The American Naturalist for January contains an article by Hubert L. Clark, on 'The Water Snakes of Southern Michigan,' which contains a detailed study of the species found there and concludes that *Natrix erythrogaster* is a well-defined species of recent production, probably derived from some form of *N. fasciata,* but not *sipedon.* Edward W. Berry describes some 'New or Hitherto Unknown Ephemerid Nymphs of the Eastern United States,' and R. W. Shufeldt has a paper 'On the Classification of Certain Groups of Birds.' This deals with the Saururæ, the struthious birds, and the Odontoholcæ, but the writer does not seem to have consulted Pycraft's important memoir on the Palæognathæ. Charles C. Willoughby discusses 'Hats from the Nootka Sound Region,' and the number is completed by a number of important reviews.

The *National Geographic Magazine* (Washington) for February publishes as a supplement the North Atlantic Pilot Chart for February. The chart, which is 2 by 4 feet and printed in four colors, illustrates an article by Commander Southerland on the work of the Naval Hydrographic Office. The contents of the magazine for the month also include an illustrated article by William E. Curtis on Macedonia, Bulgaria and Servia, an article by the U. S. Weather Bureau director at Salt Lake City, L. H. Murdock, discussing the fall in the level of Great Salt Lake, an argument by Edwin S. Balch in favor of American Claims in the Antarctic, and miscellaneous geographic notes.

SOCIETIES AND ACADEMIES.

BIOLOGICAL SOCIETY OF WASHINGTON.

The 365th meeting was held Saturday, January 24.

A. D. Hopkins presented a paper on the 'Work of Forest Insects,' fully illustrated with lantern slides, showing two phases of the subject. The first set of pictures illustrated the economic phase, and was suggestive of the destructive character of some of the work, and its relation to public interests.

The first of the principal insects mentioned in this connection was the destructive pine bark beetle (*Dendroctonus frontalis* Zim.), which in 1890 to 1892 devastated the pine and spruce forests of the Virginias, causing the death of many millions of forest and shade trees, over an area of some 75,000 square miles. Evidence has been recently found in Texas that the species committed similar depredations in the long-leaf pine region of eastern Texas between 1882 and 1885. It was evident to the speaker that a number of serious devastations which have occurred in different sections of Southern pine forests within the past century were due to this species.

The pine-destroying beetle of the Black Hills (*Dendroctonus ponderosæ* Hopk.) was also mentioned as one of the most destructive enemies of Western forests. It is now at work in the Black Hills forest reserve, and has already killed some 600,000,000 feet of timber. It is threatening a like fate to the remainder of the timber of the reserve; which involves the destruction not only of the timber, but of the great mining and other industries which are dependent on the timber supply.

The slides also illustrated the work of other species of *Dendroctonus* which had recently been collected in the Priest River forest reserve, Idaho, in western Washington, Monterey, Calif., and Williams, Ariz., where much timber is being killed by different species working in those localities. The destructive work of several species of *Agrilus,* which kill poplars, birches, oaks and chestnuts in different parts of the country, and that of the chestnut timber worm (*Lymexylon sericeum* Harr.), were shown, with the statement that the latter was exceedingly destructive to the chestnut timber of the Appalachian region.

The other set of pictures, illustrating the pure science phase, suggested the importance of biological material as a guide to the determination of true specific characters and characteristics of habit, of the natural relations between primary and minor divisions of bark and wood inhabiting species, and of the relation of species and genera of insects to the species and genera of plants on which they live. It also suggested the importance of

studying such material to determine the course of evolution in the home-building and social habits of some of the bark and wood dwellers. The various forms of the Scolytid gallery were displayed, ranging from the simpler types to the more specialized and symmetrical forms, and charts were exhibited indicating the natural classification of the galleries and how they correspond with the natural classification of the insects.

Under the title 'Evolution, Cytology and Mendel's Laws,' Mr. O. F. Cook noticed the recently published theory that Mendel's laws of the dissociation of parental characters in hybrids are to be explained by the segregation of paternal and maternal chromosomes at the 'reducing division' which precedes the formation of the germ-cells. It was pointed out that this theory is definitely disproved by the very facts which it was intended to explain, since the experiments of Mendel, Spillman and others have shown that the characters derived from different parents may enter into any combinations possible under the law of chance. The germ-cells may be said to be pure in characters but not in parentage. It was further argued that the existence of the 'hereditary mechanism' sought by cytologists is highly improbable, and that heredity is not the function of an organ, but a general property of organisms, to be associated with crystallization and with memory. The facts discovered by Mendel should not be made the basis of a separate generalization, since they characterize but one of four kinds of 'hybrids' representing as many different evolutionary stages.

