

SCIENCE

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MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.

THE CARNEGIE INSTITUTION OF WASHINGTON.*

MINUTES OF SECOND MEETING OF THE BOARD OF TRUSTEES. [ABSTRACT.]

THE meeting was held in Washington, at the New Willard Hotel, on Tuesday, December 13, 1904, at 10 o'clock A.M. At 12:55 a recess was taken until 2 P.M. The chairman, Mr. Billings, occupied the chair. The secretary called the roll, and the following trustees responded: Messrs. Billings, Cadwalader, Dodge, Frew, Gilman, Hay, Higginson, Hitchcock, Hutchinson, Langley, Lindsay, Low, MacVeagh, Mills, Mitchell, Morrow, Root, Walcott, White and Wright. Absent: Messrs. Agassiz, Howe, Gage and Spooner. Letters were received from Messrs. Agassiz, Gage and Howe regretting their inability to be present.

The minutes of the last meeting of the board were presented, and on motion full reading was dispensed with and they were approved as per abstract furnished each member.

The president presented his resignation, as follows:

CARNEGIE INSTITUTION OF WASHINGTON,
December 13, 1904.

TO THE TRUSTEES OF THE CARNEGIE INSTITUTION.

Gentlemen: At your meeting, on December 8, 1903, I presented a letter saying:

"When I had the honor of being chosen the first president of the Carnegie Institution, I said to the trustees that from the nature of the case my tenure of office must be short, for, having passed the age of seventy years, I was looking forward to a release from serious official responsibilities.

* From Year Book, No. 3.

by H. M. Ami; 'Upper Trias of the Lander Basin, Wyoming,' by S. W. Williston; 'The "Red Beds" of Southwestern Colorado,' by Whitman Cross and Ernest Howe; 'Pleistocene History of Fishers Island, N. Y.,' by Myron L. Fuller; 'Pleistocene of the Chesapeake and Delaware Basins,' by A. Bibbins; 'The Loess of the Lower Mississippi,' by G. Frederick Wright; and 'The Loess and Associated Interglacial (Post-glacial) Deposits,' by B. Shimek.

The following candidates were elected to fellowship in the society: Nevin M. Fenneman, University of Wisconsin; Charles N. Gould, University of Oklahoma; Mark S. W. Jefferson, Michigan State Normal College; Benjamin L. Miller, Bryn Mawr College; Cleophas C. O'Harra, South Dakota School of Mines; Albert H. Purdue, University of Arkansas; Solon Shedd, Washington Agricultural College; Bohumil Shimek, Iowa State University; Gilbert Van Ingen, Princeton University; Ralph Arnold, U. S. Geological Survey; John A. Bownocker, Ohio State University; Reginald W. Brock, Canadian Geological Survey Department; Hiram D. McCaskey, Chief of the Mining Bureau of Manila; Henry Montgomery, Trinity University, Toronto; Arthur E. Seaman, Michigan College of Mines.

The officers of the society for the ensuing year are:

President—Raphael Pumpelly, of Dublin, N. H.

First Vice-President—Samuel Calvin, of Iowa City, Ia.

Second Vice-President—W. M. Davis, of Cambridge, Mass.

Secretary—H. L. Fairchild, of Rochester, N. Y.

Treasurer—I. C. White, of Morgantown, W. Va.

Editor—J. Stanley Brown, of New York City.

Librarian—H. P. Cushing, of Cleveland, O.

EDMUND OTIS HOVEY.

SCIENTIFIC JOURNALS AND ARTICLES.

The American Naturalist for November-December contains the following articles: 'The Embryological Development of the

Skeleton of the Head of Blatta,' William A. Riley; 'The Arboreal Ancestry of the Mammalia,' W. D. Matthew; 'Localized Stages in Common Roadside Plants,' Joseph A. Cushman; 'An Arrangement of the Families and Higher Groups of Birds,' R. W. Shufeldt; 'Observations on Hearing and Smell in Spiders,' Annie H. Pritchett; 'Amitosis in the Embryo of Fasciolaria,' H. L. Osborn; 'The Transplanting of Trout in the Streams of the Sierra Nevada,' D. S. Jordan; 'A New Species of *Diaptomus* from Mexico,' A. S. Pearse; '*Hyla andersoni* and *Rana virgatipes* at Lakehurst, New Jersey,' W. T. Davis. There are also notes, reviews and lists of publications.

