EOCENE SIRENIANS IN EGYPT.

DR. C. W. ANDREWS published in July his third paper* on extinct vertebrates of Egypt, including a fuller description of a new species of Sirenian belonging to the genus *Eosiren*. The specialization of *Eosiren* is very notable. The author concludes: "It is remarkable that, except in the presence of posterior incisors and canines, this early (Middle Eocene) Sirenian is scarcely at all more generalized than the later *Halitherium*, and it appears that the Sirenia must have branched off from their parent stock at an extremely early period. In some respects, particularly in the structure of the teeth and of the humerus, there is a certain similarity with *Mœritherium*, and it seems not improbable, therefore, that the relationship between the Sirenia and the Proboscidea suggested by Blainville and others may have a real existence.

PROGRESS OF THE EXPLORATION FOR FOSSIL HORSES.

THIS is the second year of exploration by the American Museum of Natural History from the fund presented by William C. Whitney especially for researches on the evolution of the horse. Last year a number of Upper Miocene skulls and feet were found in Texas, but the chief discovery was the nearly complete skeleton of *Anchitherium*, the three-toed, marsh-living horse, which has just been mounted in the Museum. A nearly complete skeleton of *Mesohippus bairdi* was secured from a Western collector during the winter. The Montana expedition from the Museum during the present summer has fortunately secured a specimen of the little-known *Mesohippus westoni*, the horse of the Lower Oligocene, or Titanothere beds proper, a species first named by Cope from the Swift Current Creek region of Canada. Word has just been received of the very fortunate discovery in Nebraska of the remains of a small herd of *Hipparion*. They consist of one skull, which promises to be fine, parts of others, eight hind limbs and feet, mostly complete, four fore limbs and feet, one pelvis, and enough vertebræ and ribs to make up one complete vertebral column. Altogether there is no doubt that a complete animal can be mounted. The feet are of the very long, slender type, terminating in narrow, pointed phalanges.

* 'Extinct Vertebrates from Egypt,' III., *Geological Magazine*, N. S., Decade IV., Vol. IX., pp. 291–295, July, 1902.

THE PERISSODACTYLES TYPICALLY POLYPHYLETIC.

THE study of the fossil horses of this country, so far as it has progressed, proves conclusively that there were at least three and probably four parallel phyla, of which *Anchitherium*, *Protohippus* and *Hipparion* are the most conspicuous representatives in the Miocene, thus confirming results previously reached by Scott, Pavlow and others. This accords with the demonstration recently made by Osborn of four parallel phyla of Titanotheres, and of the long-known existence of two parallel phyla of Palæotheres. The theory that the Rhinoceroses included at least six parallel phyla is now finding fresh confirmation. The Lophiodons are certainly diphyletic, including the extremely light-limbed and the heavy-limbed forms. It thus appears that the Tapirs alone failed to conform to this law. This law is nevertheless a matter of comparatively recent recognition, the genealogy of the Horses, Rhinoceroses and Titanotheres having been widely treated as if they were monophyletic, ever since Huxley placed *Anchitherium*, *Hipparion* and *Equus* in a linear series.

H. F. OSBORN.

SCIENTIFIC NOTES AND NEWS.

DR. WOODROW WILSON was installed as president of Princeton University on October 25, in the presence of many distinguished educators and other prominent men. Addresses were made by ex-President Cleveland, by Dr. Francis L. Patton, the retiring president of the University, and by Dr. Wilson. We hope to publish the inaugural address of Dr. Wilson next week.

THE degree of LL.D. was conferred on Dr. Alexander Graham Bell at St. Andrew's University on October 23, on the occasion of the installation of Mr. Andrew Carnegie as rector.

AT the centennial celebration of the founding of Washington and Jefferson College, held

on the 15th inst., the degree of Doctor in Science was conferred upon Dr. W. J. Holland, the director of the Carnegie Museum in Pittsburgh, and upon Dr. John A. Matthews, of New York City.

A CENSUS of the Philippines will be taken on March 1. It will be under the direction of General Joseph S. Sanger, who will be assisted by Mr. Henry Gannett, of the Geological Survey, and Mr. G. H. Armstead, of the Department of Agriculture. They will leave for Manila without delay.