F. A. LUCAS.

GEOLOGICAL SOCIETY OF WASHINGTON.

AT the 137th meeting of the society, held in the assembly hall of the Cosmos Club, Wednesday evening, January 28, 1903, the following papers were presented:

Mr. S. F. Emmons, 'The Drainage of the Valley of Mexico.'

Mr. Emmons presented a sketch, illustrated by lantern slides, of the various drainage systems of the valley of Mexico, culminating in the elaborate and extensive works recently completed at a cost of over 21½ millions, that carry off not only the surplus waters in time of flood, but also the sewage of the city of Mexico.

He also presented a sketch of the physiography and geology of the valley, together with some speculations as to the probable causes of its change from a valley of the ordinary type to the enclosed area without external drainage of the present day, a change that evidently occurred in very recent time, geologically considered.

Mr. Waldemar Lindgren, 'Notes on the Geology of Molokai, Hawaiian Islands.'

The island is entirely of volcanic origin, and, like some others of the same group, is made up of two old volcanoes separated by a low gap. The western part of the island is a volcanic mountain rising to an elevation of about 1,200 feet. The eastern and most interesting part forms a segment of a circle, the north coast being the chord. The highest peaks rise to nearly 5,000 feet above the sea. While the southern slope is that of a fairly regular volcanic cone and is scored by a great number of ravines, the northern coast is characterized by a great and extremely steep escarpment attaining a height of over 3,000 feet above the sea. Five streams drain this north slope and have eroded deep canyons or alcoves. The escarpment is interpreted as a great fault along which the northern half of the volcanic cone has sunk down below the sea. The peninsula of the leper settlement at the foot of the escarpment is believed to be a part of the thrown block.

At the forks of the stream of Wailau great boulders of coarse diabase were found, indicating that in the upper drainage basin of this stream there are extensive outcrops of this rock, which has not heretofore been known to occur in the Hawaiian Islands.

W. C. MENDENHALL,
Secretary.

THE MONTANA ACADEMY OF SCIENCES, ARTS AND LETTERS.

THE academy held its first meeting at Bozeman at the same time as the meeting of the State Teachers Association. Three sessions were held, and ten papers were presented.

The strength of the academy was shown by a membership of fifty-eight at the first meeting. With the membership badly scattered in a large state, it was very satisfactory to have an attendance of from fifteen to forty at each session. The sessions were held in the chemical lecture room of the Agricultural College. The following papers were given:

President's Address, 'Montana as a Field for an Academy of Sciences, Arts and Letters,' Morton J. Elrod, University of Montana.

'An Experiment in Temperature as Affected by Altitude,' Morton J. Elrod, University of Montana.

Two thermographs are placed at different altitudes, one at 3,225 feet, the other at 5,100 feet. The instruments have been read weekly since March last. The daily range of temperature is greater at the base than at the summit. During the early fall the higher altitude frequently showed warmer temperature at night than the lower. In October and November the instrument at higher altitude frequently registered more than twenty degrees colder than the one at lower altitude. The mountain top at 5,100 feet frequently showed positive and continuous rise in temperature eight to twelve hours before the effect was noticeable on the lower instrument. It also cools much more quickly than the base. The experiment is being continued, and readings are made regularly.

'A History of Botanical Collecting in Montana,' Dr. J. W. Blankinship, Agricultural College.

This is a very important paper, dealing with the various expeditions and collectors and the collections made by them. Brief histories of expeditions are given, stating the localities to which the expeditions were made, the names of the collectors, the magnitude of the collection, and the institutions in which the herbariums are deposited. Many of the names of collectors have been perpetuated in the names of flowers, now common to botanical collections. The history is carried down to 1898, when the writer began work in the state, and will be completed later. Most of the papers covering the reports of the expeditions are in the library of the agricultural college, as are also many of the important herbariums. The paper is an important contribution to the botanical literature and work in the state.

'An Investigation of Young's Modulus and the Rigidity Modulus of Copper Wire as affected by Twisting the Wire,' Professor J. E. Monroe, State Normal School.

The paper is the result of an experiment in which the wire was twisted a given number of revolutions.

1. The object was to determine the effect quantitatively.

2. A wire was so arranged that each modulus could be determined under the same conditions.

3. First test was made with the wire in its normal condition; then with 10 complete turns taken; then 20 more; then 30 more; and so on until 360 turns were put into the wire, out of which number 332.25 remained.

