large and small. These were considered representative of the groups to which they belong, and thus the averages may be considered typical. The per cent. of inbreeding varies in different sections of the country as well as in different kinds of schools, as follows:

	Per Cent.
Six women's colleges average	12.4
Fourteen western schools average ..	23.5
Five southern schools average	25.3
Sixteen state universities average .	26.2
Twelve eastern schools average ...	29.6
Twenty-two central schools average	33.7

The table shows the kind of degrees the inbred instructor received from his alma mater. Captions have also been made for those having studied at the alma mater, either as undergraduates or as graduates, without receiving a degree. Persons were not entered under these two captions unless a considerable amount of work was thus done in the alma mater. Frequently more than one first, second or third degree was obtained. Lack of space prevented showing this in detail. M.D. and C.E. are counted as third degrees. Western schools means west of the Mississippi. Eastern schools means schools east of Ohio.

CHARLES HART HANDSCHIN

THE TENTH INTERCOLLEGIATE NEW ENGLAND GEOLOGICAL EXCURSION

THE tenth Intercollegiate New England Geological excursion was taken Saturday, October 22, in the vicinity of Hanover, N. H., under the leadership of Professor J. W. Goldthwait, of Dartmouth College.

Friday evening a preliminary meeting at which papers were read and discussed was held in the geological lecture room of Butterfield Museum. This meeting was attended by twenty-one persons. Professor J. W. Goldthwait gave a summary of his work on the postglacial subsidences and uplifts in the St. Lawrence Valley. Professor D. W. Johnson discussed the evidence of recent subsidence on the New England coast and showed that the *apparent* sinking of the land may be accounted for in other ways. His recent studies show that there can have been no change in the level of the New England coast in the last 1,000 to 3,000 years. The Nantasket beaches show that there has been no change in level in at least 1,000 years. Professor B. K. Emerson gave a summary of the glacial geology of the Connecticut Valley.

The excursion Saturday morning was taken to the Connecticut Valley esker to study its relation to the other deposits in the valley. The clays of the "highest terrace" were shown to have been deposited in the still waters of a lake formed by a temporary dam of some sort, perhaps a ledge of rock which the stream later abandoned as it cut a new channel into the softer glacial deposits of the former valley. The deltas at the mouths of the tributary streams at altitudes above the "highest terrace" seem to have been laid down in the lake in which the silt of the "highest terrace" was deposited. After a study of the unprotected terraces and abandoned, incised meanders of Mink Brook the party were obliged to stop on account of rain.

Representatives were in attendance from Amherst, Brown, Dartmouth, Harvard, Holyoke, Massachusetts Agricultural College, Middlebury, Smith, University of Vermont, Wellesley, Wesleyan, Williams.

No announcement was made as to the place of the next excursion.

HERDMAN F. CLELAND,
Secretary

SCIENTIFIC NOTES AND NEWS

FOR his researches on the determination of atomic weights the Royal Society has awarded the Davy medal to Dr. Theodore W. Richards, professor of chemistry at Harvard University.

THE Harben Lectures of the Royal Institute of Public Health, of London, for 1912, will be given by Dr. Simon Flexner, of the Rockefeller Institute for Medical Research, New York.

PROFESSOR W. S. EICHELBERGER assumed the directorship of the U. S. Nautical office on November 2, succeeding Professor Milton Updegraff.

AFTER more than sixteen years' continuous service as state geologist of Indiana, Mr. W. S. Blatchley will retire from office on January 1. The position of state geologist in Indiana is unique in that it is an elective position, and in the recent democratic landslide Mr. Blatchley was defeated by Mr. Edward Barrett, of Plainfield, Indiana.

MR. L. C. SNIDER, A.M. (Indiana), has been appointed assistant director of the Oklahoma Geological Survey, to succeed Mr. L. L. Hutchison. Mr. Frank Buttrum, A.B. (Oklahoma), has been appointed chemist of the survey to succeed Mr. Snider.

