MAURICE FRÉCHET: 'Sur les opérations linéaires (deuxième note).'

E. KASNER: 'Surfaces whose geodesics may be represented in the plane by parabolas.'

MAX MASON: 'The doubly periodic solutions of Poisson's equation in two independent variables.'

O. VEBLEN: 'Definition in terms of order alone in the linear continuum and in well-ordered sets.'

S. EPSTEEN and J. H. MACLAGAN-WEDDERBURN: 'On the structure of hypercomplex number systems.'

E. H. MOORE: 'On a definition of abstract groups.'

E. V. HUNTINGTON: 'Note on the definitions of abstract groups and fields by sets of independent postulates.'

L. E. DICKSON: 'Definitions of a group and a field by independent postulates.'

L. E. DICKSON: 'On semi-groups and the general isomorphism between finite groups.'

E. V. HUNTINGTON: 'A set of postulates for ordinary complex algebra.'

H. F. BLICHFELDT: 'On imprimitive linear homogeneous groups.'

SOCIETIES AND ACADEMIES.

THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.

THE eleventh regular meeting of the Society for Experimental Biology and Medicine was held in the zoological laboratory of Columbia University, on Wednesday evening, April 19. The president, Edmund B. Wilson, was in the chair.

Members present.—Adler, Auer, Calkins, Emerson, Gies, Hatcher, Jackson, Lee, Levene, Levin, Lusk, Meltzer, Morgan, Murlin, Richards, Salant, Sherman, Torrey, Wallace, Wilson, Wolf, Yatsu.

Members elected.—Harlow Brooks, W. B. Cannon, A. J. Carlson, R. G. Harrison, A. P. Mathews, G. H. Parker, A. E. Taylor.

ABSTRACTS OF REPORTS OF ORIGINAL INVESTIGATIONS.*

The Relation Between Normal and Abnormal Development of the Frog's Egg: T. H. MORGAN.

* The abstracts presented in this account of the proceedings have been greatly condensed from abstracts given to the secretary by the authors themselves. The latter abstracts of the reports may be found in current issues of *American Medicine* and *Medical News.*

The method of development of the frog's egg may be changed by a number of external conditions, *e. g.*, treatment with salt solutions of definite strengths, variations of temperature, deprivation of oxygen, treatment with carbon dioxid, subjection to 180 revolutions per minute, etc. The effects of such external agents are not gradual, *i. e.*, corresponding in degree to the increasing strength of the agent employed, for no effects appear up to a certain point, when suddenly the agent begins to act. Increasing the strength of the agent above this point increases the effect very slightly. The most plausible explanation of this mode of behavior in most of the cases is as follows: The agents act by coagulating certain parts of the egg, thereby preventing their further development. Other parts of the egg that are made up of different colloids or of different concentrations of colloid, remain unaffected, and proceed to carry out their development as far as the presence of the injured region allows.

The author referred particularly, however, to a second point of special interest: Despite the great diversity in the form of the abnormal embryos, most of them may be reduced to modifications of the same type. He stated that the abnormal embryo develops in the material of the upper hemisphere, while the normal embryo develops over the lower hemisphere. Two interpretations of this difference seem possible. Either the material is totipotent and an embryo may develop anywhere in the egg, appearing in the less injured regions; or the material for normal and abnormal development is the same and becomes carried downward, during the early stage of normal development, from the upper into the lower hemisphere. A test of these alternatives showed that when the two upper anterior blastomeres are removed, the head end of the embryo is defective; when the two upper posterior blastomeres are removed the posterior end sometimes shows defects. When all four of the upper blastomeres are removed no embryo develops, although the blastoporic rim may appear near the equator of the egg, the gastrulation process may begin and the dif-

ferentiation of the germ layers take place to a certain extent.

The author concluded from these results that some at least of the material that goes to form the embryo lies at first high up in the upper hemisphere of the egg. In the light of this conclusion it became necessary to examine once more the early development, especially the pregastrula stages, for no one has suspected that the embryo-forming material lies in the upper hemisphere and is transported to the lower hemisphere *before* the lips of the blastopore have appeared.

