific Method.) Pp. xii + 498. (London: Kegan Paul and Co.; New York: Harcourt, Brace and Co., 1929.) 21s. net.

No doubt most thoughtful biologists deplore the small number of generalisations which exist in their science compared with the ever-increasing masses of unrelated facts reported by workers in field and laboratory. Evidently some attention to fundamental concepts is required, and Mr. Woodger has made an attempt to survey critically the primary suppositions which are involved in biological thought. His book begins with a discussion of the relations between natural science and philosophy, including a vigorous attack upon phenomenalism. Mr. Woodger is for the most part a follower of Prof. Whitehead and the Cambridge school of logicians. The book then gives an account of the principal antitheses of biology (vitalism-mechanism, structure-function, organism-environment, preformation-epigenesis, teleology-causation, mind-body), mediating between them and mitigating the bitterness of their opposition. Finally, the author ventures on a discussion of the future of biology.

Mr. Woodger's very difficult task has been accomplished so successfully that no biologist who really wishes to face fundamental problems should omit to read it. Yet it suffers from three defects: (a) it is unnecessarily long, because unnecessarily polemic, especially against text-book statements; (b) it attributes to physiologists, biochemists, and others with whom the author is not in sympathy, opinions much cruder than those they actually hold; and (c) it is insufficiently constructive. Mr. Woodger tends to destroy without replacing. Thus on p. 315 he says, "It will be necessary to devise ways and means for correcting a purely analytical procedure", but there the question is left, though most biologists would agree as to the importance of the way the parts are related; the difficulty is to investigate without destroying. Perhaps Mr. Woodger will some day give us a better, shorter, more constructive book, suggesting methods of research better than those now in use, instead of simply pointing out their deficiencies.

*The Soul of Manchester.* Edited by Dr. W. H. Brindley. (Published for the Manchester Section of the Society of Chemical Industry.) Pp. xi + 280 + 16 plates. (Manchester: Manchester University Press, 1929.) 6s. net.

THIS interesting compilation, finely illustrated, commemorates the meeting of the Manchester Section of the Society of Chemical Industry, held in the city this year, and is very welcome. It is in no sense a guide-book, but a critical valuation of the activities—scientific, literary, educational, industrial, and general—of a centre which has long played a conspicuous part, for good and all, in the evolution of human affairs within and outside

its borders. Authorities such as Sir Henry Miers, Prof. A. Lapworth, Prof. C. H. Herford, Sir Michael Sadler, Prof. F. E. Weiss, Prof. C. H. Reilly, Dr. Henry Guppy, and others recount success, failures, and future aspirations.

The attractiveness of citizenship lies, doubtless, in its fundamental diverseness. We would like to be told, in similar vein, of the soul of Liverpool, of Sheffield, Birmingham, Bristol, but realise the civic hardihood involved in such ventures. As for London, she must ever stand alone, mother of our cities, in spirit dominant.

The title of the book is fully met in able articles. These include: "The Story of Education", "The Face of Manchester", "Chemistry and Manchester University", "Manchester and Cotton", "Social Service", "Manchester and Recreation". An informing contribution, "Manchester and its Press", recalls Alex. Ireland, sometime manager of the defunct *Examiner*, who came to Manchester from Edinburgh, where he had been associated with William and Robert Chambers. He was the only man in the country, we are told, in the secret of the authorship of "The Vestiges of Creation".

*Evolution by Symbiosis.* By H. Reinheimer. Pp. viii + 141. (Surbiton: Grevett and Co., Ltd., 1928.) 5s. net.

It is not very easy to deal with Mr. Reinheimer in a short notice; but at the same time one cannot feel sure that he deserves a longer one. This book is but one of a number which he has written, all telling the same story, namely, "that the standards of virtue and vice in the universe depend upon two antitheses: symbiosis and parasitism; that it is definitely immoral and ruinous, through the whole of nature, for an organism to be parasitic; that the degree of virtue is the degree in which an organism co-operates or 'gets on' with the universe, living by helping the rest of creation" (p. 8). "Only austere constituted organisms can hope to enjoy natural immunity from disease" (p. 23). A carnivore is a "semi-degenerate organism" (p. 44); "there is but a difference of degree between carnivorism and parasitism" (p. 45); "symbiotic cross-feeders [that is, herbivores] are *ipso facto* in due relation with the world of life and thereby best qualified to enter into fruitful, sympathetic and intelligent social intercourse of the most varied kinds" (p. 56), so long as they do not overdo it and become "plant-assassins" (wasteful and destructive herbivores) like the elephant, which is "a typical acromegalic animal in a state of hopeless senescence verging on extinction" (p. 109).

Mr. Reinheimer has produced a great bulk of argument in favour of his views, and it must be admitted that some of his ideas are clearly important, whilst others are at least interesting; for example, a study of animal nutrition is obviously a necessary part of any comprehensive study of evolution. But Mr. Reinheimer spoils his own case by being peevish with biologists who do not accept his views. "Orthodox biology is written, as I have often said, to suit the perverted digestion of modern society" (p. 51). He has a favourite phrase, "as