PRESIDENT TAFT has appointed Mr. John S. Conway, of the U. S. Reclamation Service, to the position of chief constructing engineer in the U. S. Light-house Service. This position was created by the act of congress reorganizing the Light-house service.

PROFESSOR EMIL MATHIAS has been appointed director of the Meteorological Observatory Puy de Dôme, as successor to M. Brunhes.

THE Astronomical Society, of Antwerp, has established a meteorological office under the direction of Messrs. Birkenstock, Dierckx and Riegler.

THE *Observatory* notes that Sir W. H. M. Christie, who has retired from the post of astronomer royal, joined the staff at Greenwich in 1870 as chief assistant to Sir George Airy, whom he succeeded as astronomer royal in August, 1881. The lengths of tenure of previous holders of the office have been: Flamsteed 44 years, Halley 22, Bradley 20½, Bliss 2, Maskelyne 46, Pond 25, Airy 46, so that Sir William Christie has been astronomer royal for a period of almost exactly average length—about 29 years.

PROFESSOR KAMMERLING ONES, of the University of Leyden, has put his cryogenic laboratory at the disposal of Madame Curie for her researches on radio-activity at low temperatures.

SIR GEORGE DARWIN has been elected president of the Cambridge Philosophical Society.

THE Royal Society of Edinburgh has elected officers as follows: *President,* Sir William Turner; *Vice-presidents,* Professor Crum Brown, Professor J. C. Ewart, Dr. J. Horne, Dr. J. Burgess, Professor T. Hudson Beare, Professor F. O. Bower; *General Secretary,* Professor G. Chrystal; *Secretaries to ordinary meetings,* Dr. C. G. Knott, Dr. R. Kidston; *Treasurer,* Mr. J. Currie; *Curator,* Dr. J. S. Black.

OFFICIAL notifications have been recently received announcing the election to the Permanent International Committee on School Hygiene of Dr. William H. Burnham, professor of pedagogy and school hygiene, Clark University; Dr. Thomas F. Harrington, director of school hygiene, Boston Public Schools; Dr. R. Tait McKenzie, professor of physical education, University of Pennsylvania and Dr. Thomas A. Storey, professor of physical instruction and hygiene, College of the City of New York.

DR. GEORGE E. HALE, director of the Mount Wilson Solar Observatory, is at present in Egypt.

DR. W. A. MURRILL, assistant director of the New York Botanical Garden, has sailed for Europe to examine type specimens of fungi in museums and herbaria.

ACCORDING to a consular report Mr. C. W. Beebe, curator of ornithology, New York Zoological Park, who has been in the far east in search of pheasants, has secured a complete collection of fine specimens. In Borneo he secured specimens of the pheasants, obtaining eleven live birds. Studies, photographs and paintings were made of the birds in their native haunts. Mr. Beebe is now in Java.

MISS MARY LOIS KISSELL, of the department of anthropology of the American Museum of Natural History, has left New York for an extended period of field observation among some of the Indian tribes of the southwest. Miss Kissell will devote her time to a study of the basket work and textiles of these tribes, paying especial attention to the origin and significance of designs.

THE College of Science of the University of Illinois announces a series of six lectures by Professor William Morris Davis, professor of geology in Harvard University, on "Geography as a Subject for University Study." These lectures will be given the week of November 12 to 18. On the evening of November 19 the Harvard Club of the University of Illinois will hold its annual dinner, on which occasion it is expected that Professor Davis will be present as guest of honor.

PROFESSOR THOMAS C. CHAMBERLIN, of the University of Chicago, gave an illustrated lecture on China at St. Louis on November 8, on the occasion of the meeting of the National Academy of Sciences in that city.

DR. L. A. BAUER gave an illustrated address on November 10 at Colgate University, under the auspices of the departments of geology and biology, on "The Magnetic Survey of the Globe and the Work of the Yacht *Carnegie*."

