

*THE MAGNETIC SURVEY OF CHINA*

MR. DON C. SOWERS, sent out in November, 1908, by the Department of Terrestrial Magnetism of the Carnegie Institution of Washington, to secure magnetic observations in China and Chinese Turkestan, returned to Washington last December.

Besides the leader, the party consisted of Professor C. G. Fuson, of Canton Christian College, a Chinese interpreter and a cook. Leaving Peking January 30, 1909, they went as far as Honanfu by rail; thence traveling by Chinese carts, pack animals, mule chairs, etc., the party proceeded along the great northern trade route of China, passing out of China proper at the end of the Great Wall in northwestern China, thence across the Gobi Desert to Urumtsi, the capital of Chinese Turkestan. Continuing in a southwesterly direction, skirting the Taklamakan Desert, along the south side of the Tien Shan Mountains, the expedition finally reached Kashgar, in the western part of Chinese Turkestan on July 28. Turning here to the southward the Himalaya Mountains were crossed via the five passes of the Karakorum trade route, the highest trade route in the world, arriving at Leh, India, in September, and at the railroad at Rawal Pindi, northern India, October 13.

The overland journey from the terminus of the railroad in China to the place where the railroad was again reached in northern India was over 4,500 miles in length and required eight and one half months to accomplish it. It lay through a little frequented and, until recent years, unexplored portion of the globe. It is a region full of interest for the geographer, historian and scientist.

The party was everywhere shown the utmost courtesy and every possible assistance was rendered by Chinese officials as well as by representatives of foreign governments.

Connection was made at Dehra Dun with the magnetic survey of India, at present in progress under the direction of the British government.

*SCIENTIFIC NOTES AND NEWS*

SURGEON CHARLES F. STOKES has been nominated to be surgeon-general of the navy, to

succeed Surgeon General Presley M. Rixey, who retires.

On the evening of April 2, at the Waldorf-Astoria, a dinner will be given in honor of Dr. Charles F. Chandler, head of the department of chemistry of Columbia University, whose resignation after forty-seven years of service will go into effect next June.

THE Geological Society of London will this year award its medals and funds as follows: the Wollaston medal, as already announced, to Professor W. B. Scott; the Murchison medal, to Professor A. P. Coleman; the Lyell medal, to Dr. A. Vaughan; the Wollaston fund, to Mr. E. B. Bailey; the Murchison fund, to Mr. J. W. Stather; the Lyell fund, to Mr. F. R. Cowper Reed and Dr. R. Broom.

THE council of the Royal Geographical Society has decided to award a special gold medal to Commander Peary for his journey to the North Pole, and for having undertaken such scientific investigations as his opportunities permitted; and a silver replica to Captain Bartlett for attaining eighty-eight degrees north latitude. It is expected that Commander Peary will lecture before the society on May 4. Later in the month he will lecture before the Berlin Geographical Society, which will confer on him its gold medal.

PROFESSOR W. BATESON, who vacated a fellowship at St. John's College, Cambridge, on resigning the professorship of biology in the university, has been elected to an honorary fellowship.

MR. JOHN D. ROCKEFELLER, having learned of the distinguished services to medical science which have been and are being rendered by the researches of Professor Paul Ehrlich, of Frankfurt, Germany, has presented to the board of directors of the Rockefeller Institute for Medical Research the sum of ten thousand dollars to be placed at the disposal of Professor Ehrlich for furthering his investigations into the chemical therapy of the protozoon diseases.

THE New York *Evening Post* states that Professors H. N. Morse, H. C. Jones and S. F. Acree, of Johns Hopkins, have received their sixth annual grant from the Carnegie Institution of Washington for the prosecution of

special researches in chemistry. Professor Morse and his assistant, Dr. W. W. Holland, are engaged on the subject of osmotic pressure, especially at higher temperatures. Professor Jones and Dr. W. W. Strong are studying quantitatively the absorption spectra of various solutions. Professor Acree and Dr. B. B. Turner will continue their investigations on tautomerism and the theory of catalysis.

