be subjugated and controlled for human welfare through a continued and cumulative conquest limited only by capacity for yielding necessaries of life. While other limiting factors may arise as mentality extends and intensifies, that most evident to-day in this and several other countries is the water supply; yet even this barrier may not prove insuperable by advancing invention so long as the constituents of water abound in other combinations in the external earth-crust. Whatever the uncertainties, any definite estimate of future population made in the light of limitations arising in current knowledge of resources is more likely to be found too small than too large as knowledge and command over nature advance with the progressive development of mankind.

W J McGEE

## THE SILLIMAN LECTURES

THE Silliman lectures for 1911 will, as already announced, be given at Yale University by Professor Max Verworn, of the University of Bonn. They will be given in Lampson Hall at five o'clock on successive days beginning on Monday, October 9. The subjects are as follows:

I. Historical Observations on the Doctrine of Irritability.
II. The Meaning of Stimuli.
III. The Special Characteristics of Stimuli.
IV. The General Effects of Stimulation.
V. The Analysis of Excitation.
VI. The Conductivity of Excitation.
VII. Refractory Period and Fatigue.
VIII. The Interference of Excitation.
IX. The Interference of Excitation. (*Continued.*)
X. The Processes of Depression.

The preceding lectures on the Silliman foundation have been:

1903. Professor Thomson, Cambridge University: Electricity and Matter.
1904. Professor Sherrington, University of Liverpool: Integrative Action of the Nervous System.
1905. Professor Rutherford, McGill University: Radio-active Transformations.
1906. Professor Nernst, University of Berlin: Applications of Thermodynamics to Chemistry.
1907. Professor Bateson, Cambridge University: The Problems of Genetics.
1908. Professor Penck, University of Berlin: The Problems of Glacial Geology.
1909. Professor Campbell, Lick Observatory, University of California: Stellar Motions.
1910. Professor Arrhenius, University of Stockholm: The Theories of Solutions.

## SCIENTIFIC NOTES AND NEWS

PROFESSOR W. S. EICHELBERGER, director of the Nautical Almanac, will represent the United States at a conference of the directors of the National Nautical Almanacs to be held at Paris from October 23 to 28.

AT Harvard University Professors W. M. Davis (geology), P. H. Hanus (education), E. V. Huntington (mathematics) and E. B. Holt (psychology) have leave of absence from the university for the academic year 1911–12; Professors Theobald Smith (comparative pathology), George Santayana (philosophy), R. B. Perry (philosophy) and D. W. Johnson (physiography), for the second half-year.

THE Hanbury gold medal of the British Pharmaceutical Society has been awarded to M. Eugene Léger, of the Hôpital St. Louis, Paris.

DR. G. A. HANSEN, president of the permanent international committee on leprosy, was one of the founders of the *Medicinsk Revue* in Norway in 1884. On the occasion of his seventieth birthday recently, as we learn from the *Journal* of the American Medical Association, the *Revue* issued a special *Festschrift* number in his honor with fifteen articles on various topics, especially leprosy and pellagra, all by Norwegian writers.

PROFESSOR CHARLES L. EDWARDS, of the University of Southern California, has been placed in charge of the abalone investigations instituted by the Fish and Game Commission of the state of California.

WE learn from *Nature* that Mr. J. J. Nock has been appointed by the British secretary of

state for the colonies, on the recommendation of the Kew authorities, curator of the Hakgala Gardens, Ceylon.

Mr. Marconi has been elected president of the Junior Institution of Engineers in succession to Sir J. J. Thomson, F.R.S.

M. G. Fayet, of the Paris Observatory, has been appointed astronomer at the Nice Observatory, in succession to M. Simonin.

It is stated in *Nature* that Dr. R. Karsten, lecturer in comparative religion in the University of Helsingfors, has started on an expedition to Gran Chaco and Bolivia for the purpose of making investigations on the sociology and religion of various tribes of natives, some of whom are little known, while others have never been visited. He will be accompanied by his cousin, O. Lindholm.

A bronze statue has been erected at Poleymeux, in the Rhone Department, France, in memory of Ampère.

Mr. Edward Whymper, known for his explorations among the Alps, in the Andes and elsewhere, died at Chamonix on September 16, aged sixty-one years.

