SCIENTIFIC NOTES AND NEWS

PRESIDENT HOOVER has sent to the Senate the nomination of Dr. George Otis Smith, director of the Geological Survey since 1907, to be chairman of the new Federal Power Commission. Dr. Smith is named for the long term, expiring on June 22, 1935.

THE Swedish Medical Society has awarded its Pasteur Gold Medal to Dr. Emile Roux, director of the Institut Pasteur of Paris. The award is made every ten years.

PROFESSOR MAX PLANCK, now vice-chancellor, has become chancellor of the Prussian Order for Merit of Science and Art, to succeed the late Professor Adolf von Harnack. Dr. Ludwig Hoffmann and Dr. Ulrich von Wilamowitz-Moellendorff become first and second vice-chancellors, respectively.

SIR WILFRED GRENFELL delivered the inaugural address to the Royal Scottish Geographical Society in Edinburgh on November 21, and received the Livingstone Medal, which is the highest honor that the society can confer. The address was on "Labrador," the scene of Sir Wilfred Grenfell's life's work.

DR. ERNST ANTON WÜLFING, professor of mineralogy and petrography at the University of Heidelberg, celebrated his seventieth birthday on November 27.

DR. C. S. MYERS, director of the British National Institute of Industrial Psychology, has asked to be released from the duties of the directorship, and has been appointed principal, in order that he may devote the whole of his time to the institute's research and educational activities. Dr. G. H. Miles, who has been assistant director for several years, has been appointed director and will take charge of the practical activities.

DR. LAURENCE VAIL COLEMAN, director of the American Association of Museums, was appointed to the executive committee of the International Museums Office at a recent meeting in Geneva of the International Institute of Intellectual Cooperation. The seven other members of the committee represent Belgium, England, France, Germany, Italy, Spain and Switzerland.

DUE to the illness of Dr. A. O. Thomas, the treasurer of the Iowa Academy of Science, the executive committee of the academy has appointed Dr. W. F. Loehwing, of the Department of Botany of the State University of Iowa, to act as treasurer of the academy.

Nature reports that at the anniversary meeting of the British Mineralogical Society, held on November 4, the following officers were elected: *President,* Sir John S. Flett; *Vice-presidents,* Dr. G. F. Herbert Smith, Professor C. Gilbert Cullis; *Treasurer,* Mr. F. N. Ashcroft; *General Secretary,* Mr. W. Campbell Smith; *Foreign Secretary,* Dr. J. W. Evans; *Editor of the Journal,* Dr. L. J. Spencer.

LEAVE of absence has been granted to Professor Brash, dean of the faculty of medicine, of the University of Birmingham, and Professors Haswell, Wilson and Daly, to visit the United States as guests of the Rockefeller Foundation to inspect the buildings and equipment of medical schools in view of the building and development of the new medical school of the University of Birmingham.

DR. KARL L. MULLER, of the Forest Experiment Station at Munich, Germany, is spending several months in the Northern Rockies and the Pacific Northwest in search of the best climatic "race" of lowland white fir (*Abies grandis*) to meet the needs of southern Germany.

MR. MELBOURNE WARD, of the Australian Museum, is spending a few weeks examining crustacea at the National Museum. On November 15 he gave an illustrated lecture before the Biological Society on "The Natural History of the Barrier Reef of Australia."

DR. C. G. ABBOT, secretary of the Smithsonian Institution, delivered on November 22 a lecture before the Royal Canadian Institute, on "Studying the Sun in Many Lands."

ON the evening of December 2 at the University of Pennsylvania, Dr. Colin G. Fink, professor of electrochemistry at Columbia University, addressed the chemists and engineers of Philadelphia on "Combatting Corrosion with Chromium" covering in the main his researches of the last few years.

DR. ALBERT ERNEST JENKS, professor of anthropology, University of Minnesota, delivered an illustrated address on "Prehistoric Mimbres Culture" before a meeting on November 21, of the Sigma Xi Chapter of the Staff of Mayo Clinic, Rochester, Minnesota.

AT the autumn meeting of the Colorado Chapter of the Sigma Xi, held on December 12 in the recently completed Union Memorial Building of the University of Colorado at Boulder, Professor Etienne B. Renaud, of the University of Denver, delivered an address on the archeological survey of eastern Colorado conducted by him last summer.

