

lungs coefficient) $\frac{\text{oil}}{\text{water}}$ of the many indifferent and basic anæsthetics. His studies led him to the conclusion that the narcotic power of a compound depends in the first place upon its division-coefficient between the aqueous medium and the cholesterin-lecithin solvents of the organism, provided the absolute solubility of the compound in the cholesterin-lecithin solvent is not below a certain minimum.

In the second part detailed descriptions and tables are given of the numerous experiments made on a great many compounds, establishing in each one its division-coefficient and its narcotic power. The compounds comprise indifferent and basic narcotics, also antiseptics and antipyretics which possess more or less anæsthetic powers as secondary effects. The author draws from his numerous experiments the conclusion that the longer and the less branched the carbon chains of a compound are, the stronger is its narcotic power, and that the substitution of a hydrogen atom by a hydroxyl group diminishes, and the substitution by an alkyl group increases, the narcotic power of a compound. Overton thinks that the indifferent narcotics interfere probably in a physical way with the cholesterin and lecithin of the cells, while the basic narcotics interfere also with the protoplasm of the cell, hence the greater clinging of the latter group of narcotics to the cells and their deleterious effects.

Overton's book is a very valuable contribution to biology and pharmacology; it opens new fields and new methods of research and will prove to be a fruitful stimulus to student and investigator.

S. J. MELTZER.

NEW YORK.

Les matières colorantes naturelles. By V. THOMAS (Chef des travaux de chimie appliquée à la Faculté des Sciences de Paris). Une publication de l'Encyclopédie Scientifique des Aide-Mémoire. Publiée par Gauthier-Villars, Paris, sous la direction de M. Léauté (Membre de l'Institut). Pp. 180.

It is probable that no department of chemistry, during the past thirty years, has experienced a more marvelous development and

elaboration than that relating to the artificial dyestuffs. At the present time these synthetic dyes are numbered by the thousand, and millions of dollars are invested in their commercial production. Two of the largest chemical factories of the world are devoted to this industry, one employing over 200 trained chemists, the other over 160, practically all of them Ph.D. men from the universities. The relation between the structure of these dyestuffs and their tinctorial value has been definitely established for most classes of artificial colors, and the literature of the subject is vast in extent.

The result of this tremendous activity in the field of artificial colors has been that the natural colors have been correspondingly neglected, and it is only within quite recent years that attention has again been directed to these substances, many of which have been familiar since ancient times. These scattered researches upon the tinctorial constituents of plants used in dyeing have been collected, digested, and the results presented in a condensed form by the author. The work is ably and carefully done, the chapter upon the Flavone Colors being especially praiseworthy.

In this volume the author treats only those natural coloring matters which are commonly regarded as derivatives of benzophenone, xanthone or flavone, thus including the majority of the natural yellow dyes.

Each chapter opens with general statements concerning that particular group of colors, its history, development, etc. This is followed by a detailed description of the individual colors, giving history, preparation, properties, tinctorial value, etc., the reactions and syntheses by which the constitutional formula has been elucidated being clearly and concisely explained. References to original articles are numerous, and in some cases (*e. g.*, syntheses in the flavone group) quite extensive.

The separate chapters deal with the following colors:

I. Derivatives of benzophenone.—Maclurin and derivatives, catechin and derivatives, kinoin.

II. Derivatives of xanthone.—Indian yellow, euxanthone, gentisin and gentisein, datiscetin, paradatiscetin.

III. Derivatives of flavone (phenylpheno- γ -pyrone).—Chrysin, tectochrysin, apigenin, acacetin, luteolin, quercetin, rhamnetin, isorhamnetin, rhamnazin, fisetin and derivatives, morin, myricetin, k  mpferid, galangin, loto-flavine.

The volume concludes with an alphabetical table of the coloring matters and their derivatives, giving the name of the compound, its melting point, and the reference to the page of the text where the same may be found described in detail, thus constituting an excellent index.

The book presents an able review of a field which is frequently unjustly slighted in the larger text-books. It can be heartily commended to those interested in this branch of organic chemistry.

MARSTON TAYLOR BOGERT.

Pflanzenphysiologie. Ein Handbuch der Lehre vom Stoffwechsel und Kraftwechsel in der Pflanze. Von DR. W. PFEFFER. II. Kraftwechsel. Zweite vollig umgearbeitete Auflage. Leipzig, Wm. Engelmann. 1901. Pp. 353.

The first volume of this comprehensive work appeared in 1897 and was reviewed by the writer of this note in SCIENCE (7: 318. 1898). The recent part deals with the general action of growth, and the influence of various factors upon it, the inherent causes of specific form, variation and heredity, rhythm and resistance.

The commendation given the first volume of this splendid work seems equally well deserved by the second. The citations of literature are quite inclusive up to 1900, and many of the more important papers appearing since that time are given, although not much time could have been given to a consideration of their contents.

It is to be said that the author has not had so much critical editorial work before him in the preparation of the present part as in the first volume, since the greater number of principles discussed are in the form in which they have been accepted for a decade. Much of the material rests exactly as it was left by Pfeffer's lengthy papers of a few years since upon transformations of energy, and in other sections the subject matter has remained almost undisturbed since the first edition of the book.

Some of the phases of the activity of the plant discussed do not appear to have been carried to the extent that might be reasonably expected from a work of this character. Thus in dealing with the influence of light upon plants, the author has not followed to a logical conclusion the discussions foreshadowed in the preface.

The influence of water content upon growth and form, correlation, reproduction and regeneration comes in for a well-conceived treatment, and the pages devoted to these topics are valuable additions to literature.

The first volume has already been translated by Dr. Ewart in a manner adding much to its scientific and practical value, and it is to be hoped that he will be as speedy and attentive in editing the present volume. An unusually large number of typographical errors will doubtless be reduced to a minimum in the process.

The fulness of discussions, exactness and pertinence of citations, together with the grasp of the subject and breadth of view of the author, make this book very easily the greatest work yet produced on plant physiology, and in the historical development of the subject it will prove to be as valuable as the notable volume of Sachs.

D. T. MACDOUGAL.

SCIENTIFIC JOURNALS AND ARTICLES.

THE October (closing) number of Volume 2 of the *Transactions of the American Mathematical Society* contains the following papers: 'Geometry of a Simultaneous System of Two Linear Homogeneous Differential Equations of the Second Order,' by E. J. Wilczynski; 'Theory of Linear Groups in an Arbitrary Field,' by L. E. Dickson; 'On Certain Aggregates of Determinant Minors,' by W. H. Metzler; 'Ueber die Anwendung der Cauchy'schen Multiplikationsregel auf bedingt convergente oder divergente Reihen,' by A. Pringsheim; 'Ueber den Goursat'schen Beweis des Cauchy'schen Integralsatzes,' by A. Pringsheim; 'New Proof of a Theorem of Osgood's in the Calculus of Variations,' by O. Bolza; 'On Certain Pairs of Transcendental Functions whose Roots Separate each other,' by M. B  cher; 'On the System of a Binary Cubic and a Quadratic and the