and its application to electric arc welding; the effects of gases on electrically heated filaments as applied to gas-filled tungsten lamps, and the laws of electron emission as applied to radio and other vacuum tubes.

Dr. Langmuir was graduated from the School of Mines of Columbia University in 1903. He continued his studies at the University of Göttingen, where he received the doctorate of philosophy. Returning to this country, he served the Stevens Institute of Technology, Hoboken, New Jersey, as instructor of chemistry from 1906 to 1909. Since then, he has been connected with the General Electric Research Laboratories.

SCIENTIFIC NOTES AND NEWS

DR. T. W. STANTON, geologist in charge of paleontology and stratigraphy in the U. S. Geological Survey, has been appointed chief geologist, succeeding Dr. W. C. Mendenhall, who has become director of the survey. Dr. John B. Reeside, geologist, has been placed in charge of paleontology and stratigraphy.

DR. GEORGE E. COGHILL, professor of comparative anatomy at the Wistar Institute, Philadelphia, has been nominated for president of the American Association of Anatomists and will be elected at the meeting to be held in New York on March 25 and 26.

THE Chancellor's Medal, the award of the University of Buffalo for public service, was conferred at the midwinter commencement on February 22 on Dr. Frank A. Hartman, professor of physiology, one of the discoverers of the cortin treatment for Addison's disease.

THE Langley Memorial Prize, which is usually awarded every three years for the best paper submitted by officers of the West African Medical Service, has been awarded by the London School of Hygiene and Tropical Medicine in equal shares for Dr. E. C. Smith's paper entitled "A Dermatological Atlas of Nigeria" and Dr. Hope Gill's paper on "Diagnostic Methods in Human Trypanosomiasis."

DR. DAVIDSON BLACK, professor of anatomy at Peking Union Medical College, has been elected a corresponding member of the Field Museum of Natural History.

A DINNER in honor of the seventy-fifth birthday of Mr. Otto P. Amend, past president of The Chemists' Club, New York, was held at the club on February 3.

DR. JULIUS WAGNER-JAUREGG, who retired three years ago as professor in the Medical School of the University of Vienna and as director of the Psychiatric Neurological Clinic, will celebrate his seventy-fifth birthday on March 8.

PROFESSOR LUDOLF VON KREHL, professor of internal medicine at the University of Heidelberg, known for his work on pathological physiology, celebrated his seventieth birthday on December 26.

PROFESSOR ANSON MARSTON, dean of engineering at the Iowa State College, and Dr. Charles F. Curtiss, dean of agriculture and director of the Agricultural Experiment Station, will retire at the close of the present college year, having reached the age of retirement established by the Iowa State Board of Education.

DR. ROSCOE RAYMOND HYDE has been promoted to be professor of immunology at the School of Hygiene and Public Health of the Johns Hopkins University to succeed the late Dr. Carroll G. Bull.

DR. M. X. SULLIVAN, until recently biochemist of the U. S. Public Health Service, has become director of the Chemo-Medical Research Institute of Georgetown University.

MR. JOHN C. PHILLIPS has been appointed to the staff of the Peabody Museum, Cambridge, filling the vacancy caused by the death of Augustus Hemenway. Messrs. George W. Harley and Philip A. Means have been appointed associates in anthropology.

DR. CLARENCE BEAMAN SMITH, chief of the Office of Cooperative Extension Work of the U. S. Department of Agriculture, who has been associated with the department's extension work since its inception, has been appointed assistant director. Under this arrangement Dr. Smith will, in addition to continuing as chief of the Office of Cooperative Extension Work, assist Dr. C. W. Warburton, director of extension work.

DR. VICTOR C. JACOBSEN, professor of pathology, Albany Medical College, has been awarded a grant of $1,000, by the Committee on Scientific Research of the American Medical Association, to aid in a study of transplantable mouse melanoma, particularly in elucidating the neurogenic theory of melanoma origin.

DR. EDWARD ORTON, JR., from 1894 to 1916 director of the department of ceramic engineering at the Ohio State University and from 1902 to 1915 dean of the College of Engineering, later engaged in manufacturing, died on February 10, at the age of sixty-eight years. Dr. Orton was state geologist of Ohio from 1899 to 1906 and was the founder of the American Ceramic Society.

