mann's Annalen for January, that by a small modification in Maxwell's equations to satisfy the conditions of high rarefaction, which is met with in a Crookes tube, longitudinal ether waves are possible, which would possess many of the properties of the so-called cathode rays.

ARTHUR W. GOODSPEED.

UNIVERSITY OF PENNSYLVANIA, Feb. 8.

SCIENTIFIC NOTES AND NEWS.

GENERAL.

AN admirable portrait of the astronomer Schiaparelli forms the frontispiece to *Minerva* for 1896.

DR. S. P. LANGLEY has been elected one of the Foreign Members of the Royal Society of London. There are now six from the United States, Alexander Agassiz, B. A. Gould, S. P. Langley, Simon Newcomb, H. A. Newton and H. A. Rowland.

NEW honors are being bestowed upon the discoverers of argon. First came the Barnard gold medal of Columbia College, then the $10,000 Hodgkins prize, then the prize of 50,000 francs from the French Institute and now it is announced that Lord Rayleigh and Professor Ramsay have been made Knights of the Legion of Honor, by order of the French Government.

MR. W. L. SCLATER, son of the veteran secretary of the Zoölogical Society of London, has been appointed curator of the South African Museum at Capetown. Mr. Sclater was for some time deputy superintendent of the Indian Museum at Calcutta, and has more recently been assistant master at Eton. Mr. Sclater is a well trained zoölogist. His predecessor at Capetown, Mr. Rowland Friman, was a botanist.

MR. ROBERT RIDGWAY, of the National Museum, has gone to Southern Florida to study the spring bird migrations, during February and March. His son, Audubon Ridgway, a promising young ornithologist, is his companion.

MR. FRANK HAMILTON CUSHING, of the Smithsonian Institution, is still engaged in the investigation of the ancient lake dwellings of southern Florida, where he has been since December.

THE aquarium, which was so attractive a feature in the display of the United States Fish Commission at the Atlanta Exposition, has been transferred to the custody of the Smithsonian Institution, and will be installed in the National Zoölogical Park in Washington.

THE delay of President Cleveland in appointing a Commissioner of Fisheries to succeed the late Colonel Marshall MacDonald is quite unaccountable. The requirements of the law as to the qualifications for this office are so explicit that there ought to be no difficulty in making a choice. There are few men in the country who possess 'proved scientific and practical knowledge of the fishes of the coast.' The position was created for the late Prof. Baird, who created the organization, and brought it to a high state of efficiency. It would seem a matter of necessity that his successor should be a naturalist and one who has had experience in the study of fishes and the fisheries.

THE government of Greece has granted to the American School of Archæology, at Athens, the privilege of making excavations on the site of ancient Corinth.

THE appointment of Dr. John S. Billings to be chief librarian of the consolidated libraries of New York City is a most excellent one—though it is to be regretted that his work in sanitary science should be interfered with. His admirable abilities as an administrator will have full exercise in this new position, and there can be little doubt that he will be able to organize some new advances in bibliography as well. Dr. G. E. Wise, of the Newberry Library, Chicago, in a recent article in the *Library Journal*, gives an appreciative survey of his *Index Catalogue of the Library of the Surgeon Generals Office*—the extent and importance of which is just beginning to be appreciated outside of the medical profession.

ONE of the most extensive zoölogical works of modern times will be *Das Tierreich* projected by the Zoölogical Society of Berlin, to be edited by Professor F. E. Schulze. It is to contain descriptions of all the known species of animals, prepared upon a uniform plan.

THE pictures of living walruses, in *The Cosmopolitan* for February, are from photographs

taken by Prof. L. L. Dyche of the University of Kansas, and are exceedingly interesting and instructive. They illustrate an article by Prof. Dyche, who accompanied Lieut. Peary to the arctic regions.

Le mouvement scientifique aux Etats-Unis is the title of an elaborate paper by M. Jules Violle, of the École Normale Superieure in Paris, which has recently appeared in the *Revue générale des sciences pures et appliquées*, and in the *Annales du Conservatoire des Arts et Metiers*. M. Violle, who came over in the Exposition summer, writes very appreciatively of our astronomers, physicists and inventors, and their work; and endeavors to impress upon France that it has much to learn from the United States. "America," he writes, "has already too many advantages over us. Our most important interests demand that we should struggle to preserve the advantages which we still possess over America. High intellectual culture is not a matter of luxury or of national pride. A mere glance at the other nations of the world demonstrates that not only the prosperity of a country but its very future depends upon scientific progress, at once glorious and profitable to every citizen." M. Violle's article is elaborately illustrated, but the pictures are somewhat incongruous with the text, exhibiting chiefly public buildings and scenes at the World's Fair.

The same number of the *Annales du Conservatoire*, has other important articles on the Chicago Exposition—one upon its general features by Emile Levasseur, member of the Institute, one on the mechanical display by M. Gustave Richard, and one upon Agriculture in America by M. Maximilien Ringelman, of the National Agricultural School at Grignon, who declares that notwithstanding certain remarkable features, our agriculture is on the whole in a very backward and primitive condition. These articles together fill two hundred pages and have numerous illustrations.