DR. T. C. CHAMBERLIN, professor of geology in the University of Chicago, has been elected president of the Geological Society of Chicago.

THE Chanute Medal, which is each year awarded by the Western Society of Engineers for the best paper presented to the society in the field of civil engineering during the preceding year, has been given to Professor Arthur N. Talbot, of the University of Illinois. Professor Talbot's paper is entitled "Tests of Cast-Iron and Reinforced Concrete Culvert Pipe." The foundation for the medal given by the Western Society of Engineers was established by Dr. Octave Chanute. The arrangement provides for three medals, one for work in mechanical engineering, one in civil engineering and one in electrical engineering.

THE council of the Royal Astronomical Society has awarded the gold medal of the society to Professor F. Küstner, director of the University Observatory of Bonn.

DR. CHAS MORREY, head of the department of bacteriology in the Ohio State University, has been given leave of absence for the next academic year.

MR. W. H. PEW, assistant professor of animal husbandry in the Iowa State College, has declined the directorship of the New Hampshire Agricultural Experiment Station.

A COMMITTEE has been formed in England, the membership of which includes the Italian ambassador, the Marquis of San Guilianno, Sir Thomas Clifford Allbutt, regius professor of physics at Cambridge, and a number of prominent scientific men and physicians, to promote the investigation and study of pellagra.

SIR ERNEST SHACKLETON has denied the report that he is to lead another expedition to the Antarctic.

REUTER'S AGENCY learns that the first member of the British Antarctic Expedition under Captain Scott, Mr. Cecil H. Meares, has left England. He is going to Siberia to obtain dogs and ponies for use in the expedition. Except that he is to make a brief stay at Moscow, Mr. Meares travels direct to Vladivostock. Thence he will proceed north to the Amur and by means of sledges will press further north to Yakut, a great sable center in Yakutsk, where animals will probably be procurable. Later he may leave to go to Okhotsk and on to the Verkhoyansk Mountains, a region which is described as being almost, if not quite, the coldest in the world. Mr. Meares intends to get most of his dogs, particularly the main team leaders, in Siberia. This part of the work is likely to occupy between three and four months. Mr. Meares will then begin the collection of ponies in the country round Harbin, and, with his animals, will join the main body of the expedition on board the *Terra Nova* in New Zealand in December.

PROFESSOR JOSEPH JASTROW, of the department of psychology of the University of Wisconsin, has accepted the general editorship of a new series of psychological manuals for the general reader, to be known as the "Conduct and Mind Series." His own contribution to the series will be a work on "Character and Temperament." The introduction to an English edition of Professor Gross's "Criminal Psychology," about to be issued as the first number of a series of translations of important foreign works on the subject by the American Institute of Criminology, will be written by Dr. Jastrow. He leaves the university the second week of February to spend the second half year as lecturer at Columbia University.

DR. ARTHUR T. HADLEY, president of Yale University, will deliver the oration on golden jubilee day, May 17, next, when the fiftieth anniversary of the foundation of the College of California, the precursor of the University of California, will be celebrated.

PROFESSOR JOHN DEWEY, of Columbia University, gave, at the Johns Hopkins University, from January 31 to February 5, a course

of six lectures on "Aspects of the Pragmatic Movement of Modern Philosophy."

PROFESSOR R. A. DALY, of the Massachusetts Institute of Technology, gave five lectures to advanced students in the Geological Department of the University of Wisconsin in January on the subject of Igneous Rocks.

PROFESSOR CARL RUNGE, of Göttingen, Kaiser Wilhelm professor at Columbia University during the present year, is now giving lectures at several American universities. At the University of Michigan he has given the following course:

February 4—"Methods of Graphical Calculation."

February 5—"The Graphical Representation of Functions" (first lecture).

February 7—"The Graphical Representation of Functions" (second lecture).

February 8—"Graphical Integration and Differentiation."

February 10—"Differential Equations Treated Graphically."

