

to plant life. Methods of chemical analysis are wisely left for a separate work and the results of analysis alone are given when a knowledge of the same is necessary to an understanding of the discussion. The nature of the experiments, however, and the manipulation of the same, are given with sufficient fullness to enable the reader to judge of the value of the conclusions. The general arrangement of the book is as follows: Part I. treats of the nutrition of plants, of germination, and of the origin of the organic and inorganic constituents. Part II. makes a study of the atmosphere in its relation to plant life and of the gases influencing this life, of nitrogen, oxygen, carbonic acid, nitric acid, ammonia, etc. Part III. treats of soils, their formation and composition, and of their physical and chemical properties. A bibliography, coinciding with the arrangement of the text, completes the work.

The author is particularly interesting in his section on nitrification and also in treating of the assimilation of free atmospheric nitrogen by plants and soils. The experiments and conclusions of Berthelot and André are noted as well as those of M. Schloesing, the author concluding with; "Il n'entre pas dans notre programme d'insister davantage sur ces diverses recherches; car nous tentons d'ordinaire à n'avancer que des faits positifs. Ici il ne nous est guère permis de faire un choix entre les opinions produites. Il est à espérer qu'un prochain avenir levera les doutes qui règnent encore sur ce grave sujet."

The book has the usual exquisite neatness of first-class French publications, with full-bodied paper, clear print and broad margins, making it altogether a most enjoyable volume.

CHARLES PLATT.

*Outlines of Forestry, or the Elementary Principles Underlying the Science of Forestry.* By EDWIN J. HOUSTON. Philadelphia, J. B. Lippincott Co. 254 p. 12°. \$1.

This little book is a useful manual of facts relating to the subject. Among the matters considered are the conditions necessary for the growth of plants, distribution over the earth, forma-

tion of soil, animate and inanimate enemies of the forest, vapor, rain, drainage, climate, hail, reforestation and tree planting, etc. The last chapter, called "Primer of primers," contains in short, concise sentences the substance of what had been given at length in the earlier chapters. Taken by itself, it would serve a useful purpose in the education of the general public to the importance of the subject.

The book is, perhaps, unfortunately written in a loose and rather slovenly manner. It abounds in repetitions of not only the same ideas, but also of nearly identical words. The following extracts are particularly bad examples, but they fairly represent the ordinary style of the writer: "Heat and light are to be found in practically all parts of the earth. They differ, however, in amount in different regions of the earth, and such differences cause the differences that are noticed in the plants that grow in different regions." "The quantity of moisture in the air differs greatly in different parts of the earth, and on this difference, together with the difference in temperature, depends the differences observed in the plants of various regions." "Each section of the country possesses, so to speak, a nationality in its plants, or, in other words, there lives in each section of country a particular nation of plants. Such a nation of plants, or the plants peculiar to a particular section of country, is called its flora."

The author makes use of a new word, "heatshine," which is rather difficult to define. "The sunshine and the heatshine which awaken the sleeping germ and call it into activity," etc. In the appendix are given various lists of trees suitable for planting, and these contain some curious errors. For example, under the head of "deciduous trees" we find maples, hickories, cedars, firs and pines, while under "evergreens" are placed spruce, larch, sweet gum, poplar, oak, walnut, etc. In another place we observe under "conifers" bald cypress, red cedar, white pine, black cherry and European alder, while the European larch figures in another table as an evergreen. Errors of this kind rather detract from the value of the book.

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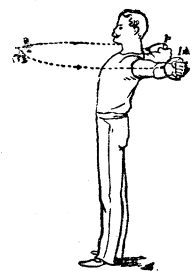
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