

Medical Research at New York, various public health laboratories, the laboratories for research connected with many of the more progressive hospitals and asylums of the country, and last, but by no means least, the agricultural experiment stations with their increased funds, all offer opportunities for progressive work which, if properly taken advantage of, promise results of great importance in the development of a more exact and broader knowledge of the chemical processes of life. To the chemist and physiologist there is nothing to be desired more than an increase in the activity of research; research guided by intelligence and knowledge, coupled with an interest which knows no discouragement.

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THE AMERICAN SOCIETY OF VERTEBRATE
PALEONTOLOGY

THE society held its seventh annual meeting at Yale University, New Haven, Conn., December 25, 26 and 27, the following papers being presented and business enacted.

Dr. G. R. Wieland discussed the extermination of green turtles and whales, showing that while the whaling industry had been prosecuted fully a thousand years, in which time some \$272,000,000 worth of oil and bone had been obtained, the total number of whales killed was under one million; but the destruction of this relatively small number is fast exterminating these marine mammals. After an animated discussion the society adopted the following resolution:

Resolved, That the American Society of Vertebrate Paleontologists will aid in every way practicable those measures, legislative, international and local, which will prevent the now immanent destruction of the great marine vertebrates, especially whales, manatees, seals and green or other

turtles, on the coasts of the United States and on the high seas.

Dr. F. B. Loomis described a fauna of vertebrates (*Portheus*, *Ichthyodectes*, *Sau-rocephalus*, *Pachyrhizodus*, *Empo*, etc.) found in the upper black shales making the divide between the Cheyenne River and Hat Creek, Wyo. This fauna being typical of the Niobrara indicated that the upper beds of the so-called Ft. Pierre of that region are Niobrara, and what is beneath would be Niobrara and Ft. Benton.

Dr. W. J. Sinclair showed that the material of the Washakie was practically all volcanic ash, probably distributed by wind and streams.

Dr. G. F. Eaton discussed the skull of *Pteranodon*, showing that the basal portion was peculiar in the development of the parasphenoid, and unique in the possession of diagonal rods running from the base of the parasphenoid to the transpalatines. The origin of the crest was partly attributed to the great development of grasping muscles (connected with the supposed piscatorial habit of feeding) and was compared with incipient crests in the fish eating birds *Plotus* and *Phalacrocorax*. The striking similarity of the pelvis to that of birds was pointed out.

Professor Joseph Barrell read a paper in which evidence was given showing the widespread development of flood plain deposits in the Old Red Sandstones basins and the presence of a fluvial piscine fauna. The climate was genial and subject to recurrent seasons of dryness. The footprints of the earlier amphibia often show also an association with fluvial deposits and an adaptation to even semiarid climates. In the discussion of various factors tending to bring about the evolution of the Amphibia the influence of recurrent seasons of dryness upon a fluvial fauna appeared to be by far the most

powerful. In conclusion the origin of hibernation was discussed and the probable relations of early amphibia and reptilia.

Dr. Wieland exhibited the skeleton of the giant turtle *Achelone*, pointing out the points of morphological importance, and the affinities of the Protostegidæ.

Professor Bashford's presidential address on the "Findings in Fossil Fishes, 1906-1907" appeared in SCIENCE on February 14.

Dr. Hussakof presented a model of a restoration of *Dinichthys*, which emphasized the great head and relatively small body and tail, suggesting a bottom-living fish. He also showed illustrations and specimens giving the exact detail as to the location of the fish-bearing beds in the Devonian of Canada.

Dr. C. R. Eastman announced the discovery of a new species of *Cœlacanthus*, the earliest yet found in this country, and represented by a nearly complete individual, in the basal portion of the Kinderhook limestone of Iowa. The accompanying invertebrate fauna is regarded by Dr. Stuart Weller as a survival of late Devonian times, and its marked Devonian aspect has also been commented on by Professor S. Calvin. The specialized character of the new American form indicates that the ancestors of the group are to be sought in rocks possibly as old as the Lower Devonian, where their remains have hitherto escaped notice. A description of the new form will be found in the *Journal of Geology*.

Professor R. S. Lull presented a comparative study of the musculature of the chameleon and a chelonian, together with the muscle depressions on the skull of *Triceratops*, the main muscles of the latter were ascertained—those of the jaws and of the neck region. The frill or crest seems to have had its incipient function in providing space for attachment of the great temporal muscles of mastication. A sec-

ond function, that of providing leverage for the wielding of the head, with its great armament of horns, and a final function of protection of the neck, were ascertained. The crest is quite similar to the casque of the chameleon, both morphologically and in function, while the male of the living *Chameleo owenii* from Fernando Po resembles *Triceratops* still further in the development of three horns. Convergence toward the turtles is shown in the beak and the false roofing of the skull above the brain case, culminating in the turtle *Meiolania* of the Tertiary of Lord Howe Island, which also bore horns on the skull.

