3. Mary J. Ross, 'The Origin and Development of the Gastric Glands of *Desmognathus, Amblystoma* and Pig.'

This work was submitted to the Faculty of Cornell University for the degree of Doctor of Philosophy.

4. H. F. Thatcher, 'A Preliminary Note on the Absorption of the Hydranths of Hydroid Polyps.'

The conclusion is reached that the process is not liquefaction of protoplasm, or of withdrawal of the polyp as a whole. The absorption takes place by the degenerating cells of the endoderm and ectoderm being turned into the digestive tract of the colony.

VOLUME IV., No. 3, February, 1903:

1. Axel Leonard Melander, 'Notes on the Structure and Development of *Embia texana*.'

2. W. R. Coe and B. W. Kunkel, 'A New Species of Nemertean (*Cerebratulus melanops*) from the Gulf of St. Lawrence.'

3. R. P. Cowles, 'Notes on the Rearing of the Larvæ of *Polygordius appendiculatus* and on the Occurrence of the Adult on the Atlantic Coast of America.'

The rearing of the larvæ of an American *Polygordius* by the diatom method, and its identification with the European species *appendiculatus*.

4. Arthur W. Greeley, 'On the Effect of Variation in the Temperature upon the Process of Artificial Parthenogenesis.'

The length of exposure to the solution necessary to produce artificial parthenogenesis of the unfertilized eggs of *Asterias* and *Arbacia* varies inversely with the temperature. An increase of temperature to 27° C. liquefies the protoplasm of the *Asterias* eggs and produces a fragmentation of the nucleus.

5. Wm. Morton Wheeler, '*Erebomyrma;* a new genus of Hypogæic Ants from Texas.'

Containing an account of the first ant-genus to be established by an American.

Science Abstracts will in future be published in two sections, *Section A:* physics embracing light, including photography; heat; sound; electricity and magnetism; chemical physical and electro-chemistry; general physics; meteorology and terrestrial physics; physical astronomy. *Section B:* embracing steam plant, gas and oil engines; automobiles; oil-engine-driven ships and launches; balloons and airships; general electrical engineering, including industrial electro-chemistry; electric generators, motors and transformers; electrical distribution, traction and lighting; telegraphy and telephony. The American Physical Society is now joined with the Institution of Electrical Engineers and the Physical Society of London in the direction of the publication and has elected Professor E. H. Hall of Harvard University as its representative on the publishing committee. In consequence of this arrangement, Section A will in future be received by all members of the American Physical Society. The American Institute of Electrical Engineers is also cooperating with the committee and taking special means to bring the publication to the notice of all its members, who will in future be able to obtain it at a reduced subscription rate through the secretary of the American Institute.

SOCIETIES AND ACADEMIES.

THE NEW YORK ACADEMY OF SCIENCES. SECTION OF ASTRONOMY, PHYSICS AND CHEMISTRY.

AT the meeting of the section on January 5, the following papers were presented: Mr. C. C. Trowbridge on 'Some Facts Regarding Persistent Meteor Trails—the significance of size, color and drift'; Professor Harold Jacoby on a 'Comparison of Astronomic Photographic Measures With the Reseau and Without it.'

At the meeting of February 2, Mr. Herschel C. Parker read a paper on 'Experiments Concerning Very Brief Electrical Contacts,' exhibiting contact keys by means of which he could get a fairly accurate range of adjustment from 0.1 second to 0.00001 second.

Professor Marston T. Bogert gave a very interesting talk on 'Some Products Derived from Coal,' paying special reference to the products from coal-tar. From bituminous coal, by distillation, are derived: (1) Coal gas, (2) ammonia water, (3) tar and (4) coke.

The uses of coal-gas and coke are so well known as to need no mentioning. In the United States, the total production of ammonium compounds for the year 1900 amounted to 2,700 tons, valued at about $2,000,000.

The chief source of coal-tar is the coal-gas manufacture, but large amounts are also obtained from the by-product coke ovens, the water-gas industry, etc. During the year 1900, twenty per cent. of the gas produced in the United States was coal-gas, requiring the distillation of 1,350,000 tons of coal, and producing thirteen and one half billion cubic feet of gas, *i. e.,* 10,000 cubic feet per ton of coal. The yield of tar is approximately five per cent. of the weight of the coal used; the product of tar was, therefore, 67,000 tons. If we add to this the 52,000 tons of tar from the by-product coke ovens, we have a total of about 120,000 tons of tar produced in 1900 from coal. This is less than one fifth of the amount produced in England from similar sources. The total production of coal-tar in Europe for the year 1898 was 1,120,000 tons.

