

of dealers. But the editors have done something with them, and they have handled the more lasting forms with a rather surprising fullness of treatment.

Nomenclature, which is a source of some concern and more confusion to botanists, has been conformed, more or less consistently, to the more conservative horticultural and botanical views. It could not give satisfaction in any case, and it has at least the merit of simplicity as it has been handled.

In a word, whatever one would most reasonably look for in a Cyclopedia of American Horticulture, is to be found in Professor Bailey's book. While good things may have been omitted from it, the present reviewer has not found bad things that have been introduced into it; and it is worthy of a place where not only gardeners and botanists, but school-children may see it daily.

WM. TRELEASE.

*La nature tropicale.* By J. CONSTANTIN. Paris, Felix Alcan, Ed. Pp. 315, figs. 166. 1899.

The first chapter of this book is chiefly comprised of selections from the expressions of various naturalists on their first encounter with the forests and jungles of the tropics, and the second analyzes the principle factors in the equatorial climate. Succeeding chapters are devoted to trees and their architecture, foliage, periodicity, flowers and fruits, the tropical forest in previous geological epochs, climbers of all kinds, parasites and parasitic action of flowers, saprophytes and epiphytes, co-operation of ants, influence of the sea, the mangrove, the flora of islands and the final chapter is a singular mixture of fanciful conceptions relative to the earlier history of the earth and the cosmos, with enough of an admixture of mythology and tradition to endear it to readers of tender years. The general style of the book is not unpleasant, and although most of it might have been written a decade since, yet some recent results have crept into the discussions, especially in regard to the more sensational discoveries in botany. A table of contents placed at the end of the book does not redeem the lack of a suitable index.

D. T. MACDOUGAL.

*Fossil Flora of the Lower Coal Measures of Missouri.* By DAVID WHITE. Monographs of the United States Geological Survey, Vol. XXXVII. Washington. 1899. 4to, cloth. Pp. 467; pls. 73.

This work is based upon material collected by Dr. J. H. Britts and by geologists of the Missouri and United States Geological Surveys, in Henry county, Missouri.

It may be regarded from either the point of view of the geologist or from that of the paleontologist, but it is essentially a contribution to paleo-botany in which the facts are utilized for purposes of correlation and comparison between the coals of Missouri and those of the Eastern United States and Europe.

The species enumerated are 124. Of these 10 are gymnosperms, 1 (*Palaeoxylon*) is classed provisionally under 'Animalia?' and the remainder are cryptogams, most of them previously described. The discussion and table of synonymy under each genus and species is exceedingly full and a number of changes in nomenclature are made in order to bring it into harmony with modern ideas on the subject. The systematic arrangement is in accordance with the botanical affinities and sequence of the species and families.

Several innovations may be noted in the matter of illustrations. The figures are mainly reproductions of photographs of the rock containing the species, accompanied by drawings of portions of the species in which details of outline, nervation or fructification, etc., are shown. This method gives a good general idea of the actual appearance of each specimen as a whole together with the particular features which require emphasis, but such plates are not equal, for purposes of exact study, to reproductions from carefully made drawings, as may be seen by a comparison between Plates XL. and XLI. Another innovation which has produced excellent results is in the line of enlarged photographic reproduction, an example of which may be seen on Plate LI.

In the final discussion of the flora there are tables of distribution, for purposes of comparison with other coal floras and the conclusion is reached that the stratigraphic position of the Henry county coals is subsequent to the lower

coals of the Lower Coal Measures of the East, including the Morris or Mazon Creek coal of Illinois and the Brookville or Clarion coal of Ohio and Pennsylvania, but previous to the Darlington or Upper Kittatinning coals of the latter States. A comparison with the British coal flora indicates that the flora of the Henry county deposits is represented to a greater extent in the Upper and Middle Coal Measures of Great Britain than in the Lower; probably in age about that of the basal portion of the Upper Coal Measures of that country. Interesting comparisons are also made with the coal floras of Continental Europe. It is to be regretted that in this, as in all similar large works, many of the finer points in comparative biology are necessarily omitted or else are more or less hidden in the mass of the systematic arrangement. There is no doubt that several of the species are capable of even more critical treatment that is given to them, but every one must recognize that the author has performed an immense amount of investigation and has produced a work of permanent scientific and economic value.

ARTHUR HOLLICK.

*Analyse microchimique et spectroscopique.* By M. -E. Pozzi-Escot. (Encyclopédie scientifique des aide-mémoire.) Paris, Gauthier-Villars, Masson et Cie. P. 192, figs. 40.

Chemists the world over, have awakened, within the last few years, to the fact that the microscope is a most valuable accessory to every laboratory of chemical analysis. This increasing interest has been remarkably slow considering the almost inestimable value of this instrument as an aid in chemical research. The failure, in the past, to make use of the microscope has been, doubtless, due to two causes: first, the fact that instruction in the use and manipulation of this instrument has not been, heretofore, included in the courses of study offered to students fitting themselves for chemists in the various educational institutions; second, there has been a lack of suitable text-books, manuals, etc. The latter cause has been eliminated by the recent publication of several works. Of these the latest is the little compend of M. Pozzi-Escot published under the title given above. The appearance of this out-

line of the methods of microchemical analysis can be taken as indicating an increasing appreciation of the great value of the microscope to chemists, and friends of the system will, therefore, gladly welcome the little book although it is almost entirely a compilation of methods and reactions already published. It is but fair to the author, to state, however, that the material has been well chosen and due credit has been given to the originators of the different tests and processes.

The author gives a concise review of the rise and development of microchemical analysis. Then follows a description of the requisite apparatus and reagents, the tests for the different elements, and finally a more detailed discussion of the methods to be employed in the systematic analysis of unknown substances.

It is greatly to be regretted that the elements have been arranged in alphabetical order and that no details are given as to the way of applying the tests, nor (save in a few cases) of the causes which may lead to their failure. Any attempt to make microchemical analysis a purely mechanical matter is certain to give the beginner no end of difficulty and, moreover, is apt to mislead him into the idea that a knowledge of chemistry is not an essential in the interpretation of the tests obtained.

Reactions for sixty-three elements are given, most of which are satisfactory and are illustrated by original or copied drawings of the crystals to be obtained.

Chapters III. to V., dealing with the methods to be employed in a systematic analysis, are much better than those preceding. The necessary manipulations being described in detail and cautions as to sources of error are also given. This portion of the work can be consulted with profit by all those interested in the neat and elegant methods of microchemical analysis and renders it worthy of a place in the analytical laboratory.

That part of the book devoted to spectroscopic analysis comprises only nineteen pages. It would have been better had the author omitted this section entirely and devoted the extra space to a more thorough discussion of reactions and to an index.

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