A BACTERIOLOGICAL laboratory has been created by the Prussian government at Potsdam and placed under the charge of Dr. Behla, known for his researches on cancer.

MAJOR W. C. GORGAS, surgeon, U. S. A., has been designated by Surgeon-General O'Reilly to represent the United States at the First Egyptian Medical Congress which opens at Cairo on December 16.

DR. JAMES BRYCE will give at Cambridge University on November 29 the first of the Henry Sidgwick memorial lectures. His subject is 'The Philosophic Life among the Ancients.'

PROFESSOR ERB, of Heidelberg, known for his work on the nervous system, gave last month the inaugural address of the winter session of the Post-graduate College of the West London Hospital.

IT is announced that lectures will this winter be given before the Royal Geographical Society by Captain Otto Sverdrup on his four years' Arctic work in the *Fram,* and by Dr. Sven Hedin on his three years' expedition to Central Asia.

DR. HANS FRIEDERICH GADOW, lecturer on zoology at Cambridge University, has passed through the United States on his way home from an expedition to Central America.

CAPTAIN BOYD ALEXANDER has recently left England to pursue his ornithological investigations in the island of Fernando Po and other places in the Bight of Benin; and he intends to explore the country around Lake Chad, in order to acquire further knowledge as to the affinity existing between the West African and East African fauna.

DR. MAX WOLF, director of the Observatory at Heidelberg, Germany, has appointed Mr. Raymond S. Dugan his assistant for one year, on the recommendation of Professor Todd, whose pupil and assistant at Amherst he formerly was. For the past three years Mr. Dugan has had charge of the Beirût Observatory, which was built for the Syrian Protestant College by D. Stuart Dodge, Esq.

PROFESSOR HUGO KAHL, formerly of the faculty of the University of Kansas, and latterly connected with the Agricultural Experiment Station of the University of Illinois, succeeds Mr. Herbert H. Smith as a custodian in entomology at the Carnegie Museum, under Dr. W. J. Holland, the curator of that department.

THE council of the British Institution of Civil Engineers has, in addition to the medals and prizes given for communications discussed at the meetings of the institution in the last session, made the following awards in respect of other papers dealt with in 1901–02: A Telford gold medal to J. McFarlane Gray (London); a George Stephenson gold medal to R. Price-Williams (London); a Watt gold medal to W. Bell Dawson, M.A., D.Sc. (Ottawa); Telford premiums to W. R. Cooper, M.A., B.Sc. (London); E. M. De Burgh (Sydney, N. S. W.); George Wilson, D.Sc. (Manchester); Frank Oswell, B.A. (Buenos Ayres); A. W. Brightmore, D.Sc. (London); a Crampton prize to C. D. H. Braine (Mowbray, Cape Colony); the Manby premium to B. W. Ritzo (Cape Town).

IT is proposed to create a memorial to Professor Virchow in Great Britain, the movement having been inaugurated by Lord Lister.

PROFESSOR SYDNEY H. SHORT, formerly professor in Denver University, known for his researches in electricity, has died in London, at the age of forty-four years.

THE International Congress of Americanists held last week its fourteenth session at the American Museum of Natural History, New York City. The program contained the titles of ninety-two papers contributed by dis-

tinguished representatives from Europe, South America, Mexico and the United States. We hope to publish shortly a full account of the proceedings.

THE International Congress on Tuberculosis opened in Berlin on October 23 with about one hundred delegates in attendance. Professor Brouardel, of Paris, was chosen chairman. The press despatch quoted by us last week that Dr. W. H. Welch was one of the American delegates may have been correct as far as the appointment is concerned, but Dr. Welch has returned to Baltimore after delivering the Huxley lecture at London.

THE seventh International Congress of Agriculture will be held at Rome in the spring of 1903. It will be divided into ten sections. (1) Rural economy, agrarian and land credit, cooperation, insurance, international commercial relations. (2) Agronomy (application of science to agriculture, amelioration of agriculture and pasturing). (3) Agricultural instruction (schools, colleges, agricultural experiment stations, etc.). (4) Economy of farm animals and related industries (bees, birds, silkworms, etc.). (5) Rural engineering (construction, hydraulics, etc.). (6) Special culture and related industries (fecula, oil, sugar, fruit, vegetables, flowers, essences, etc.). (7) Vegetable pathology, destruction of parasites, protection of useful animals (international measures). (8) Forests (preservation, replanting, etc.). (9) Water and pisiculture. (10) Wine growing and making. This special section will be considered as a continuation of the International Congress of Wine Growers inaugurated in Paris in 1900.