Coal tar is first roughly divided into the following fractions: (1) First runnings, or light oil (lighter than water); (2) middle oil, or carbolic oil; (3) heavy oil, dead oil, or creosote oil; (4) anthracene oil, or green grease; (5) pitch (remains in the stills).

These five products were taken up in detail, and about one hundred drugs, perfumes, etc., were exhibited, the method of derivation of the substances being explained.

S. A. Mitchell,
Secretary of Section.

BIOLOGICAL SOCIETY OF WASHINGTON.

The 366th meeting was held Saturday, February 7.

Vernon Bailey spoke on 'The Goodnight Herd of Buffaloes and Cataloes in Texas,' saying that this comprised fifty buffaloes and about seventy cataloes, or crosses between the buffalo and domesticated cattle. The breed selected for crossing was the Polled Angus, and the half-bloods resembled these more than they did the buffalo, being black, of the same build, and often hornless. This cross has most excellent beef qualities, growing rapidly and reaching a weight of 1,800 pounds, while it is unusually hardy. Mr. Goodnight hopes to establish a fixed breed of this grade. So far all crosses have been between buffalo bulls and Polled Angus cows, the demand for buffaloes being such that the buffalo cows have been kept breeding pure-blooded calves.

T. H. Kearney presented a paper entitled 'Further Observations on the Effect of Sodium and Magnesium Salts, with and without Calcium, upon Seedlings.'

In experiments upon seedlings of the white lupine (*Lupinus albus*) it was found that the degree of toxicity of certain salts of sodium and magnesium was greatly affected by the presence or absence of calcium. In pure solution magnesium sulphate was found to be far the most toxic, and sodium bicarbonate the least. In solutions to which an excess of calcium sulphate had been added the order of toxicity was quite different, sodium carbonate being toxic in slightest concentration, while magnesium sulphate became decidedly the least toxic. In pure solution a 0.00125 normal solution of magnesium sulphate represents the maximum concentration permitting the root tips of lupine seedlings to retain their vitality during a twenty-four-hours culture. Upon the addition of an excess of calcium sulphate, however, the root tips could survive in a normal 0.6 solution of the magnesium salt.

The question whether other higher plants, under exactly similar conditions of experiment, would show a corresponding relation to the same salts, immediately presented itself. With lucerne or alfalfa (*Medicago sativa*) almost identical results were obtained, the salts proving toxic in the same order and almost in the same degree, both in pure solutions and in solutions to which calcium sulphate was added.

As it was desirable to ascertain the effects of these salts on plants of widely different relationships, the experiments were repeated on maize, the criterion of toxic effect being the death point of the strongest rootlet. Very unexpected results were obtained, for with pure solutions both the relative and the absolute toxicity of the salts were found to be widely different from those observed in the case of the lupine. In pure solution the salt which killed at the lowest concentration was sodium carbonate, while the least toxic of all was

magnesium sulphate. With the latter salt the root tip retained its vitality in a normal 0.25 solution, hence at a concentration of the pure solution two hundred times as great as the maximum which allowed lupine root tips to survive. Equally interesting results were obtained upon adding calcium sulphate to the solutions.

It is important, in view of the diverse results obtained, to continue the experiments with many different plants. Until that is done no generalizations are possible, and we may only say that the protoplasm of remotely related plants differs widely in its reaction to pure solutions of various mineral salts; while the addition of a calcium salt would appear to cause a certain amount of uniformity in the effect of each salt upon various organisms.

Frank Bond discussed 'Irrigation Methods and Machinery,' illustrating his remarks with lantern slides showing how the conditions varied in different states and the different types of dams, reservoirs, canals and devices for measuring the amount of water used. He concluded with some remarks on the great Assouam dam on the upper Nile.

F. A. LUCAS.

GEOLOGICAL SOCIETY OF WASHINGTON.

AT the 138th meeting of the society, held in the assembly hall of the Cosmos Club, Wednesday evening, February 11, 1903, the following program was presented.

Mr. W. C. Mendenhall, 'Chitina Copper Deposits, Alaska.'

The Chitina copper belt is in the eastern part of the Copper River basin, Alaska.