A STATUE of the late Morris K. Jesup, for many years president of the American Museum of Natural History, was unveiled in the foyer of the museum on February 9. The statue, which is of Carrara marble and represents Mr. Jesup seated, is the work of Mr. William Couper. Addresses at the unveiling were made by Dr. Henry Fairfield Osborn, who has succeeded Mr. Jesup as president of the museum, and Mr. Joseph H. Choate, one of the founders of the museum.

THE three great meteorites, brought by Commander Peary from the Arctic regions and for some time exhibited in the American Museum of Natural History, have been purchased and given to the museum by Mrs. Morris K. Jesup.

THE firm of Dr. F. Krantz, of the Rheinisches Mineralien-Contor, Bonn, Germany, has requested Dr. M. E. Wadsworth, dean of the School of Mines of the University of Pittsburgh, to assist the firm in preparing a collection of crystal models to accompany Dr. Wadsworth's recently published laboratory "Manual of Crystallography."

A SERIES of lantern slides especially de-

signed for use by teachers of physical geography has been prepared by Professor D. W. Johnson, of Harvard University. The slides are photographic and contour representations of the same land form on the same slide, the map being so oriented that its bottom is the foreground of the photograph. Many of the views reproduced are from Professor Johnson's own negatives; the rest are from photographs in the Garden Collection of Photographs at Harvard University.

THE Liverpool Geological Society, as we learn from *Nature*, celebrated the jubilee of its first meeting on January 10. The society entertained at dinner the Lord Mayor and representatives of the university, of kindred societies in the city and of the Yorkshire Geological Society and the North Staffordshire Field Club. The toast of the university elicited expressions of regret at the absence of a chair of geology in the university. The first meeting of the society having been held on January 11, 1860, an open meeting was held on January 11, and was largely attended. Mr. W. Hewitt, the president, was in the chair, and the minutes of the first meeting having been read, he remarked that that meeting was held in a room in the house of Mr. G. H. Morton, the first honorary secretary of the society. He also read a letter from Mr. H. Duckworth, the first president, congratulating the society and regretting that his age prevented his being present. Professor J. W. Judd, C.B., F.R.S., an honorary member of the society, then delivered an address on "The Triumph of Evolution: a Retrospect of Fifty Years," remarking that the foundation of the society was nearly coincident with the appearance of Darwin's "Origin of Species."

TWENTY lectures by non-resident lecturers have been arranged by the mechanical engineering department of Columbia University. Charles B. Going, managing editor of the *Engineering Magazine*, will give the first six on February 10, 12, 17, 19, 24 and 26, his subject being "The Province of Works Management." Charles U. Carpenter, president of the Herring-Hall-Marvin Safe Co., will lecture on March 5, 10, 12 and 17, on "The Functions of Organization, its Purposes,

Scope and Object." H. L. Gantt, consulting engineer, will lecture on March 31 and April 2 on "The Compensation of Workmen." Walter M. McFarland, vice-president of the Westinghouse Electric and Manufacturing Co., will lecture on April 7 on "The Importance of the Commercial Elements in Engineering Achievement." Harrington Emerson, consulting engineer, will lecture on "Works Management," on April 14, 16 and 21. Richard T. Lingley, treasurer of the American Real Estate Co., will lecture on "Bookkeeping," on April 30, May 5 and 7. E. J. Prindle will lecture on May 14 on "Patents as a Factor in Manufacturing Operations."

THE medical department of the University of Michigan offers the following list of lectures as extramural university extension work. The same lectures are also delivered during the course of the year, during the summer school to university students and town's people of Ann Arbor, and are delivered anywhere in the state of Michigan under the conditions mentioned in the medical calendar.

"The Evolution of the Superman: The Fight against Tuberculosis," by Dean V. C. Vaughan.

"Medicines: Their Use and Abuse," Professor Edmunds.

"Psychotherapy," Professor Camp.

"The Prevention of Insanity," by Professor Barrett.

"The Role of Insects in the Transmission of Disease," by Professor Novy.

"The Prevention of Tuberculosis; the Venereal Diseases and their Extermination," by Professor Warthin.

"Development as an Aid in the Interpretation of Structure," by Professor Huber.

"The Care of the Eyes in Children," by Professor Parker.