Briefly, the author's examination showed that throughout the early period of segmentation, the material of the upper hemisphere gets pushed far out to the sides of the egg. This is brought about largely by the development of the enormous segmentation cavity. During the later cleavage period the yolk cells of the lower hemisphere push upwards into the segmentation cavity, almost obliterating it. This upward movement of the cells in the interior is compensated for by the moving downwards below the equator of the outer layers of the egg. In this way the embryo-forming material is carried into the lower hemisphere. Along its edge the lips of the blastopore develop. The dorsal, lateral and ventral lips roll over the yolk (or more accurately, the yolk draws in beneath their advancing lips) and the dorsal organs of the embryo (the embryo in a narrower sense) appear over the lower or yolk hemisphere of the egg.

Rejuvenescence in Protozoa: Gary N. Calkins.

Since 1876 it has been generally assumed that one effect of conjugation is rejuvenescence or renewal of vitality in both of the ex-conjugants. This assumption has never been proved experimentally. In his Paramœcium work, begun in 1901, the author almost had the proof, but allowed the opportunity for obtaining it to pass without realizing it at the time. In order to complete the earlier work a new series of experiments with Paramœcium was started on the last day of February (1905), consisting of three different lines, at present in about the fortieth generation after conjugation. In his original experiments the author found strong evidence against the old view that both ex-conjugants are rejuvenated. In twenty pairs which were cultivated after separating from conjugation, at least one individual of each pair invariably died before many days, thus indicating an incipient fertilization like that in metazoa. This phenomenon will be given careful study in the experiments now under way.

Temperature and Muscle Fatigue: Frederic S. Lee.

Lohmann has recently claimed that a cold-blooded muscle on being heated to a mammalian temperature shows a course of fatigue similar to that of mammalian muscle, and, on the other hand, that a warm-blooded muscle on being cooled fatigues like the muscles of cold-blooded animals at a similar temperature. The author was unable to confirm Lohmann's results, and maintains his own previous conclusion that the contraction process of the muscles of cold-blooded animals in the course of fatigue becomes greatly slowed, while those of warm-blooded animals show no such phenomenon. The muscles of the frog and the turtle show their characteristic method of fatigue whatever the temperature. The muscles of warm-blooded animals on being cooled and then fatigued show either no slowing of the contraction process or only a slight slowing. The latter seems to be most pronounced in the rodents, namely, the rabbit, mouse and rat.

On Intraureteral Pressure and its Relation to the Peristaltic Movements of the Ureter, with demonstrations. Daniel R. Lucas. (By invitation.)

The author has observed that suction normally follows the peristaltic wave of the ureter; at the same time a force is exerted on the fluid in front of the wave. The force of the peristaltic wave was seen to raise a column of water of considerable height. When the ureter is acting normally, the pressure in the pelvis of the kidney remains constantly negative, the anatomical arrangement of the pelvis preventing collapse under negative pressure. These facts indicate that the ureter functions, to some extent at least, as an active agent in

the formation of urine, for the latter is in part a filtration process.

Further Observations upon the Phosphorized Fats in Extracts of the Kidney: EDWARD K. DUNHAM. (Presented by P. A. Levene.)

The author has found that beef kidney yields protagon to the extent of 0.14 to 0.2 per cent. of its weight (fresh). The protagon was obtained by the method recently used by Cramer (*Journal of Physiology,* 1904, XXXI., p. 31). On comparison with the protagon obtained by the same method from beef brain, it was found that the substance from the kidney contained distinctly more nitrogen and phosphorus than that from the brain. The cleavage products, however, showed that both substances are closely related. The following percentage analytic data were obtained by Dr. Levene:

	From Beef Kidney. (1)	(2)	From Beef Brain.	Cramer's Data for Beef Brain Protagon.
C	65.61	65.55	65.76	66.25–66.42
H	11.00	11.09	10.66	10 82–11.07
N	3.16	3.25	2.51	2.29
P	2.06	2.19	0.97	1.04
S	0.82	—	1.33	0.71

Comparative Physiological Action of Salts of Neodymium, Præseodymium and Lanthanum: B. J. DRYFUSS and C. G. L. WOLF.