The deposits which have been exploited here are concentrations in various forms of copper, which is believed to have been distributed originally in minute quantities throughout an extensive series of basalt flows of pre-Permian age. The most promising ore bodies are found near the contact with a heavy limestone which overlies the basalts. They occur as veins in the limestone and in the greenstone or as 'bunches' in the greenstone only. The ores are usually bornite or chalcocite in the surface exposures. Chalcopyrite and native copper also occur.

Mr. David White, 'An Anthracite Coal Field Three and a half Hours West of Washington.'

Under this title the speaker contributed some observations on the Sleepy Creek mountain basin in Morgan County, West Virginia. It has recently been thought by some geologists that the coal-bearing series here might be of Pottsville age, but the stratigraphic and paleontologic evidence were stated by Mr. White to agree in indicating that the beds belong to the Pocono.

One very thick, though highly impure, coal has been exposed at a number of localities. Its anthracitic character is ascribed to the porosity of its rock environment and the alterative influences to which it has been subjected because of its extreme eastern position. This position perhaps accounts also for its exceptional thickness.

Mr. George W. Stose, 'The Structure of a Part of South Mountain, Pennsylvania.'

South Mountain, the Blue Ridge of southern Pennsylvania, is composed of Lower Cambrian quartzites and shales forming a flat-topped, steep-sided anticline exposing Algonkian volcanics in the center. The quartzites dip steeply beneath the limestone of the Cumberland valley and only small local faults, if any, occur along the western flank of the mountain.

Offsets of the mountain front are due to additional anticlines coming in on the northwest and plunging southwestward beneath the limestone, which partakes of the folding of the mountain rocks. The offset opposite Waynesboro is accentuated by faulting.

Mr. Geo. Otis Smith, 'Abandoned Stream Gaps in Northern Washington.'

The cases cited are in the Okanogan valley, and, as shown by photograph and contoured map, are peculiar topographic features, but very common in this region. Such series of gaps on the valley side result from the successive occupation by streams flowing along the side of an expanding valley glacier. Antoine Coulee, near the junction of the Methow and Columbia Rivers has been described by Professor Russell as the fissure behind a displaced block. Glacial and physiographic evidence

was cited, however, to show that this larger gorge was also the product of stream erosion at a time when the Columbia cañon was occupied by the Okanogan glacier with a thickness of ice exceeding 2,500 feet.

W. C. Mendenhall,
Secretary.

THE RESEARCH CLUB OF THE UNIVERSITY OF MICHIGAN.

The club met on the evening of January 21, and listened to a paper by Dr. C. L. Meader on 'The Acquired Meanings of the Latin Pronoun Idem,' and a paper by Professor H. S. Carhart on 'The Rôle of Thermoelectromotive Forces in a Voltaic Cell.'

The latter contained in brief the thermodynamic theory of a voltaic cell, so far as relates to its properties dependent on temperature. It was shown that all these could be completely explained by means of electrolytic thermoelectromotive forces between a metal and the liquid in contact with it. Thermoelectromotive forces exist without temperature difference at the junctions, for a current will either absorb or generate heat at a junction according to its direction in relation to that of the thermo-electromotive force there.

Data were given showing that the temperature coefficients of a Daniell cell, a Carhart-Clark cell, and a calomel cell are all accounted for numerically by the thermoelectromotive forces at the metal-liquid junctions.

It was also shown that the heat represented by the second term of the Gibbs-Helmholtz equation is the difference between the heat generated at the negative electrode, where the current flows against the thermoelectromotive force, and that absorbed at the positive, where both current and electromotive force are in the same direction. The effects are thus localized in the cell.

It was also demonstrated by curves and numerical data that the electromotive force of a concentration cell is explained for dilute solutions by the thermo-electromotive forces at the two electrodes, because this electromotive force increases with the density of the solution. For this last reason also thermo-electromotive forces explain the change in the electromotive force of a Daniell cell when the density of either solution is changed. All these conclusions have been confirmed by numerous measurements.

Frederick C. Newcombe,
Secretary.

ELISHA MITCHELL SCIENTIFIC SOCIETY.

The 146th meeting was held in the Chemical Lecture Room, University of North Carolina, February 10, at 7:30 P.M.

In a paper on 'The Biological Blood Test,' Dr. R. H. Whitehead gave an account of the recent work of Uhlenhuth in the serum-diagnosis of blood in various species of animals, and called attention to its great importance in certain medico-legal cases.

Under the title 'Recent Work on Corals,' Dr. J. E. Duerden gave an account of his work upon the septal development in recent and fossil corals. In recent corals the septa beyond the primary septa—metasepta—are found to appear bilaterally, in a dorso-ventral sequence, within each of the six primary systems, the adult radial symmetry being secondary. In certain Palæozoic corals the metasepta arise in a regular dorso-ventral succession within only four of the six primary systems.

