

earthly mysteries, and that what we call beauty, whether of sound or form, is but its resultant and expression. It was in the very spirit of Pythagorean mysticism and wisdom that that great naturalist, Henri Fabre, wrote his great ode to number; as in a kindred spirit the old carpenter in Verhaeren's poem:

"Fait des cercles et des carrés,
Tenacement pour démontrer
Comment l'âme doit concevoir
Les lois indubitables et fécondes
Qui sont la règle et la clarté du monde."

We must never forget that the secrets of the mystic, whether Gnostic, Cabbalist or Pythagorean, lie very deep indeed, and that a twin alternative between esoteric and exoteric statement, or between literal and allegoric interpretation, by no means exhausts the various meanings which the mystical philosopher can wrap up in his words. In the end, as we come slowly to a better, though still a clouded, understanding of what lies within and behind the Golden Verses and all the rest of the husk of Pythagorean tradition, we feel the truth and force of William James's saying (aptly quoted in the article to which I have just referred), that the "mystical classics have neither birthday nor native land; their speech antedates language, and they do not grow old."

D'ARCY W. THOMPSON.

PHYSIOLOGICAL CHEMISTRY.

Physiological Chemistry: A Text-book and Manual for Students. By Prof. A. P. Mathews. Pp. vii + 1040. (London: Baillière, Tindall and Cox, 1916.) Price 21s. net.

PROF. MATHEWS is well known as a worker in the field of physiological chemistry, more especially on its physical side. His present volume is one of an ambitious character, and has the merit of being distinctly original. The chapters on the chemistry of the fats, carbohydrates, and proteins are fuller than is usual in such books, and the subject-matter is not only clearly explained, but is fully up to date. Much of it is pure chemistry, but it will not be less valuable for that reason to the biologist. The section on physical chemistry is also treated at considerable length, as might have been anticipated by those who know the author's bent. The whole subject is confessedly treated unequally, for, as the preface puts it: "Of so large a subject one can be personally familiar with but a small part." The portions that strike one as susceptible of more expansion are those dealing with muscle and the ductless glands; for the latter group of organs Prof. Mathews coins yet another name: he dubs them the Cryptorhetic Organs—*i.e.* organs with a hidden flow. One small feature of the book—*viz.* the explanation and derivation of technical terms—might well be imitated in more elementary manuals than the present. While on the question of words, one may add that the nomenclature adopted for the fats and fat-like substances is one not likely to commend itself to all physiologists.

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Each chapter is followed by a short selected list of papers bearing on the subject dealt with in that chapter. There is no attempt at a complete bibliography, but the selections appear to have been judiciously made, though in the present state of the political atmosphere German writers figure rather too largely for English taste. The papers mentioned for reading and study are mostly recent ones, because they approach the subject from the modern point of view, and in them the older literature is cited. The choice does not imply that the author does not value the work of the early pioneers; indeed, he presents evidence that he takes the opposite point of view, and the full consideration which he gives to their work forms one of the most interesting features of his book. He, for instance, gives a very extensive account of the researches of Lavoisier, whom he perhaps rightly regards as the founder of bio-chemistry, of Beaumont, of Claude Bernard, and many others.

Prof. Mathews, who is here the exponent of a vast but nevertheless comparatively young branch of science which every day is becoming more and more exact, is not devoid of a sense of imagination, the most valuable asset of both a teacher and a researcher. His excursions into the regions of speculation will be read with keen interest, even although, like so many hypotheses in the past, they may ultimately be forgotten. Such theories as those which he advances in his comparison of the animal body to a magnet, or in his conception of the "conservation of psychism," or in his attempts to explain memory on a chemical basis, will certainly stimulate thought and future investigation. To quote once more from the preface: "It is hoped that this book will raise in the mind of those who read it more questions than it answers."

The last 160 pages of the book are devoted to a description of the laboratory work in physiological chemistry as carried out in the University of Chicago, and practical teachers will obtain many useful wrinkles by studying these. W. D. H.

OUR BOOKSHELF.

Cambridge Geological Series. Agricultural Geology. By R. H. Rastall. Pp. ix + 331. (Cambridge: At the University Press, 1916.) Price 10s. 6d. net.

MR. RASTALL'S well-written and excellently printed book is a treatise on geology for agricultural students rather than on agricultural geology. To say this is no disparagement, since it is obviously intended for the stage in an agricultural curriculum when natural history subjects are predominant, and not for the later years when preliminary scientific conceptions are applied to the study of the soil. A knowledge of chemistry and elementary mineralogy is presupposed, but unnecessary technical terms are carefully excluded. The final chapter, on "The Geological History of the Domestic Animals," will appeal especially to those whose work is on the farm. The history of life on the globe is, indeed, far more appreciated by agricultural scholars than