The American Naturalist for March commences with observations on 'A Remarkable Occurrence of the Fly, *Bibio fraternus* Loen' by James G. Needham, the writer noting that several counts showed an average, on the ground, of 15 to a square foot, and that there were forty acres of *Bibio* territory. Even more remarkable was 'An Unusual Occurrence of *Dinoflagellata* on the California Coast' described by H. B. Torrey. The organism was a species of *Gonyaulax* and it caused the death of large numbers of fishes, holothurians and crustaceans, probably the putrefactive changes produced by the death of vast numbers of *Gonyaulax* itself. Annah Putnam Hazen describes 'Regeneration in *Hydractinia* and *Podocoryne*,' and James A. G. Rheen discusses 'The Standing of *Pteropus Haldemani* Hallowell' which he considers as a synonym of *Epomophorus gambianus* Ogilby. Finally there is a long and valuable article by John H. Lovell on 'The Colors of Northern Polypetalous Flowers' considered not only in their relation to insects but to the origin of the colors themselves.

The Popular Science Monthly for April opens with a discussion of the question 'Is this a Degenerate Age?' by J. J. Stevenson, who evidently considers that it is not. Frank H. Bigelow describes 'The Formation and Motions of Clouds,' showing the necessity for a study of the higher regions of the atmosphere in order to enhance the accuracy of weather forecasts, while under the title 'Contributions to Biology from Investigations on the Breeding Salmon' Yandell Henderson reviews the work of Miescher and gives some of the more important results of his observations. Frank Thilly discusses the question 'What is Philosophy?' and Edwin Grant Dexter presents 'A Study of Calms,' showing their apparent effect upon life phenomena. 'Our Foreign Commerce in 1901' is considered by Frederic Emory, showing what advances have been made in foreign trade and what may still be done in that direction, and Frank K. Cameron treats of 'The Soil as an Economic and Social Factor,' making a plea for more serious consideration of the subject. J. H. Gore tells of the proposed 'Draining of the Zuider Zee' and David Starr Jordan of 'The Evolution of Fishes.' Finally we have some notes on Scientific Literature and the Progress of Science, the whole making an extremely good number.

SOCIETIES AND ACADEMIES.

THE SCIENCE CLUB OF THE UNIVERSITY OF WISCONSIN.

At the January meeting of the Club Dr. Victor Lenher described some curious results of an investigation of the telluride minerals. He has observed that when metallic tellurium and a gold solution are brought together, the gold is completely precipitated, while the replaced tellurium passes into solution. The natural tellurides of gold, when brought in contact with chloride of gold, precipitate gold from solution, and when only a little gold solution is used they completely bleach the yellow solution. Not only does this reaction show why gold is not infrequently found as a pseudomorph in the telluride localities, but it also casts considerable doubt on the true chemical character of the tellurides. As the fusion of gold with tellurium gives an alloy which precipitates gold from solution, this method of preparing an artificial telluride has been unsuccessful. Hydrogen telluride introduced into a gold solution was found to act as a reducing agent, precipitating pure gold containing no trace of tellurium. As sulphur chloride and nitric acid extract tellurium from these minerals, leaving noble metal as a residue, grave doubt seems to be cast as to these minerals being true chemical compounds.

On February 27 Professor Louis Kahlenberg lectured before the Club on the subject, 'Chemical Action and the Theory of Electrolytic Dissociation.' After a brief explanation of the theory of electrolytic dissociation, the lecturer stated that adherents of the theory have claimed that instantaneous chemical action, and even all chemical action, is due to the presence of free, charged ions, in other words, that instantaneous chemical changes take place only in conducting solutions. This claim is based on the fact that

aqueous solutions of acids, salts and bases are conductors of electricity, and that when such solutions are mixed, chemical changes occur in them instantly in most cases. In this connection a number of typical experiments of instantaneous precipitations by double decomposition in aqueous solutions were exhibited. Solutions of silver nitrate were treated with solutions of the chlorides of hydrogen, iron, sodium, potassium, etc.; in each case a white precipitate of silver chloride was instantly formed. Solution of copper nitrate in water was treated with hydrogen sulphide and copper sulphide was thrown down at once, etc.

