have been explored and thousands of the bones of other animals recovered. It is quite possible that the great auk may have straggled so far south during severe winters, since there is some reason to believe that it was not rare off the coast of Virginia, but that it was a *resident* anywhere south of Nova Scotia is open to doubt, and that it bred even there is open to argument. Mr. McGuire tells me that foreign vessels traded along the eastern coast of North America to a much greater extent than is generally known, and as the great auk was frequently salted down for ships' stores, it may well have been carried south in this form, and found its way to an Indian village. As bearing on the value of the evidence of stray bones found in shell heaps, it is to be noted that the same part of the heap in which the bones of the great auk were found yielded a humerus of a typical dachshund. (My anthropological friends will cheerfully correct me if I err in saying that this breed of dogs was unknown on the American continent in prehistoric times.) Are we then to at once conclude that the dachshund was common among the Indians? F. A. LUCAS.

WASHINGTON, D. C.

RECENT ZOOPALEONTOLOGY.

AN UPPER PLIOCENE CAVE.

PROFESSOR BOYD DAWKINS recently (January 7, 1903) described, before the Geological Society of London, an Upper Pliocene Cave discovered in 1901. This cave is of far greater antiquity than the familiar caves of the Pleistocene and contains a mammalian fauna including the mastodon, elephant, rhinoceros, horse and saber-toothed tiger in an Upper Pliocene stage of evolution, similar to that of the Val d'Arno of Italy. In course of the abstract he says:

"Some of the bones present the characteristic teeth-marks of the hyenas; and the preponderance of the remains of the young over the adult mastodons points to the selection by the hyenas, who could easily master the calves, while they did not as a rule attack the large and formidable adults. The author has observed a similar selection in the case of mammoths in hyena-dens, into which the remains had been brought by those cave-haunting animals." At the same time the author presented a map illustrating the physical geography of the British Isles in the Upper Pliocene Age.

A NEW RHINOCEROS FROM SOUTHERN BAVARIA.

DR. ERNST STROMER, working in the Paleontological Museum of Munich, has recently described* a new rhinoceros, *Aceratherium bavaricum*, from the Upper Miocene of Bavaria. The skull is of similar type to the well-known *Aceratherium tetradactylum* of Sansan, and the *A. incisivum* of the Lower Pliocene of Eppelsheim. Unfortunately the tip of the nasals is lacking, a fact which renders it difficult to determine to which series of rhinoceroses this animal belongs. (2) The same author gives a valuable summary of the geological history of northern Africa.† (3) He has also published a comparative paper upon the entepicondylar foramen and third trochanter,‡ primitive characters of the fore and hind limbs of mammals. (4) A more extensive work is his memoir entitled 'Die Wirbel der Land-Raubtiere,' based principally upon the extensive collections in the Museum of Munich and worked out at the suggestion of Dr. Max Schlosser.

THE BASAL EOCENE MAMMALIAN FAUNA IN THE FT. UNION BEDS OF MONTANA.

THE very important discovery of bones and teeth of mammals in the Ft. Union beds of Montana has been reported by Earl Douglass of the Carnegie Museum, in a paper entitled 'A Cretaceous and Lower Tertiary Section

* 'Ein Aceratherium-Schädel aus dem Dinotherien-Sand von Niederbayern,' Abdr. a. d. *Geognostichen Jahresheften*, 1902. 15. Jahrgang, 1902.

† 'Betrachtungen über die geologische Geschichte Aethiopiens,' Abdr. a. d. *Zeitschr. d. Deutsch. geolog. Gesellschaft*, Jahrg., 1901.

‡ 'Ueber die Bedeutung des Foramen entepicondyloideum und des Trochanter tertius der Säugethiere,' Sep. Abdr. *Morphologisches Jahrbuch*, XXIX., 4.

in South Central Montana.'* In order to settle beyond a doubt the age of these beds a large collection of fossil leaves was made and determined by Mr. F. H. Knowlton, of the U. S. Geological Survey, who reported the species all Ft. Union beyond a doubt. The invertebrates, so far as discovered, are also Ft. Union. The association of these characteristic Ft. Union fossils with basal Eocene mammals such as *Mioclænus, Anisonchus, Euprotogonia* and *Pantolambda* of New Mexico, constitutes one of the welcome geological correlations of recent years, it has been so difficult hitherto to decide as to the age of the Ft. Union beds. The bearing of this discovery on the age of the Puerco and Torrejon is still open to discussion. This correlation may tend to strengthen the suggestion of Professor Cope, who at one time placed the Puerco and Torrejon in an uppermost division of the Cretaceous. Unfortunately the mammals of this formation have no exact counterparts in the oldest Eocene mammals of Europe.

A REVIEW OF THE REPTILIA OF THE TRIAS.

WE are indebted to Friedrich von Huene, of Tübingen, for a valuable preliminary review of the Triassic reptilia in a memoir† of eighty-three pages, illustrated by nine plates. Our knowledge of the Triassic reptiles in general is extremely limited as compared with either that of the Permian reptiles and amphibians, or that of the Jurassic and Cretaceous; yet in the Trias the ancestral types of Plesiosaurs and Ichthyosaurs, of Rhynchocephalia and Testudinata, of Dinosaurs, of Pterosaurs, and of Crocodilia were so near the point of departure from each other, that Triassic skeletons and skulls, when fully known, will give us the clearest insight into the original relationships of these great orders. The volume contains extensive quotations and figures taken from the general literature of the subject, and is fortunately more in the nature of a review and summary of our knowledge than of an attempt still further to increase the nomenclature. Among the valuable new figures, however, is that of the occiput of *Placodus gigas*. The author includes the stegocephalian amphibians and anomodont reptiles of the Karoo formation of South Africa in his list. Of these two groups alone there are 85 genera, out of a total of the 155 genera heretofore described in the Trias. In connection with this special investigation he is especially desirous of securing casts and figures of specimens from the American Trias.