ON the occasion of the recent celebration of the Mexican centenary a statue of Friedrich Heinrich Alexander von Humboldt, who more than one hundred years ago made his journey of research through Mexico, was unveiled. The statue is a gift to the republic by Emperor William; the formal presentation was made by Herr Carl Buenz, German minister to Mexico, and the acceptance was by President Diaz.

MR. PROSPER J. A. BERCKMANS, known as a horticulturist and entomologist, died at Augusta, Ga., on November 8, in his eighty-first year.

THE death is announced of Dr. Kurd Lasswitz, professor of mathematics, known also for his contributions to the history and philosophy of science.

THE death is also announced of Dr. Felix Kreutz, emeritus professor of mineralogy in the University of Cracow.

IT has been decided to hold the joint meeting of the Central Branch of the American Society of Zoologists and Section F, of the American Association, on Wednesday and Thursday, December 28 and 29, and not on Tuesday, as announced two weeks ago.

THE second annual meeting of the Oklahoma Academy of Science will be held at Norman on November 25 and 26. H. H. Lane, professor of zoology at the State University, is president and F. B. Iseley, of Tonkawa, is secretary.

THE tenth annual conference of the sanitary officers of the state of New York, is being held this week at Buffalo.

THE Lord Mayor of Birmingham has received an intimation that if an invitation were sent to the British Association to hold their annual meeting in Birmingham in 1913 it would be favorably considered. The letter has been placed before the general purposes committee of the city council, and they have recommended that the invitation should be given. The council will cooperate with the university and other public institutions to make the necessary arrangements.

THE Berlin correspondent of the London *Times* states that the German ministry of the interior has called a meeting to consider whether the foundation of a special institute for aviation research is practicable or whether the work can be better carried out by existing institutions. Delegates from the imperial government and the federal states will be present, together with representatives of the German technical universities of various associations connected with aviation and motors and of the industries concerned. It is stated that Count Zeppelin and Professor Hergesell will attend.

THE Antarctic exploration ship *Terra Nova* has sailed from Melbourne for Lyttelton, N. Z., where Captain Scott will join her.

THE first annual meeting of the American Association for the Prevention of Infant Mortality was held at the Johns Hopkins University on Novmber 9, 10 and 11. The subject for the first session was "The Duty of a Nation to its Potential Citizens," the speakers being Professor Irving Fisher, of Yale University; Dr. Abraham Jacobi, of New York, and Dr. William H. Welch, of Baltimore.

THE Austrian Institute for Radium Research, which has been erected at a cost of

$100,000, will be opened in Vienna next week. It is the creation and property of the Academy of Sciences, but the cost of the building has been defrayed by Dr. Carl Kupelwieser. The new institute adjoins the physical laboratory of the university and is equipped with the most modern appliances and instruments.

The *Electrical World* states that the Edison Medal Association, formed by the friends and admirers of Mr. T. A. Edison to found a gold medal in the American Institute of Electrical Engineers celebrating the invention of the incandescent lamp and twenty-five years of its successful use, has closed up its accounts. The association began its work five years ago and raised a fund of somewhat over $7,600 for the purpose. Of this account $5,000 was placed in the hands of the institute for the medal award fund. The contract for the design of the medal was made with Mr. James Earle Frazer, the well-known sculptor, who, owing to the change in the deed of gift, was called upon to make two separate designs. The medal was at first to be awarded to the best thesis submitted by students of electrical engineering, but this plan proved a failure and only one award was made to a student competing, the amount being $150 without a medal, but with a special certificate. A new deed of gift was then drawn up by which the medal is awarded for meritorious achievement in electricity, and this year Professor Elihu Thomson was the first recipient.

Dr. Tempest Anderson delivered a lecture in the Sedgwick Museum, Cambridge University, on "Matavanu, a New Volcano in Savaii, German Samoa," illustrated with lantern photographs, on November 5.

The Henry Sidgwick memorial lecture, at Cambridge University, will be given by Sir George Darwin, K.C.B., F.R.S., on "William and Caroline Herschel," in the hall of Newnham College, on December 3.

