SCIENCE

FRIDAY, MAY 22, 1914

CONTENTS

MSS. intended for publication and books, etc., intended for review should be sent to Professor J. McKeen Cattell, Garrison-on-Hudson, N. Y.

THE SOCIAL OBLIGATIONS OF THE BOTANIST[1]

THE subject of the address which I am to have the honor of presenting before you this evening was suggested to me on hearing recently a statement to the effect that it is the duty of society to pay for the services of the botanist. It seems to me that there is something to be said on the other side of this question, and, although my predecessors on similar occasions have almost invariably favored you with learned scientific discussions, I shall depart from that ancient and time-honored custom and invite your attention to a consideration of some of the social obligations of the botanist.

A distinguished and honored member of this society has defined botany as that science "that occupies itself with the contemplation of plant as related to plant, and with the whole vegetable kingdom as viewed philosophically—not economically or commercially in its relation to the mineral, on the one hand, and to the animal on the other." From this definition it naturally follows that a true botanist is one who is engaged in research upon plants as such without regard to the relationship they may bear to the welfare and activities of mankind. The history of botany clearly shows that botanists have ever been largely devoted to their science for its own sake, for the pleasure which they might derive from a knowledge of plants. The speculations in which they were absorbed concerned questions of truth and not those of economic values. But throughout the history of the race, the economic aspect of

[1] Address of the retiring president before the Botanical Society of Washington, March 3, 1914.

against a too exact phylogenetic interpretation of embryological facts." While admitting the correctness of the first of these statements, from the point of view of the student seeking an outline of the principles of Chordate development one may question the pedagogical propriety of adding a number of more or less irrelevant facts for the purpose of enforcing a conclusion which may be deduced with even greater clearness from the more pertinent embryological phenomena of the higher chordates.

Following the account of the frog, the early development and organogeny of the chick is considered, and the book ends with a chapter on the early development of the mammalia, special attention being devoted to the development of their embryonic membranes and to that of the external form of the human fetus. It is unfortunate for the continuity of the descriptions that no mention is made of the early processes of development of the Reptilia, since these in several particulars afford a much clearer transition to the specialized mammalian conditions than do the similar stages of the chick. The account of the later stages of *Amphioxus* might well have been replaced by a description of the early stages of reptilian development.

But, on the whole, Professor Kellicott's book is an excellent one, both in its conception and execution. The descriptions are clear and without redundancy and are illustrated by numerous well chosen illustrations. Extensive bibliographic lists are appended to the various sections and there is an excellent index.

J. P. McM.

Chemical Technology and Analysis of Oils, Fats and Waxes. By Dr. J. Lewkowitsch. In three volumes. 5th edition. Volume I. Macmillan Company. 1913. $6.50.

This volume has increased from 542 to 668 pages: the chapters on the Constituents and on the Examination of the Mixed Fatty Acids being increased by nearly one third. In view of the encyclopedic character of the book, one is surprised to find no mention of the absolute viscosimeter; of Dunlap's excellent method of purifying alcohol for alcoholic potash; of T. W. Richards' apparatus for distilling in vacuo by electricity, all of which are admirably adapted for work with fats and oils. The information regarding the Saybolt viscosimeter, too, is not the latest, although perhaps the latest published.

The reviewer regards the treatment of the subjects as most thorough and eminently satisfactory. It is wisely critical, showing evidence of investigation done under the doctor's own eyes. It is approached by nothing in any language, as is attested by the fact of its translation into French and rewriting in German. It is invaluable to every one having to do with fats, oils and waxes.

It will be noted with deep regret by all in this branch that the appearance of the book in this country closely coincided with the death of its author.

A. H. Gill

SCIENTIFIC JOURNALS AND ARTICLES

The April number (Vol. 15, No. 2) of the *Transactions of the American Mathematical Society* contains the following papers:

Maurice Fréchet: "Sur la notion de différentielle d'une fonction de ligne."

