SCIENCE

EDITORIAL COMMITTEE: S. NEWCOMB, Mathematics; R. S. WOODWARD, Mechanics; E. C. PICKERING, Astronomy; T. C. MENDENHALL, Physics; R. H. THURSTON, Engineering; IRA REMSEN, Chemistry; J. LE CONTE, Geology; W. M. DAVIS, Physiography; O. C. MARSH, Paleontology; W. K. BROOKS, C. HART MERRIAM, Zoology; S. H. SCUDDER, Entomology; C. E. BESSEY, N. L. BRITTON, Botany; HENRY F. OSBORN, General Biology; C. S. MINOT, Embryology, Histology; H. P. BOWDITCH, Physiology; J. S. BILLINGS, Hygiene; J. MCKEEN CATTELL, Psychology; DANIEL G. BRINTON, J. W. POWELL, Anthropology.

FRIDAY, JANUARY 20, 1899.

CONTENTS:

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

*ADVANCES IN METHODS OF TEACHING.**

ZOOLOGY.

BY *advances in teaching* I understand the use of desirable methods not now generally employed, for while the common methods of this generation are advances over those of a preceding one a discussion of this fact could have no possible value and only an historical interest to us.

I take it that the common method of teaching zoology is by means of laboratory work supplemented by lectures or recitations, and, further, that both teacher and institution are well equipped for this work; these are prerequisites, the need of which need not be emphasized here. Beyond and in addition to these common provisions what advances in teaching zoology are both possible and desirable? Many minor features might be considered, such as certain improvements in laboratory and museum methods, the best sequence of subjects, the relations of lectures to laboratory work, etc.; but I prefer to emphasize two, and only two, main features, viz.: (1) the relations of research to teaching, and (2) the study of the whole of zoology.

I. One of the greatest possible advances in teaching zoology would be the promotion of research work in all institutions of college or university grade and the establishment of the closest possible relations be-

* Discussion before the New York meeting of the American Naturalists and Affiliated Societies, December, 1898.

be shown that the two species have been derived from a common ancestor; in other cases one species is evidently derived from another occurring stratigraphically below it."

Contrary to the prevailing opinion that fossil oysters, on account of their great variation, are of little value in the recognition of strata, our authors are led by their observations to conclude "that certain forms of the Ostreidæ possess very distinct specific characters, have definite geologic horizons, and are of the greatest value in stratigraphic work." They recognize the fact, also, that no scheme of classification can be entirely satisfactory until both fossil and recent oysters have been "the subject of thorough investigation from a phylogenetic and morphologic standpoint, according to the lines of research followed out by Hyatt in the cephalopods, Jackson in the pelecypods, Beecher and Schuchert in the brachiopods and Von Koch in the stony corals."

Sixty-one accepted species and varieties of fossil oysters are listed as occurring in the Texas Cretaceous, and twenty-three indefinite and abandoned species. Of the former forty-seven are tabulated as characteristic of definite horizons (p. 31).

Under the caption 'Historical Statement of the Discovery in the Texan Region of the Forms referred to *Gryphæa pitcheri*, Morton,' the confusion of various authors concerning this famous fossil is clearly presented and the sources of error pointed out. The following topics of more than ordinary interest are also discussed: 'Differentiation,' 'Geographic and Stratigraphic Distribution of the Lower Cretaceous Gryphæas,' 'Specific Classification and Evolution of the Lower Cretaceous Gryphæas,' and the bulletin closes with careful descriptions of six species, characteristic of the Lower Cretaceous, which the authors believe to merit recognition, supplemented by a brief statement of their relationship. The excellent and copious illustrations which accompany this paper deserve especial commendation. Of thirty-five plates, thirty, including copies of figures from Hall, Marcou and Roemer, are devoted to Gryphæas; of the remainder, one is a view of a living oyster bed, showing the profusion of molluscan growth, the others sections showing the stratigraphic occurrence of the Texas Cretaceous Ostreidæ.

FREDERIC W. SIMONDS.
UNIVERSITY OF TEXAS.

BOOKS RECEIVED.

Calcul de généralisation. G. OLTRAMARE. Paris, Hermann. 1899. Pp. viii+191.

Report of the Commissioner of Education for the year 1896–97. Washington, Government Printing Office. 1898. Vol. II. Pp. 1137–2390.

The Human Body. H. NEWELL MARTIN. Fifth Edition, revised by GEORGE WELLS FITZ. New York, Henry Holt & Co. 1898. Pp. xiv+408.

Elements of Graphic Statics. PROFESSOR L. M. HOSKINS. New York and London, The Macmillan Company. 1899. Pp. viii+199, and eight plates. $2.25.

SCIENTIFIC JOURNALS AND ARTICLES.

THE *American Naturalist* for January opens with an article by Dr. Arthur Hollick discussing the relation between forestry and geology in New Jersey. Professor W. M. Wheeler gives a biographical sketch of the late George Baur, which is accompanied by a biographical sketch containing 144 titles. Articles follow by Miss Julia B. Platt, describing certain phenomena of geotaxis; by Professor Cockerell, on 'Vernal Phenomena in the Arid Regions,' and by Professor E. W. MacBride, reviewing Seitaro Goto's work on the development of *Asterias pallida.*

THE *American Geologist* for January opens its twenty-third volume with a notice of Edward Drinker Cope, by Miss Helen Dean King, with a portrait and a bibliography containing 815 titles. There follow articles by Dr. N. H. Winchell, on 'Thalite and Bolingite from the North Shore of Lake Superior,' and by Mr. Marsden Monson, on 'The Loss of Climatic Evolution.'

THE *Journal* of the Boston Society of the Medical Sciences for December, 1898, contains an abstract of an interesting paper by Dr. Morton Prince entitled 'An Experimental Study of Visions,' also an important paper by Dr. Franklin W. White upon 'the Germicidal Properties of Blood Serum.' Among the conclusions reached are these: Human blood serum differs greatly in its germicidal action