THE collection of the birds of Holland, formed by Baron Snouckaert van Schauburg and mounted by Tar Meer, the celebrated Dutch taxidermist, has been purchased by the Carnegie Museum. It numbers about eight hundred specimens and contains nearly all the species of Western Europe. Each species is represented by both sexes in adult plumage, and in many instances by the young also. There are over three hundred species found in the collection. The collection of the lepidoptera of Western Pennsylvania made by Mr. Henry Engel, of Pittsburgh, has also been purchased by the museum. It contains nearly twelve thousand specimens, representing approximately two thousand species. The specimens are in beautiful condition.

IT is announced that the entomological collection of the late John Ackhurst, of Brooklyn, containing some 50,000 specimens, has been purchased for the zoological department of the University of Chicago.

MISS MARY H. TATNALL has presented the herbarium of her father, the late Edward Tatnall, to Colorado College.

MR. JOHN MORLEY has given the library of the late Lord Acton to Cambridge University. It will be remembered that this valuable historical library of some 70,000 volumes was purchased some time ago by Andrew Carnegie from Lord Acton, who was allowed to retain it until his death. Upon Lord Acton's death Mr. Carnegie gave the library unconditionally to Mr. Morley.

THE expeditions sent by the Carnegie Museum to the fossil fields of the west report unusual success during the past summer and fall. Mr. W. H. Utterbach has succeeded in recovering in Wyoming a nearly complete skeleton of diplodocus in beautiful condition, as such things go. The bones are free from crushing and the matrix is of such a character as to enable them to be easily freed from their surroundings. Mr. O. A. Peterous and Mr. C. W. Gilmore were very successful in their labors in western Nebraska and eastern Wyoming, where they made considerable collections of mammalian remains. Mr. Earl Douglas in Montana has had excellent success. Some four or five weeks ago he reported that he had already taken up fifty-eight skulls, accompanied by more or less complete skeletons, representing the peculiar fauna of the deposits in which he has been working. Mr. C. W. Gilmore, who has been working in the Freezeout mountains of Wyoming, has collected a large quantity of material representing the carnivorous dinosaurs, hitherto lacking in the collections at the Carnegie Institute.

MR. H. J. EUSTACE sends notice from the New York Agricultural Experiment Station

at Geneva that an unusual and serious trouble with harvested apples has appeared in western New York. It is confined entirely to scabby apples. A white or pinkish mildew appears upon the scab spots and transforms them into brown, sunken, bitter, rotten spots. On very scabby apples these rotten spots soon coalesce and ruin the fruit. The damage done is enormous. In Niagara, Orleans, Monroe and Wayne counties thousands of barrels of apples have been ruined. The varieties most affected are Greening and Fall Pippin. Upon investigation it was found that the white mildew on the scab spots is the cause of the rot, and that it is a distinct fungus having no connection with the scab fungus. The scab itself will not rot a fruit, but it breaks the skin wherever it grows and thereby makes an opening for this other fungus to get into the apple and rot it. Traces of the rot are sometimes found upon apples while still on the trees, but the greatest damage is done during the sweating process, either in piles on the ground or in barrels. Apples barreled immediately after picking and placed at once in cold storage seem to escape the trouble, but it is liable to appear later when the fruit is placed upon the market. A preventive of the rot is much to be desired, but at present none is known. Investigations in this line are now in progress at the station. The whole trouble can be traced back to a lack of thorough spraying. Had the apples been kept free from scab by spraying, the white rot fungus could do them no harm in storage. However, the past season has been exceptionally favorable for scab and spraying has been less effective than usual.

The College of Physicians of Philadelphia announces that the next award of the Alvarenga prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about $180, will be made on July 14, 1903. Essays intended for competition may be upon any subject in medicine, but can not have been published, and must be received by the secretary of the college on or before May 1, 1903.