Dr. E. C. Pickering, director of the Harvard College Observatory, writes that from an examination of the photographs of the Harvard map of the sky, Miss A. J. Cannon has found that a new star appeared in the constellation Sagittarius on August 10, 1899. Its approximate position for 1875 is R. A. $= 18^h\ 12.2^m$, Dec. $-25°\ 14'$. A photograph taken on August 9, 1899, shows no trace of this object, although adjacent stars of the magnitude 11.5 are seen. The outburst was very sudden, as on a photograph taken the next evening, August 10, 1899, the Nova is a conspicuous object, magnitude 8.5. The light faded rapidly, from magnitude 8.6, on August 25, to 10.5 on October 13, 1899. After that the decrease was more gradual. The last photograph on which the new star is visible was taken in October, 1901, when the star was very faint, and about the thirteenth magnitude. This is the third new star discovered at this observatory in the last six weeks. Nova Sagittarii No. 2, which was found by Mrs. Fleming, preceded Nova Sagittarii No. 3 about 20^m and was south $2°.3$.

There has recently been installed in the museum of the University of Georgia a collection of land and water birds consisting of 172 species and 283 specimens. The collection was made by Professor W. J. Hoxie, of Savannah, and every bird in the collection was taken in Chatham County, Georgia, in the years 1908–1909. Much interest is being manifested in Georgia now in the protection of song and game birds, and the study of their economic value to the state is being impressed upon the minds of the common school teachers.

Nature states that an appeal is made for funds to erect a new building for the Royal Society of Medicine. Of the sum required, the society has already provided £17,000, and it asks that not less than £26,000 may be contributed from without, so that it may not be compelled to curtail its very valuable public and scientific work. Towards the money in hand £8,500 has been subscribed by members of the medical profession. The Lord Mayor has become chairman of a Mansion House committee formed to promote the raising of upwards of £30,000 for the new building. The society now has 3,200 fellows and members, and possesses a library of nearly 100,000 volumes. It was originally founded in 1805,

under the name of "The Royal Medical and Chirurgical Society." A new charter was granted it in 1905 under the new name of "The Royal Society of Medicine."

IN a British Colonial Office report Professor Wyndham Dunstan, director of the Imperial Institute, says that the initial stage of the work of the Mineral Survey of Ceylon may now be regarded as largely completed. It is clear that the island contains, in addition to gem stones, a number of minerals of commercial importance, of which only graphite, mica and thorianite are at present worked. The mining of graphite is on a large scale and in some cases is under European supervision. This mineral is an important article of export. Mica is mined to a small extent by primitive methods, and there is room for further enterprise in this material now that it is known that much of the Ceylon mica is of value for special purposes. Thorianite is a new mineral discovered as a result of the operations of the survey, and so far not known elsewhere than in Ceylon. Comparatively large quantities have been profitably exported in recent years and utilized in this country as a source of the thoria used in the manufacture of the incandescent gas mantle. Much remains to be done in discovering new localities in which this mineral is present, and also in devising better methods of recovering it from the river beds and alluvia in which it is known to occur.

ON February 17 of the present year the legislature of Illinois enacted a law establishing three mine rescue stations and making for them an appropriation large enough for their complete equipment with all necessary apparatus for the work of rescue following a mine disaster. The location of these stations has been decided; one will be at Benton in the southern Illinois coal field, one at Springfield in the central coal field and the third at La Salle in the northern field. Two men will be appointed for each station, one as general manager and the other as superintendent. Eight men have recently passed preliminary examinations for these positions, and have been in training for this work at the government rescue station at the University of Illinois. The training comprises practise in the use of rescue apparatus in a smoke chamber, and instruction in the proper use and care of rescue apparatus. These men have had unexpected additional practise in a mine fire which occurred during their stay at the University of Illinois. During this period of training the members of the faculty of the School of Mines and of the Department of Geology supplemented the practise work by lectures on "First Aid Work," "Mine Gases," "Coal Dust," "Safety Lamps" and "The Geology of Coal."