The lecturer explained that such instantaneous chemical changes are, however, not at all confined to solutions that conduct electricity. Absolutely dry hydrogen chloride, ammonia, hydrogen sulphide, phosphorus trichloride, arsenic trichloride, antimony trichloride, tin tetrachloride and silicon tetrachloride, as well as the oleates of copper, nickel, iron and manganese, are soluble in hydrocarbons—benzine, for instance—and such solutions are most excellent insulators or non-conductors of electricity. These solutions have much the same outward appearance as conducting aqueous solutions. It was shown experimentally that when copper oleate solution in benzine is treated with the chlorides of hydrogen, phosphorus, arsenic, antimony, tin, or silicon, in the same solvent, there forms instantly in each case a heavy brown precipitate which is anhydrous cupric chloride. It is obvious that the formation of cupric chloride in these non-conducting solutions is perfectly analogous to the precipitation of silver chloride from the aqueous conducting solutions above mentioned.

Further instantaneous precipitations in these non-conducting hydrocarbon solutions were demonstrated experimentally, such as the formation of cupric sulphide, ammonium chloride, nickel chloride, cobalt chloride, etc. It was thus conclusively shown that instantaneous precipitations take place in non-conducting as well as in conducting solutions, and that the changes are perfectly alike in character. From this it follows that it cannot be claimed that instantaneous chemical action takes place in conducting solutions *because* they are conductors, or, in the language of the dissociation theory, because they contain free, charged ions.

Molecular weight determinations of the sulphates of copper, iron, nickel, cobalt, etc., when dissolved in water, show that these salts are not dissociated; yet these solutions are good conductors of electricity. On the other hand, abnormally low molecular weights are observed in some solutions that are nevertheless non-conductors. Again, according to boiling-point determinations, common salt in water would be dissociated more in concentrated than in dilute solutions, which is absurd. It has further been demonstrated that solutions of acid sodium tartrate, as well as solutions of other acid salts, are far more sour to the taste and more toxic in their action toward plants than they ought to be according to the theory of electrolytic dissociation. From this array of facts, which has been published in a series of articles in the *Bulletin of the University of Wisconsin* and the *Journal of Physical Chemistry,* Professor Kahlenberg concludes that *the theory of electrolytic dissociation is untenable.*

At present scientists have no adequate explanation as to why certain solids—*e. g.,* metals—conduct electricity, and certain other solids—*e. g.,* wax or glass—do not. It is therefore not surprising that the real reason that some solutions conduct and others do not is yet unknown. A further careful, experimental study of solutions in various solvents will no doubt throw light upon this subject.

C. K. LEITH.

PHILOSOPHICAL SOCIETY OF WASHINGTON.

THE 548th regular meeting was held March 1, 1902.

Under informal communications several speakers described unusual appearances of rainbows, and Mr. Marcus Baker gave a brief statement of the present status of the Carnegie Institution.

The first regular paper was by Mr. D. L. Hazard, on 'The Secular Variation of the Magnetic Declination in the United States.'

This change in the direction of the compass needle appears to be of a periodic character, requiring several hundred years for its complete development and amounting in the compact part of the United States to 5°–8°. The Coast and Geodetic Survey has followed up the phenomenon by observations for the past fifty years, and has now found it possible to deduce certain general relations between the geographic location of a place and the terms of the periodic formula representing the secular change in declination there. By means of these relations tables have been prepared giving the secular change in declination in each state and territory, and these tables were used in preparing the data for the isogonic chart of the United States for 1902 which has just been issued by the Coast and Geodetic Survey.

In the discussion that followed, Mr. Baker referred to the voluminous magnetic records of the General Land Office, discussed by Mr. Gannett. Mr. Bauer told of the expedition now in the field to locate the magnetic North Pole; and Mr. O. J. Klotz, of Ottawa, spoke of his own work based on the Canadian observations.

