NOTES ON INORGANIC CHEMISTRY.

GEORGE MÉKER, in a recent *Comptes Rendus*, calls attention to the fact that, while fused sulfate of ammonium or the alkaline halids have little or no effect on platinum, a mixture of ammonium sulfate and bromid or potassium bromid corrodes the metal very rapidly. Platinum black or even finely divided metallic platinum, is rapidly brought into combination with this mixture at 330°, the bromo-platinate of ammonium being formed. The other metals of the platinum group have not been tested with this mixture by the author.

IT is many years since Dr. Künzel called attention to the fact that in a nickel solution containing potassium nitrite even traces of a calcium salt give a yellow precipitate. Several of these triple nitrites have been from time to time studied, and in the last *Zeitschrift für anorganische Chemie* Carl Przibylla gives a systematic study of these salts. $CuBa\,K_2\,(NO_2)_6$ may be taken as a type of the triple nitrites. The copper may be replaced by nickel or iron, the barium by calcium, strontium or lead, and the potassium by ammonium. The salts are very insoluble, not stable in the presence of water, and some of them appear to be mixtures, but even these mixtures closely approximate the above formula.

THE work of Melikoff and Pissarjewsky on peruranic acid was recently noticed in this column. According to their view of the constitution of this acid, its ammonium salt should contain ammonium peroxid, and their efforts to obtain this compound are the subject of a preliminary communication in the last *Berichte*. By mixing concentrated ether solutions of hydrogen peroxid and ammonia at —20°, a thick liquid was obtained which had little odor of ammonia, and which, on further cooling with liquid carbon dioxid, crystallized. Analysis of the crystals gave the composition $(NH_4)_2 O_2 , 2 H_2O_2 , 10 H_2O$. The water of crystallization seems not to be constant, but the existence of the peroxid of ammonium of the formula $(NH_4)_2 O_2 , 2 H_2 O_2$ appears well established.

J. L. H.

SCIENTIFIC NOTES AND NEWS.

THE TOTAL ECLIPSE OF THE SUN.*

THE observation of the total solar eclipse in India has been a magnificent success. Here at Talni, during the three weeks of our preparations, we never saw a single cloud and to-day has been as perfect as those which have preceded it, and whilst we are rejoicing over our own good fortune the news is flashed to us that at Buxar, in the east, and Jewar, in the west, observers have been equally favored. Thanks to the forethought of our host, Lieutenant Morris, no spectators were allowed to approach within several hundred yards of our camp, and we observed the superb spectacle free from the slightest interruption. The first encroachment of the dark body of the moon gave us an hour and a half's warning of totality, and slowly indeed did the first part of that time pass. A fine procession of sharply-defined spots lay across the solar disc, and were swallowed up one by one by the invading darkness. The air, which had been intensely hot, grew chill, the weird sense of approaching disaster which always accompanies an eclipse oppressed the nerves, and then, with what seemed a sudden rush, the shadow fell.

I was watching the eclipse through a binocular, one lens of which was fitted with an eyepiece prism. As totality approached the burning spectrum at the sun became crowned with dark semicircles—the Fraunhofer lines. These grew finer and sharper, and then suddenly turned to bright flame at either end of the semicircles. The continuous spectrum narrowed, the bright arch grew with startling swiftness, a long constellation of glittering points sparkled out for a fraction of a second, and totality had begun. 'Go!' I cried. The signal clock was started, and its clear beat rang out, emphasized at every tenth second by the

* A cablegram to the London *Times*.

sharp ting of its bell, and the warning voice of the timekeeper called, 'One hundred,' 'Ninety,' 'Eighty,' according to the number of seconds still left us.

Just behind me Captain Molesworth and Mrs. Maunder, at an equatorial with two cameras, were changing plates with the confidence and precision begotten of much practice. With each camera six plates were to be exposed, and all went without a hitch, but, just as the word came for the sixth exposure, with a sudden rush an immense flood of sunlight poured forth. The eclipse had been four seconds short of the time we had expected. Meantime Mr. Thwaites had secured three photographs and Lieutenant Morris exposed several plates in small cameras. Further east Mr. Evershed, with a threefold arrangement of spectroscopes, exposed plates to catch the spectrum of the corona, and especially of the flash. Between our other occupations we looked up at the magnificent spectacle before us. The darkness did not equal the eclipses of 1886 or 1896, but the corona stood out in the sky as a vast silver star, brighter and more extended than when I saw it eleven years before. Two fine leaf-shaped extensions stretched out almost horizontally east and west, whilst nearly, but not quite, on the sun's equator, directed southwest, was the greatest ray of all, two millions of miles in length almost, pointing to where one celestial brilliant glittered several degrees away.