Progress is being made in the endowment of a fellowship of anatomy in the Wistar Institute of the University of Pennsylvania in honor of Joseph Leidy. Of the $30,000 required, $7,000 has now been subscribed. The committee of the alumni and former students of Leidy's consists of Wm. C. Posey, Chairman; J. Howe Adams, Secretary and Treasurer; Joseph P. Tunis, Joseph Leidy, Jr., and C. H. Frazier; and there is an Advisory Committee consisting of C. C. Harrison, S. Weir Mitchell, J. M. Da Costa, Geo. A. Piersol and Isaac J. Wistar. The money so far subscribed has come chiefly from Philadelphia, but the endowment should be national and international. Subscriptions may be sent to the Treasurer or to any member of the committees.

The following monographs of the U. S. Geological Survey are in press and will shortly be issued:

XXV. *The Glacial Lake Agassiz*, by Warren Upham. 1895. 4°. xxiv, 658 pp. 38 pl.

XXVI. *Flora of the Amboy Clays*, by John Strong Newberry; a posthumous work, edited by Arthur Hollick. 1895. 4°. 260 pp. 58 pl.

The following monographs are in preparation:

The Geology of Franklin, Hampshire and Hampden Counties, Massachusetts, by Benjamin Kendall Emerson.

The Glacial Gravels of Maine and their Associated Deposits, by George H. Stone.

Geology of the Denver Basin, Colorado, by S. F. Emmons, Whitman Cross and Geo. H. Eldridge.

Sauropoda, by O. C. Marsh.

Stegosauria, by O. C. Marsh.

Brontotheridæ, by O. C. Marsh.

Report on Silver Cliff and Ten-Mile Mining Districts, Colorado, by S. F. Emmons.

Flora of the Laramie and Allied Formations, by Frank Hall Knowlton.

A special meeting of the Biological Section of the New York Academy of Sciences was held on January 31st to discuss the origin of instinct with reference to the inheritance of acquired character. The meeting was called in honor of Principal C. Lloyd Morgan, of Bristol, who opened the discussion. He described his own interesting experiments with chicks and ducklings, and held that these and other evidence tend to show that instincts are not perfected under the guidance of intelligence and then inherited. A chick will peck instinctively at food, but must be taught to drink. Chicks have learned to drink for countless generations, but the acquired action has not become instinc-

tive. The discussion was continued by Profs. Baldwin, Cattell, Osborn, Hyslop and others, and was closed by Prof. Morgan.

THE Fisheries, Game and Forest Commission of the State of New York, in its annual report, recommends that power be conferred upon the Commissioners to close streams or other bodies of water in the State for a term of years, not to exceed five, when in their judgment it is necessary to resort to such procedure to enable fish planted by the commission to obtain suitable size, before fishing of any kind is permitted. It is stated that salmon planted in the Hudson River would do well if it were not for dams and nets. The Commissioners recommend as a public necessity that two bodies of water in the Adirondack region, to be selected by the Commission, be set aside by law and used as stock waters to supply eggs of lake trout and other fish for the public waters of the State. They also recommend that forest lands in the Adirondack and Catskill region be purchased, until the entire area be included in the forest preserve.

THE Proceedings of the Chemical Society (London) issued on January 14th contain an abstract of a paper by Prof. Dewar, on the liquefication of air and research at low temperatures. The author reviewed the forms of apparatus that had been used in low temperature research, pointing out that the best and most economical plant for the production of liquid air or oxygen was one based on the general plan of the apparatus used by Pictet in his celebrated experiments on the liquefaction of oxygen in the year 1878. He described his own experiments, and stated that Prof. Olzewsky's claim to priority was fantastic. In the discussion that followed Lord Playfair and Dr. Armstrong deprecated the attacks that had been made on Prof. Dewar. Mr. Blount described the Linde process for liquefying air. Trials of the process had been made on a considerable scale, and there appeared to be no difficulty in liquefying air cheaply and in quantity. At the close of the exercises Prof. Dewar said that the late Prof. Wroblewski, as early as the year 1884, predicted that liquid air would be the refrigerating agent of the future; his prophecy seems about to be realized.

WE learn from *Nature* that at their scientific meeting on March 3d the Zoölogical Society of London propose to discuss the much-vexed question of zoölogical nomenclature. This subject will be introduced by Mr. Slater, the Secretary of the Society, who will read a paper on the 'Rules for naming Animals,' lately adopted by the German Zoölogical Society, and point out the divergences between them and what is called the Stricklandian Code of Nomenclature, recognized by the British Association, and usually followed in Great Britain.

THE Agricultural Society of Austria has concluded arrangements for holding an international agricultural machinery fair in Vienna, which is to be opened on March 9th, and will last for six days.

