

is a "trivial detail," but Mr. Allen hastens to insist on the importance of "living chlorophyll" as the "original manufacturer and prime maker" of all the material of life, either vegetable or animal. Evidently chlorophyll is here doing duty for the alliance of chlorophyll with a vastly more important substance, protoplasm, but the author could hardly expect "untechnical readers" to appreciate this; and his statement that chlorophyll is a variety of protoplasm will certainly not meet with the assent of botanists. Again, the statement that "plants alone know how to make protoplasm" is one which is contradicted, fortunately for us all, by the experience of daily life; in order, however, that we may be quite clear as to the author's conception of protoplasm, he defines it (in italics) as "*the only living material we know*"; and this would seem to make it clear that he had not by a *lapsus calami* written protoplasm when he meant proteid. For a continuation of this subject, the critical reader may refer to pp. 190-191.

When Mr. Allen comes to deal with what we gather from his preface he considers the most important part of his work, we find evidences of hasty generalisations on insufficiently ascertained facts. Many plants which are certainly not degenerate, are regularly self-fertilised; and we submit that in most districts in England the humble bee has far more to do with the fertilisation of the Tropæolum than the Humming-bird hawk-moth; and this latter insect is certainly *not* the only one in Europe capable of performing this office.

But it is needless to multiply examples further. All we can say is that those readers who are ignorant of the real facts may find the book pleasant, though we can hardly add profitable, reading.

OUR BOOK SHELF.

Low's Chemical Lecture Charts. (London: Sampson Low, Marston, and Co., 1895.)

THIS is a series of diagrams intended to illustrate various chemical and metallurgical processes and apparatus, and designed more especially for the use of teachers who are preparing students for the examinations of the Science and Art Department, the London Matriculation, Oxford and Cambridge Local, &c.

There is no doubt that a good set of useful diagrams, of convenient size and moderate price, would be gladly welcomed by a large number of teachers, but the charts before us can scarcely be said to fulfil all the requirements of such a set of diagrams. The size of the sheets, namely, 30 in. x 40 in., is sufficiently large for the use of such classes as they are intended for, and it does not render them too bulky for convenient storage. In most cases the illustrations are very roughly executed enlargements of familiar cuts from various text-books and treatises on chemistry, sometimes well chosen, sometimes not. Many of the sheets contain several pictures, and where it happens that the subjects represented are in a manner related, this does not detract from their merit, except in so far as it necessitates the illustrations being smaller than if each occupied a single sheet. But in a number of instances the subjects depicted on the same diagram have no connection; thus, on the same sheet we find a representation of Hofmann's apparatus for showing the volume composition of water, and illustrations of certain apparatus used by Dewar in making experiments at low temperature.

Again, another diagram contains the following illustrations: (1) Hofmann's apparatus for composition of sulphur

dioxide; (2) ozone apparatus; (3) apparatus for composition of ammonia; (4) apparatus for composition of hydrochloric acid; (5) Andrews' and Tait's ozone tube; (6) apparatus for composition of nitrous oxide; (7) Smithell's flame cone separator. With so many illustrations on one sheet, 30 in. x 40 in., each one must be almost insignificantly small, and quite erroneous ideas of the relative sizes of various pieces of apparatus are likely to be conveyed to the student. With some of the figures still more serious exception must be taken; thus, Fig. 2, Sheet 14, depicts a piece of apparatus, the design of which is of more than questionable feasibility; while Fig. 2, Sheet 17, is an impossible arrangement.

Many of the metallurgical figures are badly chosen. Thus, the old method for extracting zinc, known as "distillation per descensum," which has been quite obsolete for many years, is brought to life again in Diagram No. 11.

If these diagrams were a little better executed, and could be purchased singly, they would be of much more service to the general run of teachers, who could then select from a catalogue such as they might require.

G. S. N.

Brasilische Pilzblumen. Von Alfred Möller. Mit 8 Tafeln. (Jena: Gustav Fischer, 1895.)

THIS volume forms the seventh part of the "Botanische Mittheilungen aus den Tropen," edited by Prof. Schimper, of Bonn. The title—"Fungus-Flowers"—is suggestive of a popular and æsthetic treatment of the subject, but this impression is somewhat misleading, for Dr. Möller's work is of a strictly scientific character, and appeals more especially to systematic mycologists. At the same time, the extraordinary forms of the Fungi described give a considerable degree of general interest to the book, which is enhanced by the pleasant style in which the subject is treated. Dr. Möller is already well known for his mycological investigations, particularly for his fascinating work on the cultivation of Fungi by South American ants. The "Fungus-Flowers" are simply gastromycetous fungi of the family Phalloideæ, of which that repulsive plant the "Stinkhorn" (*Ithyphallus impudicus*) is the best-known British representative.

The author has been most fortunate in his investigation of the remarkable Brazilian forms of this family, which includes perhaps the most highly differentiated of the Fungi. He has founded no less than four new genera on his discoveries. One of these (*Protubera*) is referred to the Hymenogastreæ, and is of special interest, for it appears to connect that family with *Clathrus* among the Phalloideæ. The other new genera (*Blumenavia*, *Aporophallus*, and *Itajahya*) are members of the Phalloideæ, *Blumenavia* showing affinity with *Clathrus*, while the remaining two belong to the tribe Phalleæ. Eight new species are described in all.

The book is full of interesting details of the occurrence and mode of growth of these Fungi. It is illustrated by eight fine plates, many of the figures in which are from photographs of the specimens, while others represent their more minute structure. The first plate, a coloured representation of "the most remarkable of all Fungi," *Dictyophora phalloidea*, is especially striking. This is not one of the new species, but has never been adequately figured before. This extraordinary fungus bears a general resemblance to *Ithyphallus*, but is distinguished by the presence of an immense net-like indusium surrounding the stem, from which it stands out like a crinoline. The German colonists at Blumenau have given it the name of "the veiled lady."

Dr. Möller's book will be indispensable to students of mycology, and will no doubt attract more general attention to a most interesting group of plants, about which much still remains to be discovered. D. H. S.