I had hoped to ascertain the distribution of the element coronium in the corona, but the green line, which for us composes its spectrum, was very faint, and was not seen at all on the eastern side of the sun. On the west it was traced to about 5′ in height. Whilst telegraphing we learn that Professor Naegamvalla secured forty photographs at Jewar, completing his program.

E. W. Maunder.

American Mathematical Society.

A regular meeting of the American Mathematical Society will be held on Saturday, February 26th, in Room 301 of the Physics Building of Columbia University, New York City. The two sessions will begin at 10:30 a. m. and 2:30 p. m., and the Council will meet at 2 p. m. From all indications this meeting promises to rival in interest the recent very successful annual meeting of the Society. The following papers have thus far been entered for presentation:

1. Professor Maxime Bôcher: 'The theorems of oscillation of Sturm and Klein.'

2. Dr. J. W. Davis: 'Behavior at laboratory temperatures of gas and vapor generating globes in celestial spaces.'

3. Mr. P. R. Heyl: 'The measure of the bluntness of the regular figures in four dimensional space.'

4. Dr. J. I. Hutchinson: 'Note on the tetrahedroid.'

5. Dr. E. O. Lovett: 'On the symmetry of algebraic surfaces.'

6. Dr. G. A. Miller: 'A generalization of Sylow's theorem.'

7. Professor W. F. Osgood: 'A new proof of the existence of a solution of the differential equation $dy/dx = f(x, y)$, the Cauchy-Lipschitz condition not being imposed.'

8. Professor James Pierpont: 'The Early History of the Galoisian theory of equations.'

9. Mr. Paul Saurel: 'Note on integrating factors.'

10. M. James Maclay: 'Certain double minimal surfaces.'

11. Professor H. S. White: 'Inflexional Lines, Triplets and Triangles Associated with the Plane Cubic Curve.'

The January number of the *Bulletin* (Vol. VII., No. 4) contains the following papers; 'On the Commutator Groups,' by Dr. G. A. Miller; 'On the Limit of Transitivity of the Multiply Transitive Substitution Groups that do not contain the Alternating Group,' by Dr. G. A. Miller; 'Geometry of Some Differential Expressions in Hexaspherical Coordinates,' by Dr. Virgil Snyder; a review of Lie's Differential Equations, by Dr. Edgar Odell Lovett; a notice of Beman and Smith's translation of Klein's Vorträge über ausgewählte Fragen der Elementargeometrie; 'Notes;' and 'New Publications.'

The February *Bulletin* (Vol. VII., No. 5) is a 72-page number. It contains an account of the recent annual meeting of the Society, by the Secretary; an account of the Evanston meeting of the Chicago Section, by Professor T. F. Holgate, Secretary of the Section; the presidential address, 'The Philosophy of Hyperspace,' de-

livered at the annual meeting, by Professor Simon Newcomb; 'Orthogonal Group in a Galois Field,' by Dr. L. E. Dickson; a valuable review of Weber's Algebra, by Professor James Pierpont; 'Shorter Notices; 'Notes;' and 'New Publications.'

GENERAL.

THE Romanes lecture of Oxford University will be delivered by Sir Archibald Geikie in the Sheldonian Theatre on June 1st, on 'Types of Scenery and their Influence on Literature.'

MR. F. W. DYSON, of the Royal Observatory, Greenwich, London, writes to the London *Times* that the photographs of the solar eclipse taken by the Astronomer Royal, Professor Turner, Captain Hills, Mr. Newall and Dr. Copeland have all been developed and that the results are excellent. Captain Hills has succeeded in photographing the spectrum of the reversing layer, and Professor Turner has obtained marked results as to the amount of polarization of the corona.

PROFESSOR HITZIG, of Halle, has been elected an honorary member of the London Neurological Society, in the room of the late Professor du Bois-Reymond.

