

temperatures to be determined at the successive heights reached, the place and time at which the balloons fall indicating approximately the direction and velocity of the upper currents. The 'aeronautical concourse' of the St. Louis Exposition afforded an opportunity to undertake these investigations in this country. Accordingly, the work was taken up by Mr. A. Lawrence Rotch, director of the Blue Hill Observatory, in cooperation with Col. J. A. Ockerson, chief of the Department of Liberal Arts at the Exposition, and a series of very satisfactory experiments has just been completed.

The balloons used in the experiments are the closed rubber balloons devised by Dr. Assmann, director of the Prussian Aeronautical Observatory. These balloons are inflated with about 100 cubic feet of hydrogen gas; they expand in rising until they burst, and then the attached parachute moderates the fall. In some cases two balloons, coupled tandem, were employed, and, as only one balloon bursts, the other is borne slowly to the ground and serves to attract attention. The instruments, which were furnished by M. Teisserenc de Bort, of Paris, record the temperature and barometric pressure upon a smoked cylinder, turned by clockwork; and the lightest of them in its basket weighs about one and one half pounds. A notice attached to each requests the finder to pack the instrument carefully in a box and return either to St. Louis or to Blue Hill, with promise of a reward for the service.

Owing to delays in obtaining the gas and apparatus, the experiments were not begun until the middle of September, during which month four ascensions took place. All of the balloons fell within a radius of fifteen miles, about fifty miles east of St. Louis. Twice the height of nine or ten miles was attained where a temperature of 68° F. below zero was recorded. These experiments were conducted by Mr. S. P. Fergusson, of the Blue Hill Observatory staff. Another series of ten ascensions was executed by Mr. H. H. Clayton, meteorologist at the Blue Hill Observatory, during the last part of November and the first days of December, mostly after sunset, in order to avoid the possible effect of insolation.

Fortunately, all these balloons were also recovered, though the stronger upper air currents carried them further from St. Louis, three of them traveling more than two hundred miles, and two, at least, with a speed exceeding one hundred miles an hour, the direction of every balloon being toward the easterly semi-circle. Ten of the fourteen ascensions furnished good records, and the reduction of the later ones reveals lower temperatures than in September, for example, 72° below zero at the height of seven and three quarters miles on November 25, and 76° below at six and one quarter miles on the following day.

The fact that all the balloons were recovered indicates the excellent topographical situation of St. Louis for despatching them, and Mr. Rotch expects to make another series of ascensions there this month, in order to obtain the temperatures of the upper air in mid-winter.

#### SCIENTIFIC NOTES AND NEWS.

THE Lavoisier medal of the Paris Academy of Sciences has been awarded to Sir James Dewar.

THE title of Correspondant de l'Ecole d'Anthropologie de Paris has been conferred upon Mr. George Grant MacCurdy of the Yale University Museum.

MR. FREDERIC EMORY, chief of the Bureau of Trade Relations of the Department of State, has presented his resignation to take effect on March 31.

DR. HORACE JAYNE has resigned the directorship of the Wistar Institute of the University of Pennsylvania.

LORD KELVIN has accepted the nomination of the council for the presidency of the London Faraday Society, in succession to Sir Joseph Swan.

PROFESSOR G. SERGI has been made president for the International Congress of Psychology to be held at Rome from April 26 to 30 of the present year.

LIEUTENANT-COLONEL A. KEOGH has been appointed director general of the British Army Medical Service.

At the meeting of the California Academy of Sciences, recently held in San Francisco, Mr. Walter K. Fisher, assistant in the department of zoology, of Stanford University, delivered a lecture entitled 'Bird-life on a Tropical Island of the Pacific.

DR. OTTO NORDENSKIÖLD lectured on his Antarctic exploration before the French Geographical Society on December 16.

PLANS have been made to erect a memorial to Dr. Franz Riegel, professor of medicine at Giessen, who died last August.

*Nature* states that it is proposed to establish in the University of Liverpool a memorial to Mr. R. W. H. T. Hudson, late lecturer in mathematics, whose brilliant career was so tragically cut short at the end of last September. The memorial will probably take the form of an annual prize in mathematics, to be awarded for distinction in geometry, the subject in which Mr. Hudson's work chiefly lay.

DR. BENJAMIN WEST FRAZIER, professor of mineralogy and metallurgy at Lehigh University since 1871, died as the result of a stroke of apoplexy on January 4, at the age of sixty-three years.

MR. C. C. BARRETT, an English entomologist, has died at the age of sixty-eight years.

SIR LOTHIAN BELL, F.R.S., the author of works on metallurgy, died on December 20 at the age of eighty-eight years.

THE death is also announced of Professor Hermann Wilfarth, director of the Agricultural Experiment Station at Bernburg; and of M. Paul Tannery, author of works on the history of science.