Dr. Louis Braundet, professor of anatomy at the medical school at Reims, has died from anthrax, contracted in the course of his professional duty.

The Civil Service Commission will hold an examination for assistant forest ranger on October 23–24, 1911. The U. S. Department of Agriculture estimates that 400 eligibles will be needed during the field season of 1912. Assistant forest rangers are paid an entrance salary of $1,100 per annum. The examination will be held at National Forest headquarters in Alaska, Arizona, Arkansas, California, Colorado, Florida, Idaho, Kansas, Minnesota, Montana, Nebraska, Nevada, New Mexico, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming. The law requires that, when practicable, forest rangers must be qualified citizens of the state or territory in which the national forest on which they are appointed is situated. Since the list of local eligibles must be exhausted before eligibles residing in other states can be appointed, the chance of citizens of outside states who go to National Forest states and take the examination to secure an appointment is small.

The eleventh intercollegiate geological excursion will be held on October 13 and 14 in the vicinity of Boston under the direction of Professor A. C. Lane, of Tufts College. The north side of the Boston basin will be visited to study shore changes, salt marsh peat as evidence of subsidence, beach cusps, the gabbro diabase of Nahant and Medford, and the Cambrian contact zone. Further information may be obtained from the secretary, Professor Herdman F. Cleland, Williams College.

At the last meeting of the Ohio State Archeological and Historical Society, G. F. Wright was elected president; E. O. Randall, secretary, and W. C. Mills, curator. The legislature at its last session, in addition to its ordinary appropriations for field work and general expenses, voted $100,000 for a museum building to be erected on the grounds of the State University at Columbus. also $40,000 for the erection of a fire-proof building in Fremont, Ohio, to preserve the valuable library of Americana and political documents left by the late President Hayes. This also secures to the state, for a public park, the grounds, to the extent of twenty-five acres, surrounding the homestead of ex-President Hayes.

The meeting of the International Sanitary Conference to revise the provisions of the convention of 1903 for the prevention of the invasion and propagation of plague and cholera, is to take place in Paris on October 10 next.

Fifty thousand dollars will be sought of congress by the Public Health and Marine Hospital Service for the suppression of pellagra. The annual report of Surgeon-General Wyman, soon to appear, will show the great strides that have been made by the disease in the last two years. It is said that it is increasing annually more than 100 per cent. It is said that there are in the south more than 10,300 cases.

We learn from *Nature* that an agreement has been signed by the representatives of the

United Kingdom and Germany, the carrying into effect of which will mean a thorough investigation into the extent of sleeping sickness in the Gold Coast Colony, the Ashanti and northern Territory Protectorates, and Togoland. Each government will keep the other informed of the incidence, extent and possible spread of the disease in its territory, and will treat the other's native subjects free of charge; but each may impose restrictions on the frontier traffic and may prevent suspected sufferers from crossing its border. The agreement is for three years certain from December 1, 1911, and continues thereafter for yearly periods, unless denounced at least six months before the close of a year.

A REPORT on the geology of the Lake Superior region, by President C. R. Van Hise and Professor C. K. Leith, of the University of Wisconsin, has been published by the United States Geological Survey as Monograph 52. This monograph represents the survey's first attempt to cover the geology of the region in a single volume and forms at once a notable contribution to the literature of American geology and a guide book for the exploitation of the mineral wealth of the region. It covers 641 pages and contains chapters on all the iron and copper producing districts as well as full descriptions of the iron and copper ores. It includes accurate maps of all the districts and a general geologic map of the region. The illustrations number 49 plates and 76 text figures, comprising maps, sections, diagrams and halftone reproductions of photographs of ores and minerals.

