

formation and subsequent partial resolution of inactive acid may be maintained. In the discussion of Harden's results (p. 69), it is not clear why the lactic acid formed should be optically active at all; from the description given it appears that the asymmetry of the molecule must disappear altogether.

Dr. Plimmer points out that many of the changes caused by living organisms may possibly be due to enzyme action. In addition to his experiments with zymase, Buchner has lately submitted further experimental evidence in favour of this conception, since, conjointly with Meisenheimer, he has proved that from *Bacillus acidificans longissimus* an enzyme may be prepared which converts cane sugar into lactic acid. The same investigators have also shown that the conversion of ethyl alcohol into acetic acid may be accomplished by an enzyme which they obtained from vinegar bacteria.

Buchner's work on zymase surely merits more than the few lines which the author devotes to it, especially since space is found for an account of many discoveries which are of much less fundamental importance. Reference might also have been made to Bredig's experiments on inorganic ferments. Further, one cannot help regretting that a brief account of Emil Fischer's work on the decomposition products of albuminoids is not incorporated in the volume. Those are, however, minor objections. British workers in different sciences will appreciate Dr. Plimmer's account of biochemistry. A. McK.

### OUR BOOK SHELF.

*Metallurgical Laboratory Notes.* By Henry M. Howe, Professor of Metallurgy in Columbia University. Pp. xiv+140. (Boston: The Boston Testing Laboratories, 1902.)

THE time has passed when practical teaching in metallurgy was a synonym for little more than a course of exercises in assaying. No one recognised this sooner and more fully than Prof. Howe, and his students now devote much of their time in the laboratory to carrying out experiments illustrating the principles which underlie the various processes of the treatment of ores and metals in works. This little volume contains a description of ninety-one such experiments of both educational and instructive value, and constitutes the first attempt to embody the new methods in book form. The author expresses in the preface his feeling that the series of experiments now published is incomplete and shows a lack of balance, and probably many metallurgists will find themselves constrained to agree with him. Those teachers who are convinced that ore treatment is still by far the most important branch of the subject may object to a system in which the majority of the experiments are directed to the study of the treatment and properties of metals. Even the methods will not command universal approval in this country, where students are encouraged to learn to overcome the difficulties occasioned by the use of indifferent implements on the grounds that they will be better fitted by such training to deal with the more serious difficulties unavoidably encountered in the industries. The smoothing away of obstacles, and the reduction to a minimum of the practice in manipulation, have been characterised as "spoonmeat methods." It must

be admitted, however, that these views are likely to be held most firmly by the professors who are least adequately supplied with laboratory equipment. Prof. Howe considers that in proportion as less time is devoted to details of manipulation, more leisure is available to the student for "the unwelcome task of thinking," than which nothing could be more important. Perhaps it might be argued that practice in manipulation would make the best laboratory workers, and that practice in thinking would assist in turning out the best general managers. The book is extremely welcome, and breaks ground that must soon be assiduously cultivated. It will be carefully studied by all who have the improvement in the training of metallurgists at heart. T. K. R.

*Nature Studies in Australia.* By W. Gillies and R. Hall. Pp. v+299. (Melbourne and London: Wm. Combe and Tombs, Ltd., n.d.) Price 2s.

THE recognition of the importance of "nature-study," if we are to know anything really worth knowing about animals and plants, in Australia is a satisfactory sign of the times, and an indication that throughout the world the old-fashioned ways of teaching are to be abolished, and also that the days of mere section-cutting and skin-describing are numbered. The greater part of the present little volume is devoted to birds (mammals being left out), of the life-histories of which Mr. R. Hall has for many years been an enthusiastic student, and we must congratulate both authors on the mass of interesting information they have concentrated into such a small space with regard to a number of characteristic Australian species. The majority of the numerous illustrations are the results of the authors' own cameras, and, although necessarily on a small scale, they are, for the most part, excellent examples of bird-photography. One great advantage possessed by the authors is that their subject has a freshness which cannot be claimed for descriptions of British bird-life, and this gives a charm to their work which stay-at-home writers must find it difficult to equal. We must confess, however, to a feeling of dissatisfaction at the use of names like "lunulated honey-eaters" for certain of the species, which are certainly not examples of "nature-teaching," and we are by no means sure that we quite like the "pupil and teacher" style on which the work is planned—it savours a little too much of "Sandford and Merton."

One fact appears of more than usual interest. It is commonly stated in ornithological works that every species of migratory bird breeds in the most northern portion of its range. According, however, to the authors, at least one Australian bird—the double-banded or sand dotterel—goes south to breed, travelling to the south of New Zealand, "that is to say, as far towards Antarctica as it can now get."

Space, we regret to say, prevents our going deeper into the contents of the work before us, the latter portion of which is devoted to the lower vertebrates and invertebrates. We can, however, safely recommend it to the best attention of teachers of nature-study, if only for the fact that a book written on the spot is worth a dozen compilations made elsewhere. The price renders it within the reach of all. R. L.

*Considerazioni agrarie sul Piano di Capitanata.* By Dr. Nestore Petrilli. Pp. 87. (Naples, 1902.)

THIS work consists of a monograph upon the agricultural conditions which prevail in the great plain of the Capitanata, constituting the northern part of Apulia. Such monographs, which are regularly produced upon the Continent, and provide great assist-