DR. H. M. JOHNSON, head of the Simmons Investigation of Sleep at Mellon Institute, lectured at the University of North Carolina on November 5 and 6

on "The Logical Structure of Three Modern Psychologies" and on "Some Recent Experiments on Sleep." The lectures were given under the joint auspices of the university and the local chapter of Alpha Psi Delta, honorary psychological fraternity.

THE following lectures and clinics were given recently at the Duke University School of Medicine and Hospital: Professor M. Weinberg, of the Pasteur Institute, Paris, "Anerobic Infections and Serum Treatment"; Professor I. S. Ravdin, University of Pennsylvania Medical School, on "Diseases of the Gall Bladder," and Professor William Castle, of the Harvard Medical School, on "Deficiency Diseases in Relation to Anemias."

PROFESSOR JULIAN S. HUXLEY, honorary lecturer in King's College, London, and Fullerian professor of physiology in the Royal Institution, will deliver two lectures on biology at the New School for Social Research, New York, on January 8 and 15. The first lecture will deal with evolution; the second with problems of heredity and development. Following there will be a course beginning on January 2 of twelve lectures on "Modern Biology and Human Affairs," by Dr. Henry J. Fry, professor of biology at Washington Square College of New York University.

DR. ALBRECHT PENCK, professor of geography at the University of Berlin, was by invitation present at the celebration in London of the hundredth anniversary of the Royal Geographical Society. At its close he gave an address at the University of London on "The Relations between Europe and Central Asia."

THE American Mathematical Society held a regular meeting at the University of California at Los Angeles on November 29. An address was delivered by Professor H. F. Blichfeldt, professor of mathematics at Stanford University, on "The Method of Geometry in Numbers." Professor Harald Bohr, professor of mathematics at the University of Copenhagen, brother of Professor Niels Bohr, who is this year a visiting professor at Stanford University, spoke on "The Theory of Dirichlet Series."

THE North Jersey Section of the American Chemical Society meets at the Hotel Winfield Scott, Elizabeth, New Jersey, at 2:00 P. M., on Saturday, December 13. Dr. Hugh S. Taylor will address the section on "Catalytic Reactions in Aliphatic Organic Chemistry." At the conclusion of the address buses will take members to the Bayway Refinery of the Standard Oil Company of New Jersey, where they will visit the technical service, research and motor laboratories. They will then return to the hotel where an informal dinner will be served. Two addresses will follow the dinner, the first by Dr. Warren K. Lewis on the "Thermal Properties of the Higher Hydrocarbons," and the second by Dr. R. P. Russell on "Hydrogenation of Oils."

THE thirty-eighth annual meeting of the American Psychological Association will be held from December 29 to 30 at the University of Iowa, Iowa City, under the presidency of Professor Herbert S. Langfeld, of Princeton University. Members of the association are to be guests of the university at a special dinner on Tuesday evening, December 30. At this time the new laboratory will be formally dedicated and a number of psychologists will speak on the status of experimental psychology.

THE Colorado-Wyoming Academy of Science convened for its fourth annual meeting in the University of Colorado at Boulder on November 28 and 29. All the important educational institutions in Colorado and Wyoming were represented and over a hundred scientific papers were presented in the various sections. Dr. H. H. Marvin, president of the Nebraska Academy of Science and head of the physics department of the State University of Nebraska, was the guest of honor and delivered the opening address on "The Approach to Unity of Explanation in Physics" and "The Raman Effect." Papers were presented by Professor R. G. Gustavson, of the University of Denver, on "The Female Sex Hormone," and by Josephine Roche, president of the Rocky Mountain Fuel Company, on "Social Science and Social Action." The following officers of the academy were elected for the coming year: *President,* Professor Frank E. E. Germann; *Vice-president,* Professor P. E. Boucher; *Secretary,* Professor J. Harlan Johnson; *Treasurer,* Professor O. M. Dickerson.

THE International Astronomical Union, of which Sir Frank Dyson, of London, is president, will have its annual congress at the Harvard Astronomical Observatory in the first week in September, 1932. Many astronomers will be drawn to America at that time by a total eclipse of the sun which will be visible in New England. That meeting will be the fourth congress held by the organizations. The others have been in Rome in 1922, in Cambridge, England, in 1925, and in Leyden in 1928.

