historical exhibition intended to bring under view the social and industrial condition of the country at the beginning of the century.

Arrangements have been made that will probably ensure the union of the Astor Library, the Lenox Library and the Tilden Endowment. This would supply New York with a Library whose property is valued at $8,000,000.

A Committee of the English House of Commons has been appointed to consider changes in the system of weights and measures.

Mr. Charles D. Walcott has been awarded the Bigsby Medal of the Geological Society of London.

Lord Rayleigh is delivering a course of six lectures on *Waves and Vibrations* at the Royal Institution of London. On April 5th he will lecture on 'Argon.'

The Massachusetts Horticultural Society invites subscriptions for the erection of a monument in honor of the late Francis Parkman.

Dr. Kossell, of Berlin, has accepted a call to the Professorship of Physiology at Marburg.

Professor C. L. Doolittle, of Lehigh University, has been called to the chair of Mathematics in the University of Pennsylvania, and Mr. A. P. Brown has been appointed Assistant Professor of Geology and Mineralogy.

Professor John B. Clarke, of Amherst College, has accepted a call to a professorship of Political Economy in Columbia College.

Dr. D. Hack Tuke, editor of the *Journal of Mental Science*, and well known for his writings on insanity, died in London, on March 5th, at the age of sixty-eight.

Mr. J. W. Hulke, President of the Royal College of Surgeons of England, died recently at the age of sixty-five. He was eminent as a surgeon and especially as an ophthalmologist.

Mr. Hyman Montague, known for his writings on numismatics, died in London on the 18th of February, at the age of fifty-one.

Professor Lauth, the eminent Egyptologist, died at Munich, on February 11th, at the age of seventy-three.

The death is announced, at the age of eighty-five, of Sir Henry Rawlinson, the eminent Assyriologist.

Macmillan & Co. announce two works on Physical Geography, by Prof. Tarr, of Cornell University—one an elementary and the other an advanced text-book. The same publishers announce: *Louis Agassiz, his Life, Letters and Works*, by Jules Marcou.

SOCIETIES AND ACADEMIES.

BIOLOGICAL SOCIETY OF WASHINGTON, FEB. 23.

Mr. F. E. L. Beal read a paper on the food habits of woodpeckers, based on the examination of more than 600 stomachs. He found that the Hairy and Downy woodpeckers (*Dryobates villosus* and *pubescens*) feed chiefly on insects, most of which are harmful species. They also eat wild fruits and seeds. The food of the flicker (*Colaptes auratus*) consists largely of ants. Two stomachs contained each more than three thousand ants, and these insects formed 45 per cent. of all the stomach contents examined. The Flicker also ate other noxious insects and some wild fruit, such as dogwood berries and wild grapes. The Red-headed woodpecker (*Malanerpes erythrocephalus*) feeds largely on insects, all of which are harmful species except a few predacious beetles. The vegetable food of the Redhead comprises wild fruits and some corn and cultivated fruit. The Yellow Bellied woodpecker, or Sapsucker (*Sphyrapicus varius*), is

the only one in which the vegetable food exceeds the animal. It feeds largely on the inner bark and sap of trees, and also on insects. More than two-thirds of the latter in the stomachs examined were ants.

Dr. C. Hart Merriam, commenting on this paper, said that one result of the study of birds' stomachs by the Division of Ornithology and Mammalogy of the Department of Agriculture had been to show a wider range of food than previously suspected. Each bird has its favorite foods, but when these fail it is usually able to find something else on which it can subsist. Furthermore, the food of most species varies in different localities and at different times of the year, so that the examination of a series of stomachs, however large, from a single locality is utterly insufficient to furnish a reliable index to the range of food of the species. Thus, while the 600 stomachs of woodpeckers examined by Professor Beal failed to show a single beech-nut, it is nevertheless true that in northern New York beech-nuts form, during winters following 'nut years,' the principal article of food of three of the five species mentioned.

Mr. L. O. Howard remarked that it had been queried whether or not ants were more injurious than beneficial, and stated that as harborers of aphids and mealy-bugs they indirectly cause much damage, and are to be considered on the whole as decidedly injurious. He gave an interesting illustration of the manner in which ants had placed colonies of mealy-bugs on the artificially enlarged foliar nectar glands of certain Liberian coffee trees which had been placed in the hot-house of the Department of Agriculture.