The experiments were carried out in vitro and on unicellular organisms, bacteria and infusoria, frogs, pigeons, rats and guinea pigs. The solutions used were chiefly the chlorids, isotonic with 0.6 per cent. sodium chlorid. Dilute solutions were found to delay the growth of bacteria and eventually to kill. The solutions were not very toxic to spores. Opalina, paramœcia and vorticellæ were killed quickly, equivalent solutions of the chlorids acting in the following order of strength: neodymium, præseodymium and lanthanum. In frogs, voluntary and involuntary muscle are quickly put out of action. The solutions act in the same order as with unicellular organisms. Intravenous injection caused almost instant death, due to multiple embolism. Attempted chronic poisoning gave unsatisfactory results. The authors attribute a large share of the acute effects observed to the acid present in their solutions owing to the hydrolytic dissociation of the salts.

The Influence of Bile upon Blood Pressure: S. J. MELTZER and WILLIAM SALANT.

The authors found that all degrees of effects could be produced at will, from an insignificant one to a considerable, even a fatal, fall of blood pressure. Besides the quantity and the concentration of the bile it was found that the *rate* at which it is introduced into the circulation is the most effective factor in the result. A quantity of bile of a given concentration, which, when injected *slowly,* would cause only an insignificant depression, brought about a very great fall of the blood pressure when injected *rapidly.* In control experiments it was found that the mechanical and thermal conditions attending the injections had no observable influence on the pronounced effects noted above. Previous conflicting statements regarding the influence of bile on blood pressure may be attributed, therefore, to results due to different *rates* of injection. This factor, clearly recognized in other connections, had always been ignored in this.

It is probable that the bile exerts an inhibitory effect upon the heart. The authors have shown that the action on the heart is not due to malnutrition caused by hemolytic influences.

A Report of Feeding and Injection Experiments on Dogs after the Establishment of the Eck Fistula: P. B. HAWK. (Presented by A. N. Richards.)

Mixed diets were not attended by abnormal symptoms. Diets consisting of beef meal and milk or of fresh lean beef alone were followed by ataxia, loss of sight and hearing, complete anæsthesia and catalepsy. In some cases, however, these effects were noted only after the addition of Liebig's extract to the meat diet. The administration to normal dogs of sodium carbamate, either by mouth or by intravenous injection, gave rise to none of the symptoms observed by Pawlow and Nencki.

On Chemical Fertilization: JACQUES LOEB. (Presented by William J. Gies.)

The author found that when unfertilized eggs of the sea urchin were exposed for about

one to two minutes to 50 c.c. of sea water, to which about 3 or 4 c.c. of $n/10$ acetic acid had been added, the majority of the eggs formed the membrane characteristic of the entrance of the spermatozoon. When these eggs were exposed for from thirty to forty minutes to 100 c.c. of sea water to which 14 or 15 c.c. of a $2\frac{1}{2}$ n solution of sodium chlorid had been added, those of the eggs which had formed membranes developed into swimming larvæ that rose to the surface. These larvæ developed into perfect plutei as fast as the larvæ of eggs fertilized with sperm. When the order of treatment was reversed, not a single larva was formed. When eggs were fertilized with sperm first and then exposed to the hypertonic sea water for from about thirty to forty minutes, their development became almost identical with that of the unfertilized eggs treated first with acid and then exposed to the hypertonic sea water for the same period of time.

The acid treatment above referred to causes the formation not only of the membrane, but also, in due time, of the karyokinetic spindle. Eggs exposed for only thirty or forty minutes to the hypertonic sea water do not show any changes of any kind. Following the action of the acid, however, treatment with hypertonic sea water appeared to accelerate the mechanism of cell division originated by the acid treatment, and also seemed to increase the vitality or to prolong the life of the egg.

William J. Gies,
Secretary.

THE PHILOSOPHICAL SOCIETY OF WASHINGTON.

The 599th meeting was held April 1, 1905.