THE Seventh International Conference of Industrial Psychology (Technopsychology, *Psychotechnique*), will be held in 1931 in Moscow, under the presidency of Dr. I. Spielrein, of the Institute for the Protection of Labor. While the date has not been definitely determined, it will probably begin on September 15. Industrial psychologists who wish further information may correspond with Dr. W. V. Bingham, 29 West 39th Street, New York, and Professor

M. S. Viteles, University of Pennsylvania, Philadelphia, American members of the council.

IT had been the intention, according to the *Journal* of the American Medical Association, to close the Internationale Hygiene-Ausstellung Dresden on October 12. In spite of bad weather, which cut down the attendance, nearly three million persons visited the exposition. But, in order to score the success in Germany and in foreign countries to which the exposition is entitled, a much greater attendance is needed. A large number of investigating commissions have visited the exposition. Since, in 1931, few, if any, large expositions are announced for Germany next year, the Dresden exposition will be opened again in 1931. The exhibit of modern hospitals and their equipment will be preserved complete. Many of the set-ups will be reorganized, and other set-ups entirely new will be added. Also the foreign exhibit, which is housed in the Staatenhaus, will be enriched by the addition of material, much of which, owing to the short time allowed for the preparation of the exposition of 1930, could not be assembled. A considerable amount of material from America has been promised. Another new set-up will be a general survey of Catholic missionary enterprises in foreign countries. To secure a large attendance of the public, a special and regular train service from all parts of Germany and from many points in foreign countries will be organized.

Industrial and Engineering Chemistry reports that an institute to popularize the study of chemistry, to aid in the development of chemical sciences and industries, has been established in the Soviet Union. The establishment will be known as the Museum Institute of the History of Chemistry and has been created upon the advice of the Higher National Economic Council. A credit of 15 million rubles (approximately $7,500,000) has been opened for the construction and development of the institute.

A GIFT of $2,500 for purposes of chemico-medical research at the Medical College of Virginia, Richmond, has been announced. At the request of the donor of the money his name has been withheld. This gift will make possible a full-time worker for one year in the department of chemistry. Other departments of the school of medicine will cooperate in plans already made for the special line of study to be undertaken and will share in the responsibility for the work as it proceeds.

THE correspondent of the London *Times* at Stockholm reports that Professor Hertzberg has made an examination of the films taken by the Andrée Expedition in 1897 and has achieved greater success than was anticipated with their reproduction, twenty of them giving perfectly clear pictures. Twelve of them will be reproduced in the official record of the Andrée Expedition. The best prints show the balloon after landing on the ice, from which it would appear that the loss of gas and the formation of ice on the envelope of the balloon caused it to come down. Another picture shows Andrée with a Polar bear he has shot, and this is so clear that the bear's fur stands out distinctly. In addition to pictures showing the wonderful spirit maintained by the party, there is one of the party's camp, but it is uncertain whether it was a camp on the ice or on Kvitö Island. It is noteworthy that some of the films on being developed show that they are positives. Professor Hertzberg states that the edges of the films in some rolls were found stuck together, thus hermetically sealing the center, and this, helped by the low temperature, preserved them.

A CAST of the fossilized skull and lower molar recently discovered at Chou Kou Tien, near Peking, has been presented to the British Museum (Natural History) by Mr. F. O. Barlow and is on view to the public in the Fossil Mammal Gallery at South Kensington for comparison with other skulls of primitive man. While the remains are of approximately the same age as those of the Ape-Man (*Pithecanthropus*) of Java, and the Piltdown man (*Eoanthropus*) found in the Sussex Weald in 1912, the juxtaposition of casts in same display-case now enables visitors to recognize the distinctions. The department of botany has received 152 natural-size water-colors of North American wild flowers from Mrs. Hosea B. Morse, who has enhanced the value of her gift by full botanical and biological notes.

Nature reports that an analysis of the literature of the Raman effect published up to the end of June of this year is given by S. Bhagavantam in the September number of the *Indian Journal of Physics*. Some three hundred and fifty references are dealt with—a large increase on the 150 listed by Dr. Ganesan last year in the same journal—and have been grouped under twenty-six heads, the first three of which contain book references and articles of a general character, and the remainder papers on special aspects of the effect. These are followed by an author index and an alphabetical list of the substances which have been studied, and there is a further list of almost a hundred other papers on light scattering which have been published by Indian authors since 1919.