Mr. F. A. Lucas described the general structure of the tongue of woodpeckers, noting the great difference between the tongue of the sapsucker (*Sphyrapicus*) and of most woodpeckers. In the sapsucker the tongue was of moderate length and margined for some distance back from the tip with hair-like bristles, some standing out, others directed backward, thus forming a brush for securing syrup. In the other woodpeckers examined, the tongue was excessively long and armed towards the tip with a few sharp, reverted barbs, an arrangement which seemed admirable for extracting grubs from holes in trees.

Mr. B. E. Fernow, in closing the discussion, said that he was glad to see the rehabilitation of the woodpecker, a bird which, once considered very beneficial, had been latterly condemned as injurious, while the evidence now presented seemed to be in its favor.

Mr. F. A. Lucas exhibited some Abnormal Feet of Mammals, saying that abnormalities in the way of digits could be mostly grouped under three heads, duplication of digits, irregular additions to the number of digits, the extra ones budding out from the others, and increased number of digits due to reversion. The latter he considered to be the rarest of the three, most of the extra digits of polydactyle horses being simply cases of duplication, as in the specimen shown. The feet of a pig exhibited illustrated the irregular addition of digits, while two feet of a three-toed cow were thought to be cases of reversion. Feet of an old and young llama illustrated the transmission of abnormalities.

Mr. M. B. Waite gave notes on the flora of Washington and vicinity, which were the result of his own collecting. Two species were added to the flora, namely: *Floerkia proserfinacoides*, Willd. (already published), and *Kyllingia primila*, Michx.

Selaginella rupestris, Spring, which had not been found for many years, was rediscovered at Great Falls. New localities were given for a number of rare plants. Attention was called to some spurious and doubtful additions to the local flora. The

tendency of some of the botanists to include in the flora cultivated plants or plants escaped from cultivation which do not properly belong there was criticised, as was also the practice of publishing plants in the lists of additions without seeing specimens and depositing them in some accessible collection. F. A. Lucas, *Secretary.*

NEW YORK ACADEMY OF SCIENCES, FEB. 11.
BIOLOGICAL SECTION.

The following papers were presented:

The Occurrence and Functions of Rhizobia. Dr. Albert Schneider. A discussion of the discovery of the adaptability of rhizobia to other plants than leguminous. Some conclusions based on investigations carried on at the Illinois experiment station were given to show that it is probable that rhizobia may be so modified as to grow in and upon roots of gramineous plants (ex. Indian corn).

An Undescribed Ranunculus from the Mountains of Virginia. Prof. N. L. Britton.

On the So-called Devil's Corkscrews of Nebraska. Dr. J. L. Wortman. A visit to the locality during the past summer had enabled him to study many problems in connection with their occurrence, which tend to throw considerable light upon their nature. The formation in which they occur was positively identified as the Loup Fork division of the upper Miocene, which is a true sedimentary deposit. The Diamonhelix occurs in a stratum of from 50 to 75 feet in thickness always standing vertically, and their tops are not confined to any one level. They vary much in size and character, but so far as observed always present the spinal twist. The fact that they occur in true sedimentary rocks, that their tops occupy many levels, together with the lack of evidence to show that there was any disturbance of level during the time the sediment was being laid down, was considered to totally disprove the theory that they represent the burrows of animals, which has been so extensively held in explanation of their curious nature. The invariable presence of plant cells, together with other facts, leads to the conclusion that they very probably represent the remains of roots or stems of some gigantic water plant.

The excretory System of Clepsine and Nephelis. Dr. Arnold Graf. The results of H. Bolsius have proved to be erroneous. The different parts of the nephridium are classified as follows: (1). *Infundibulum*, consisting in Nephelis of six bilobed ciliated cells, in *Clepsine* of a peduncle cell, pierced by a ciliated canal, and two bilobed ciliated cells attached to the peduncle. (2). *Receptaculum excretorium.* A vesicle which is in open communication with the funnel and in osmotic communication with the following parts of the nephridium. It is similar in both genera, and filled with disintegrating material. (3). *Portio afferentia.* The part of the gland, consisting of a single row of round cells, pierced by a sometimes bifurcated canal, which gives off branched canals. Similar in both genera. (4). *Portio glandulosa.* Row of cells, pierced by a smooth canal without side branches or bifurcation. This part is the largest part of the whole organ. Similar in both genera. (5). *Vesicula terminalis.* In *Nephelis* a vesicle, lined by a ciliated epithelium, in *Clepsine* a simple pouch of the *epidermis*, without cilia. (6). *Canalis terminalis.* The short canal by which the terminal vesicle communicates with the exterior. Present in *Nephelis.* In *Clepsine* it is equivalent to the terminal vesicle.