A CIRCULAR, quoted in *Nature,* respecting the work of the Aberdeen University Bird-migration Inquiry has been issued by Professor J. Arthur Thomson and Mr. A. L. Thomson. The object of the movement is the collection of more definite information on migration by the method of placing aluminium rings on the feet of a large number of birds, in the hope of hearing of the subsequent movements of some proportion of the birds. The rings are inscribed with the address "Aberdeen University," and a number (or number and letter combination) different in each case. The rings are placed on young birds found in the nest, or on any old ones that can be captured without injury. The following extracts are taken from the circular above-mentioned: (1) "It is particularly requested that all who may shoot, capture or kill or even hear of any of our marked birds, should let us know of the occurrence. As accurate particulars of date and locality as possible are desired, but, above all, the number (or number and letters) on the ring. Indeed, except where it has been possible to reliberate the bird uninjured, the ring itself should always be sent, or the ring and foot, or even the whole bird. We always refund postage if asked to do so." (2) "We invite the cooperation in the actual work of marking of any who are specially interested, and have some knowledge of birds and also time and opportunity for the work. The necessary rings, schedules, postage stamps, etc., are supplied by us, without charge, and we undertake to let the marker know of each case of a bird marked by him being recovered, and to let him have copies of printed reports as far as possible."

A SERIES of analyses of the water of the Mississippi River made by chemists of the United States Geological Survey, reveals the changes in its character at different points. At Minneapolis the water of the Mississippi is very simple in character, being distinguished only by secondary alkalinity, primary salinity and very low secondary salinity or permanent hardness. At Moline, Ill., permanent hardness appears definitely among the properties of the Mississippi water, although it occupies a very subordinate position. At Chester, Ill., however, the character of the water appears to be greatly changed, for the analyses indicate that the proportion of primary salinity is much increased and the proportion of permanent hardness is more than doubled. This change is due to the highly saline waters received from the Missouri at a point between Quincy and Chester. From Chester to New Orleans the river water appears to undergo no permanent change in gen-

eral character. Additional contributions of saline waters from the west, received through Arkansas and Red rivers, suffice to maintain in the water of the lower Mississippi that high proportion of salinity first derived midway in its course from the Missouri River.

WEST of Koyukuk and Yukon rivers in Alaska a large area has long remained geologically unexplored. In a portion of this region an exploration party from the United States Geological Survey worked during the season of 1909, and the results of the studies there carried on and extended as far as Council, in Seward Peninsula, are set forth in Bulletin No. 449 just issued by the survey. The party consisted of Philip S. Smith and H. M. Eakin, geologists of the survey and authors of the report, A. G. Winegarden, packer, and a cook. Supplies for a month were shipped to Nulato, the point from which the expedition set out, and other supplies, sufficient to last the rest of the season, were sent to Nome and then transported to the mouth of the Koyuk and there cached to await the arrival of the party. The area traversed by this party was selected for survey because it was thought that the metamorphic rocks of the Seward Peninsula might occur within it, which would give presumption of the presence of gold deposits. In addition to exploring the region east of Norton Bay the party carried the topographic and geologic mapping into the southeastern part of the Seward Peninsula, thus extending the areas mapped by the Geological Survey in earlier years. The report is a volume of 140 pages, describing the topography and geology of the area and containing notes on its climate, vegetation, game and fish. Some 40 pages are devoted to the mineral resources—placer and lode gold deposits and prospects, and silver, lead, copper and coal. It is illustrated with photographs and brief sketch maps and contains also a topographic reconnaissance map of southeastern Seward Peninsula, on the scale of four miles to the inch, a colored geologic map of the same area and a colored geologic map of Nulato-Norton Bay region, on the scale of 8 miles to the inch.

FLUORSPAR, one of the lesser minerals, has come to occupy a comparatively important place in every-day affairs. It is used in the manufacture of glass, of enameled and sanitary ware, in refining antimony and lead, in the production of aluminum, and as a flux in blast furnaces and in the manufacture of steel in basic open-hearth furnaces. The production of open-hearth steel alone in 1910 was over 15,000,000 long tons. The production of fluorspar, according to Ernest F. Burchard, of the United States Geological Survey, in a report on fluorspar and cryolite just issued, increased from 18,450 short tons in 1900, valued at $94,500, to 69,427 tons in 1910, valued at $430,196. There was an increase in 1910 of 37 per cent. in quantity and 47 per cent. in value over the figures for 1909. The deposits which have been exploited are in Arizona, New Mexico, Colorado, Illinois, Kentucky, Tennessee and New Hampshire. Illinois is much the heaviest producer. There was also imported in 1910, according to Mr. Burchard, 42,488 short tons, valued at $135,152. Mr. Burchard's report contains, in addition to the statistics of the industry, a discussion of the methods of mining and milling fluorspar as well as a description of recently discovered high-grade deposits in New Mexico.