It is said that the commission appointed by the New York Legislature to report on the plans for establishing a state electrical laboratory at Schenectady, consisting of State Engineer Bond, A. C. Buck, of Niagara Falls, and C. P. Steinmetz, of Schenectady, will report favorably on the plan.

The Electrical World states that it is proposed to use electric light signals at night and flags by day to warn the fruit growers of the Santa Clara Valley as to the approaching weather conditions. Professor A. G. McAdie, of the Weather Bureau, at San Francisco, has suggested that during the months of February, March and April the orchardists be warned by colored lights of the approach of frosts, which would enable them to smudge by burning oil, etc. During September, October and November the approach of showers could be indicated. An electric tower, 220 feet in height, located in San Jose, Calif., can be seen over the greater part of the county.

The volume containing the physical papers of the late Professor Henry A. Rowland, the preparation of which for publication we have already announced, is now nearly ready for distribution to its subscribers. It has been edited under the direction of a committee, consisting of President Remsen, Professor Welch and Professor Ames, who have made every effort to present to the world, in a suitable form, this memorial of their colleague. In this book, which contains about 750 pages, royal octavo, are collected not alone Professor Rowland's strictly scientific papers and his public addresses, but also a detailed description of his ruling engine, with plates and photographs. The memorial address of Professor Mendenhall serves as a biographical sketch, which is accompanied by a portrait of Professor Rowland. The subjects treated in these papers cover a wide range. In heat there is the great memoir on the mechanical equivalent of heat, with several shorter articles on thermometers. In electricity and magnetism there are the fundamental researches on magnetization, on the magnetic effect of electrical convection, on the value of the ohm, on the theory and use of alternating currents, etc. In light there are the renowned discovery and theory of the concave grating and the long series of investigations made in the field of

spectroscopy. Lists of wave-lengths will not be reprinted in this volume, as they are readily accessible elsewhere; and any subscriber to this volume may obtain, by application to the Johns Hopkins Press, Baltimore, a copy of Rowland's 'Preliminary Table of Solar Wave-Lengths.' The price set is five dollars net per copy for orders sent in advance of publication, after which the price will be $7.50. Orders may be sent to Professor Joseph S. Ames, Secretary of the Committee of Publication, Johns Hopkins University, Baltimore, Maryland.

THE board of visitors to the Melbourne Observatory in their report to the Governor of Victoria express their regret that the position of chief assistant has not yet been filled, "for it has become more and more urgent from the fact, among other reasons, that new and important duties will shortly devolve on the astronomer in connection with the bureau of standard weights and measures, which, we are informed, is to be placed in Mr. Baracchi's charge. Mr. Baracchi's predecessor always had two trained astronomers as assistants, but now what was formerly the work of three men falls entirely on his shoulders. All the present staff except Mr. Baracchi are either observers or computers, each doing the work he has been trained to do accurately and well, but among them all there is no one competent to take charge of an observatory even for 24 hours. The observatory, one of the most important in the Southern Hemisphere, is primarily a place for astronomical research, and its existence can only be justified by research work carried on in it. Mr. Baracchi has already proved himself to be eminently qualified to conduct astronomical research, but he is practically unable to attempt such investigations, as his time is more than fully occupied with the routine work of administration and detail that could equally well be done by a chief assistant. We cannot expect the reputation of our observatory to be maintained if we compel the director to spend his time conducting correspondence, arranging details of the work, supervising computers, and travelling about the country inspecting barometers and rain-gauges."