"The Problem of Pure Milk; Children's Diseases," by Professor Cowie.

"The Prevention of Premature Old Age," by Professor Hewlett.

"The Cancer Problem," by Professor Peterson.

IN accordance with a request of the Chilean government, transmitted through the customary diplomatic channels, the commissioner of education calls attention to the announcement of an Exposition of Fine Arts to be

opened at Santiago, Chile, on September 18, 1910, as a feature of the Chilean centennial. This exposition will be held in the recently erected Palace of Fine Arts which will form a permanent memorial of the occasion. Works of art intended for this exposition must be forwarded before the first of May of the present year. Full particulars with respect to the plans for the exposition may be obtained by addressing the general secretary, Mr. Ruchon Brunet, Santiago, Chile.

THE London correspondent of the *Journal* of the American Medical Association writes that the prohibitive price of radium has led to the establishment of a novel institution—a radium bank where the precious metal may be stored and rented to physicians, scientists and others who wish to use it but can not afford to pay \$80 a milligram, its present market price. The ultimate locality of the bank is to be in the neighborhood of Cavendish Square, in the heart of the district in which London consultants live, but for the present temporary offices have been opened at Moorgate street in the heart of the commercial and banking district of the city. For an average operation 50 milligrams of radium are required, costing \$4,000 and, therefore, it is only at one or two of the London hospitals that radium can be used to any extent. A number of business men have combined to form the bank which will "let" 100 milligrams at \$200 for one day's use and for each subsequent day at one half per cent. on the value of the amount issued. Securities will have to be given. The bank purposes to stock radium to the value of \$250,000. The difficulty is in getting a supply of radium. The main source has been the pitch-blende from Joachimsthal, Bohemia, which yields one part in 3,000,000. A new supply has been discovered in the bed of a stream near Guarda in Portugal. In England two Cornish mines have yielded a little but the whole available supply is limited owing to the enormous expense of extraction. Although radium exists in air, sea water and almost everywhere, there is hardly an ounce of the pure metal in the world. The bank will be organized very much

after a model of a similar institution in Paris, through which most of the radium used in England has hitherto come.

THE Institute of Chemistry is issuing, as we learn from the *London Times*, the third edition of the "List of Official Chemical Appointments," prepared by its secretary and registrar, Mr. Richard B. Pilcher. The work is intended primarily for the use of professional chemists and those who contemplate making chemistry their profession, but it should prove useful also to those who are interested in the applications of chemistry to the purposes of the state and in the promotion of higher education in the science. It is arranged in three divisions. The first gives official appointments in Great Britain and Ireland under the various departments of state, local authorities and public institutions and teaching appointments in the universities, colleges, technological institutions, medical, agricultural and veterinary colleges and public and secondary schools. The second contains similar information for India, Australia, New Zealand, British South Africa and British colonies and protectorates, with Egypt and the Sudan; while the third gives a concise account of societies and institutions devoted to the advancement of chemical science and of professional chemical interests.

THE College of Mechanical and Electrical Engineering of the University of North Dakota has secured additional quarters  $170 \times 40$  feet in which will be located the steam, gas and electrical engineering laboratories and the iron foundry. The new engine room is to have as a part of its equipment a 70 horse power automatic cut-off high speed steam engine, two 25 kilowatt electrical generators, a 12 horse power gasoline engine, and a 55 horse power producer gas engine. The new boiler-room will have three 70 horse power fire tubular boilers. These last are of the same make and each will be provided with different type of furnace and different grates. One will be equipped with an automatic mechanical stoker, another with a special combustion chamber, while the third will have the furnace

usually installed with this type of boiler. The college will undertake to determine the relative efficiency of the different types of furnaces in burning any given fuel and to determine also the relative steaming qualities of different fuels when burned in the three distinct types of furnaces. In the boiler room a 50 horse power suction down-draft gas producer designed to handle lignite and soft or bituminous coals. With certain modifications it can be converted into an up-draft gas producer capable of handling anthracite and coke. In selecting the power equipment it is the idea of Dean Crouch to install such apparatus and machinery as will enable the college to investigate the best ways and means of utilizing North Dakota lignite (in which the state abounds) and of converting the same into power. That the results obtained may have a practical value, the units selected are of sufficient size to give fair indications of what may be expected from commercial plants. The experimental engineering laboratories are supplied with various types of electrical generators, motors, transformers, etc., and are equipped for testing all kinds of steam, gas, hydraulic and electrical machinery. The iron foundry is being equipped also with a cupola with a melting capacity of two tons an hour.