FOREIGN exchanges state that the Circolo Matematico di Palermo intends to offer an international prize for geometry at the fourth International Mathematical Congress, which will meet at Rome in 1908. The prize will consist of a small gold medal, to be called the Guiccia medal, after its founder, and of 3,000 francs, and will be given by preference, though not necessarily, to an essay which advances the knowledge of the theory of algebraical curves of space. The treatises may be written in Italian, French, German or English, and

must be sent to the president of the Circolo Matematico before July 1, 1907.

THE New York *Evening Post* states that in pursuance of the written agreement between Harvard and New York Universities, to carry on for ten years a biological station in the Bermuda Islands, a supervising committee has been completed by the acceptance of a third member of the committee, Hugo Baring, who was nominated by the Royal Society of London, which is a contributor to the enterprise through the Bermuda government. Harvard University is represented on the committee by Hon. Charles S. Fairchild, ex-secretary of the United States Treasury, and New York University by Mr. William M. Kingsley, the treasurer of the university.

MR. ANDREW CARNEGIE has given \$263,000 to the Maryland Institute School of Art and Design, thus doubling the assets of the institution. A new building will be erected to replace the one destroyed in the Baltimore fire. It is also stated that Mr. Carnegie has intimated to officials of the Franklin Institute, of Philadelphia, that if they can secure the Franklin fund amounting to about \$155,000, in the hands of the Board of City Trusts, he will add an equal sum to the amount. The Franklin fund, £1,000, was left to the City of Philadelphia by Dr. Benjamin Franklin in 1790, to be used in making loans to young married artificers under certain conditions. No loans under the conditions have been made for years. The money will be used for the erection of a new building.

THE Mexican Department of Agriculture is planning a series of meteorological stations to be connected by telegraph with the meteorological observatory in Mexico City.

PROFESSOR BOYCE, of Liverpool University, has proposed to the Liverpool Chamber of Commerce a scheme for the establishment of a commercial museum and bureau of scientific information.

THE new tuberculosis building at the Johns Hopkins Hospital, adjoining the general dispensary, will be formally opened about January 15. It is the gift of Mr. Henry Phipps, of Pittsburg, who gave \$20,000 last winter,

through Dr. Osler, for a separate dispensary for tuberculous patients.

KARLSRUHE has followed the example of Charlottenburg in establishing a tuberculosis museum. Arrangements are being made by which parties of working people will be enabled to visit the museum from all parts of the country.

WE learn from *The British Medical Journal* that a private citizen has placed in the hands of the government of the Grand Duchy of Baden a sum of \$60,000 towards the foundation at Heidelberg of an institute for the study of cancer. The government has given a site for the purpose in the immediate neighborhood of the University Hospital, and has promised a grant for the maintenance of the institute.

THE completed object-glass of eighteen inches clear aperture for the new observatory was formally delivered to the trustees of Amherst College on December 31 by Mr. C. A. R. Lundin, the maker and optical expert, representing the firm of Alvan Clark and Sons. The objective was brought to Amherst by Professor Todd and deposited in the college vault for safe keeping till the mounting is ready to be erected in the spring. The flint and crown disks were made by Mantois, of Paris, and were pronounced by Alvan Clark the finest pair of disks ever received in his shops. The optical work upon them, figuring, correcting and polishing, during the past two years, fully maintains the highest standard of excellence set by this firm in the forty-inch Yerkes telescope, the thirty-six-inch Lick telescope, the thirty-inch Russian object-glass, the twenty-six-inch at Princeton, and numerous others.

A PACIFIC Coast Biological Society was established at a meeting held in San Francisco on December 10. Its membership includes those who are carrying on research in zoology, paleontology, anatomy, physiology, psychology and botany. Meetings will be held four times a year. At the first meeting Dr. Jacques Loeb gave an address on heliotropism in animals. Professor H. Heath, of the Stanford University department of zoology, was elected president, and Professor W. J. V. Osterhout,

of the department of botany at the University of California, secretary-treasurer.

A MATHEMATICAL section of the California Teachers' Association was organized on December 26, 1904, at San Jose. Professor G. A. Miller, Stanford University, was elected president, and Mr. J. F. Smith, Campbell High School, secretary. The main object of the association is to arouse more interest in mathematical pedagogy by means of separate meetings for the discussion of recent mathematical movements.

THE American Breeders' Association will hold its annual meeting at Champaign, Illinois on February 1, 2 and 3. Special sessions will be devoted to the following subjects: specific methods of breeding corn, wheat, apples and other plants; methods of improving short horns, dairy cattle and other breeds of live stock, breeding disease-resisting plants, Mendel's law, in-and-in breeding.