Professor Lull's second paper considered the migrations of the elephants, first from the ancestral home in the Fayûm of Egypt, and later to and from the great center of proboscidian evolution in India. The American elephants have been the result of successive migrations, one genus only, *Dibelodon*, having reached South America by way of the Isthmus of Panama.

Professor H. F. Osborn discussed "Dolicocephaly and Brachycephaly in Titanotheres," showing that while lengthening or shortening might take place uniformly as if the skull were stretched, still it was more generally to be attributed to local lengthening or shortening of a special part as the face or brain case. On Friday at 5 P.M. Professor Osborn gave an illustrated lecture on his trip into the Fayûm, this being before both the zoologists and paleontologists.

Professor E. C. Case had a paper on the "Permian Glaciation and Distribution of Permian Reptiles" presented; in which he brought out the uniform character of the fauna of Africa, South America and India, and its entire lack of affinity with the North American Pelycosauria. During the Permian glaciation of the southern hemisphere, its reptile fauna was driven northward, surviving in some unknown

locality; later after the glaciation it returned to the southern land mass, there to develop its high variation and specialization. Probably during its exile the mammalian stem arose. The North American Pelycosauria (though having a common ancestry in pre-Permian times) never came in contact with the southern Anomodontia, and played their rôle independently.

Dr. W. D. Matthew described a new four-horned pelycosaur from the Permian of Texas; also a mole from the Lower Miocene of South Dakota.

Mr. Walter Granger, summarizing his studies on the American Hyracotheres, showed that the generic term *Eohippus* covered all the Wasatch, Wind River and Huferno Basin species of the family; *Orohippus* all the Bridger forms; and *Epihippus* all the Uinta forms. He also demonstrated that on premolar 3 of the upper jaw, the last cusp to develop was the anterior-internal, while on premolar 4 it was the posterior-internal which developed last. This striking divergence in the phylogeny of two adjacent teeth causes a demand for much further study, before the history of the various teeth can be summarily treated.

Mr. Harold Cook described a new hornless acerotherine rhinoceros from the Lower Miocene of Nebraska.

Dr. F. B. Loomis discussed the fauna of the Lower Miocene of Nebraska, describing a new *Parahippus*, a hornless rhinoceros (*Acerotherium*) and two new *Dicerotheres*. A review of the fauna and consideration of the nature of the sedimentation led him to advocate an eolian origin for the beds. The last session of the meeting was devoted to museum methods, the discussion being led by Mr. A. Herrman, Dr. Matthew and Professor Chas. Schuchert.

At the business session the following officers were elected for 1908:

President—Professor R. S. Lull, of Yale.

Secretary-treasurer—Dr. W. D. Matthew, of the American Museum.

Executive Committee—Dr. C. R. Eastman, of Peabody Museum; Mr. O. A. Peterson, of Carnegie Museum; Professor Wm. Patten, of Dartmouth College.

F. B. LOOMIS,
Secretary

THE NEW EDUCATION IN CHINA

THAT most popular simile of schoolboy compositions, of Juno springing full-armed from the head of Jupiter, may be applied to the new education in China. From the Chinese government the new education came forth by imperial edict. The edict and the consequent commands and directions present a fully articulated scheme of education.

Four grades of education were made: (1) The primary school, of five years; (2) the common school, of four years; (3) the middle school, of five years; (4) the provincial college, of at least two years, and for some students one; (5) the Imperial University, at Peking, of such a length as may be desired.

Such a course, in its whole duration, covering from sixteen to twenty years, represents a most impressive endeavor to introduce the western system of education into the Middle Kingdom.

The system is indeed western, but it is western colored by Japanese influences. The martial conqueror of China has become her teacher in things intellectual, and more willing has China become to receive her conqueror as a teacher since this teacher has become the conqueror also of Russia. The rapid advancement of Japan to a place among the great nations gives to her example and teachings a peculiar impressiveness. Japan in turn, it may be added, found in Germany and America her intellectual and pedagogical models.

The Avon to the Severn flows, the Severn to the sea;

And Wycliffe's dust must spread abroad, wide as the waters be.