THE surgeon general of the army announces that the first of the preliminary examinations for the appointment of first lieutenants in the Army Medical Corps for the year 1911 will be held on January 16, 1911, at points to be hereafter designated. Full information concerning the examination can be procured upon application to the "Surgeon General, U. S. Army, Washington, D. C." The essential requirements to securing an invitation are that the applicant shall be a citizen of the United States, shall be between twenty-two and thirty years of age, a graduate of a medical school legally authorized to confer the degree of doctor of medicine, shall be of good moral character and habits, and shall have had at least one year's hospital training or its equivalent in practise after graduation. The examinations will be held concurrently throughout the country at points where boards can be convened. The examination in subjects of general education (mathematics, geography, history, general literature and Latin) may be omitted in the case of applicants holding diplomas from reputable literary or scientific colleges, normal schools or high schools, or graduates of medical schools which require an entrance examination satisfactory to the faculty of the Army Medical School. In order to perfect all necessary arrangements for the examination, applications must be complete and in possession of the Adjutant General on or before January 3, 1911. There are at present seventy-six vacancies in the Medical Corps of the Army.

According to *Nature* the staff of the Exeter Museum has prepared and arranged for public exhibition the fine series of about 4,000 species and 20,000 specimens of land-shells received towards the latter part of 1909 as a bequest from the late Miss Linter. According to the terms of the will, the collection was to be made accessible to the public within a specified period, and this heavy task has been successfully accomplished. Lack of space prevented, however, the whole collection being shown at once, and it has accordingly been arranged to exhibit it in sections.

Sir William Ramsay, has, as reported in the London *Times,* announced that for the first time radium had been produced in Great Britain from British ore. The announcement was made on the occasion of the visit of a number of gentlemen to the British Radium factory, Limehouse, where the process of purification has been carried on since June. The ore came from the Trenwith mine of the St. Ives Consolidated Mines (Limited). In the course of a statement which he made on the conclusion of the inspection of the works, Sir William Ramsay mentioned that, up to the present, the amount of pure radium actually produced was over half a gram, or 5,500 milligrams of 10 per cent. radium, though the factory has been laid out to produce one gram of pure radium per month. Apart from the new supply, he said, there were not more than five grams of radium in the world at the present moment. From each ton of pitchblende, if it was pure, 530 milligrams of radium could be extracted, and the loss in crystallization was small, amounting barely to one milligram. The Cornish supply of pitchblende, Sir W. Ramsay declared, was, as far as he could judge, very much richer in radium than the pitchblende which could be got in Austria, and there was no other source of supply known at present of the same magnitude as that yielded by the Cornish mines. "The supply of radium is thus assured," he added. "From a medical point of view alone the demand will be very great; in fact, the present demand is much greater than the supply." At Karlsbad and Joachimsthal baths containing radium water were prescribed and had been found very serviceable in cases of rheumatism, gout, neuritis and every form of nervous complaint. The present quoted price of radium was from £18 to £20 a milligram. Sir W. Ramsay further explained that polonium, a newer and rarer element than radium, also exists in the pitchblende concentrates which have been taken from the Cornish mines. This element is got from a rich solution by what Sir W. Ramsay described as a very simple process, which had been tried at the factory on a small scale. "Inasmuch," he said, "as polonium disappears to one half its amount in 140 days. the probability is that its particular use will be for medical purposes. It has never been brought into the market, however, and its therapeutic action has not been tried at all. It gives off the same amount of rays as radium, but it is a much rarer element than radium in the sense that there is much less of it in the pitchblende. Another element, actinium, which was discovered by M. Dibierne, Mme. Curie's colleague, we have not yet touched, but we know it is in the residues. All these elements have different periods of life. Radium is only half gone in 1,700 years, polonium in 140 days." The visitors were shown the radium which is stored at the factory in a specially constructed safe lined with lead and asbestos, and for the safety of which the greatest precautions are taken.