Annals of the Carnegie Museum, Vol. III., No. 1, contains the following papers: 'Minute (or Order) Book of the Virginia Court Held for Ohio County, Virginia, etc.,' edited by Boyd Crumrine; 'The Tropicodileptus Fauna at Canandaigua Lake, New York, with the Ontogeny of Twenty Species,' Percy E. Raymond; 'Two (new) Species of Turtles from the Judith River Beds of Montana,' O. P. Hay (*Baëna callosa* and *Aspideretes beecheri*), and 'A Preliminary List of the Hemiptera of Western Pennsylvania,' P. Modestus Wirtner.

The Zoological Society Bulletin, of New York, for January contains accounts of the newly erected ostrich house and small mammal house, a note on 'Wild Animal Photography,' a description of 'A Mosquito Object-Lesson at the Aquarium' and other interesting and valuable information regarding the work of this very active society.

The American Geologist for December contains as the leading article a paper by Charles S. Prosser assisted by Edgar R. Cumings, entitled 'The Waverly Formations of Central Ohio,' illustrated by three plates of half-tone views of the formations described. The region considered, which is near Columbus, had never been carefully described; but on investigation it affords the most satisfactory exposures of the Waverly formations to be found in central Ohio. Mr. N. Mistockles continues his serial on 'The Untenableness of the Nebular Theory' and Professor Hobbs

has the concluding chapter on the 'Tectonic Geography of Eastern Asia.' G. P. Grimsley contributes a paper entitled 'A Theory of Origin for the Michigan Gypsum Deposits,' in which he supposes that they were deposited in an interior sea, and in explanation of the localization of the deposits compares it with the present Caspian Sea.

SOCIETIES AND ACADEMIES.

THE GEOLOGICAL SOCIETY OF WASHINGTON.

THE 161st meeting of the society was held on Wednesday evening, January 11, 1905. The regular program comprised the following communications:

Undulations of Certain Layers of the Lockport Limestone: Mr. G. K. GILBERT.

Mr. Gilbert exhibited photographic views of two structures affecting beds near the top of the Lockport limestone. These had been previously described and figured by Hall, in his report on the geology of the fourth district of New York. One structure is a system of domes or arches occupying the whole surface of the rock and separated by narrow synclines. They are usually several feet in diameter, and are repeated downward through a series of strata. The other structure is a mammillation somewhat resembling ripple marks, and with a diameter of about one inch. The two structures occur in the same strata. The photographs were made in a new railroad cutting within the city of Niagara Falls, in a quarry three miles east of the city, and in water channels temporarily exposed at the Dufferin Islands, on the Canadian side. Mr. Gilbert was not satisfied with Hall's characterization of the structures as concretionary, but suggested no alternative. He thought them contemporary with the deposition of the strata, and not subsequent.

The Great Fault of the Bitterroot Mountains:

Mr. W. LINDGREN.

The Bitterroot Mountains in the western part of Montana rise for a distance of eighty miles like a long narrow block above the general level of a greatly dissected plateau or peneplain which extends over a large area in central Idaho and a part of the adjacent state

of Montana. On the east the Bitterroot Mountains descend from an elevation of 9,000 feet to the level of the wide Bitterroot valley. From one end of the range to the other this slope is remarkably even and gentle, having an average declivity of twenty degrees. Its face consists of a zone of granite schist, perhaps averaging 1,000 feet thick, in which pressing and deformation of the crystals are intimately associated with numberless slipping planes with striation parallel to the slope of the front plane. The predominant rock of the range is a quartz monzonite with transitions into granite. These facts are interpreted as meaning that the frontal slope is formed by a great flat fault of normal character, along which both molecular and molar movement has occurred. The horizontal component would be at least 15,000 feet, the vertical at least 4,000. The depth below the surface at which this zone of schistosity was formed can scarcely have been more than 2,000 to 4,000 feet. The age of the uplifted peneplain is believed to be late Mesozoic and the fault is probably but little later. Slight faulting movements seem to continue along it up to the present time.

Artesian Water in Crystalline Rocks: Mr. GEO. OTIS SMITH.

The presence of artesian water in an area of crystalline rocks in the vicinity of York, Me., presents a hydrologic problem little discussed in geological literature. With closely folded and thoroughly indurated rocks the water circulation in the deeper rock zone must be along schistosity partings and joint openings rather than through pore openings in a gently inclined porous stratum. The impervious cover essential to the artesian type of supply of ground water is furnished by the greater degree of cementation of the natural openings in the rock near the surface. It thus follows that the pressure under which the water circulates in the rock becomes insufficient to overcome the internal friction near the surface, and upward escape is prevented. When a free vertical channel is provided by a well, the water rises in the well and in three cases cited overflows at the surface. The results of this hydrologic investi-