In a communication made by Mr. R. A. Harris, entitled 'A General Account of the Tides,' brief mention was made of the disturbing forces and the ordinary ways of producing the tide. A small deep body of water may obey the equilibrium theory, *i. e.*, its surface may always be normal to gravity as disturbed by the moon or sun. This theory nearly explains the tides in Lake Superior, the eastern half of the Mediterranean Sea, the southwestern portion of the Gulf of Mexico and of the Caribbean Sea. The ocean tides are due chiefly to stationary waves, or oscillations, existing in such portions of the ocean as have for free period approximately the period of the tidal forces. The motion is thus sustained on a considerable scale, just as is the motion of the air particles in a resonator tuned to a sound of constant pitch.

The principal systems for the semidaily tide were shown on maps, and attention called to the loops and nodes of the oscillating areas. By means of maps of cotidal lines (taken from the Coast Survey Report for 1904) it was shown that over wide areas the tide is nearly simultaneous, while in certain localities the time of tide changes rapidly. In many instances the former regions correspond to loops of the stationary waves, while the latter give indications of nodal lines. Attention was called to isolated points at which there is no rise and fall of tide. Around such points the hours, or times, of the tide run through a complete cycle of values, from 0 to XII. or 0. Such points may be due to the superposition of stationary waves, or to other forms of wave motion; in narrow bodies the deflecting force of the earth's rotation is influential in their production. It was shown that both times and ranges give evidence of the existence and location of these points.

Mr. John F. Hayford then spoke on 'A Test of Isostasy from Geodetic Observations.' According to the theory of isostasy excesses of mass represented by portions of the earth which are above sea level are compensated for by defects of density beneath them, and similarly the density is excessive beneath the oceans. The test referred to is being made in connection with a new computation of the figure of the earth based upon geodetic observations in the United States, which is now in progress in the Coast and Geodetic Survey. The test furnishes a direct proof that the theory of isostasy is true as applied to the northeastern portion of the United States, and also furnishes a determination of the depth of compensation.

Charles K. Wead,
Secretary.

THE BIOLOGICAL SOCIETY OF WASHINGTON.

The 399th regular meeting of the Biological Society of Washington was held March 11,

1905, with President Knowlton in the chair and eighty-seven persons present. Under 'Notes and Exhibition of Specimens,' Dr. L. O. Howard exhibited specimens of various products of artificial silk, and briefly explained the process of preparation and weaving. This note was discussed by Mr. W. P. Hay. Mr. E. L. Morris called attention to the recently issued edition of Cassino's 'Naturalists' Universal Directory'; and noted the very large number of errors which are scattered through the work. He suggested the advisability of the scientists in a city like Washington taking some steps to have such errors as much reduced in number as possible. Mr. F. H. Blodgett exhibited a microscope slide of a common ant mounted in toto, in xylol and balsam, in normal position, showing clearly such anatomical characters as the attachment of the head to the thorax. This preparation was discussed by Mr. Morris. President Knowlton called attention to a recent paper containing facts concerning the salts found in human blood.

The regular paper of the evening was by Professor Willett M. Hays, assistant secretary of agriculture, on 'Breeding Problems.' He said:

Of the $5,000,000,000 worth of agricultural products annually produced in the United States, $4,000,000,000 worth is handled by plant and animal life. This production may be increased by (1) better farming ten per cent. and (2) by breeding ten per cent. Increased returns from better farming cost more than equal increased returns from breeding. Ten per cent. of $4,000,000,000 is $400,000,000 and this can be produced at a cost very small as compared with the total increase.

Improvements through breeding can not be patented or monopolized. The problem, therefore, is a national one and national funds should be forthcoming with which to facilitate the work of investigation, growing, testing, recording and distributing improved varieties and breeds. The work already done by the Department of Agriculture, the experiment stations and by private effort sufficiently justifies such large expenditures, and the money is not far off. It would seem wise to have the ownership of the plants and animals under process of improvement vested in private hands, the government giving general direction and subsidizing the operations.

A broad plan of cooperation must be worked out. Plant and animal breeders are well started in cooperation through the medium of the American Breeders' Association, organized a year ago and soon to publish its first annual report.