The Michael Sars Expedition under Dr. Hjört, financed and accompanied by Sir John Murray, which, as already mentioned, left Plymouth on April 7, has completed its work. The *Geographical Journal* states that the observations began off the west coast of Ireland, and were continued southwards off the west coasts of Europe and Africa as far as Cape Bojador. Thence the expedition went by way of the Canaries and the Sargasso Sea to the Azores, and thence to Newfoundland, whence the Atlantic was once more crossed on the homeward voyage. Throughout the cruise both physical and biological observations were constantly made, the number of stations amounting to 74. More than six hundred

temperature observations were made at various depths (samples being collected at the same time), besides many other observations at the surface during the voyage. The readings were exact to one 200th of a degree Centigrade. The results will throw valuable light on the different currents of the Atlantic, especially in the eastern part about the Canaries and Azores and in the domain of the Gulf Stream. Detailed observations with the Ekman current-meter were made in the Straits of Gibraltar and on the submarine slope south of the Azores. In the straits, interesting results were obtained as regards the limit between the upper or eastward-flowing current, and the lower or westward-flowing current, which was found to be at a depth of from 50 to 100 fathoms, according to the tide. The maximum velocity measured was about 5 knots, while velocities of from one to two knots were common, both in the upper and the lower current. By exposing photographic plates at varying depths, information was obtained as to the intensity of light beneath the waters of the Sargasso Sea. The effect of light was clearly observable at 300 fathoms, and in a less degree at 500; but at 900 no influence of light was traceable. Only the blue rays were found to reach as low as 300 fathoms. The biological researches have yielded a rich harvest. Centrifugal action on the samples of water by means of a steam winch revealed the presence, in the warm waters of the Sargasso Sea, of excessively minute pelagic plants, such as escape through the meshes of the finest silk nets. They were found in thousands in each liter of water down to about 50 fathoms, and the observations permitted the vertical distribution of the different species (many of them new) to be determined. These minute organisms belong to the order *Coccolithophoridæ,* the smallest species occurring chiefly in the warm seas, but two were found in some numbers even in the cold water of the Great Newfoundland bank. Deep-sea fishes and others of the larger organisms were obtained by tow-nets and trawls, used at varying depths, from the surface to 2,000 fathoms. Many new species were brought to light, and pelagic fishes were found to exist at all depths, though scarce in the deepest layers. Off the west coast of Ireland, as many as 330 deep-sea fishes were caught in a single haul at 500 fathoms. The fauna at the bottom down to 2,900 fathoms was investigated by a special trawl, but very few species were obtained from the greatest depths. The results of the temperature observations across the Gulf Stream to the south of the Great Banks were so interesting that the homeward route was altered so as to permit further investigations to be made, the visit to Iceland being therefore abandoned.

Nature states that the British Board of Agriculture is understood to have applied to the commissioners appointed under the development act for an annual grant of £50,000 for the purpose of research work in agriculture and for giving technical advice to farmers. A number of agricultural institutions have sent in applications for financial help, but the board and two of the commissioners—Messrs. A. D. Hall and Sydney Webb—are engaged on a comprehensive scheme that shall ensure the best use being made of the present material. The board has appointed a special advisory committee, including the Duke of Devonshire, Lord Reay, Sir Edward Thorpe, Dr. Dobbie, Mr. S. U. Pickering, Professor J. B. Farmer, Lieutenant-Colonel Prain, Drs. Teall, Harmer, MacDougall and Wilson, and Messrs. Davies, Middleton, Staveley-Hill and Stockman to help generally in the work.

UNIVERSITY AND EDUCATIONAL NEWS

MR. JAMES A. PATTEN, of Chicago, has given $200,000 to endow a chair of experimental pathology in the medical school of Northwestern University. Special attention is to be given to the study of tuberculosis and pneumonia.

BY the will of the late Samuel W. Bowne, bequests in stocks and bonds of considerable value are made to Wesleyan University and Dickinson College. Goucher College receives $20,000 and the Drew Theological Seminary $130,000.