THE following data have been compiled by Messrs. Waldemar Lindgren and H. D. McCaskey as a preliminary review of the gold industry in the United States in 1909. Gold mining progressed, on the whole, very satisfactorily in 1909. The year was marked by increasing recovery from the depressed conditions of the two years immediately preceding and by general advance in the development of proved mines and districts. Although these improvements resulted in a generally increased production of the base metals, and as a consequence augmented the gold output, they did not seriously detract from those gold-mining operations which had benefited during the late panic by the closing of numerous copper, lead and zinc mines and the consequent release of skilled labor for gold mining. From the preliminary figures of the Director of the Mint, which have just been published, it is estimated

that the output of gold for 1909 reached the unprecedented total of \$99,232,200, an estimated increase of \$4,672,200 over the production for 1908. In spite of serious drawbacks, first in one mining camp, then in another, the production of gold has increased more than \$4,000,000 in each of the last two years, and the outlook indicates, unless present abnormal conditions in the Black Hills should continue or curtailment be shown elsewhere, a production of over \$100,000,000 in 1910. In general, gold production has increased mainly from placers and the mining of siliceous ores, and to a smaller degree from copper ores, from which gold is a by-product. According to estimates from the Bureau of Statistics, the United States imported in 1909 gold valued at \$13,510,513 in foreign ore, \$26,233,368 in foreign bullion and \$6,059,313 in foreign coin, and exported gold valued at \$498,822 in domestic ore, \$43,021,545 in domestic bullion, \$86,803,265 in United States coin and \$2,717,725 in foreign coin, the excess of exports over imports thus being \$87,238,323. In 1908 there was an excess of exports over imports valued at \$30,939,163. The imports in 1909 were made up chiefly of ore and bullion from Mexico and to a smaller degree from Canada and South America. The exports consisted largely of coin and went chiefly to South America, though large amounts of gold were sent to Japan, the United Kingdom and France.

A REPORT on the annual exports of farm products from the United States from 1851 to 1908 from the Bureau of Statistics, U. S. Department of Agriculture, gives averages by five-year periods, so that it is possible to perceive the general drift of the trade. The chief agricultural products exported in the past half century have been (1) cotton, (2) grain and grain products and (3) packing-house products. In 1851-5, cotton made nearly two thirds of the value of all agricultural exports, but in 1901-5 between one third and one half only, although the average quantity exported increased from 1,026 million

pounds in 1851-5 to 3,577 million pounds in 1901-5, while in 1907, the highest year, 4,518 million pounds were sent out. In the period 1861-5 the quantity of cotton exports was only about 5 per cent. of that for 1856-60. Increases occurred afterward, however, until in 1876-80 the average quantity exported was somewhat greater than in the period just prior to the Civil War. In quantity exported per capita, the five-year period 1856-60 was highest; there were then exported 44.8 pounds of cotton per capita. The nearest approach to this was 44.5 pounds per capita in 1901-5. Cotton-seed products, such as cotton-seed oil, oil cake and oil-cake meal have assumed considerable importance in the export trade of the United States in recent years, that is, beginning about 1876. The value of cotton-seed products exported averaged during the past several years from 25 million to 30 million dollars a year, the highest being in 1907, about 34 million dollars. Grain and its products come second in order of value. They increased from a yearly average of 25 million dollars in 1851-5 to 194 million dollars in 1901-5, in 1851-5 to 194 million dollars in 1901-5, and in 1908 were 215 million dollars. The chief items are wheat (including wheat flour), corn and oats. Exports of these cereals during 1851-5 were equivalent to about 20 million bushels of grain annually, and fifty years later to about 250 million bushels. The period of largest grain exports was 1896-1900, since which time there has been a decline. The per capita exports of wheat and flour were largest in 1881-5, when they were equivalent to 2.6 bushels per capita; in 1901-5 the average exports per capita were 2 bushels, and since 1905 have been less than 2 bushels. In corn the maximum limit was reached in 1896-1900, when an average of 2.4 bushels per capita was exported. Then came a downward tendency, the exports in the next five-year period being only 1.1 bushels per capita, and in succeeding years falling below 1 bushel. Compared with corn and wheat, exports of oats have been small, the largest average for any five-year period being 38 million bushels a year during