PROF. D. G. BRINTON began on February 7th a course of eight lectures on the 'Scientific Study of Man,' to be given on successive Fridays at the Academy of Natural Sciences. The lectures are as follows:

1, 'The Universe and Man from the Standpoint of Science;' 2, 'Man's Position in the Chain of Animal Life;' 3, 'The Origin of Man;' 4, 'The Races or Varieties of Man;' 5, 'The Geographic Distribution of Man;' 6, 'Man as a Wild and as a Domesticated Animal;' 7, 'The Metaphysical in Man;' 8, 'The Man of the Present and the Future.'

AT the annual meeting of the American Forestry Association in Washington the membership was reported to be 632, and it was announced that the Association would be incorporated in the District of Columbia. The establishment of a monthly or bi-monthly publication, as the official organ of the Association, was recommended, and a plan was submitted for the affiliation of State Forestry Associations with the National Association.

M. JULES REISET, the eminent chemist and agriculturist, member of the Paris Academy of Sciences, died at Paris on February 5th, aged 78 years.

RESOLUTIONS have been adopted by the New Mexico Agricultural Experiment Station to the effect that great injury has already been done to the agricultural and horticultural interests of the Southern States by the introduction of

injurious insects, and that to prevent such introduction horticultural quarantine officers should be stationed at various Southern ports, and that in addition an agent of the Department of Agriculture should be sent to study the injurious insects in Mexico, Central America and the West Indies.

PROF. S. W. Holman, of the Massachusetts Institute of Technology contributes to the December number of *The Philosophical Magazine* an article on galvanometer design in which he concludes that it is practically useless to wind turns within a distance of about one-quarter of the needle-length of the coil centre, and that to increase sensitiveness the needle must be made as short as is consistent with torsion of suspension. Those who describe sensitive galvanometers, and especially instrument makers in cataloguing are urged to present the data.

d = deflexion in mm. with scale at 1 metre from galvanometer.

c = current in amperes producing that deflection.

g = the galvanometer resistance as connected up when d is observed.

t = the time of single swing of the needle when c is measured.

THE Board of Health of New York City has passed a resolution providing that all dealers in milk must secure a license from the Board, and licenses will only be granted to those whose dairies have been properly inspected.

WE have received the first number of *The Technical Journal*, a bi-monthly publication adopted as the official organ of the Alumni Association of the Hebrew Technical Institute. Mr. Max Loewenthal, 248 East 78th St., is the editor and publisher.

The British Medical Journal states that inoculation of the virus of small-pox was practiced in Russia in very early times, the system having probably been introduced into the Caucasus from Greece or Turkey, the Tcherkesses adopting the habit of protecting their women from the disfigurements of natural small-pox. The method used was pricking in the virus elsewhere than on the arm. In China, on the other hand, the practice was, and still is, to some degree at least, to insert moist small-pox crusts in the nostril, even to blowing the virus up the nostril. Queen Catherine of Russia was inoculated in 1768, and very many followed her example, especially those near the Court; and as early as 1772 government facilities for securing inoculation were given, free operations being inaugurated in St. Petersburg, Kazan, and even Irkutsk, in Siberia.

THE investigations carried on by the geological department in the University of Wisconsin during the autumn quarter were as follows: By C. R. Van Hise: A final revision of Principles of pre-Cambrian North American Geology, a manuscript of about 500 pages of typewritten material, to appear in the 16th Annual Report of the Director of the U. S. Geological Survey; a final revision of a report upon the Marquette iron-bearing district of Michigan, about 1,000 pages of typewritten manuscript and 40 maps, to be published as a monograph with accompanying atlas by the U. S. Geological Survey. By Wm. H. Hobbs: A study of material collected in connection with an investigation of the structural geology of portions of Litchfield county, Conn., and Berkshire county, Mass., to be published in a report of the U. S. Geological Survey. With C. K. Leith, a study of ancient volcanic rocks from areas in the Fox River valley. By J. Morgan Clements: Continuation of an investigation on the pre-Cambrian volcanics of the Michigamme district. By S. Weidman and E. R. Buckley: A study of the geology of the vicinity of Wausau, Wis.

UNIVERSITY AND EDUCATIONAL NEWS.

ACCORDING to the fifth edition of *Minerva* the attendance of students at the beginning of last year at the thirty largest universities in the world was as follows:

1. Berlin	8,652	12. Leipzig	2,957
2. Vienna	6,714	13. Edinburgh	5,924
3. Madrid	5,829	14. Cambridge	2,893
4. Naples	5,040	15. Prag	2,859
5. Moscow	4,118	16. St. Petersburg	2,804
6. Budapest	3,892	17. Michigan	2,772
7. Munich	3,561	18. Kijew	2,417
8. Athens	3,331	19. Pennsylvania	2,400
9. Harvard	3,290	20. Turin	2,355
10. Oxford	3,256	21. Yale	2,350
11. Manchester	3,000	22. Minnesota	2,171