of Bartels, who maintains that the education, physical and mental, of woman, however high it may be, should be always aimed to fit her for the duties of the family circle only.

This conclusion will not be in the least acceptable to the 'advanced' women of the day, nor to those sociologists who see in woman's present condition, not the model of the future, but a survival from a barbaric past.

D. G. Brinton.

SCIENTIFIC NOTES AND NEWS.

EXPERIMENT STATIONS FOR ENGINEERING.

A movement is in progress looking to the development at the 'land-grant colleges' of the several States, of a system of mechanical engineering 'experiment stations,' on much the same basis as the existing agricultural experiment stations organized under the Hatch bill of 1887. It is anticipated that the outcome will be the organization of such stations in all the agricultural and mechanical colleges of the country, in which the agricultural experiment stations have been successfully organized and operated. The purpose of the movement is to secure the promotion of engineering research, and of the development of the scientific facts and principles which are of most value to the mechanic arts and to the profession of engineering. The headquarters of the central office to which all will report is thought likely to be the Bureau of Steam Engineering of the Navy Department; that being the largest, most important and most generally suitable of the government bureaux to take cognizance of such work as is comtemplated. A Department of Mechanic Arts was proposed years ago, probably earlier than the Department of Agriculture, but the importance of the former has not been as promptly or as fully recognized as that of the latter, and nothing has yet been done in that direction. Should such a department be founded, it will naturally become the center of the work of mechanical engineering experiment stations. The present movement has its origin among Southern colleges, and members of the engineering profession who desire to see the encouragement of Southern industries through scientific method, and its earliest expressions is found in the papers of Prof. Aldrich of the West Virginia University, on engineering research.

THE BRITISH MUSEUM.

Natural Science states that the changes at the British Museum (Natural History) on the retirement of the Keeper of Zoölogy, Dr. A. Günther, are as follows: Prof. Sir W. Flower assumes the office of Keeper of Zoölogy in addition to his post as Director, without addition of salary; Dr. Bowdler Sharpe becomes Assistant Keeper of Vertebrata, his department consisting of Messrs. Thomas Boulenger, and Grant; Mr. Edgar A. Smith, Assistant Keeper of Invertebrata, associated with Prof. Jeffrey Bell, Mr. Pocock and Mr. Kirkpatrick; Dr. A. G. Butler, the head of the Entomological Department, with his juniors, Messrs. Waterhouse, Kirby, Gahan Heron, Austen, Hampson, and a new Assistant appointed to fill the vacancy. Mr. Pocock becomes a first-class Assistant. Changes have also been begun in the galleries. The larger fishes will be slung up to the roof, so as not to cumber the valuable floor space, and a more definite arrangement will be made of fishes; similar alterations are contemplated in the reptile gallery, where seventeen crocodiles have for many years enjoyed palatial quarters on the floor. The public gallery of birds will gradually be improved on the plan adopted already is one of the bays, and in the mammalian gallery certain arrangements are contemplated which will show the finer specimens to great advantage. The Trustees have recently purchased for the Department of Geology important series of fossils selected from the collections of the Rev. P. B. Brodie, Rowington, Warwick, and of the late Mr. James W. Davis, Chevinedge, Halifax. Mr. Brodie's collection includes a large number of type specimens described by various authors; and all of these are included in the British Museum selection except those in his unique cabinet of fossil insects, which he still retains. The collection of the late Mr. Davis contains some very fine fishes from the Lower Lias of Lyme Regis and a large number of fragmentary

fish remains from the Yorkshire Coal-measures, described and figured in his own writings.

ASTRONOMICAL.

IN the *Astronomical Journal*, issued December 5th, Dr. Chandler publishes what we may call an ephemeris of the motion of the earth's pole, calculated for the years 1893 to 1896. This ephemeris is arranged in a form admirably adapted for the use of practical astronomers. The simple rectangular coördinates of the instantaneous pole are given for each date, so that it is possible to calculate the instantaneous latitude by means of the very simple formula:

$$\phi - \phi_0 = x \sin \lambda - y \cos \lambda$$

where λ is the longitude.

The numbers in Dr. Chandler's ephemeris are based upon his observational theory of the polar motion. Similar rectangular coördinates of the instantaneous pole, as obtained from actual modern observations, have been computed by Dr. Albrecht, of Potsdam, for the period from 1890.0 to 1895.3. Dr. Albrecht's results were laid before the International Geodetic Commission, which met at Berlin in September. They have not as yet been made generally accessible, though a few copies of his paper were prepared by a lithographic process for distribution among the persons specially interested.