A SPECIAL sub-committee of the Technical Education Board of the London County Council has recently published a report on 'The Application of Science to Industry.' The *Electrical World* states that the committee has arrived at the conclusion that "various branches of industry have during the past 20 or 30 years been lost to this country, owing to the competition of foreign countries; that in many others our manufacturers have fallen seriously behind their foreign rivals; and that these losses are to be attributed in no small degree to the superior scientific education provided in foreign countries." In this connection, reference is made to the transfer from England to Germany of numerous departments of manufacturing chemistry, the best-known instance of loss being the manufacture of aniline dyes and many other valuable products from coal tar. Whereas the original investigations and discoveries on which the industry is based were made almost entirely in England, there are not now a thousand workpeople employed in the industry in the Kingdom. On the other hand, it is a most lucrative and flourishing business in Germany. Then the manufacture of high-class lenses for photographic cameras, microscopes, telescopes and field-glasses, as well as of thermometer-glass tubes for making thermometers for accurate physical measurements, has practically been lost to the country. Thirdly, the committee points to the rapid development in the United States, Germany and Switzerland of the various branches of the manufacture of electrical machinery, as compared with the relatively slow progress made in the United Kingdom. In 1890 the imports of electrical appliances and scientific apparatus were too insignificant to be separately scheduled. In 1900 they amounted to £1,174,000 and £522,000, respectively. While some of the witnesses examined attributed the relative backwardness of England in scientific industries partly to other causes, they were practically all agreed in considering it due, in the main, to the deficiencies of the British educational system. It did not appear that the training of the workmen was at fault. It is believed that the opportunities now open to the Lon-

don workman for obtaining technical education in his trade are actually superior to those enjoyed by the German or American workman. Summing up all the evidence, the committee is convinced that the main causes of British failure in the chemical, optical and electrical industries are the following: (*a*) The lack of scientific training of the manufacturers themselves, and their consequent inability to recognize the importance of scientific assistance; (*b*) the defective condition of secondary education, and the consequent lack of sufficiently prepared recruits for advanced technological training; (*c*) the lack of a sufficient supply of young men who have been trained, not only in scientific principles and method, but also in the application of science to particular industrial processes; (*d*) the lack of any institution providing advanced technological training which is sufficiently equipped and endowed to enable it to give adequate attention to post-graduate or advance work. There is a consensus of opinion that the highest grade of technical education must be carried on in an institution of university rank during the day. The few hours which can be given in the evening by those who are engaged in business during the day are insufficient for training in research.

UNIVERSITY AND EDUCATIONAL NEWS.

MR. JOHN D. ROCKEFELLER has offered to give $500,000 to Teachers College, Columbia University, on condition that the sum of $440,000 be collected from other sources—$190,000 to pay the outstanding debts and $250,000 for further endowment. It was also announced at the meeting of the trustees on October 23 that the college had received from Mr. and Mrs. B. Everett Macy $175,800 for the increase of the endowment funds and $98,709 for the completion of the Horace Mann School.

PRINCETON UNIVERSITY has been made the residuary legatee under the will of the late Mrs. Susan Dod Brown, and will, it is said, receive $140,000.

AT a meeting of the governors of University College, Liverpool, on October 14, it was announced that the sum of £170,000 had been promised for the endowment of an independent university when created.

LEIPZIG UNIVERSITY will celebrate the five hundredth anniversary of its establishment in 1909.

THE following is a list of appointments in the Scientific Departments of the University of Maine for the present year: Perly F. Walker (University of Missouri, Cornell), professor of mechanical engineering; J. E. Burbank (Bowdoin, Harvard), instructor in physics; Walter Rantenstrauch (University of Missouri), instructor in mechanical engineering; F. H. Mitchell (University of Missouri), instructor in chemistry; H. W. Britcher (Syracuse and Johns Hopkins), instructor in zoology; W. A. Mitchell (Trinity), tutor in physics; H. E. Cole (University of Missouri), tutor in electrical engineering; T. Buck (University of Missouri, Chicago), tutor in mathematics; W. A. Lambert (Harvard), tutor in mathematics; H. H. Hanson (Pennsylvania State College), assistant chemist in experiment station; H. P. Hamlin (University of Missouri), assistant in civil engineering; C. C. Alexander (University of Missouri), assistant in civil engineering.

MISS ALICE W. WILCOX, B.A. (of Vassar), and for two years fellow at Chicago University, has been appointed instructor in zoology at Wellesley College. Miss Frances E. Foote, B.A., of Wellesley College, and lately graduate student at Columbia University, has also been appointed to a partial instructorship. These additions to the department are made necessary partly by increase in number of students and partly by the fact that Miss Mary A. Bowers, senior instructor in the department is this year doing but half work.

M. LIARD has succeeded M. Gréard as vice-rector of the University of Paris.

MR. R. P. GREGORY, of St. John's College, has been appointed demonstrator in botany at Cambridge University.

DR. H. W. THOMAS, of Montreal, has been appointed fellow in pathology at McGill University.