The next paper was by Mr. C. F. Marvin, of the Weather Bureau, on 'Anemometer Comparisons and the Use of Ball Bearings.' The methods employed in testing anemometers on whirling machines were described, and the advantages gained by making the tests in the open air during more or less windy weather pointed out. The artificial wind produced by the whirling-machine motion, combined with the natural wind, gives a resultant wind of a constantly changing velocity which resembles closely the gusty winds of nature. From the present state of knowledge of the Robinson anemometer problem, it appears that each type of anemometer requires to be investigated on its own merits. Anemometers of the same pattern, dimensions, construction and moment of inertia will agree within less than one per cent. In the standard Weather Bureau anemometer the old Robinson law that the cups move one third as fast as the wind is found to be true only for velocities between five and ten miles per hour. The cup centers move relatively much faster at higher velocities. Thoroughly satisfactory tests have not been made at high velocities, but the indicated velocities of seventy-five to one hundred miles per hour obtained from time to time in gales and storms are undoubtedly too high.

The formula for the standard instruments is found to be $V=0.263+2.953v-.0407v^2$; where v is the velocity of the center of the cups and V is the velocity of the wind, by observation up to about 35 miles per hour.

Speaking of the friction of anemometers it was stated that the popular impression that friction exerted an important influence on the indications of the anemometer was a mistake, and that it was easy to construct instruments even without ball bearings and keep them in such a condition that the friction was an unimportant factor in ordinary meteorological work. Friction is of importance only in the measurement of the most feeble air currents. These conclusions resulted from tests made with the whirling machine, and have recently been entirely confirmed by a six-month comparison of two standard Weather Bureau anemometers, exactly alike in all respects except that one instrument was fitted with ball bearings of approved construction, while the other instrument was an old one with the ordinary rubbing bearings. In a total run of 31,600 miles the ball-bearing anemometer gained 46 miles, viz., 0.15 per cent., on the anemometer with ordinary bearings. This slight difference was doubtless due quite as much to accidental causes as to the large difference in friction which was perfectly apparent to the ordinary perception.

Charles K. Wead,
Secretary.

ANTHROPOLOGICAL SOCIETY OF WASHINGTON.

The 327th meeting was held February 24. The Secretary to the Board of Managers announced the election to active membership of Dr. O. F. Cook and Lieut. W. E. Safford, U. S. N.

A Chilkat blanket loom with blanket in process of manufacture was exhibited by Dr.

Hough in the absence of Lieut. G. T. Emmons, U. S. N.

These blankets or fringed mantles of ceremonial character are invariably decorated with a symbolic design of the bear in yellow, blue, black and white. The loom consists of two uprights set in blocks, supporting a beam from which hang the unstretched warp threads of mountain sheep's wool twisted with bark fiber. The woof of dyed wool is twined by hand with the warp, the woman following a design drawn upon a board.

Dr. J. Walter Fewkes presented a communication entitled 'Sky God Personations in Hopi Worship.' Dr. Fewkes said that Hopi impersonations are made by means of masks, a dance with masks or by symbols as idols, pictures or images. The sky god is prominent in two great festivals, the dramatization of the return of the clan ancients or catchinas and their departure. In the former, he is a sun-sky-god personation called Ahuli, the 'returning one,' and in the latter Eototo, a god of growth, leads the ancients back. In the winter solstice ceremony the sky god is in form of a bird. The sky god is male and the earth god is female.

In discussing the paper Professor McGee said that man is constrained by custom more in uncivilized life. They personify certain potencies in common customs; later, these become ceremonies.

Dr. Fewkes' paper led the way to the discussion of the next topic, 'Animism, Totemism and Totemic Impersonations,' by Miss Alice C. Fletcher, Dr. A. E. Jenks, J. N. B. Hewitt, Francis LaFlesche and others. Miss Fletcher said that among the Sioux there is nothing answering to the sky god. The prominence of the sky god as a general term is rather fundamental. The Indian mind is like our own as to the beliefs; we are not yet free as to our minds. The conception of a god by the Indian would not be that of a single god, but dual, the union and manifestation of male and female principles.