IT is reported in *Nature* that, after sixteen years as professor of geography at the Royal University of Turin, Professor Guido Cora has resigned his charge, in order to devote himself entirely to scientific researches in geography and related sciences. He has transferred his residence (and the direction of his periodical *Cosmos*) to Rome, Via Goito, 2.

THE physico-mathematical section of the Berlin Academy of Sciences has appropriated 700 Marks to Professor Fr. Dahl, of Kiel, for the arrangement of the zoological material collected by him in Ralûm; 500 Marks to Dr. Philipp Fauth, of Landstuhl, for the publication of drawings of the planets Jupiter and Mars, and 1,200 Marks to Dr. K. Holtermann, of Berlin, for the publication of a work on the fungi of the East Indies.

PROFESSOR EDMUND J. JAMES, of the University of Chicago, has been nominated by the Bureau of Education to represent the United States at the International Congress of Commercial Instruction, to be held at Antwerp next April.

IT is proposed to hold an International Industrial and Commercial Congress in Brazil, from May to October, 1899.

A CONFERENCE of representatives of the National and State Boards of Health to consider questions of general sanitation will probably be arranged in connection with the International Health Exposition, to be held at the Grand Palace, New York City, from April 25th to May 21st.

IT has been decided to hold at Earl's-court, London, from May to October next, a universal exhibition intended to illustrate the inventions, industries, manufactures and applied arts of to-day. An endeavor will be made to render it international in its scope, and sections have been devoted to France, Germany, Russia, Austria-Hungary, Switzerland, Turkey, Bosnia and the United States. The exhibition will be the fourth of the series held at Earl's-court, under the management of the London Exhibitions (Limited).

THE Council of the Sanitary Institute of Great Britain has accepted an invitation from the Lord Mayor and City Council of Birmingham to hold its seventeenth congress and exhibition in that city in September next.

AN exhibition of the collections of the Jesup North Pacific expedition, made during the summer and autumn of 1897, will be opened in the American Museum of Natural History on February 15th. A lecture on the general results of the expedition will be given, at 3 p. m., in the museum.

MR. H. S. H. CAVENDISH, already known for his explorations in Somaliland, is about to start with a caravan of four hundred natives to investigate the country west and northwest of Lake Rudolf, in equatorial Africa.

MR. G. B. SUTTON, of Newark Valley, has presented to Cornell University a collection of the woodpeckers of North America, together with an oil painting representing a forest scene. The woodpeckers, representing 24 species and 11 sub-species, are mounted in natural attitudes upon an artificial beech stump, about 3.3 meters

in height, and are so arranged that they can all be seen at a glance. Mr. Sutton purposes giving to the University a group of nocturnal animals mounted in a similar manner.

A SERIES of specimens of rare coal taken from mines in Missouri, Arkansas and Texas, and a collection of petroleum, petroliferous rocks and petroleum shales from India have been presented to the museum of economic geology of New York University.

GENERAL LEW WALLACE has announced that at his death the city of Crawfordsville, Ind., will come into possession of his study, which has just been completed at a cost of $40,000. The building is to be used as a public library. A collection of rare books will be included in the gift.

WE take the following items from *Natural Science*: The association française de botanique has acquired as its organ *Le monde des plantes*, for many years edited by Mr. Léveillé, of Mans (56 Rue de Flore). The Association is intended to take the place of the Société française de botanique, which ceased to exist in 1895. It is intended to form a central herbarium and library, free to members, and to undertake the exchange and determination of specimens. The State Museum, Vienna, received the following collections during 1896: Eppelsheim collection of Coleoptera, including more than 2,000 species or 26,000 specimens of Staphylinidæ; the Gustav Mayr collection of Hemiptera, including 1,350 species or 5,500 specimens; the Bergenstamm collection of Diptera, including 3,000 species or 45,000 specimens; the Steindachner collection of fish, chiefly from the Red Sea, 3,400 specimens representing 702 species. The collection of geological photographs in this Museum then numbered 1,892, while the ethnographic photographs were 5,477. The Colonial Museum at Marseilles, opened in 1893, is remarkable for its valuable collection of tropical vegetable products. These are studied and analyzed under the direction of Mr. Heckel in the Museum laboratory. Among recent acquisitions may be mentioned Dr. Buisson's collection of the mollusca of Tahiti, botanical collections from New Caledonia, presented by Messrs. Heckel and Jeanneney and Col. Pelletier, and from the Antiles by R. P. Düss.

