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-

gation will be presented in the forthcoming 'Contributions to Hydrology in the Eastern United States.'

Some Erratic Boulders in Middle Carboniferous Shale in Indian Territory: Mr. J. A. TAFF.

Mr. Taff described the occurrence of erratic boulders of limestone, dolomite, chert and quartzite, of Silurian, Ordovician and probably Cambrian ages occurring in Middle Carboniferous shales several thousand feet above the base of the Carboniferous section in the Ouachita Mountains from the west end almost to the Arkansas line, a distance of nearly a hundred miles. The boulders range in size from an extreme length of sixty feet to small fragments and are promiscuously distributed in the shale. Some of them are angular while others are round as if water worn. No rocks in the Ouachita Mountains can be compared with the erratic boulders except probably some of the Ordovician cherts which occur 10,000 feet beneath the boulder bearing shale. The Arbuckle Mountains lie southwest of the Ouachita range in southwestern Indian Territory and trend nearly S. 60° W. almost at right angles to the bearing of the folds of the Ouachitas. The Arbuckle uplift extended southeastward beneath the Cretaceous will pass twelve to fifteen miles south of the west end of the Ouachita Mountains. The identity, lithological and paleontological, of a large part of the Ordovician and Silurian strata, in the Arbuckle uplift, with the erratic boulders in the Carboniferous shale of the Ouachita Mountains, and the local relations of the uplifts press toward the conclusion that the erratics had their sources in a range or group of mountains in the region now occupied by southern Indian Territory and northern Texas. The size of the boulders and their disposition in the marine shales show that without any reasonable doubt they were floated by the medium of ice from a mountainous land into a Carboniferous sea now occupied in part at least, by the Ouachita Mountains. The hypothesis of ice transportation is supported by the occurrence of certain scored or striated chert and limestone boulders found with other erratics in the shale. The cause of the scorings found in the chert boulders is a problem now receiving further study. A fuller discussion concerning the occurrence and characteristics of these erratic boulders will be published at an early date in some geological journal.

GEO. OTIS SMITH,
Secretary.

THE BOTANICAL SOCIETY OF WASHINGTON.

THE twenty-third regular meeting of the Botanical Society of Washington was held Saturday evening, October 16, 1904. The following papers were presented:

Vitality of Buried Seeds: Dr. J. W. T. DUVEL.

A review was given of the results of the germination tests of 112 different samples of seed which had been buried in a heavy clay soil for one year. The seeds were buried at the three different depths of 6–8, 18–22 and 36–42 inches.

The majority of the seeds retained their vitality better the deeper they were buried.

With but few exceptions, the seeds of cultivated plants had either decayed or germinated and afterward decayed, at all depths.

Weed seeds, in some cases, retained their vitality remarkably well. The results indicate that the preservation of the vitality of weed seeds when buried in the soil is directly proportional to the noxiousness of the plants producing them.

Drug Plant Investigations in the Department of Agriculture: Dr. RODNEY H. TRUE.

The present organization of this line of investigations includes two different lines of work. Field investigations are now being carried on in Vermont, at Washington, D. C., in South Carolina and in Texas, where areas of land of from four to twenty acres are reserved for use in this connection.

In South Carolina experiments on a commercial scale are in progress, several thousand pounds of drugs having been marketed last fall.

The laboratory investigations are carried on chiefly at Washington in three laboratories: the laboratory of histology, where questions of structural and plant physiological nature are under investigation; the laboratory of phar-

macognosy, where the study of improved processes of handling the products is given especial attention; and in cooperation with poisonous plant investigations, laboratory of pharmacology, where the physiological action of drug plants and products is tested. In addition to these laboratories, for all routine chemical work, cooperation with the bureau of chemistry is afforded.

Among the problems under investigation are, first, the domestication and cultivation of valuable native drug plants now being depleted, such as hydrastis and cascara sagrada; second, the cultivation of drug plants furnishing products now exclusively or chiefly produced abroad and imported, as, for example, belladonna, licorice, capsicum, opium poppy and many others; third, a careful scientific study of processes involved in curing and fermentation or in otherwise treating the fresh material in order to bring it in best condition to the market.

Do Segregations of Character Pairs Occur at Other Points in the Development of Organisms than the Maturation of Germ Cells: Professor W. J. Spillman.

The speaker pointed out that the distribution of color on spotted animals could be explained on the assumption that the color potentialities separate in cell divisions concerned only in the somatic development of the animal, and that bud variation might possibly be due to the same thing. If such separations do occur, very distinct cases of mutation might arise in consequence thereof. In this connection it is interesting to note the conclusions of biologists who have investigated the subject of embryology. They conclude that in some embryos the cells resulting from the first one or two divisions in the embryo have almost identically the same inheritance, and that a single one of these cells is capable of developing into a complete embryo, usually, however, dwarfed in character. In other embryos, if one of the two cells resulting from the first division is destroyed, the other cell develops into a portion of the embryo, presumably that portion that would have developed from that cell if the other cell had lived, indicating that in the first division a separation of characters was made that gave the two cells a different inheritance.