Mr. Francis LaFlesche gave a legend of the Omaha and Osage, bearing on the origin of totems. When they were as one tribe they were very poor. They said 'No one can help us but the magic power of Wakanda.' The children put clay on their faces and prayed to Wakanda. Then they got power to make bows and arrows and they blessed the bows and arrows, and in order to preserve the art they set apart a clan. They made houses, etc., and divided the families into clans. The buffalo, elk and turtle, for instance, are not worshipped as totem animals, but are a means through which Wakanda is worshipped. Mr. LaFlesche describes the way men get Wakanda. A hole in shape of a house is made in the ground beneath the grass roots, and the man stands before it and cries to Wakanda; he makes no definite petition, but cries for strength. Perhaps a wolf appears; it is a vision; he preserves that vision by killing a wolf, and takes the skin, or an ear, or tail, and this becomes his totem from Wakanda.

Mr. Hewitt spoke of the Iroquois god that holds up the sky. The legend relates that he was born from the armpit of his mother; he said he came from the sky. His brother is called 'Flint.' In the beginning animals were asked to support human beings, hence came totems. Personal totems originate in a dream at the age of puberty.

Miss Fletcher said in explanation that Wakanda is not seen, or felt, or heard and is only manifest through lesser powers.

WALTER HOUGH.

THE GEOLOGICAL SOCIETY OF WASHINGTON.

AT the meeting of the Society on March 12 the first paper, by Mr. George I. Adams, was entitled 'Lithologic Phases of the Pennsylvanian and Permian of Kansas, Indian Territory and Oklahoma.' As stated by Mr. Adams, the succession of formations in Kansas, Indian Territory and Oklahoma, the lower of which are of Coal Measure or Pennsylvanian, and the upper of Permian age, forms an unbroken series. Within the area of their occurrence they exhibit several lithologic phases. The section in Kansas may be briefly described as: (1) Basal shales and sandstones with coal beds, (2) limestones interstratified with shales and some coal beds, (3) limestones interstratified with shales which carry no coal, and (4) shales which are

gypsiferous. In Indian Territory and Oklahoma the limestones thin out and disappear from the section approximately along the Arkansas River. The striking feature of the series south of the Arkansas is the transition of brown sandstones and carbonaceous shales with coal beds to red sandstones and shales. The line marking approximately the limit of the red color cuts diagonally across the stratification. The Red Beds, so-called, are accordingly equivalent in part to divisions 2, 3 and 4 of the Kansas section, with which they are in strike. Their lower portion is Coal Measure or Pennsylvanian in age, and the higher horizons in western Oklahoma are true Permian.

Mr. F. B. Weeks presented a paper on 'Gold-bearing Quartzites of Eastern Nevada.' In the Great Basin region the base of the sedimentaries is exposed in only a few localities. It consists of a coarse conglomerate of loosely cemented fragments of the underlying crystalline rocks, which passes rapidly into well-defined quartzites. These quartzites vary in thickness from a few hundred feet to twelve thousand feet, and are succeeded by a shale band carrying a Lower Cambrian fauna.

In many of the Great Basin ranges the lowest sedimentaries exposed are quartzites, having similar stratigraphic relations. They are usually light-colored, fine-grained rocks, and are known to be auriferous at a few localities. In these areas the strata have been faulted and crushed, and the series is composed of a succession of massive beds and of zones of crushed quartzites. No dikes or evidences of injection of vein material which affected the deposition of ore-bearing solutions have been found. At certain localities veins have been supposed to exist, but examination of the material in thin section reveals its quartzitic character. The pay ore is found in the zones of crushed quartzites and along fracture planes in the massive beds.