The problems in breeding now up for solution are worthy of the highest scientific effort. The technique of breeding, growing and distributing pure bred stocks of the different crops and animals calls for skill and business ability of a high order. The study of thermatology in agricultural high schools and colleges is fascinating and most valuable. The economic importance of breeding demands serious attention from the whole people.

THE 400th regular meeting of the Biological Society of Washington was held March 25, 1905, with Vice-President Hay in the chair and seventy-seven persons present. Under 'Notes,' Mr. M. W. Lyon, Jr., spoke of having observed twelve dead crows during a short walk in the Soldiers' Home grounds, and commented on the large number for so small an area. Dr. B. W. Evermann stated that three weeks previous, in a grove of pines, he had observed seven. Dr. E. A. Mearns noted that such deaths were epidemic, especially in the neighborhood of Fort Meyer. Many of the specimens observed had been sent to the Smithsonian Institution as probable cases of malarial fatality. Mr. William Palmer stated that after every snow, especially if more than two weeks' stand, the crows died by the score. Dr. L. O. Howard emphasized the fact that these were largely malarial cases. Mr. W. L. McAtee called attention to the large amount of food suitable for birds he had noted during the winter in heaps of drift. He stated that in one heap alone he had counted 1,583 specimens of seeds, etc., all of which were available as bird food.

The first regular paper of the program was

by Dr. Hugh M. Smith, presenting 'Ichthyologia Miscellanea' as follows:

1. The proper name for the blue-gill sunfish. This species is now known as *Lepomis pallidus* (Mitchill). Dr. Smith showed that Mitchill's name *pallidus* (1815) can not be appropriated for this fish, as the description does not apply and the species is not found near New York City, the type locality of *pallidus*. The earliest available name for this sun-fish is *incisor* of Cuvier and Valenciennes (1831), and the species should be known as *Lepomis incisor* (Cuvier & Valenciennes).

2. Note on a rare flying-fish (*Cypselurus lütkeni*). The speaker recorded the capture of the second known specimen at Beaufort, N. C., in 1904. The source of the type specimen, now in the Philadelphia Academy of Sciences, is doubtful, but the indications are that it, too, came from Beaufort about 1871.

3. The feeding habits of the trigger fish (*Balistes vetula*). These habits had been observed on a captive specimen at the Woods Hole Laboratory. Dr. Smith described in detail how this fish attacked, killed and ate its food consisting largely of a certain species of crab.

This paper was discussed by Dr. Evermann.

The second paper was by Mr. A. G. Maddren, 'Notes on the Occurrence of Mammoth Remains in Alaska.'

In introductory remarks an outline was given of a trip the speaker made last summer in the interests of the Smithsonian Institution to Alaska with the purpose of searching for the remains of large Pleistocene mammals, particularly those of the mammoth, which are popularly supposed to be abundant in that region, but actually do not exist in any great numbers. The entire length of the Yukon River was traversed and one of its largest tributaries, the Porcupine, was ascended to the Old Crow River, in the basin of which stream abundant evidence of Pleistocene mammal remains were found.

Attention was called to the fact that Pleistocene mammal remains appear to be no more abundant in Alaska than in the United States, and to find complete remains of the mammoth and associated mammals search must be made around the former shore lines of the Pleistocene lacustrine deposits that are considerably developed in Alaska.

A historical summary of the records of the occurrence of mammoth remains in Alaska was given and the statement made that there is no formation of ice in Alaska that may be assigned to the Pleistocene age, as has been stated by some writers, but that all the ice phenomena there occurring are, geologically, comparatively recent.

The concluding remarks favored the view that Alaska, from a geographical standpoint, was in Pleistocene time part of Asia; that its fauna had closer affinities to that of Asia than to the contemporary fauna of the United States and that if sufficient material were at hand to institute a close study it would be found that *Elephas primigenius,* the true Siberian mammoth, never lived in the United States, which was occupied by three distinct species of fossil elephants, the form most closely related to the Siberian mammoth (*E. primigenius*) being *Elephas jacksoni,* the others being the more easily distinguished forms *Elephas columbi* and *Elephas imperator.*

The last paper was by Dr. A. D. Hopkins on 'Ornaments and Blemishes in Wood, Caused by Insects and Birds.'

