

on the carbohydrates and on uric acid; of v. Baeyer, Claisen, Waitz and others on the work in their respective fields.

The introduction occupies 77 pages, and among other subjects includes condensed presentations of the aims of physical chemistry and stereochemistry, of the work based on the optical and magnetic properties of carbon compounds, and of that based on measurements of conductivity. The book is written tersely and clearly. The nomenclature in common use is retained, but that recommended by the Geneva Conference is also given. The literature and historical references are abundant.

Professor Smith's translation is very good. A slip is on page 122, where wine is said to be obtained from 'St. John's berries;' a term not found in the Century Dictionary. The German word 'Johannisbeeren' means currants. The volume before us contains the results of the latest work on the subject, and, as the second (and last) volume on the aromatic series is promised by the publishers during the present year, the student purchasing this excellent book may feel confident that he has the last word on the subject up to the date of publication.

E. RENOUF.

Physical Chemistry for Beginners. By DR. CH. VAN DEVENTER. With an Introduction by Professor J. H. VAN'T HOFF. Authorized American edition from the German edition. Translated by BERTHRAM B. BOLTWOOD, PH.D., Instructor in Physical Chemistry in the Sheffield Scientific School of Yale University. First edition, first thousand. New York, John Wiley & Sons; London, Chapman & Hall, Limited. 1899. Pp. 154.

In the preface it is stated that "in the book at hand the author has endeavored to collect the most important results of physical chemistry in such a manner that this important branch of modern chemistry may be accessible to those who have not made an exhaustive study of physics and mathematics. The requirements of students of medicine and pharmacy, as well as of elementary chemistry, have been especially considered in the preparation of this work."

Chapters are devoted to the fundamental

laws of composition, the properties of gases, thermochemistry, solutions, phenomena of light and the periodic system. It would seem that a chapter on electrochemistry would add to the value of the book.

The work has been used by Van't Hoff in connection with his lectures on chemistry to students in Amsterdam, and is spoken of as having furnished him welcome assistance.

The work of translation has been done with care by Dr. Boltwood, his purpose being, in part, to place in the hands of his own students a book which shall contain a clear and concise statement of the fundamental facts of physical chemistry.

HARRY C. JONES.

BOOKS RECEIVED.

Das Tierreich. 7 Lieferung, *Demodicidæ* und *Sarcoptidæ*. G. CANESTRIUM and P. KRAMER. Pp. xvi + 193. M. 9.20. 8 Lieferung, *Scorpiones* und *Pedipalpi*. KARL KRAEPELIN. Pp. xviii + 265. M. 12.60. Berlin, R. Friedländer und Sohn. 1899.

Steinbruchindustrie und Steinbruchgeologie. O. HERRMANN. Berlin, Borntraeger. 1899. Pp. xvi + 428. M. 10.

Essai critique sur l'hypothèse des atomes dans la science contemporaine. ARTHUR HANNEQUEN. Paris, Alcan. 1899. Second Edition. Pp. 457.

The Newer Remedies. VIRGIL COBLENTZ. Philadelphia, P. Blakiston's Sons & Co. 1899. Third Edition. Pp. vi + 147. \$1.00.

The Psychology of Reasoning. ALFRED BINET. Translated from the second French edition by ADAM GOWANS WHITE. Chicago, The Open Court Publishing Co. 1899. Pp. 191.

SCIENTIFIC JOURNALS AND ARTICLES.

THE first article in the *American Naturalist* for May is by H. S. Jennings, and is a continuation of 'Studies on Reactions to Stimuli in Unicellular Organisms.' The present part, III., treats of 'Reactions to Localized Stimuli in Spirostomum and Stentor,' the writer reaching the conclusion that the organisms react as individuals and not as substances. But while it will not do to think of their reactions as those of chemical substances, neither will it do to attribute to unicellular organisms the psychological powers of higher animals. Under the title of 'Vacation Notes, II., The Northern Pacific

Coast,' Douglas H. Campbell touches on the botany of that region. W. D. Matthew considers the question: 'Is the White River Tertiary an *Æolian* Formation,' deciding it in the affirmative. F. H. Herrick describes several cases of 'Ovum in Ovo,' and after classifying the various methods in which such abnormalities occur presents theories which account for them. The concluding paper by T. D. A. Cockerell is 'On the Habits and Structure of the Coccid Genus *Margarodes*.' Among the editorials is one on 'The Gypsy Moth and Economic Entomology,' in which the ground is taken that it is not worth while to continue the present extravagant policy. The number is unusually full of brief and good reviews of recent scientific literature.