INCREASED travel to the national parks during the past year is announced by Horace M. Albright, Director of the National Park Service. This heavier use of the national parks was the most remarkable when compared with the reduced use of transcontinental trains and of resorts generally. The national

park travel year ends on September 30 of each year. This year the number of visitors to the national parks totaled 2,818,618 as against 2,680,597 in 1929, an increase of 138,021. Yosemite National Park led in numbers, with 458,566 visitors. Mount Rainier was second, with 265,620. The national monuments as a whole suffered a loss, with 466,075 visitors as against 567,667 in 1929. A large part of this decrease, however, was the result of the abolishment last April of the Papago Saguaro National Monument, which last year reported 87,600 visitors. During the first six months of this year, the period of heaviest travel in the southwest, approximately 50,000 people visited this monument. The Petrified Forest National Monument in Arizona, with 105,433 visitors, led both in numbers and in point of increase. The 1929 visitors to this monument numbered 69,350. Director Albright was enthusiastic over the development possibilities of the area. Despite the reduction in the number of visitors to the monuments, the combined park and monument travel for 1930 is greater than that for any previous year with the exception of 1929.

THE council of the British Association have asked the government to give effect to the recommendations of the Royal Commission on National Museums and Galleries for the establishment of a National Open-Air Folk Museum. It is suggested that the Royal Botanic Gardens in Regent's Park could be utilized.

THE London *Times* reports that an expedition from the University of Cambridge is sailing for Mombasa early in December to carry out biological investigations of certain little-known lakes in East Africa. The particular objectives will be Lake Rudolf, Lake Baringo and Lake Edward. Several expeditions have been made to the better-known lakes, and in 1927 government surveys of the Victoria and Albert Nyanzas were made to investigate the economic value of native fishes. Lakes Rudolf, Baringo and Edward have never been scientifically examined, and it is expected that the expedition will bring home a large number of new forms of life, as well as information about the inter-relationships of the fauna and flora, about the chemistry and physiography of the lakes, and perhaps a solution of the interesting problem of the absence of crocodiles from Lake Edward. Another side of the work will be the extension of Mr. L. S. B. Leakey's recent Kenya archeological explorations northwards in the Great Rift Valley; it is hoped to find further archeological remains round Lakes Baringo and Rudolf. The expedition is being financed by the Royal Society, the Natural History Museum, the Royal Geographical Society, the British Association and other scientific bodies. It will be under the leadership of Dr. E. B. Worthington and other members from Cambridge will be Mr. L. C. Beadle as zoologist and Mr. V. E. Fuchs as geologist and surveyor.

DISCUSSION

BABYLONIAN MATHEMATICS

ALL the earlier accounts relating to the historical development of the quadratic equation have become antiquated during the last two years as a result of recent discoveries relating to the mathematical attainments of the Babylonians during a period of at least 1,500 years beginning about 2000 B. C. It is especially interesting to observe that this period overlaps that of the early Greek mathematical activity and hence it establishes a continuity in algebraic developments which had not been known to exist hitherto. According to a recent number of the *Quellen und Studien zur Geschichte der Mathematik,* a new publication to which Professor R. C. Archibald called attention in this journal,[1] we now know at least 19 Babylonian problems which give rise to quadratic equations, and with respect to 10 of these the details of the solutions are given. In some cases the method used corresponds to the modern method of completing the square and differs only from our modern procedure by omitting the double sign when the square root is extracted.

The Babylonian mathematics is of special interest in view of the fact that our division of the circle into 360 parts called degrees, and our division of the degree and the hour into 60 parts called minutes and of the minute into 60 parts called seconds can be traced back thereto. It has often been stated that the Babylonians employed a sexagesimal system of numerical notation. As a matter of fact this is not strictly true since they did not employ 59 different symbols for the first 59 natural numbers; neither did they employ a sexagesimal symbol corresponding to our decimal point to mark the starting-point of their integral numbers and their systematic fractions represented by multiples of negative powers of 60. A fully developed sexagesimal system of numerical notation has never been commonly used as far as we know. The early Babylonians do not seem to have possessed even an emptiness zero, but a symbol which was also used as a symbol of separation was employed later by them for this purpose.

[1] SCIENCE, 70: 67, 1929.