

## OUR BOOK SHELF

*Practical Botany for Elementary Students. Introductory to the Systematic Study of Flowering Plants.* By D. Houston, Science Master, South London Middle-Class School Association. (London: W. Stewart and Co., 1881.)

THIS book differs from Mr. Bettany's (vol. xxiv. p. 235) in being less general in its treatment. It is in fact a series of studies of the coarse anatomy of a number of common plants much on the plan first given in Huxley and Martin's "Elementary Biology." Each study is followed by a technical description, notes on the distinctive characters of a few allied plants, and some miscellaneous matter. "The plants selected are well-known and easily-procured types of the fifteen natural orders included in the Syllabus of the First Stage of Elementary Botany issued by the Science and Art Department, as it is believed that no better selection of natural orders, intended as introductory to the study of classification, could possibly be made." As far as can be judged without working through it, the book is well done, and will be a valuable aid to the teacher if honestly used. Mr. Bettany's plan of teaching the art of describing is soundest. His book can hardly be abused, while with Mr. Houston's there is the risk that incompetent teachers may make their pupils simply learn a large part of it by heart, on the chance of one or more of the plants being set in an examination. Occasionally, where the author abandons the sure ground of personal study, he makes slips. Thus more than half the short list of exotic genera of orchids has the names misspelled. The distribution in time and space of the several orders illustrated is given, though somewhat meagrely. Perhaps in the present state of palæophytology the former is not very important. Under *Orchidaceæ*, for example, the Distribution in Time is given as "not represented," which, apart from the fact that it is a contradiction in terms, means nothing more than that fossils referable to this group of plants have not been found, and are perhaps not likely to be. It may be asked, too, what is the value of the evidence upon which the liliaceous genus *Yucca* is dated back to the Trias?

*Von aen Umwälzungen im Weltall.* Von Rudolf Falb (Vienna, Pesth, and Leipzig: Hartleben, 1881.)

THIS work is divided into three parts, with separate headings: (1) In den Regionen der Sterne; (2) Im Reiche der Wolken; (3) In den Tiefen der Erde. The author, whose name has frequently been mentioned in our columns, has lectured in various German cities on volcanic and cosmological phenomena, and eventually went to South America in order to study the great volcanoes of the Cordilleras. He conceived an earthquake theory, and his South American friends induced him to publish it. The result is the book now before us, which was published in Spanish at Valparaiso as far back as 1877 ("Estudio sobre los templores de tierra fundado en la historia del universo"). After a sojourn in South America extending over three years, Herr Falb returned to Europe, and his earthquake theory was frequently mentioned in the press in connection with the Agram earthquakes. The theory is simple enough in itself, and the author has at least the credit of being most enthusiastic in its support and in adducing as many facts in proving the same as can possibly be found. Whether he succeeds in proving it is another question. According to Herr Falb's view, all earthquakes, or at least by far the larger majority of earthquakes, are of a volcanic origin; or, to express it concisely, "earthquakes are subterranean eruptions." The basis of this theory is naturally the supposition that the whole interior of the earth is an ocean of incandescent matter. This is affected by the attraction of sun and moon in exactly the same manner as the sea and atmosphere are acted upon. The second division of the book therefore represents sun and moon

as the generators of storms and tides; and in the third division, the principal one, we see the cause of earthquakes traced to the influence of sun and moon. There is no doubt that the author has a special gift of representing his subject clearly and popularly; his eloquence keeps the reader interested from the first line to the last. He quotes no less than thirty facts, from which he draws thirteen different inferences in proof of the volcanic nature of earthquakes. We regret that space does not permit us to enter further into details, but we can heartily recommend the book to our readers.

*The Quantitative Estimation of Phosphoric Acid.* By M. H. Joulie. Translated by J. Barker Smith. (Dulwich: Published by the Author, 1881.)

THE laudation of M. George Ville, with which the translator opens his preface, discouraged us at first from further perusal of this pamphlet on the citro-uranic method of determining phosphoric acid in manures; and when we did peruse these sixty pages, our chief impression was derived from the comical literality with which French idioms had been rendered into English words. But after all a good many useful hints may be gathered by practical analysts from this little book. Of course most agricultural chemists are familiar with the difficulties which beset the fair sampling and preparation of manures for analysis, and they are also acquainted with many special contrivances for overcoming these difficulties. But information as to new and improved methods of operating, and as to modifications of old processes, is always acceptable.

The essence of M. Joulie's method consists in the precipitation of the phosphoric acid in a prepared solution of a manure by means of a solution containing citrates of ammonium and magnesium. The precipitate which forms is thus produced in the presence of the lime as well as of the iron and alumina of the original liquid; we should like further proof that the whole of the phosphoric acid is invariably precipitated under the conditions described by M. Joulie, especially as he directs the solutions, if rich, to be kept no more than two hours before the ammonio-magnesian phosphate is filtered off. The second and final stage in M. Joulie's method is the solution of the precipitated phosphate and its titration by a standard solution of uranium nitrate.

The second part of this pamphlet describes the treatment of manurial phosphates with solutions of ammonium oxalate and ammonium citrate in order to determine their "relative assimilability." We are not aware that M. Joulie was the first to employ these reagents in the analysis of phosphates—his announcement of the use of the oxalate being in 1872, and of the citrate during the next year. Anyhow, we must demur to some of the conclusions which M. Joulie draws from his experiments, nor can we accept as satisfactory the final directions for the "assay of superphosphates" with which the last fifteen pages of his manual are occupied. The determination of the phosphoric acid and phosphate dissolved by distilled, or, if you will, carbonated water, from a superphosphate cannot be safely replaced by a determination of the phosphates soluble in ammonium citrate. For we lack proof that retrograded phosphates are equal in value with monocalcic phosphate, which alone possesses an initial diffusive power when it is introduced into the soil.

*The Butterflies of Europe.* Illustrated and described by Henry Charles Lang, M.D., F.L.S. Part I. (L. Reeve and Co., 1881.)

WE have received Part I. of this work, the approaching publication of which was announced in these columns a few weeks back. The whole of the species (and some prominent varieties, &c.) inhabiting Europe proper will occupy about twenty monthly parts, each containing sixteen pages of text and four coloured plates. The plates