From well authenticated reports of assays of material derived from prospects in the massive beds, which had not been affected by faulting, it was found that these beds contain from five to ten dollars in gold. It was suggested that the zones of crushed quartzite had been enriched by percolating waters which had derived their ore-bearing solutions from the overlying quartzite beds, and that in the latter the gold was probably associated with the sands on the sea beach from which these quartzites were formed, perhaps in the same manner as we find it in certain beach sands of the present day. It is desirable that data should be obtained to show how widespread is the occurrence of gold in the quartzites of this region.

A paper entitled 'Notes on a (Hitherto Undescribed) Meteorite from Admire, Kansas,' was presented by Mr. G. P. Merrill. The Kansas meteorite was described by Mr. Merrill as belonging to Brezina's rökicky group, of which the meteorite of Eagle Station, Carroll County, Kentucky, is the only representative thus far found in America. The mineral composition was given as olivine, metallic iron, schreibersite, troilite, chromite and lawrencite.

The striking and most interesting feature of the stone as described was the pronounced brecciated structure, the olivines which occurred in single crystals and aggregates from one to thirty millimeters in diameter being almost universally fractured, and many of them in a decidedly angular condition. The metallic iron was described as occurring in the form of a binding constituent, the meteorite being therefore a breccia of olivine fragments with a metallic cement. It was noted that this metallic portion, however, occurred in two forms, the one compact and taking readily a high silvery polish, and the other less dense and dull gray.

Chemical analysis of the dull iron showed it to be not plessite, as ordinarily assumed, but a spongy mass consisting of metallic iron, troilite and lawrencite, or both; the lawrencite in such cases manifesting itself very quickly through oxidation and the exudation of a greenish iron chloride passing over rapidly into an oxide.

Starting out from the margin of these areas were acicular crystals, which it was assumed were incipient crystallizations of the metallic iron resulting from the reduction of the chloride. From the fact that the metallic por-

tions were found penetrating into the olivines and along the lines of fracture, it was also assumed that the iron was altogether secondary and posterior to the shattering of the silicate.

The meteorite will be described in detail in the *Proceedings of the U. S. National Museum.*

ALFRED H. BROOKS,
Secretary.

NEW YORK ACADEMY OF SCIENCES.
SECTION OF ANTHROPOLOGY AND PSYCHOLOGY.

A MEETING was held on February 28. Mr. J. H. Bair reported on some quantitative studies in sensory and motor association. His experiments have been carried out by aid of a typewriter, the subject reacting to different stimuli by striking different keys. Curves were presented showing the rate of formation of association. If, after the stimuli have been presented many times in the same order, the order is then changed, the association is interfered with, and the more so the firmer it has become. If the typewriter keys are interchanged, so that the reaction to each stimulus must be changed, this interferes still more with the association. These results showed, then, that the association of definite sense impressions with definite motor reactions was more persistent than the association of sense impressions with other sense impressions following in serial order, or than the association of movements with other movements following in serial order.

In the discussion of this paper, several other facts were mentioned, showing the importance of motor reactions in the formation of association. Professor Thorndike had observed that good visualizers, who are able to picture mentally a page of printed matter that they have read, yet cannot read off the pictured words; apparently because the visual images are not associated with motor responses.

Mr. J. B. Miner spoke on 'Involuntary Muscular Responses to Rhythmic Stimuli.' He described some experiments conducted by himself at Columbia and Minnesota universities, in which tracings were obtained for non-voluntary hand and head movements when the subjects listened to a series of uniform sounds. It has been noted by Thaddeus L. Bolton and others in their investigation of rhythm that such a series of sounds appears not uniform, but as if coming in groups of two or more sounds. The muscle responses obtained correspond with this perception of rhythm, one wave coinciding with each rhythmic group. The movements recorded strikingly agree with another phenomenon of rhythm in that a motor wave shows for each stimulus when the sounds came slowly (forty per minute), but when the rapidity of the sounds was increased the wave encompassed two, three and even four sounds. This agrees with the introspective observation that the subjective group includes more units as the sounds come more rapidly. On the basis of the data of muscular responses Mr. Miner believes that an adequate physiological explanation of rhythm may be formulated, while organic rhythms alone would not furnish a completely correlated activity.