J. H. M. Wedderburn: "A type of primitive algebra."

C. T. Sullivan: "Properties of surfaces whose asymptotic curves belong to linear complexes."

E. W. Chittenden: "Relatively uniform convergence of sequences of functions."

H. S. Vandiver: "Note on Fermat's last theorem."

E. R. Hedrick and Louis Ingold: "A set of axioms for line geometry."

G. C. Evans: "The Cauchy problem for integro-differential equations."

The March number (Vol. 20, No. 6) of the *Bulletin of the American Mathematical Society* contains: Report of the twentieth annual meeting of the society, by F. N. Cole; Report of the winter meeting of the society at Chicago, by H. E. Slaught; "Shorter Notices"; Zoretti's Leçons sur le Prolongement analytique and Scheffers's Serret's Lehrbuch der Differential- und Integralrechnung, by Frank

Irwin; Meyer's Theorie benachbarter Geraden und ein verallgemeinerter Krümmungsbegriff, by E. B. Cowley; Hilbert's Grundlagen der Geometrie and Grundzüge einer allgemeinen Theorie der linearen Integralgleichungen, by T. H. Gronwall; Lebon's Gabriel Lippmann, Moritz's College Mathematics Notebook and College Engineering Notebook, and Harris's Gravitation, by E. B. Wilson; "Notes"; and "New Publications."

THE April number of the *Bulletin* contains: "An unpublished theorem of Kronecker respecting numerical equations," presidential address, by H. B. Fine; "Two convergency proofs," by Arnold Emch; "Some properties of the group of isomorphisms of an abelian group," by G. A. Miller; Review of Landau's Handbuch der Lehre von der Verteilung der Primzahlen, by T. H. Gronwall; Review of Fisher's Purchasing Power of Money, by E. B. Wilson; "Shorter Notices"; Clebsch-Lindemann's Geometrie, by Joseph Lipka; Weyl's Die Idee der Riemannschen Fläche, by F. R. Moulton; "Notes"; and "New Publications."

THE May number of the *Bulletin* contains: Report of the February meeting of the society, by F. N. Cole; "A non-enumerable well-ordered set," by A. B. Frizell; "Note on the Fredholm determinant," by W. A. Hurwitz; "Time as a fourth dimension," by R. C. Archibald; Review of Bützberger's Bizentrische Polygone, Steinersche Kreis- und Kugelreihen und die Erfindung der Inversion, by Arnold Emch; "Shorter Notices"; Loria's Poliedri, Curve e Superficie secondo i Metodi della Geometria descrittiva and Darstellende Geometrie, zweiter Teil, by Virgil Snyder; Czuber's Differential- und Integralrechnung, by L. W. Dowling; Ciani's Lezioni di Geometria proiettiva ed analitica, by E. B. Cowley; Hessenberg's Transcendenz von e und π and Bolza's Variationsrechnung, by T. H. Gronwall; Picard's Das Wissen der Gegenwart in Mathematik und Naturwissenschaft, by J. B. Shaw; Sturm's Maxima und Minima in der elementaren Geometrie, by J. V. McKelvey; Norris and Craigo's Advanced Shop Mathematics, by P. F. Smith; Czuber's Wahrscheinlichkeitsrechnung, by H. B. Phillips; Lord Kelvin's Mathematical and Physical Papers, volumes IV., V. and VI., and Love's Problems of Geodynamics, by E. B. Wilson; Annuaire pour l'An 1914 publié par le Bureau des Longitudes, Combebiac's Les Actions à Distance and Abbe's Mechanics of the Earth's Atmosphere, by E. W. Brown; "Notes"; and "New Publications."

SPECIAL ARTICLES

THE SYSTEMATIC POSITION OF THE MYLODONT SLOTHS FROM RANCHO LA BREA[1]

IN the excavation work carried on by the University of California in the Pleistocene of Rancho La Brea, a considerable percentage of the material obtained represents ground-sloths of the mylodont group. Twenty-seven skulls, representing the family Mylodontidæ, are now in the collection of the department of paleontology. Of these, nineteen are well preserved and show the dental series on both sides. Many lower jaws are also available, several of which are associated with the skulls. In a preliminary consideration of this extensive series of specimens, certain suggestions as to the relationship of some of the mylodont genera have presented themselves. It seems desirable, therefore, to make this information available for other students of the group.

The writer is indebted to Professor John C. Merriam for kind assistance during this study.

The genera *Mylodon* and *Paramylodon*, to which the Rancho La Brea material has previously been referred, are the members of the family Mylodontidæ definitely recognized in the North American Pleistocene. A fragmentary lower jaw, originally described by Harlan from Big Bone Lick, Kentucky, was referred to *Mylodon* by Owen in 1840. In 1903 Brown[2] established the genus *Paramylodon* on a skull and lower jaw with associated skeletal material obtained from Pleistocene deposits near Hay Springs, Nebraska.

[1] Read at the fifth annual meeting of the Paleontological Society, Princeton, N. J., January 1, 1914.

[2] Brown, B., *Bull. Amer. Mus. Nat. Hist.*, Vol. XIX., Art. XXII., pp. 569–583, 1903.