Dr. Hopkins stated that the object of the paper was to discuss the causes of some of the ornamental conditions and blemishes commonly seen in the wood of trees and their crude and finished products.

The blemishes appear in lumber and wood-finish as discolored spots, checks, dark stains, resin deposits, pin holes, worm holes, etc., and in the trees as scars, decayed spots and hollow trunks.

The ornamental conditions appear in the lumber and inside finish and furniture as so-called bird's-eye, curly, burl and wavy or satined effects, and on the surface of the wood beneath the bark as artistic and curious carved and embossed work.

It would be difficult to find a recently constructed public building or private residence which does not show in the natural wood finish one to many blemishes, the results of many causes. Most of them, which are not

natural conditions in the wood, are caused primarily by insects, birds and various other agencies, which produce wounds in the cambium of the living tree. When we are able to identify these blemishes with the species of bird or insect that caused them, they become objects of interest. Certain bird's-eye and curly effects are even more interesting, because more pleasing to the eye, and the exact cause is more obscure.

The object of the study of woodpecker work in living trees was to determine characters by which the subsequent results from wounds made by them in the living cambium could be identified from those caused by insects and other agencies; also to determine the relation of the birds and their work to subsequent injuries by insects, or the reverse.

The material collected by him during the past fourteen years represents some forty species of forest trees, of many genera and families, and from widely different sections of the country.

It appears that the object of the sapsucker working in the bark of living trees is to secure both liquid and solid food from the sap, cambium and bast, and not for the purpose of collecting insects, or, at least, not primarily for that purpose.

The punctures in the bark vary in size, form and arrangement, according to the species of tree and the character of the food furnished. In the pine, spruce, hemlock, juniper, and probably in all conifers, the desirable substance is furnished by the living bast tissue and cambium, while the wood yields resin instead of sap, therefore the birds have no occasion to puncture the outer wood-ring, and very rarely do so, whereas in maple, walnut, hickory and such trees as furnish at certain times of the year a prolific flow of saccharine sap from the sapwood, the outer ring of wood is always punctured. In the former, the wounds are usually broad, often connected, and usually arranged in longitudinal rows, while in the latter they are narrow, funnel-shaped, rarely joining, and arranged in transverse rows.

The method of healing of these wounds is quite variable, being influenced not only by the character of the wound, but by the species or genus of trees in which they occur.

The resulting defective or ornamental conditions and subsequent annual layers of wood also vary in character and economic importance with different kinds of trees and commercial products.

While the healed wounds made by the birds cause a bird's-eye effect in the finished surface, they are not responsible for all bird's-eye wood. The small densely placed bird's-eye in maple is not caused by birds, but appears to be a character peculiar to certain individual trees, while that resulting from the work of birds is coarser, less distinctly defined, more sparsely arranged, and the wood in which it occurs usually shows small dark spots or streaks where the original wound was made in the living cambium.

Specimens of blemishes, bird's-eye and stained effects caused by birds and insects in many kinds of wood were shown, together with some forty stereopticon slides.

Attention was called to the knotty walking sticks, umbrella handles, crops, etc., which represent an extensive industry, in which the desired knotty effect is produced artificially by making wounds with a sharp instrument in the living bark and cambium of the growing stem, which is left to grow one year and heal the wounds before cutting the stick and removing the bark. This result is similar to that from a wound made by a sapsucker, which may have suggested the idea.

E. L. MORRIS,
Recording Secretary.

MICHIGAN ORNITHOLOGICAL CLUB.

THE annual meeting of the Michigan Ornithological Club was held in the museum of the University of Michigan at Ann Arbor on April 1, 1905. A business meeting was held in the forenoon in the curator's office. The following officers were elected for 1905–6.

President—Walter B. Barrows.
First Vice-President—A. H. Griffith.
Second Vice-President—James B. Purdy.
Third Vice-President—J. Claire Wood.
Secretary—Alexander W. Blain, Jr.
Treasurer—Frederick C. Hubel.