Dr. Clark Wissler reported some ergograph experiments showing that the contracting muscle presents a power series which is constant, whether the resistance is applied by a spring or by a weight. While this power series is weakened by fatigue, the resistance value of any point in the muscle series is the same for a weight or for a spring. In other words, there appears no difference between the fatigue produced by weights and springs when estimated in terms of the muscle series.

R. S. WOODWORTH,
Secretary.

SECTION OF ASTRONOMY, PHYSICS AND CHEMISTRY.

THE Section met at the Chemist Club on the evening of March 3. The first paper of the evening was by Mr. Charles C. Trowbridge, on the 'Physical Nature of Persistent Meteor Trains.' Mr. Trowbridge gave a list of forty meteor trains which had remained visible to the naked eye for from two minutes to more than one hour. The trains were all seen by reliable observers. Several tables were exhibited, giving the size, shape and color of recently observed meteor trains.

Mr. Trowbridge gave his views as to the most probable composition of meteor trains, and presented several hypotheses which might account for their long-continued luminosity. The hypotheses advanced were the following: (1) Incandescence of the particles of the train; (2) phosphorescence of the train; (3) electrical discharges; (4) reflection of the light from the sun, moon or stars by the particles of the train; (5) electrons striking the meteoric dust or the air particles in or about the train, causing a fluorescent glow similar to that in a Crookes tube. The source of the electrons may be either the highly heated meteor, in which case the long-continued luminosity of the train must be accounted for by a retardation of the fluorescence, possibly due to the low temperature, or the electrons may come from the sun; in this case the explanation would be similar to that lately given by Arrhenius for the light of the aurora. The author stated that this last hypothesis had not, so far as he knew, been previously advanced, and that the balance of evidence seemed to show that the luminosity of the persistent trains must be primarily caused by energy of an electrical nature. The subject is one of practical importance, owing to its bearing on meteorology.

The paper by Dr. S. C. Mitchell gave the results of observations on the flash spectrum taken by him at Sawah Loento, Sumatra, during the eclipse of May 18, 1901. Dr. Mitchell became, by the courtesy of the astronomical director of the Naval Observatory, a member of the eclipse expedition sent out by this government. The spectroscope employed was a Rowland objective plane grating of 15,000 lines, used in connection with a cœlostat. The weather experienced at Sawah Loento was like that at almost every astronomical location in Sumatra, cloudy throughout totality. However, through clouds, a spectrum of the flash at third contact was obtained which showed 374 bright lines between F and H. Investigations into the reasons for the differences of intensities in the flash and the Fraunhofer spectrum showed that the intensities depend on the heights to which the reversing layers of the different metallic elements around the sun extend. It was found possible to arrange the elements in three groups according to their atomic weights.

Comparisons were made with Dr. Norman Lockyer's list of 'enhanced' lines, or those stronger in the spark than in the arc, in order, if possible, to confirm Lockyer's idea that the 'enhanced' lines play an important rôle in the chromosphere spectrum. Fifty-seven per cent. of the 'enhanced' lines of titanium were found in the flash, but at the same time all of these lines corresponded without exception to strong lines in the sun. On the other hand, so many cases were found where a strong 'enhanced' line was not matched in the sun by a strong Fraunhofer line, nor by any line in the flash spectrum, that it seemed that the measures did not support Lockyer's opinion.

Section adjourned.

F. L. Tufts,
Secretary.

THE ACADEMY OF SCIENCE OF ST. LOUIS.

At the meeting of the Academy on the evening of March 3, about thirty-five persons present, Mr. L. T. Genung, of St. Louis, gave a general discussion of the Lepidoptera, their structural characteristics, habits and adaptations. He exhibited some of the more striking specimens of the Denton collection of butterflies, recently presented to the Academy of Science, and discussed the meaning of the various colors.

A paper by Mr. C. F. Baker, entitled 'A Revision of the Elephantopeæ, I.,' was presented by title.

Two persons were elected to active membership.

William Trelease,
Recording Secretary.