PROF. MAX WOLF recently published in the *Astronomische Nachrichten* an interesting summary of his photographic minor planet work at Heidelberg during the years 1892 to 1895. The observations were made with a six-inch Voigtlaender lens. The total number of plates is 179, with exposures in some cases exceeding three hours. The number of planets found on the plates was as follows:

1892,	38 known planets,	18 new planets.
1893,	27 known planets,	9 new planets.
1894,	15 known planets,	6 new planets.
1895,	19 known planets,	3 new planets.

So it would almost seem that we are approaching the limit of discovery, for planets exceeding the 12th magnitude in brightness.

H. J.

GENERAL.

WE need in America a translation of the recently published work of M. Ch. Letourneau on *La Guerre dans les diverses races humaines.* War is said to have had its origin as a variety of hunting when food, other than human flesh, was unattainable, and when it was comparatively justifiable. M. Letourneau takes for his motto, as a definition of war: *Le vol pour but; le mentre pour moyen*—and he might have added, *la folie pour cause.*

IT is not always that a man during his lifetime learns in how high esteem he is held by those most competent to judge. Dr. Dawson may, therefore, not altogether regret the following editorial article in the *Journal of Geology*: "For the second time in the brief history of the *Journal of Geology*, we are called upon to record the loss of a member of its editorial staff. And now, as before, it is one in the prime of life, in the midst of a brilliant career, and in the enjoyment of rare prospects, Dr. George M. Dawson. Less than a year ago he was elevated to the directorship of the Geological Survey of Canada, a position which he had amply earned by a score or more years of markedly successful work on the Geology of the Dominion. His 'Geology and Resources of the 49th Parallel,' prepared when he was yet a very young man, gave him a recognized place in the scientific world. It has been followed by a long list of papers of unusual merit. It is to Dr. Dawson especially that we are indebted for the geology of the northern Cordilleras and the great northwestern plains beyond the national boundary. His studies lay along many lines, and the wide range of his abilities peculiarly fitted him for the multitude of questions that were presented in the exploration of his vast and varied field. We hope to present a more adequate notice of his work in a succeeding number."

PROF. LLOYD MORGAN, the English biologist, will lecture at Columbia on four Fridays in January, beginning January 10th. His subjects will be: 1. 'Illustrations of Instinct.' 2. 'Some Habits and Instincts of Young Birds.' 3. 'The Emotions in their Relation to Habit and Instinct.' 4. 'Some Instinctive Activities of the Pairing Season.' The lectures include a discussion of his own experiments and opinions upon the Darwin-Spencer theory of 'instincts as inherited habit.' His lectures before the

Lowell Institute in Boston will be delivered upon Tuesdays and Saturdays in January, beginning January 7th. He will also lecture at Brown University and at the University of Illinois. Letters addressed to the care of Columbia College or of the Lowell Institute will reach him.

THE one hundred and twenty-eighth Bulletin of the United States Geological Survey is a review of the Bear River formation and its characteristic fauna by Charles A. White. The author states that his object is the correction of an essential error which has long prevailed among geologists concerning the taxonomic position of one of the North American Cretaceous formations; that is, its object is to present a summary of the facts which show the entire separateness from the Laramie formation of that series of non-marine strata which has heretofore been known as the Bear River Laramie, with which formation the Bear River series of strata has long been confounded. To this end the Bear River series is defined as a distinct formation, stratigraphically, geographically and paleontologically, and its taxonomic position is stated in detail.

M. GEORGES LEMOINE reported to the Paris Academy on December 2 that he had measured the amount of decomposition caused by light in solutions of ferric chloride and oxalic acid, and had found the rate of decomposition to be approximately proportional to the intensity of the light. We are not informed how the intensity of the light was measured, but if the chemical action of light can be used to measure luminosity it would be an important photometric method. The photochemical and luminous intensity of light do not, however, remain proportional when the wave-length is altered.

IN a recent work on Meteorology in its relation to Hygiene, Dr. Van Bebbier states that the average total number of hours of sunshine per year is in England 1,400, in Germany 1,700, In Italy 2,300 and in Spain 3,000. In a hundred possible hours of sunshine there are in London on the average 23 and in Madrid 66.

AT a recent meeting of the Paris Academy MM. Troost and Ouvrard reported that they could only discover faint or doubtful traces of the spectrum lines of helium in sea water or in water from the Seine. It seems to follow that the helium in the mineral springs of Canterets cannot be attributed to the air, but comes from the rocks with which the water has been in contact.

DR. FAUVEL, born at Amiens in 1830, a specialist on diseases of the throat and nose and the author of important works on these subjects, died in Paris on December 17. On the same day the death occurred of Dr. Vandermey, professor of gynecology in the University of Amsterdam.

THE *British Medical Journal* states that Dr. A. J. Woïtoff, professor of bacteriology in the University of Moscow, recently fell a victim to his devotion to scientific research. He infected himself with a virulent culture while experimenting in his laboratory, and died soon afterwards of the effects of the accident.