THE January number of the *American Naturalist* has just been issued by Ginn & Company, being the first number to be issued under their imprint. The appearance of the journal is greatly improved, a heavy glazed paper being used, with wide margins and new type. The issue of the first number of the thirty-second volume, the first entire volume under the new management, is made the occasion of an editorial on the aim of the *American Naturalist*, the province of the journal being defined as follows: "May it not be possible to regard the earth and its inhabitants as a unit? Then the problem would be to describe the various parts of this unit and to explain their relations to one another. While the solution of this problem is too vast an undertaking for any one man or any generation of men, may it not be legitimate to adopt it as the final purpose of a journal which is intended to represent the great body of naturalists in this country? It seems to us that there is a legitimate ideal of attainment and one which, if kept steadily in view by editors and contributors, will afford that unity of purpose which is essential to success."

WE have received the first two numbers of the *Journal of Applied Microscopy*, edited by Mr. L. B. Elliott, and issued from the publication department of the Bausch & Lomb Optical Company, Rochester, N. Y. The first numbers contain contributions from several leading American zoologists, and the coöperation of about a hundred men of science, who use the microscope as an instrument, has been promised. In the introductory editorial the scope of the journal is defined as follows: "It will be a progressive record of new apparatus of every kind bearing on the operations leading up to and including the use of the microscope, improvements in apparatus and new applications of apparatus already existing, methods of working, new and useful formulæ, discussion of matters relating to the above subjects, digests of similar matter appearing in foreign journals, and news and notes about institutions and men here and abroad."

THE Duquesne Steel Works of the Carnegie

Steel Company have in a single day produced 204 'heats' in twenty-four hours, and 1,928 tons of ingol-steel in the converting and 1,700 tons in the finishing mill. This is said to exceed anything reported previously in the United States and to be vastly in excess of anything known in Europe.

ON motion of Senator Cantor, the Assembly resolution calling on the Representatives of New York State in Congress to secure the establishment of a national park on the Palisades of the Hudson was taken from the table by the Senate at Albany on February 9th and adopted. A bill designed to protect the Palisades from further injury was introduced into the House of Assembly at Trenton, N. J., on February 8th, by Mr. Marnell, the provisions of which are as follows: "Every person or corporation which shall, within a distance of 2,000 feet from any navigable river forming the boundary line of this State, explode or cause to be exploded, for the purpose of blasting, breaking or loosening rock, any high explosive, shall be guilty of a misdemeanor, and on conviction thereof shall be punished by imprisonment not exceeding one year, or by a fine not exceeding $1,000, or both."

GOVERNOR BLACK, of New York State, advocates the passing of a bill that would lease to Cornell University for twenty-five years about twenty thousand acres of State land outside of the limits of the Forest Preserve. By the aid of an annual appropriation, which this year may be $25,000, the University authorities would be enabled to engage in forest culture. The best methods of forest preservation and cultivation in France and Germany would be followed on this tract of twenty-five thousand acres. The trees would be trimmed at the proper time; 'ripe' trees would be cut down and sold, and young trees would be planted. The aim would be to make the tract a paying investment for the State. If this model forestry park should be a successful experiment, the same method of management could be applied to the eight hundred thousand acres of forest land the State now owns in the Adirondacks.

Natural Science asks: "How many copies of a printed book need be issued to constitute a publication? This question seems to be raised as a side issue in a paper by Mr. Davies Sherborn on Thomas Martyn's 'Psyche,' in the January number of the *Annals and Magazine of Natural History*. Mr. Sherborn states that only ten copies of the book were issued; and the names of the species were, with six exceptions, written in ink either below the figures themselves or on fly leaves. The fact that the names were not printed is sufficient for Mr. Sherborn to stamp them as manuscript, despite the fact that they have been used by entomologists. We wonder what entomologists will say. One interesting fact in connection with the matter is that the author of this paper had actually three out of the ten copies, side by side for comparison, and has been able to trace five out of the original ten. Mr. Sherborn does not mention the copy of Part I. in the Hope collection at Oxford, but that evidently falls under his 'specimen' copies, of which it is likely others may turn up. Now let us suppose this to be a printed book. What happens? Four entire copies of the original ten are in England, one is in Holland, the rest are unknown. What possible chance has an American or an Australian of seeing such a book? Without seeing it his work must be imperfect. We offer no decision of the difficulty ourselves, but think the point sufficiently interesting to call attention to it."