THE COLORADO ACADEMY OF SCIENCE.

At the annual meeting of the Academy, held February 11, 1902, in rooms of the State Historical and Natural History Society, State House, Denver, Colorado, officers were elected, and chairmen of sections appointed February 27, resulting in the selection of the following for the year 1902:

President, A. M. Collett; *First Vice-President*, Mrs. Cornelia Miles; *Second Vice-President*, Z. X.

Snyder; *Secretary and Treasurer*, Will. C. Ferril; *Executive Committee*, George L. Cannon, Ellsworth Bethel, Charles I. Hays, and *ex officio*, A. M. Collett and Will C. Ferril.

Sections and chairman of each, as follows: *Botany*, Ellsworth Bethel; *Zoology*, Alva H. Felger; *Geology*, George L. Cannon; *Microscopy*, Dr. J. B. Kinley; *Meteorology and Physical Science*, N. M. Fenneman; *Nature Study*, S. Arthur Johnson; *Anthropology and Ethnology*, Dr. A. L. Bennett.

The Colorado Academy of Science is limited in its membership to those of the State Historical and Natural History Society, who may be engaged in scientific work and study.

WILL. C. FERRIL,
Secretary.

THE ELISHA MITCHELL SCIENTIFIC SOCIETY.

THE 140th meeting of the Society was held on March 11 at the University of North Carolina.

The following papers were read:

'Enzymes': Dr. A. S. WHEELER.

'Reversible Action of Enzymes': Dr. R. H. WHITEHEAD.

'Molecular Attraction': Dr. J. E. MILLS.

CHAS. BASKERVILLE,
Secretary.

NEW YORK ASSOCIATION OF BIOLOGY TEACHERS.

THE first meeting for the current year of the New York Association of Biology Teachers was held at 43 Hancock Street, Brooklyn, N. Y., on January 31, 1902.

The following officers were elected for the year:

President, Dr. H. R. Linville, DeWitt Clinton High School; *Vice-President*, Dr. E. F. Byrnes, Girls' High School; *Secretary*, George W. Hunter, Jr., DeWitt Clinton High School; *Treasurer*, Miss M. F. Goddard, Peter Cooper High School.

Two papers were read, entitled, 'The Pedagogical and Ethical Content of Biology,' by Miss E. F. Byrnes, and 'The History of Zoology in the Secondary Schools of the United States,' by Miss Marion R. Brown, of the Erasmus Hall High School.

The purpose of the club is to discuss and, if possible, to determine, the best methods of teaching biology in the secondary schools. The club is now entering upon the third year of a very successful existence with a much increased membership.

G. W. HUNTER, JR.,
Secretary.

DISCUSSION AND CORRESPONDENCE.

MOVEMENTS TOWARD UNION AMONG GEOGRAPHERS.

THE recent publication in SCIENCE of letters from Professor Russell, Professor Davis, and Mr. Stanley Brown recalls various other movements toward union among geographers. One of the earlier of these led to the founding of the American Geographical Society in New York; another to the institution of the National Geographic Society, with headquarters in Washington; others to the establishment of geographic clubs or societies in several centers; and still others to the enlargement of the geographic organization in Philadelphia first from a club to a society, then to a geographic institute. At least two of these organizations (those headquartered in New York and Washington, respectively) were originally designed to meet precisely such needs as those outlined by Professors Russell and Davis, together with the equally obvious need of diffusing the elements of geographic knowledge through public meetings and periodical publications; yet in both cases the latter function assumed such prominence as measurably to divert attention from the primary purpose. In both societies the modification in plan came about gradually—and it is probable that in both the changes grew out of the natural effort to balance income and expenditure in such wise as to please the majority of the members at each stage of progress. It is true, as the recent correspondents have pointed out, that the present organization of American geographers in a number of societies fails to meet all professional requirements; but it would seem to be an open question whether the needs might not be met more effectively and economically in some existing organization than by adding another to the already overwhelming list of American scientific societies.

Some of the events in the history of the National Geographic Society seem peculiarly