H. J. Webber,
Corresponding Secretary.

The Chemical Society of Washington.

The 155th regular and twenty-first annual meeting of the society was held Thursday evening, January 12, in the assembly hall of the Cosmos Club. The business of the evening consisted in the presentation of the annual reports of the secretary and treasurer and of the election of officers for the ensuing year. The election resulted as follows:

President—S. S. Voorhees.
First Vice-President—L. M. Tolman.
Second Vice-President—Allan Wade Dow.
Secretary—Atherton Seidell.
Treasurer—Fred. P. Dewey.
Four additional members of the Executive Committee—Messrs. E. T. Allen, Frank K. Cameron, Edwin A. Hill and L. S. Munson.

Professor F. W. Clarke was nominated on behalf of the Chemical Society as vice-president of the Washington Academy of Sciences.

At the conclusion of the election of officers, Dr. W. A. Noyes, of the National Bureau of Standards, delivered an address upon 'The Work of the Bureau of Standards.'

A. Seidell,
Secretary.

The American Chemical Society. Northeastern Section.

The fifty-sixth regular meeting of the section was held Friday evening, December 16, in the Lowell building, Massachusetts Institute of Technology, with President Norris in the chair. About 150 members and guests were present.

Professor Edwin J. Bartlett, of Dartmouth College, gave an address entitled 'An Evening with the Alchemists,' in which he described the processes and apparatus used by the alchemists, and showed a large number of lantern slides of contemporaneous pictures of alchemical utensils and interiors of the laboratories of the middle ages.

Arthur M. Comey,
Secretary.

THE WISCONSIN ACADEMY OF SCIENCES, ARTS AND LETTERS.

THE thirty-fifth annual meeting of the academy was held at Milwaukee, December 28 and 29. The program contained twenty-six titles as follows:

JAMES DAVIE BUTLER: 'Charles Kendall Adams—His Place in Three Universities.'

C. S. SLICHTER: 'The Specific Capacity of Wells.' (By title.)

J. H. FARLEY: 'The Concept of Motion.'

J. S. ROESELER: 'The Present Status of the Wisconsin Industrial School for Boys—Its Mechanism and Methods.'

E. B. SKINNER: 'The Determination of the Value of the Right of Way for Wisconsin Railroads.'

E. B. HUTCHINS, JR.: 'A Contribution to the Chemistry of the Tellurates.'

F. L. SHINN: 'On the Electrical Conductivity of Vapors.' (By title.)

LOUIS KAHLENBERG and HERMAN SCHLUNDT: 'On the Evolution of Hydrogen During the Action of Sodium on Mercury.'

LOUIS KAHLENBERG: 'On the Measurement of Osmotic Pressures.'

EDWARD KREMERS: 'On Classification of Carbon Compounds, II.'

WM. H. HOBBS: 'Some Examples of Fault Networks.'

DR. SIGMUND GRAENICHER: 'The Relations of the Andrenine Bees to the Entomophilous Flora of Milwaukee County.'

R. H. DENNISTON: 'The *Russulas* of Madison and Vicinity.'

GEORGE M. REED: 'Infection Experiments with *Erysiphe Graminis*.'

VALENTINE FERNEKES and C. E. BROWN: 'The Fungi of Milwaukee County and Vicinity.' (By title.)

R. A. HARPER: 'Spore Formation in *Cordyceps Herculea* Schw.'

S. P. NICHOLS: 'The Nature and Origin of the Binucleated Cells in Certain *Basidiomycetes*.'

A. H. CHRISTMAN: 'Observation on the Wintering of the Grain Rusts in Wisconsin.'

W. D. FROST and E. V. MCCOMB: 'Soil Bacteria in the Vicinity of Madison.'

W. D. FROST, C. G. DAVIES and H. F. HELMHOLTZ: 'The Viability of *Bacterium Diphtheriæ*.'

GEORGE W. and ELIZABETH G. PECKHAM: 'The *Attidæ* of Borneo.' (By title.)

W. S. MARSHALL: 'Experiments with Caddisfly Larvæ.'

GEORGE WAGNER: 'Notes on the Behavior of *Physa Ancillaria*.'

M. V. O'SHEA: 'The Psychology of Linguistic Development in the Individual.'

C. E. BROWN: 'The Fluted Stone Axes of Wisconsin.'

A. G. LAIRD: 'The Greek and Persian Armies at Thermopylæ.' (By title.)

The attendance was not large, but the sessions were marked by strong interest on the part of all present, and the papers were, as a rule, freely discussed.