The cells formerly called *Chloragogencells* should now be called *Excretophores.* A preliminary account of these cells has been sent to the 'Zoologischer Anzeizer.' The investigation has been carried out mainly on living tissues, and every source of error has been eliminated.

Bashford Dean, *Rec. Sec'y.*

NATIONAL GEOGRAPHICAL SOCIETY.

CALENDAR, 1895.

Feb. 8.—*Topographic Forms:* MAJ. GILBERT THOMPSON, MR. HENRY GANNETT, MR. G. W. LITTLEHALES.

Feb. 15.—*Shakespeare's England:* REV. G. ARBUTHNOT.

Feb. 22. *Practical Results of the Bering Sea Arbitration:* MR. J. STANLEY-BROWN.

Mar. 1.—*Recent Discoveries in Assyria and Babylonia:* REV. DR. FRANCIS BROWN.

Mar. 8. *Mexican Boundary:* MR. A. T. MOSMAN, MR. STEHMAN FORNEY, CAPT. E. A. MEARNS, U. S. A.

Mar. 15.—*Turkey:* REV. DR. HENRY H. JESSUP.

Mar. 18.—*Washington to Pittsburg and to Niagara Falls; Across the Appalachians:* DR. DAVID T. DAY.

Side Trip to Niagara Falls: MR. G. K. GILBERT.

March 20. Reception at the Arlington Hotel, Washington, D. C., 9 to 11 P. M.

Mar. 22. *Pittsburg to Yellowstone National Park; Pittsburg to St. Paul, through the oil and gas regions:* PROFESSOR EDWARD ORTON.

St. Paul to Yellowstone National Park: MR. WALTER H. WEED.

Mar. 22.—*The Alaskan Boundary:* MR. J. E. MCGRATH, MR. J. F. PRATT, MR. H. P. RITTER.

Mar. 25. *Yellowstone National Park to Sacramento; Yellowstone Park; down the Columbia; visit to Mt. Rainier and Portland:* MR. BAILEY WILLIS.

Portland to Crater Lake; Mount Shasta and Sacramento: MR. J. S. DILLER.

Mar. 29.—*Sacramento to northern Arizona; Sacramento; the Golden Gate; Yosemite; Los Angeles; San Bernardino:* MR. W. D. JOHNSON.

From San Bernardino across the deserts; to San Francisco Mt., Arizona: MAJ. J. W. POWELL.

Mar. 29.—*Oregon:* HON. J. H. MITCHELL.

April 1.—*Grand Cañon and Sonora, Mexico; Salt Lake City to the Grand Cañon; a winter in the depth of the Cañon:* MR. CHARLES D. WALCOTT.

Prescott, Phœnix and Tucson, to Sonora, Mexico; visit to the so-called cannibals: MR. W J MCGEE.

April 5.—*Across the Rocky Mountains to Denver; Northern Arizona, the Rio Grande, and across the mountains to Denver:* PROF. A. H. THOMPSON.

The Home of the Pueblo Indians: MR. FRANK HAMILTON CUSHING.

April 5.—*Physical Geography of the Great Lakes:* PROF. MARK W. HARRINGTON.

April 8.—*Denver to Washington; Denver to Pueblo, down the Arkansas river, and across the plains to St. Louis:* MR. F. H. NEWELL.

St. Louis to Washington, with visits to the great caves of Ky. and Va.: MAJOR JED. HOTCHKISS.

April 12.—*Argentina,* Columbian University, 8:30 to 9:30 P. M.: Dr. D. ESTANISLAO S. ZEBALLOS.

April 19.—*The Geography and Geology of Nicaragua:* Mr. ROBERT T. HILL.

April 26.—*Antiquities and Aborigines of Peru:* Mr. S. MATHEWSON SCOTT, MR. F. H. CUSHING.