MR. FRANCIS DARWIN has written the following letter to the *London Times*:

In an article on 'Greek at Oxford,' from a correspondent in *The Times* of December 27 occurs the remark 'It will be remembered also that Darwin regretted not having learnt Greek.'

I am at a loss to know on what authority this statement rests. If Darwin had any regrets on the subject of Greek it was when he found that in the two years intervening between leaving school and going up to Cambridge he had almost forgotten his classics, and had to begin again an uncongenial task in order to get a degree.

Darwin says of his education at Shrewsbury School: "Nothing could have been worse for the development of my mind than Dr. Butler's school, as it was strictly classical, nothing else being taught, except a little ancient geography and history" ('Life and Letters,' I., 31). He was, in fact, a victim of that 'premature specialization' which is generally referred to in a somewhat one-sided spirit, and from which the public schoolboy is not yet freed.

If the name of Charles Darwin is to be brought into this controversy it must not be used for compulsory Greek, but against it. In 1867 he wrote to Farrar, 'I am one of the root and branch men, and would leave classics to be learnt by those alone who have sufficient zeal and the high taste requisite for their appreciation' ('More Letters of Charles Darwin,' II., 441).

THE Biological Society of Washington offers for sale to the highest bidder, prior to January 15, 1905, its entire accumulation of exchange publications, consisting of about 1,500 serials or parts of serials, pamphlets and volumes on all branches of natural history. An opening bid of \$25 is already in hand. The collection will be sold as a whole, and bids for parts can not be accepted. For information apply to the secretary, Wilfred H. Osgood, Department of Agriculture, Washington, D. C.

DR. HENRY FAIRFIELD OSBORN, Da Costa professor of zoology in Columbia University and curator in the American Museum of Natural History, will deliver a series of lectures in February, at the Museum of Natural History, on 'The Evolution of the Horse.' The lectures will be given under the auspices of Columbia University in cooperation with the museum, on the first three Mondays and the first three Wednesdays of the month. The subjects are: 'The Horse as an Animal Mechanism,' 'The Horse in Relation of the Idea of Evolution,' 'The Fossil History of the Horse,' especially in North America; 'The Fossil History of the Horse Continued,' 'Existing Races of Horses, Asses and Zebras,' 'Probable Origin of the Domesticated Breeds of Horses.'

A COLONIAL exposition will be held in Marseilles in 1906, for which preparations are being made with great energy. A site has been selected, and 1,500,000 francs has been voted by the department, city and chamber of commerce. The various French colonies have already appropriated 5,000,000 francs to meet their expenses in this exposition, and further financial aid is expected.

PROFESSOR BOYCE, F.R.S., Dr. Arthur Evans and Dr. H. T. Clarke, who comprise the 13th expedition despatched by the Liverpool School of Tropical Medicine to West Africa for purposes of scientific research, sailed from the Mersey, on December 14. We learn from the *London Times* that on the day before they were entertained to a farewell luncheon by Sir Alfred L. Jones, and a numerous company of Liverpool commercial men were invited to meet them. Sir Alfred Jones in proposing

'Success to the Expedition,' said the Liverpool School had accomplished invaluable work in the direction of making the West Coast more healthful and habitable to white men and natives alike. Mr. James Boyle (American Consul) pointed out that Liverpool was rapidly forging to the front as a scientific center, and both London and Edinburgh would soon have to look to their laurels. Mr. Walter Long, M.P., said that Liverpool and the nation at large owed an incalculable debt to Professor Boyce. In the history of British colonization and territorial acquisition the most painful page was that in which one read of the death, not of men who had fallen sword in hand fighting under the flag of their country, but of those countless thousands whose lives had been sacrificed, as they now believed quite unnecessarily, to a deadly and unseen enemy, which had wrought such terrible ravages in the past, and which they had every reason to believe could now be vanquished. This was a great work, and must result in conquests as great and lasting as any that science had yet achieved. Professor Boyce, in responding, said that the feasibility of Ross's views on this subject had now been proved up to the hilt.

#### UNIVERSITY AND EDUCATIONAL NEWS.

By the will of the late E. W. Codman of Boston and Nahant, Mass., an estate which it is said, may reach \$1,000,000 will be equally divided between Harvard University and the Massachusetts General Hospital.

It is said that the classes graduating from Princeton University from 1881 to 1902 have each pledged \$10,000 for the erection of a new dormitory.

THE board of trustees of the University of North Carolina has authorized the organization of a School of Applied Science, consisting of the departments of mathematics and engineering, physics and electrical engineering, chemistry, geology and mining. Professor Gore is dean.

DR. H. MEIDINGER, professor of applied physics at the technical institute at Karlsruhe, has retired from active service at the age of seventy-three years.