THE life of Darwin, written by Prof. Wilhelm Preyer, has been published by Ernst Hofmann, Berlin.

'THE Earth's History,' by R. D. Roberts, of Cambridge University, and 'The Realm of Nature,' by Hugh B. Hill, are announced for publication by Charles Scribner's Sons.

IT is stated that the New York Pasteur Institute has purchased a farm of about 200 acres near Tuxedo Park to be used as an experiment station.

DR. D. MORRIS, Assistant Director of the Kew Gardens, delivered a lecture on 'The Rise and Progress of the Royal Botanical Garden at Kew, England,' at the American Museum of Natural History under the auspices of the New York Botanical Garden, on December 17th. Dr. Morris has now gone to the Bahama Islands, in order to investigate the cultivation of hemp and other products of the islands.

THE *British Medical Journal* summarizes in the issue of December 14th statistics which have been collected by Widmark regarding blindness in Scandanavia. These show that Denmark had in 1890 for every 10,000 inhabitants only 5.3 blind, Sweden 8.3, Norway 12.8, Finland 15.5. Compared to other European countries, of which Portugal and Russia stand highest with

20 blind for every 10,000, and Holland lowest with only 4.5, the order is as follows: Portugal, Russia, Finland, Spain, Norway, Hungary, England, Germany (without Prussia), France, Prussia, Sweden, Belgium, Austria, Switzerland, Italy, Denmark and Holland.

A SWISS National Exposition, promoted by the Swiss Confederation and the different cantons and cities, will be held at Geneva from May 1st to October 15th of the present year.

AT the 252d regular meeting, held Saturday, December 28th, the Biological Society of Washington elected the following officers for 1896: President, Surgeon General Geo. M. Sternberg; Vice-Presidents, Richard Rathburn, C. D. Walcott, L. O. Howard, B. E. Fernow; Recording Secretary, M. B. Waite; Corresponding Secretary, F. A. Lucas; Treasurer, F. H. Knowlton; Members of the Council, F. W. True, C. W. Stiles, W. H. Ashmead, F. V. Coville, C. L. Pollard.

THE New York *Evening Post* states that one of the greatest of the world's bridges is to be built at Detroit, to connect that city with Windsor. It is to be over two miles in length and to be five feet higher than the Brooklyn bridge. The plans for the structure have been prepared, and legislation looking to its construction has been asked in Washington and Ottawa. A corporation has been or will be organized under Michigan law to coöperate with a similar Canadian corporation in constructing the bridge, and the Vanderbilts will guarantee the bonds of both. The estimated cost is between four and six millions.

THE *Journal of Geology* announces that it will publish, beginning with the first number of Vol. IV., a series of four articles under the head of 'Studies for Students,' by Prof. Van Hise, on (1) Movements of Rocks under Deformation; (2) Analysis of Folds; (3) Cleavage and Fissility; (4) Joints and Faults.

THE *American Machinist* states that a bill has been introduced in the United States Senate by Senator Quay asking for an appropriation of $25,000 for the Franklin Institute and Purdue University, for the purpose of determining the quantity and effect of hammer blow, 'centrifugal lift and tangental throw' of locomotive wheels in use on American railroads; also the effects produced thereby.

THE *Appalachian Mountain Club* announces that it will publish in the early spring a 'Guide to Walks in the Country about Boston,' covering practically the ground embraced in the Club map of the country about Boston. The book will have many maps and be illustrated, and it is desired to have as many of these illustrations as possible taken by the amateur photographers of the Club.

UNIVERSITY AND EDUCATIONAL NEWS.

THE *Evening Post* states that at a meeting of the committee on buildings of the American University, architects have been chosen to prepare plans for the hall of the history building. A subcommittee was also chosen to take charge of the construction of the structure, which will cost about $150,000. Bishop Hurst announced an additional gift to the University, that of a business block in Findlay, Ohio, valued at $10,000, from John D. Flint, of Fall River, Mass.

MRS. T. K. W. SHIMER, owner and principal of the Mount Carroll Female Seminary of Mount Carroll, Ill., has offered to the University of Chicago the seminary buildings and twenty-five acres of ground, with an endowment of from $150,000 to $200,000, to be a girls' training school in connection with the University.

MR. SIDNEY A. REEVE, for several years employed with the engineering firm of Westinghouse, Church, Kerr & Co., and recently editorial writer on the *Progressive Age*, a journal devoted to gas interests, has been elected adjunct professor of steam and hydraulic engineering in the Worcester Polytechnic Institute. Prof. Reeve will begin his services in the Institute about January 1st, 1896.

MR. LECKY, the historian, has been elected member of Parliament for the University of Dublin by a majority of 750 votes.

DR. N. KUSNETZOFF has been elected associate professor of botany and director of the botanical gardens in the University of Dorpat.