4. Young's modulus increased quite uniformly from 1.13×10^{12} to 1.159×10^{12} in dynes per sq. cm. The rigidity modulus decreased uniformly from 4.409×10^{11} to 3.702×10^{11} in grams per sq. cm.

5. The wire broke from the torsion at the four hundred and fifth turn. Length of wire, 4.88 meters, diameter, 1.607 mm., density, 8.821.

'Some Montana Geology,' with lantern slides, Professor J. P. Rowe, University of Montana.

'Collecting at High Altitudes,' with lantern slides, Professor M. J. Elrod, University of Montana.

'The Problem of Meaning in the Light of Development,' Dr. Wm. Chandler Bagley, State Normal School.

The combination of conscious elements into meaningful compounds requires an explanation in terms of the elements themselves. Looking upon consciousness as functioning primarily for the modification of reaction, it would seem that the muscular and strain sensations are the most important factors in meaning. These are also quite predominantly 'marginal' sensations, and it is probable from

other sources of evidence that the margin of consciousness carries the meaning. Disturbances of apperceptive functioning in apraxia and sensory aphasia form a basis for a theory of apperceptive degrees which may explain the different meanings which at different times may be read into the same complex of sensations. Flechsig's researches on the functions of the 'silent areas' of the cortex furnish a psychophysical basis for this position. The kinæsthetic theory of meaning is, in general, confirmed by genetic studies of language and by the data of anatomy, especially those facts concerning the increase in the diameter of the pyramidal tracts and the increased differentiation of the muscular system in the higher orders.

The following were read by title:

'Vertical Movements of *Entomostraca*,' M. J. Elrod.

'The Reduction of Nitro Compounds of Benzole,' W. D. Harkins, University of Montana.

'Volcanic Ash Beds of Montana,' J. P. Rowe.

'Caves in Montana,' J. P. Rowe.

J. P. ROWE,
Secretary pro tem.

DISCUSSION AND CORRESPONDENCE.

SMITHSON'S REMAINS.

TO THE EDITOR OF SCIENCE: James Smithson, the founder of the Smithsonian Institution, is about to be turned out of his grave in Genoa, Italy, to make room for a quarry! Why should not the United States Government bring his body to this country and give him a permanent resting place in the grounds of the institution which he founded?

Smithson left his entire fortune 'to the United States of America' to promote 'the increase and diffusion of knowledge among men.' Congress accepted the trust and established 'The Smithsonian Institution' which has done so much to advance science during the last fifty years. Now let the nation that has benefited by Smithson's generosity show its appreciation and gratitude. He left no descendants to care for his remains; let us accept them, too, as a sacred trust and bring them to the United States to be deposited with all reverence in the Smithsonian Institution at Washington. GILBERT H. GROSVENOR.

WASHINGTON, D. C.

THE DESTRUCTION OF FROGS.

TO THE EDITOR OF SCIENCE: The Erie Railroad, near Meadville, Pa., runs parallel to and near French Creek. In the early spring of 1901, at about the time when the frogs were becoming active after their hibernation, I noticed, while walking along the tracks of the above railroad, a number of frogs that had been crushed by the passing trains. I counted no less than thirty-six frogs that had been killed on half a mile of single-track road. One fact noticed was that *nearly every* frog had been cut across the middle line, so that the hind legs lay on one side of the rail, and the fore legs and head on the other side. The rails were the heavy T rails ordinarily used on such roads. At about the same time I noticed on one of the streets of Meadville that was near the creek, a great number of frogs that had been similarly crushed by the electric cars that ran on that street. As the rails of the street railway were laid flush with the level of the street, it was not so surprising that many frogs were crushed, since they were very numerous in that part of town; but how so many of them should be caught on top of a six-inch T rail, and why they should practically all be cut in two, transversely, is not so easy to explain. ALBERT M. REESE.

THE GREAT AUK.

TO THE EDITOR OF SCIENCE: Permit me most emphatically to dissent from the deduction of Professor Hitchcock 'that the great auk was once a resident of Florida, and presumably of the whole Atlantic coast.' This deduction is based on the finding at Ormond, Fla., of two humeri of the great auk in one section of a large shell heap. This is a small basis for so sweeping a generalization, and it is all the smaller in the light of the fact that these two humeri are the only traces of this bird that, so far as I am aware, have come to light south of Block Island, although scores of shell heaps