'The Peter Cooper Hewitt Static Transformer' was described by Professor J. W. Gore.

Chas. Baskerville,
Secretary.

COLORADO ACADEMY OF SCIENCE.

The 31st, 32d and 33d meetings of the Colorado Academy of Science were held in the rooms of the State Historical and Natural History Society of Colorado, in the Capitol building, Denver, Colorado, October 21, November 18 and December 16, 1902. The membership of the academy is restricted to those members of the State Historical and Natural History Society of Colorado engaged in scientific work and investigation. These sessions of the academy have had an attendance ranging from about 100 to 300, and the outlook for the winter meetings is most encouraging.

At the 31st meeting the death of Professor A. M. Collett was announced, and Mrs. Cornelia S. Miles, first vice-president, became acting president. Mrs. Miles is principal of the Broadway School, Denver, Colorado, and has received the degree of A.M. in the graduate school of the University of Denver, and last summer was engaged in scientific work in the graduate school of the University of Chicago.

Professor George L. Cannon, who for a number of years had been engaged with Professor Collett in scientific work in the East Denver High School, gave a sketch of his life, and offered resolutions which were adopted.

Mr. E. B. Sterling delivered a lecture on 'puff balls,' obtained in Denver and vicinity, explaining the difference between them and the eastern forms. He pronounced the several species at Denver, so far as tested by his observations and experience, to be edible. His lecture was supplemented by a short address by Professor Ellsworth Bethel, a recognized authority on botany in Colorado. Professor George L. Cannon followed with an address on the 'Death of the Leaves,' contrasting the fall colors of this region with those of the East.

At the 32d meeting, 'Navajo Blankets, their History and Symbolism,' was the topic for discussion. After some introductory remarks by Dr. J. B. Kinley, Colonel U. S. Hollister spoke at length on the subject, illustrating his remarks by about sixty-five blankets from his own private collection. He described their system of weaving, use of dyes, and the meaning of the symbols.

Dr. A. L. Bennett delivered a lecture at the 33d meeting on the 'Value of the Cranial Capacity as Indicating the Degree of Intelligence Enjoyed by the Prehistoric Cliff Dwellers of our Great Southwest.' Dr. Bennett, in addition to being chairman of the Section of Anthropology and Ethnology of the Colorado Academy of Science, is also a fellow of the Anthropological Institute of Great Britain and Ireland. Dr. Bennett has spent considerable time examining and measuring the cranial capacity of the large collection of the Cliff Dweller skulls from the Mancos region, Colorado, in the museum of the State Historical and Natural History Society of Colorado. From data obtained in these measurements he gives them a higher grade of intelligence than has been accorded by some to these primitive people.

Mrs. W. S. Peabody read a paper on the 'Work and Plans of the Cliff Dwellings Association,' being an interesting review of efforts made to preserve from vandalism and the relic hunter the prehistoric ruins of the Southwest.

WILL. C. FERRIL,
Secretary.

DISCUSSION AND CORRESPONDENCE.

THE PUBLICATION OF REJECTED NAMES.

I WISH to speak quite respectfully of Mr. T. D. A. Cockerell; but surely systematists would be much happier if he and his like did not raise such disturbing questions as that in SCIENCE for January 30, p. 189. Had he chosen to condemn Messrs. Banks and Knowlton, first for wasting time, ink and paper over names that they never intended to use, secondly for presumption in substituting their own inventions for those of Marx and Lesquereux, then one would have applauded him. But all he objects to in them is that they inadvertently happened to print the so-called MS. names a page or so ahead of the new names proposed by themselves. Mr. Cockerell does not attempt to prove that the MS. names were published five minutes earlier, and it is clear that the publication of the old and new names was simultaneous in each paper. The precise number of pages, lines, or words that intervened can make no difference. Suppose that Mr. Banks had written as follows: "For this species of *Filistrata* there is a choice of two names: *F. oceanea* and *F. fasciata*. The name *F. oceanea* has been found on an unpublished label, but since in my opinion it is inappropriate, I shall call the species *F. fasciata*." Now to be consistent, Mr. Cockerell would have to insist that in writing thus Mr. Banks contravened the rules of nomenclature, because he introduced *oceanea* first. 'An two men ride of a horse, one must ride behind.' Surely an author does not lose his freedom of choice before he