May 3.—*Fredericksburg:* Mr. W J MCGEE, MAJ. GILBERT THOMPSON, GEN. JOHN GIBBON, U. S. A.

May 4.—Excursion and Field-Meeting, Fredericksburg, Va., 9 A. M. to 6 P. M.

May 10.—*President's Annual Address:* HON. GARDINER G. HUBBARD.

May 17.—Annual Meeting for the Election of Officers.

PHILOSOPHICAL SOCIETY OF WASHINGTON, MARCH 2.

On the Discovery of Marine Fossils in the Pampean Formation, by Dr. H. Von Ihering MR. WM. H. DALL.

Classification of Clouds; Illustrated by lantern slides: MR. ALEXANDER MCADIE.

The Army Magazine Rifle, Cal. 30: Mr. Rogers Birnie.

Additional Note on Gravity Determinations: Mr. G. K. Gilbert.

William C. Winlock, *Secretary.*

BOSTON SOCIETY OF NATURAL HISTORY, MARCH 6.

The Geographical History of the Lower Mississippi: Mr. L. S. Griswold.

Some Features of the Coastal Plain in the Mississippi Embayment: Mr. C. F. Marbut.

Note on cusped Sand-bars of the Carolina Coast: Mr. Cleveland Abbe, Jr.

Samuel Henshaw, *Secretary.*

SCIENTIFIC JOURNALS.

THE AMERICAN JOURNAL OF SCIENCE, MARCH.

The Appalachian Type of Folding in the White Mountain Range of Inyo County, Cal.: C. D. Walcott.

Notes on the Southern Ice Limit in Eastern Pennsylvania: E. H. Williams.

The Succession of Fossil Faunas at Springfield, Missouri: S. Weller.

Distribution of the Echinoderms of Northeastern America: A. E. Verrill.

Drift Bowlders Between the Mohawk and Susquehanna Rivers: A. P. Brigham.

Scientific Intelligence; Chemistry and Physics; Geology and Mineralogy; Botany; Miscellaneous; Obituary.

AMERICAN CHEMICAL JOURNAL, MARCH.

On the Cupriammonium Double Salts: Theodore William Richards and Andrew Henderson Whitridge.

The Composition of Athenian Pottery: Theodore William Richards.

A Redetermination of the Atomic Weight of Yttrium: Harry C. Jones.

Separation of Nickel and Iron: E. D. Campbell and W. H. Andrews.

Researches on the Complex Inorganic Acids: Wolcott Gibbs.

Cupric Hydride: Edwin J. Bartlett and Walter H. Merrill.

Action of Light on Lead Bromide: R. S. Norris.

The Action of Ammonia upon Dextrose: W. E. Stone.

The Carbohydrates of the Gum of Acacia Decurrens: W. E. Stone.

Reviews and Reports; Notes.

BULLETIN OF THE TORREY BOTANICAL CLUB, FEB.

New Species of Ustilagineæ and Uredineæ: F. B. Ellis and B. M. Everhart.

Contributions to American Bryology—IX: Elizabeth G. Britton.

Japanese Characeæ—II: T. F. Allen.

Tradescantia Virginica var. *villosa* Watson: E. F. Hill.

Some new hybrid Oaks from the Southern States: John K. Small.

Family Nomenclature: V. Havard.

Reviews.

Proceedings of the Club.

Index to Recent Literature Relating to American Botany.

NEW BOOKS.

Antisepsis and Antiseptics. Charles Milton Buchanan. Newark, N. J., The Terhune Co. 1895. xvi+352.

A Laboratory Guide in General Chemistry. George Willard Benton. Boston, D. C. Heath & Co. 1894. Pp. 163.

A Laboratory Manual in Organic Chemistry. W. R. Orndorff. Boston, D. C. Heath & Co. 1894. 82 experiments.

First Lessons in Chemistry. G. P. Phenix. Boston, D. C. Heath & Co. 1894. Pp. 41.

The World of Matter a Guide to the Study of Chemistry and Mineralogy. Harlan Hogue Ballard. Boston, D. C. Heath & Co. 1894. Pp. 264.

Physical Laboratory Manual. H. N. Chute. Boston, D. C. Heath & Co. 1894. Pp. vi + 213.

Practical Methods in Microscopy. Charles H. Clark. Boston, D. C. Heath & Co. 1894. xiv + 219.