THE March number of the *Bulletin of the American Mathematical Society* contains: 'On Singular Points of Linear Differential Equations with Real Coefficients,' by Professor Maxime Bôcher; 'The Hessian of the Cubic Surface,' by Dr. J. I. Hutchinson; 'On the Simple Isomorphisms of a Hamiltonian Group to Itself,' by Dr. G. A. Miller; 'Galois's Collected Works,' by Professor James Pierpont; 'Three Memoirs on Geometry,' by Professor Edgar Odell Lovett; 'Stahl's Abelian Functions,' by Dr. Virgil Snyder; 'Calculus of Finite Differences,' by Dr. D. A. Murray; 'Notes' and 'New Publications.' The April number of the *Bulletin* contains an account of the February meeting of the American Mathematical Society, by Professor F. N. Cole; 'Determinants of Quaternions,' by Professor James Mills Pierce; 'The Largest Linear Homogeneous Group with an Invariant Pfaffian,' by Dr. L. E. Dickson; 'Asymptotic Lines on Ruled Surfaces having Two Rectilinear Directrices,' by Dr. Virgil Snyder; 'Willson's Graphics,' by Dr. J. B. Chittenden; 'Pascal's Repertorium of Higher Mathematics,' 'D'Ocagne's Descriptive and Infinitesimal Geometry,' by Professor Edgar Odell Lovett; 'Sophus Lie,' translation of Professor Gaston Darboux's notice; 'Notes' and 'New Publications.' The May number of the *Bulletin* contains an account of the April meeting of the Chicago Section of the Society, by Professor Thomas F. Holgate; 'An Elementary Proof that Bessel's Functions of the Zeroth Order have an Infinite Number of Real Roots,'

by Professor Maxime Bôcher; 'A Generalization of Appell's Factorial Functions,' by Dr. E. J. Wilczynski; 'On the Arithmetization of Mathematics,' by Professor James Pierpont; 'Two Books on the Tides,' by Professor Ernest W. Brown; 'Notes' and 'New Publications.'

THE *Annals of Mathematics* will henceforward be published quarterly, beginning with the number issued on October 1st, by the department of mathematics of Harvard University. Professor Ormond Stone, of the University of Virginia, who founded and for many years supported the journal, has consented to act as a member of the board of editors in coöperation with Professor H. S. White, of Northwestern University, and Professors Byerly, Osgood and Bôcher, of Harvard University. The editors state that their object is to conduct the journal so that it may appeal not merely to the highly trained specialist, but to the general mathematical public of America from students of mathematics in the graduate schools of our universities upward. Short research articles will be welcomed, but highly technical articles will be avoided. Articles containing little or no absolutely new matter, but giving a clear presentation of some important but not readily accessible field of mathematics, or a more thorough presentation of some subject which is generally treated in an unsatisfactory manner, are especially desired.

SOCIETIES AND ACADEMIES.

CHEMICAL SOCIETY OF WASHINGTON.

THE regular meeting was held on April 13, 1899.

The first paper of the evening was read by Mr. J. K. Haywood, and was entitled 'Some Boiling-Point Curves.' The results obtained have led to the following conclusions:

I. All mixtures of the following pairs of liquids boil at temperatures between the boiling points of the constituents: alcohol-water, alcohol-ether, chloroform-carbon tetra-chloride, acetone-water and acetone-ether.

II. A solution containing 17.5 % alcohol in carbon tetra-chloride distills without change at 65.5° approximately, under a pressure of 768.4 mm. of mercury.

III. A solution containing 12.5 % methyl al-