The meeting was noteworthy on account of the inception of plans for strengthening the work of the academy. Steps were taken looking toward the publication of the *Transactions* in series instead of in a single volume of two parts as heretofore. A committee was appointed to see what may be done in the way of increasing the exchange list and filling gaps in the library. Five hundred dollars were appropriated for the work of this committee. The academy has already a valuable library, consisting almost entirely of transactions of learned societies from all parts of the world.

Part 2 of Vol. XIV. of the *Transactions* was issued in September, 1904.

E. B. SKINNER,
Secretary.

THE SCIENCE CLUB OF THE UNIVERSITY OF WISCONSIN.

THE fourth meeting of the club for the year 1904–05, was held on January 24. The following papers made up the program of the evening:

The Panama Canal—a symposium:
F. E. TURNEAURE: 'Engineering Features.'
W. A. SCOTT: 'The Economic Aspects.'
W. D. FROST: 'The Hygienic Problems.'

F. W. WOLL,
Secretary.

THE ELISHA MITCHELL SCIENTIFIC SOCIETY.

THE 157th meeting of the Elisha Mitchell Scientific Society of the University of North Carolina was held in the chemical lecture

room, Tuesday, January 10, 7:30 P.M., the following program being rendered:

PROFESSOR WILLIAM CAIN: 'The Theory of Metal or Reinforced Concrete Domes.'

PROFESSOR J. H. PRATT: 'Steel Hardening Metals.'

ALVIN S. WHEELER,
Recording Secretary.

DISCUSSION AND CORRESPONDENCE.

THE BITING POSITION OF ANOPHELES.

IT is a curious fact, as shown by Dr. J. B. Smith's communication in SCIENCE for January 13, 1905, that no observer, from the number cited, has noted the exact position of this mosquito when biting. The writer, in his communication in the December 2, 1904, issue, based his statement upon observations made in 1903 in the northern woods of Minnesota, where a number of individuals of *A. maculipennis* were allowed to fill themselves with blood from the hand, in an endeavor to see how long a time was required by them to digest a full meal (page 170 Eighth Annual Report of the State Entomologist of Minnesota). As I recall the experiment, my impression is that these mosquitoes, when biting, took a position somewhat resembling their resting position, with body and beak more nearly in line, and not at right angles as seen in *Culex*. I shall have to include myself in the army of non-observants to the extent of saying that I am not absolutely sure of this. This was made clear in my communication on page 170 of the issue of SCIENCE referred to, where I said, 'While we may be mistaken, we are under the impression that this genus, in biting, etc.' As Dr. Smith very rightly says in his letter 'I do not understand him (Washburn) to say positively that the figure is inaccurate, only that it had been his belief that the biting position resembled the resting position more nearly.'

As I remember the chart at St. Louis taken from an illustration of Nuttall & Shipley, the biting *Anopheles* is shown with body horizontal. This may be correct, but I note that Dr. Herbert Johnson, who worked on *Anopheles* for Dr. Smith, and who is quoted in the latter's communication, says with reference to the position of the body of *Anopheles* when biting, 'It is always somewhat oblique.' It was, I believe, this horizontal position with beak at right angles, which caught my eye in looking at Dr. Smith's most complete and excellent exhibit.

At the same time it will possibly occur to many that there may be individual variations in the position of biting mosquitoes, due to different configurations, greater or smaller, of the surface at the immediate point where the insect is working. The time is not far distant when this feature in the activities of *Anopheles* can be put beyond question. In the meantime it is to be hoped that some more observant workers, following Dr. Smith's suggestion, will let us hear from them on this point.

F. L. WASHBURN.

MINNESOTA STATE EXPERIMENT STATION,
January 19, 1905.

UNIVERSITY REGISTRATION STATISTICS.

TO THE EDITOR OF SCIENCE: The registrar of the University of Wisconsin has called my attention to a discrepancy that occurs in the figures furnished by him for the article on 'University Registration Statistics,' published in SCIENCE, December 30, 1904. In former years the short course and dairy students, who do not enter the university until December 1, were reported, whereas they were not included in the 1904 table. Four hundred and thirty-nine short course and dairy students were enrolled on December 1, 1904, and inasmuch as none attended the summer session of 1904, 439 should have been added to the total, giving a grand total for the University of Wisconsin of 3,370 instead of 2,931, and consequently showing a normal increase instead of the decrease represented by the figures in the table. These additional students were reported a fortnight after the appearance of the article, but it seems only fair to call attention to the omission.

RUDOLF TOMBO, JR.

SPECIAL ARTICLES.

GENERIC NAMES OF SOFT-SHELLED TURTLES.

IN a recent paper 'On the Existing Genera of the Trionychidæ' (*Proc. Amer. Philos.*