A HORNED EOCENE UNGULATE FROM EGYPT.

THE latest addition to the newly discovered mammalian fauna of northern Egypt is even more peculiar than any which have been described hitherto. Mr. Hugh J. L. Beadnell* gives it the name *Arsinoitherium*, after Queen Arsinöe. The general form of the somewhat long, narrow skull is rhinocerotine; the author indeed compares the dentition with that of the rhinoceros, but so far as we can judge from his figures, the true molar teeth, of which the worn pattern reverses that of the rhinoceroses, do not support this comparison. A most peculiar feature is the enormous protuberance rising out of the anterior half of the skull-top, bifurcating and slightly flattening toward the top, somewhat in the same manner as the horns of the later species of Titanotheres. These bony 'horns' reached the height of 68 cm., as compared with the total length of the skull, 75 cm. To strengthen their support at the base, a vertical bone or septum is carried down, uniting with the premaxillaries, as in certain of the heavy-horned rhinoceroses. The animal was as large as one of the larger rhinoceroses, the pelvic girdle having a transverse extent of 140 cm. Further accounts of this pachyderm will be awaited with the greatest interest. It demonstrates that, in addition to the fauna an-

* *Proc. Amer Philos. Soc.*, April 3, 1902, pp. 207–224.

† 'Übersicht über die Reptilien der Trias,' *Geol. u. Palæont. Abh.*, E. Koken, N. F. VI., Heft 1, Jena, 1902.

* 'A Preliminary Note on Arsinoitherium zitteli, Beadn., from the Upper Eocene Strata of Egypt,' Survey Department, Public Works Ministry, Cairo, 1902.

cestral to that which subsequently found its way into Europe, Africa had a very distinctive ungulate fauna of its own. H. F. O.

RESEARCH FUNDS OF THE SCIENTIFIC ALLIANCE OF NEW YORK.

The council of the Scientific Alliance of New York holds two funds, the income from which is used for the aid of investigation by persons who are members of one or more of the societies composing the alliance.

An account of the operation of these funds, up to the present time, is given herewith.

The John Strong Newberry Fund.—The plan for the administration of this fund, established as a memorial of Professor Newberry, was adopted by the council of the Scientific Alliance on February 25, 1897, and at the same time a grant of $50 was appropriated for research in geology or paleontology. On June 14, 1897, this grant was awarded to Dr. Arthur Hollick for aid in his study of the geology and paleontology of the Atlantic Coastal Plain; during the summer of 1897 Dr. Hollick prosecuted work in New Jersey and on Long Island and Block Island with the special object of tracing the Cretaceous formation to the latter locality, where its presence had long been assumed but not proved. Dr. Hollick secured the evidence desired by the discovery of a number of species of well-known Cretaceous plants. The results of these investigations were published in the *Annals of the New York Academy of Sciences,* XI., 55–88, pls. II.–IX.), under the title 'Notes on Block Island,' which was subsequently reprinted as 'Contributions from the Geological Department of Columbia University, No. XLII.'

The second grant from this fund, $50, was awarded by the council on June 22, 1898, to Mr. Gilbert Van Ingen for aid in research in paleontology. Mr. Van Ingen utilized the money in the study of the Silurian Fauna of Arkansas, and his results are published under the title 'The Siluric Fauna near Batesville, Arkansas' in *School of Mines Quarterly,* XXII., 318–329 (1901), in which the geological relations are discussed, and also in the same journal, XXIII., 34–74 (1901), where the trilobites of that fauna are described.

A third grant of $50 was awarded May 18, 1899, to Professor E. S. Burgess for aid in his studies of the genus *Aster.* Professor Burgess, who has been studying this difficult genus of plants with close attention for many years, is now just about completing his monograph upon them, and it will be printed in *Memoirs of the Torrey Botanical Club;* some of the results of this study were incorporated by him in the treatment of the genus *Aster* in the 'Illustrated Flora of the Northern States and Canada' by N. L. Britton and Addison Brown, also in 'Manual of the Flora of the Northern States and Canada' by N. L. Britton, and have also been used in 'The Flora of Southeastern United States' by J. K. Small.

The fourth grant from the fund, also $50, was awarded May 17, 1900, to Dr. Marshall A. Howe, for assistance in his investigation of the algal flora of the Atlantic coast of the United States. Dr. Howe spent some time on the coast of New England and on the Bermudas, making extensive collections of the seaweeds of both regions; his studies have not yet been sufficiently advanced to enable publication to be made of them, but it is expected that some of his papers will be printed within a few months.

The fifth grant was for $100, a friend of the alliance having added enough money to the annual interest on the fund to make up this amount, and it was authorized February 28, 1901. It was awarded to Dr. Arthur Hollick for assistance in the continuation of his studies upon the paleontology of the Atlantic Coastal Plain. Dr. Hollick's field work, by means of this grant, was carried out for the most part upon Cape Cod and Chappaquidick Island, Mass., where the furthest eastward extension of the Cretaceous formation was shown to occur, by means of the fossil plants collected, and a summary of his results under the title 'Geological and Botanical Notes: Cape Cod and Chippaquidick Island, Mass.,' is published in the *Bulletin of the New York Botanical Garden,* II., 381–407.

A sixth grant of $50 was authorized May