

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

Reduction of Hyperelliptic Integrals of Genus Two to Elliptic Integrals by a Transformation of the Fourth Order,' by J. H. McDonald; 'On the Theory of Improper Definite Integrals,' by E. H. Moore; 'On the Convergence and Character of a Certain Form of Continual Fraction,' by E. B. Van Vleck; Notes and Errata, Volumes 1 and 2.

The October number (Volume 8, No. 1) of the *Bulletin of the American Mathematical Society* contains the following articles: 'The Eighth Summer Meeting of the American Mathematical Society,' by F. N. Cole; 'The Ithaca Colloquium,' by Edward Kasner; 'Upon the Non-Isomorphism of two Simple Groups of Order $8\frac{1}{2}$,' by Ida M. Schottenfels; 'Concerning Surfaces whose First and Second Fundamental Forms are the Second and First Fundamental Forms respectively of another Surface,' by Alexander Pell; 'Notes,' and 'New Publications.' The November number of the *Bulletin* contains: 'On Wronskians of Functions of a Real Variable,' by Maxime Bôcher; 'The Configurations of the 27 Lines on a Cubic Surface and the 28 Bitangents to a Quartic Curve,' by L. E. Dickson; 'The Fiftieth Annual Meeting of the American Association for the Advancement of Science,' by G. A. Miller; 'Riemann-Weber: Partial Differential Equations of Mathematical Physics,' by J. S. Ames; 'Notes,' and 'New Publications.'

SOCIETIES AND ACADEMIES.

AMERICAN PHYSICAL SOCIETY.

THE fall meeting of the American Physical Society was held at Columbia University on Saturday, October 26, President Michelson presiding. The first paper, by F. L. Tufts, described experiments on the effects of stationary sound waves on unignited gas jets. The disturbances caused in such jets by sound waves were made visible by means of the 'Schlieren Methode,' the source of illumination being the spark of an induction coil. The jet was found to assume a vibrating sinuous form, with increased amplitude at greater distances from the orifice. The results could be explained upon the assumption that the initial velocity of the gas, upon issuing from the orifice, is the re-

sultant of its own proper velocity and that due to the vibration of the sound wave. Photographs of unignited jets when disturbed in this way were shown. A second paper by Mr. Tufts dealt with experiments with the ordinary organ pipe. The Schlieren method was applied in this case to show the vibrations of the blast of air blown against the tongue of the pipe, and photographs were shown which gave excellent confirmation of the usual theory of the action of such pipes.

A note on the use of the Arons' mercury lamp as a source of illumination in certain color experiments was presented by Ernest Merritt. The light from the mercury arc is chiefly due to three lines in its spectrum, lying respectively in the violet, the green and the yellow. These lines are sufficiently near to the three primary colors to make the light of the lamp seem not greatly different from white; but when the lamp is used to illuminate colored objects the absence of the red is rendered evident. Red objects, for example, usually appear black when seen by this light. When a selection is made from colored worsteds, such as are used in the ordinary test for color-blindness, the selections are much the same as those made by a red-blind individual.

After the noon recess the Physical Society joined with the Mathematical Society during the reading of a paper by M. Hadamard on the 'Theory of Elastic Plates.' In the afternoon session a note was presented by Wm. Hallock on 'Measurements of Subterranean Temperatures,' in which were given the results of the most recent work on this subject. An instrument for the measurement of entropy was described by A. G. Webster. This 'entropy meter' had not been actually constructed, nor did the speaker think that it would make a very practical apparatus. It showed a possible method, however, by which entropy changes might be automatically registered and measured. Mr. Webster also reported the results of experiments upon the audibility of sound over grass and water. It was found that under similar conditions of quietness, etc., a given sound could be heard almost exactly four times as far over water as over grass. The assumption that water is a perfect reflector, while grass