1896-1900, or something more than one fifth the corresponding exports of corn or of wheat, including flour. Exports of packing-house products, a third leading group, have increased much more rapidly in the last half century than cotton or cereals. The average value of packing-house products exported in 1851-5 was 10 million dollars a year, and in 1901-5 it was 183 million dollars, while in 1908 the value was 196 million dollars.

A STATEMENT received at the Department of Agriculture from the Forest Service office at Portland, Oregon, shows that the timber sales on national forests in the Pacific northwest is increasing rapidly. This increase is regarded as an index of the revival of business in the lumber industry generally, and shows also the growing use of national forest resources by the public. The contrast between the amount and value of timber sold during the last six months of 1909 and that sold during the corresponding period in 1908 is marked. The figures are for most of the national forests in Oregon and Washington, and show timber sales of over 52 million feet, for nearly \$114,000, during the last six months of 1909. This compares with sales of about 17 million feet, for a total of \$27,000, during the same period in 1908. The prospects for the coming six months are regarded as promising even better than what has been realized in the period just past. This increasing timber sale opens the way to management of the national forests along the best lines by permitting the removal of over-mature and decadent timber which has practically come to a standstill in point of growth, and allowing replacement of these trees with a fully stocked stand of rapidly growing young trees.

THE topographic survey of the Mount Baker quadrangle, in the state of Washington, was completed last fall by members of the United States Geological Survey and the resulting map is being prepared for engraving. The party that made this survey was under the direction of J. E. Blackburn and in the course of the work Mr. Blackburn, with E. H. Jones, T. L. Duncan and C. V. Guerin, climbed

Mount Baker, from whose slopes and summit observations were made and mapping was done. The whole mountain is an almost unbroken glacier, only narrow rocky dikes protruding here and there through the vast ice mass. This glacial ice, constantly augmented by snowfall, accumulates in a number of huge gorges, forming glaciers that move down the mountain's sides for several miles before melting. Thus the ends or lower boundaries of the glaciers are about 3,700 feet above sea level, whereas the altitude of the dome of Mount Baker is 10,745 feet. The climb to this summit was made in four hours by the topographic party from its last camp, which was pitched at an elevation of 5,200 feet. Mount Baker was long ago one of the active volcanoes of the Cascade Range, and the steam issuing from the sulphur-lipped vents of its crater to-day show that its internal fires are not yet entirely dead. The crater is about 1,000 feet below the main dome of the mountain. The summit is a table having an area of about sixty acres. Besides Mount Baker, this quadrangle contains many other majestic mountains. Notable among them is Mount Shuksan which rises abruptly from the canyon of the North Nooksack and terminates in a spire 9,038 feet above the sea. This mountain, although only a few miles distant from Mount Baker, is isolated, and its peculiar structure causes difficulties in making an ascent. Besides these two conspicuous mountains, other peaks along the summit of the Cascade, on the eastern edge of this quadrangle, rise to elevations above 6,000 feet, and, when seen from a distance, the panorama of the Cascade Range presents many views of extreme beauty and rugged grandeur. The mountains in this region are snow-capped throughout the summer, and the snows of the early fall and winter form reservoirs that feed Skagit River, which is probably the largest stream in northwestern Washington. Last December several days of rain and snow followed by chinook winds produced a flood in the Skagit that submerged the plains in its delta region and caused damage amounting to more than a million dollars.