Editorial Staff of the Bulletin: Editor, Walter B. Barrows; *Associates*, P. A. Taverner, Norman A. Wood.

The afternoon session was held in the university lecture room. The meeting was called to order by Professor Barrows, who addressed the society on 'Recent Advances in Ornithology.' The following program was then presented:

LEON J. COLE: 'In Memoriam—Albert Bowen Durfee' (read by J. Wilbur Kay in the absence of the author).

NORMAN A. WOOD: 'Birds noted En route to Northern Michigan.'

OTTO MCCREARY: 'Ecological Distribution of the Birds of the Porcupine Mountains, Michigan.'

MAX M. PEET: 'Observations on the Nesting Habits of a Pair of House Wrens.'

ALEXANDER W. BLAIN, JR.: 'On the Use in Surgery of Tendons of the Ardeidæ and Gruidæ.'

NORMAN A. WOOD: 'Some New and Rare Records for Michigan.'

EARL H. FROTHINGHAM: 'A List of Birds from the Michigan Forest Reserve, Crawford County.'

LEON J. COLE: The Occurrence of Bewick's Wren, *Thryomanes bewickii* (Aud.), at Grand Rapids (read by Wm. H. Dunham).

P. A. TAVERNER: 'A Preliminary Notice of an Interesting Migration Route.'

ALEXANDER W. BLAIN, JR.,
Secretary.

THE AMERICAN MYCOLOGICAL SOCIETY.

THE American Mycological Society met in affiliation with the American Association for the Advancement of Science at Philadelphia, December 28–31. The following officers were elected:

President—Charles H. Peck.
Vice-President—F. S. Earle.
Secretary-Treasurer—C. L. Shear.

The following committee on organization and relation to the other societies was appointed by the president: C. L. Shear, S. M. Tracy and Dr. Roland Thaxter.

The following program was presented:

CHARLES THOM: 'Suggestions for the Study of Dairy Fungi.'

GEO. G. HEDGCOCK: 'A New Disease of the Cultivated Agave.'

J. C. ARTHUR: 'A Study of North American Coleosporiaceæ.'

E. J. DURAND: 'Classification of the Geoglossaceæ.'

J. C. ARTHUR: 'The Terminology of the Spore Structures in the Uredinales.'

E. A. BURT: 'Generic Characters of North American Thelephoraceæ.'

PERLEY SPAULDING: 'Cultures of Wood-Inhabiting Fungi.'

G. F. ATKINSON: 'Two Fungous Parasites on Mushrooms.'

G. F. ATKINSON: 'The Genus *Balansia* in the United States.'

DISCUSSION AND CORRESPONDENCE.

AUBUBON'S ACCOUNT OF THE NEW MADRID EARTHQUAKE.

WITHIN the last few years there has been a reawakening of interest in the New Madrid earthquakes as evidenced by the papers of Dr. W J McGee in the fourth volume of the Geological Society of America, Dr. G. C. Broadhead in the *American Geologist* in August, 1902, and Professor E. M. Shepard in January–February number of the *Journal of Geology* of the present year. In Broadhead's paper are given abstracts of a considerable number of contemporaneous and other early publications on the earthquake phenomena, but the description by Audubon seems to have been overlooked. As he was one of the few, quite possibly the only, scientist who was in the region at the time, his account is of interest. It is of significance that it agrees very closely with the descriptions of many of the residents, indicating that the accounts are probably not so distorted as has sometimes been thought. Audubon's description is in part as follows:*

> Traveling through the Barrens of Kentucky * * * in the month of November [1812],† I was jogging on one afternoon, when I remarked a sudden and strange darkness rising from the western horizon. Accustomed to our heavy storms of thunder and rain I took no more notice of it, as I thought the speed of my horse might enable me to get under shelter of the roof of an acquaintance, who lived not far distant, before it should come up. I had proceeded about a mile, when I heard

* 'Audubon and his Journals,' Vol. II., pp. 234–237, Charles Scribner's Sons, New York, 1897.

† The first of the series of shocks was on December 16, 1811.