A VOLUME containing the reports for the year 1909–10 from those universities and university colleges in Great Britain which participate in the parliamentary grant has been issued as a blue-book and an abstract is given in the London *Times*. The introductory report of the Board of Education, which is signed by Mr. Runciman, Mr. Trevelyan and Sir Robert Morant, deplores the fact that, apart from the recent munificent gifts to Reading University College, the endowments provided by private benefaction during the period have not been comparable in magnitude and importance with those of the late Sir Alfred Jones, Mr. Otto Beit, M. Albert Kahn or Mr. W. H. Lever, to which reference was made in the last report, although there probably was never a time when university education was in greater need of encouragement. The apathy of the public at large is

only too frequently reflected in the attitude of local authorities, some of the most important of whom give far less than their proper share of support to the universities, and in one or two instances the maintenance at their present level of the grants made by local education authorities has been endangered. For the financial year 1909–10 the amount of grant actually paid by the treasury to university colleges in England was £96,100, and for the year 1910–11 £101,250. In the year 1909–10 £15,000 was added to the grant in aid of university education in Wales. Dealing with the problem of university education in the metropolis, the introductory report dwells on the need for a proper scheme of coordination, which it holds to be especially urgent in the case of higher technological and professional work, and declares that until the problem has been adequately dealt with it is almost impossible to deal wisely with even the most urgent claims for further development. With regard to finance, the report shows that nearly 33 per cent. of the income of English colleges is derived from fees, about 15 per cent. from endowments, a little over 14.5 per cent. from grants from local education authorities and 28 per cent. from the exchequer.

FOR an anthropological research expedition to the islands of Normandy, Fergusson and Goodenough, in British New Guinea, as we learn from the London *Times*, funds are being provided out of the Oxford University common fund and by several of the colleges. The work has been undertaken by Mr. David Jenness, of Balliol College, who proposes, unaccompanied, to spend a year amongst people who are admittedly cannibals. It is stipulated by the university, in contributing to the expedition, that the museum shall have the first offer of articles of interest which may be obtained. Assistance has been promised by the missionaries on Goodenough Island, including the use of a boat and native oarsmen. The first few weeks will be spent in cruising around the islands endeavoring to get on friendly terms with the people and in studying the trade relations. As the natives have sea-going canoes and trade with the neighboring coast and the island of Trobriand, 100 miles away, Mr. Jenness will endeavor to obtain the good will of one of the chiefs and settle down for about a year. Later he will proceed on a mission boat to Rossell Island, at the eastern end of the Louisiade Archipelago, to study some ethnological problems concerning the relationships of Oceanic peoples. Mr. Jenness has been provided with the latest scientific instruments, including a phonograph for recording native songs and speech.

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## *UNIVERSITY AND EDUCATIONAL NEWS*

THE Institute of Anatomy of the Jefferson Medical College, erected at a cost of $125,000, by Mr. Daniel Baugh, was dedicated on September 26. Addresses were made by Dr. E. A. Spitzka, professor of applied anatomy in the college, and Dr. George A. Piersol, professor of anatomy at the University of Pennsylvania.

THE late Dr. William Flynn, of Marion, has willed his entire estate, valued at about $30,000, to the Indiana Medical College, in which he was a member of the faculty for many years.

AMONG the public bequests made by Mr. George M. Pullman was that of $1,200,000 for founding and endowing the Pullman Free School of Manual Training at Pullman, Ill. This fund has increased to more than $2,500,000. The first step toward founding the school was the purchase, in 1908, of a campus of forty acres within the limits of the town of Pullman at a cost of $100,000. Mr. Laenas Gifford Weld, until recently professor of mathematics and dean of the faculty of liberal arts in the Iowa State University, was appointed principal in May and entered upon his new duties September 1. He will visit the leading technical and trade schools in this country and in Europe before the preparation of definite plans is undertaken.

THE medical department of Tulane University announces the inauguration of a department of tropical medicine, hygiene and preventive medicine, beginning October 1, in charge of Dr. Creighton Wellman and staff. Laboratory courses, clinics and lectures will be given in the regular junior and senior classes;