THE *Auk* for January contains, as frontispiece, the portrait of the late Charles E. Bendire, accompanying a memorial article by Dr. J. C. Merrill, presented at the 15th Congress of the American Ornithologists' Union.

DR. T. J. ROTHROCK, State Forestry Commissioner of Pennsylvania, states in his report to the Department of Agriculture, quoted from advance sheets from the *Public Ledger*, that while the rainfall last year was greater than in previous years the streams seem to have been lower. Dr. Rothrock considers that there can be no doubt but that in the periods of annual minimum water flow our rivers are delivering less water each year. Thus the most reliable statistics available show that in periods of least annual flow the water sent down by the Schuylkill river at Philadelphia in 1895 was only 39 per cent. of the amount available in 1816.

Three explanations may be offered: First, that we are passing through a period of less rainfall than formerly. Second, that the disastrous change is due to disturbing the former balance of natural conditions by removal of the forests. Third, that much of this missing water has been used before it reaches the point or points at which the estimates were made. It is on the second of these explanations that Dr. Rothrock lays the most weight.

Miss Ormerod, of Torrington-house, St. Albans, has published her annual letter on insect pests in Great Britain. She mentions, according to the London *Times*, the damage done to grass and corn crops by wireworms, leather-jackets, chafer-grubs, and the caterpillars of the small swift moth. Hessian fly and corn sawfly were reported locally. Insect attacks upon orchard and bush fruits are becoming more numerous. The codlin moth, the apple sucker and the mussel scale were all troublesome, and there is at least a probability that the American 'apple grub' has obtained a foothold in English orchards. The wood of plum trees was tunnelled by shot-borer beetles, and the foliage of cherry and pear trees was ravaged by the small slug-like larva of the pear sawfly. The more conspicuous pests of timber trees is the 'timber-man' beetle and the elm-bark beetle. A matter of special interest is the risk incurred by a large importing country like England of bringing within its borders exotic pests which happen to infest produce grown abroad. Several illustrations of this are incidently given by Miss Ormerod. Thus, the larva of the Angoumois moth was brought to England in barley imported from North Africa. The Mediterranean mill moth was found in flour shipped from an Adriatic port, and this exceedingly troublesome pest is undoubtedly establishing itself—it is to be feared permanently—in flour mills and flour stores. Locusts are present in considerable numbers in Lucerne hay from Argentina, and a case is mentioned in which three horses fed on such hay fell ill, but recovered when the hay was discontinued. The 'German cockroach' is making an apparently successful invasion of English kitchens. It is much smaller than the common cockroach, is yellowish or brownish in color, and striped with dark brown.

UNIVERSITY AND EDUCATIONAL NEWS.

The report of President Eliot, of Harvard University, with the appended documents, makes a volume of some 376 pages. President Eliot lays special stress on the desirability of granting degrees in the middle as well as at the close of each academic year, urging that this would be of great importance to some classes of students. The votes of the corporation formally inviting the Massachusetts Institute of Technology to affiliate with Harvard University are given, readiness being expressed to make such modifications in the technical departments of Harvard University as may be desirable. It is suggested as of pressing importance that the medical school be removed to a new site, and that a hospital be erected as an adjunct to it. The income of the University apart from new endowments was $1,327,360.57, while the payments were $1,228,941.50.

The regents of the University of California have decided to establish a college of commerce as one of the departments at the University. President Kellogg is directed to make application to the President of the United States that an engineer officer of the United States Navy be detailed, in accordance with the Act of Congress approved in 1879, to act as instructor in the college.

At the recent meeting of the Board of Trustees of the University of Tennessee it was decided to erect a new building for the department of mechanics and two new dormitories. It was also determined to establish, in the near future, a separate school of economics.

By the death of Miss Sara M. Fletcher, of Woodstock, Vt., $6,000 is left to Dartmouth College, as provided by the late Richard Fletcher, of Boston.

The sum collected for Vassar College through the efforts of its alumnæ now amounts to $90,000, of which $50,000 will be devoted to the establishment of the Maria Mitchell chair of astronomy.

Dr. George Santayana, instructor in philosophy at Harvard University, has been appointed to an assistant professorship.

The name of the Hon. Carroll D. Wright has been added to the faculty of Dartmouth