There there is adequate provision for technical training, secondary and higher training for every child who shows any special gift for taking advantage of it, and I consider that this fact is a greater menace to our trade than any arrangements of tariffs."

AT Cornell University Assistant Professors O. A. Johnson and M. F. Barrus have been promoted to full professorships in the department of entomology and the extension department of plant pathology, respectively.

AT Hamilton College Professor Nelson Clark Dale, assistant professor of geology at Princeton University, will succeed Professor W. J. Miller, who goes to Smith College.

MR. C. G. DARWIN, eldest son of the late Sir George Darwin, has been appointed mathematical lecturer at Christ's College, Cambridge.

DISCUSSION AND CORRESPONDENCE

TWO UNDESCRIBED SPECIMENS OF CASTOROIDES OHIOENSIS FOSTER FROM MICHIGAN

THERE are two specimens of *Castoroides ohioensis* in the collection of the museum of geology, University of Michigan, that were found in the state and have not been recorded. One of these was discovered near Owosso, Shiawassee County, in December, 1892, by A. G. Williams. It is represented by the base and upper part of the right mandible with the incisor and all of the molar teeth in position, the base of the left mandible, and the left incisor tooth. The incisors are well preserved and show the longitudinal striæ and cutting edge, but the tip and base of each are broken. The row of molar teeth is 75 mm. long.

The second specimen, a skull without the mandibular bones, was exhumed in a tamarack swamp in Pittsfield township, Washtenaw county, by J. B. Steere, in 1902. It was lying on a bed of gravelly marl and beneath three feet of peaty soil. The skull is hard, of a rich dark brown color, and is little damaged. The left zygomatic arch is broken, and the teeth, with the exception of the last molar on the left side and the right incisor tooth, are missing. Nearly the full length of the right incisor is represented, the only damage to the tooth being an injury to the outer surface and the loss of a few millimeters from the base. The double nature of the internal nasal orifices is well shown. The measurements are as follows:

	Mm.
Length of skull from occipital angle to forward end of nasals	280
Length of skull from occipital angle to forward end of maxillaries	293
Width of skull across occiput	168
Width of skull across zygomatic arches.	230
Height of skull at occiput	68
Height of skull at last molars	98
Length of nasals	116
Greatest dimensions of zygomatic arch..	67 × 115
Width of occipital foramen	36
Length of molar tooth row	73

The writer is indebted to Professor E. C. Case, of the department of geology, University of Michigan, for permission to publish these records.

NORMAN A. WOOD
MUSEUM OF ZOOLOGY,
UNIVERSITY OF MICHIGAN

SCIENTIFIC BOOKS

Outlines of Chordate Development. By WM. E. KELLICOTT. New York: Henry Holt & Co. 1913.

In this volume Professor Kellicott endeavors to give a compact though comprehensive account of the development of the Chordates, such as will be suitable for the student of general embryology. For this purpose the frog is taken as representing the type, or rather, one should say, the mean, of chordate development, and a full and connected account is given of its early development and organogeny. This account is, however, preceded by an excellent statement of the embryology of *Amphioxus,* the author believing that whether or not this represents a truly primitive type of development, " it affords, in simple diagrammatic style, the essentials of early Chordate development," while its specialized later stages " may serve to put the student upon his guard

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