graphic evidence leads to the conclusion that these regions have repeatedly been land areas, and that the successive invasions of the sea found the lands so low and flat as to offer no scarps for the sea to work upon. Regarding Brittany, it is remarked that littoral deposits somewhat to the north (bordering the Cotentin) have been produced in the same neighborhood and at altitudes differing only by a few meters during eleven different periods beginning with the Trias, thus indicating an astonishing stability of this region during the time of its denudation to the peneplain form. Marine erosion is therefore excluded, and the peneplains are ascribed to subaerial denudation.

W. M. DAVIS.

RECENT ZOO-PALEONTOLOGY.

FOSSIL REPTILES OF EUROPE.

THE latest paper upon the *Pterosaurs* is by Dr. Felix Plieninger.* Dr. Eberhard Fraas† proposes the name *Thalattosuchia* as a new group of marine crocodiles of the Jurassic formation, differing widely from all others in the extreme adaptation for aquatic life, especially in the total disappearance of the dermal armature and in the complete conversion of the limbs into paddles. The three chief genera *Metriorhynchus*, *Geosaurus* and *Dacosaurus* were placed by von Zittel in the family *Metriorhynchidæ*, of the suborder *Eusuchia*. But according to Fraas they deserve a wider separation, since while most nearly related to the long-snouted crocodiles (Longirostres), they by no means present a transition to the short-snouted (Brevirostres), but represent an entirely independent group, exclusively adapted to marine life. The superficial resemblance of the skull to that of Ichthyosaurs is intensified by the reduction of the characteristic crocodilian sculpture and by the ossification of the sclerotic coat of the eye. The details, however, are quite distinctive. This constitutes the fifth independent group of marine reptiles, the others being the Plesiosaurs, Ichthyosaurs, Mosasaurs and Chelonians.

* 'Palæontographica,' Vol. XLVIII., 1901.

† 'Jahresb. d. Ver. f. vaterl. Naturk. in Wurtt,' 1901, p. 408.

MARSH'S COLLECTION OF BRIDGER MAMMALIA.

THIS unique collection of Eocene mammalia has been placed by Professors Beecher and Dana, of the Peabody Museum, in the hands of Dr. J. L. Wortman for systematic description.* As Dr. Wortman remarks, "The importance of the subject to the student of mammalogy can scarcely be overestimated, since these epochs witnessed the beginnings and branching off of many groups destined to play such a prominent part in succeeding mammalian development. This fact was fully appreciated by Professor Marsh, and he spared neither pains nor expense in making the collections as complete as possible." In the first part, on the Carnivora, Dr. Wortman proposes an important and what may prove permanent change, in grouping with the modern Carnivores all the Creodonta that are closely related to them under the new suborder Carnassidentia, and retaining the suborder Creodonta (Cope) only for the ancient types that are entirely aberrant. Valuable notes are given upon the ancestral foxes of Wyoming, and the evolution is traced as far as the Uinta. The author believes that all the placentals had a direct marsupial ancestry, not far removed from the mesozoic carnivorous marsupials. Attention may be called to the fact, opposed to this view, that all the mesozoic marsupials known have a highly specialized character, with inflected jaw and aborted milk dentition, so that they cannot be considered ancestral to the placentals. The value of these papers for future reference would be increased by the insertion of the museum numbers in connection with all descriptions and figures.

PLEISTOCENE HORSES OF NORTH AMERICA.†

IN the preglacial sands of the west and the cave and gravel deposits of the east, remains of horses are extremely numerous; no less than twenty-five species have been proposed and the nomenclature has been in a state of dire con-

* 'Studies on Eocene Mammalia in the Marsh Collection, Peabody Museum,' Part I. Carnivora, *Amer. Jour. Sci.*, May and June, 1901.

† Tooth Characters and Revision of the North American Species of the Genus *Equus*. By J. W. Gidley. *Bull. Amer. Mus. Natural History*, Vol. XIV., Art. IX., pp. 91-141, May, 1901.

fusion. At the suggestion of Professor Osborn, Mr. J. W. Gidley, of the American Museum, has undertaken a complete revision of all the types. It is found that the chief characters used in definition by Owen, Leidy and Cope are largely invalid. The teeth patterns only subject to a wide range of individual variability, and it is an absolute law that the upper portion of the crown is not only more complex, but differs absolutely in proportion from the lower portion; the molar teeth of a young horse thus present essentially different characters from those of an old horse, and ignorance of this fact has vitiated most of the previous definitions. This very careful revision results in the apparent determination of the valid species as follows: *Equus fraternus*, a small horse from the southeastern States; *E. complicatus*, about the size of an ordinary draught horse, from the southern and middle western States; *E. occidentalis* from California, of the same size as the above; *E. pacificus*, a very large animal characteristic of middle California and Oregon; *E. conversidens* from the Valley of Mexico and *E. tau* the smallest true horse, also from the Valley of Mexico; *E. semiplicatus* from western Texas, closely resembling *E. asinus; E. pectinatus* from the Port Kennedy bone cave of eastern Pennsylvania. *E. scotti* from the Staked Plains of Texas. The latter is a long-faced type of horse about the size of the largest western pony, but with a longer body, a much larger head, a shorter neck and back and steeply sloping sides, shaped very much as in the ass or quagga. The type of this species is now mounted in the American Museum of Natural History (see Fig. 1). It is the first complete skeleton of a Pleistocene horse discovered in America. It was found in association with four other skeletons, remarkably well preserved. The largest species of horse herein recorded is *E. giganteus* Gidley; sp. nov., the teeth exceeding by more than one third the diameter of those of the largest draught horses.

H. F. O.

THE BICENTENNIAL COMMEMORATION OF YALE UNIVERSITY.

The imposing exercises celebrating the two hundredth anniversary of the foundation of Yale College took place last week in accordance with the program already published in this Journal. As President Northrop pointed out in his address, one hundred and five graduates of Yale have been president of a college; and eighty-five different colleges have at some time had a Yale graduate for president. Yale furnished the first president of at least eighteen colleges—Princeton, Columbia, Dartmouth, Georgia, Williams, Hamilton, Kenyon, Illinois, Wabash, Missouri, Wisconsin, Beloit, Chicago, California, Cornell, Western Reserve and Johns Hopkins. One of the most interesting addresses, given by Dr. Daniel C. Gilman, of the class of '52 and for twenty-five years president of the Johns Hopkins University, is published above.

The doctorate of laws was conferred on President Roosevelt and forty-six others, including the following men of science and college presidents:

John Harvard Biles, Professor of Naval Architecture in Glasgow University.

John Shaw Billings, Director of the New York Public Library.

Charles William Dabney, President of the University of Tennesee.

David White Finlay, Professor of the Practice of Medicine in Aberdeen University.

Jacques Hadamard, Adjunct Professor in the Faculty of Science at the University of Paris.

Samuel Pierpont Langley, Secretary of the Smithsonian Institution.

Albert Abraham Michelson, Professor of Physics in the University of Chicago.

William Osler, Professor of Medicine in Johns Hopkins Medical School.

Henry Smith Pritchett, President of the Massachusetts Institute of Technology.

Ira Remsen, President of Johns Hopkins University.

Ogden Nicholas Rood, Professor of Physics in Columbia University.

Wilhelm Waldeyer, Professor of Anatomy in the University of Berlin.

James Burrill Angell, President of the University of Michigan.

William Peterson, Principal of McGill University.

Seth Low, ex-President of Columbia University.

Jacob Gould Schurman, President of Cornell University.

Franklin Carter, ex-President of Williams College.

William Rainey Harper, President of the University of Chicago.