DR. BENNET M. ALLEN, professor of zoology at the

University of California at Los Angeles, sailed for Naples on February 25. He plans to make a study of the research work being carried on in European laboratories.

PROFESSOR RALPH W. HUFFERD, of the chemistry department of DePauw University, is spending his sabbatical year in Europe. With the exception of six weeks spent in the study of microchemical analysis with Professor Hans Leib, at Graz, Austria, he is devoting the year to a study of the teaching of chemistry in the universities and high schools of Germany, Austria, France and England.

AT the Bureau of Economic Geology, Texas, Mr. W. S. Adkins recently returned from several months spent in Europe as the holder of a Guggenheim fellowship; Mr. F. B. Plummer is on leave of absence in order to give courses in petroleum production engineering at the University of Texas, and Mr. C. L. Baker is giving lectures at Northwestern University.

PROFESSOR GEORG TISCHLER, director of the Botanical Institute at Kiel, delivered some 30 lectures on karyology of plants at the Johns Hopkins University while in residence as the James Speyer visiting professor from November 1 to January 30. He gave during February invitation lectures at several midwest universities and at the University of California. During March he will visit the Desert Laboratory at Tucson, New Orleans and the east coast of Florida for botanical collecting. He will sail for Europe on March 30.

DR. CLARENCE COOK LITTLE, director of the Roscoe B. Jackson Memorial Laboratory at Bar Harbor, Maine, formerly president of the University of Michigan, will be the speaker at the commencement exercises of the University of New Hampshire.

A SERIES of eight lectures on "The Problem of Human Wholeness" is being given at the University of California by Dr. William E. Ritter, professor emeritus of zoology.

THE Gehrmann Lectures at the University of Illinois College of Medicine will be given by Dr. C. Macfie Campbell, medical director of the Boston Psychopathic Hospital, and professor of psychiatry in the Harvard Medical School, on March 15, 16 and 17. The topics of Dr. Campbell's lectures are "Schizophrenic Disorders," "Preoccupational and Environmental Problems of the Patient" and "Personal and Environmental Problems, and Resources Available for Treatment."

TRUSTEES of the Ropes Memorial, Salem, Massachusetts, announce the twentieth lecture course of six lectures to be given from March 9 to April 13, on "The Geographic Isolation and the Evolution of Plants," by Professor M. L. Fernald, of Harvard University.

MR. FRED M. HARPHAM, vice-president of the Goodyear Tire and Rubber Company, gave the third Aldred Lecture of the year at the Massachusetts Institute of Technology on February 26. He spoke on "Zeppelin Airships—their Performance and Possibilities." The lecture was followed by motion pictures showing the construction of the dock and *U. S. S. Akron.*

DR. CHRISTIAN A. RUCKMICK, professor of psychology at the University of Iowa, has completed a state-wide lecture tour under the auspices of the Graduate College. Each year a lecturer is chosen on the grounds of his "distinction as an investigator" to present materials of his research to colleges and universities of the state. The subject of Dr. Ruckmick's lecture was "An Experimental Approach to the Study of the Emotions."

PROFESSOR WILLIAM SEIFRIZ, of the University of Pennsylvania, gave a course of lectures at the Johns Hopkins University on the structure of protoplasm during the first semester, taking the place of Dr. Duncan S. Johnson, who was on leave for duty at the National Research Council at Washington.

THE first annual Sigma Xi day at the University of Rochester, on February 22, was arranged by the local chapter to acquaint the rest of the university and residents of the city with the methods and aims of scientific research and with problems of investigation being conducted by members and their associates. Ninety-five exhibits of current research projects from the scientific departments of the university were on display in the Museum of Natural History from 11 A. M. until 5 P. M., and the exhibitors gave talks explaining their work. In the morning, a lecture intended especially for children was given by Dr. Wallace O. Fenn, professor of physiology, on the subject: "Arms and Legs and How they Work." At night, the society held a formal dinner, followed by an address on "Photography in the Service of Astronomy," by Dr. C. E. K. Mees, research director of the Eastman Kodak Company. Dr. Rush Rhees, president of the university, presided at the evening lecture.

ACCORDING to *Nature* the ninety-first annual general meeting of the British Chemical Society will be held in Glasgow on March 18 under the presidency of Professor G. G. Henderson, regius professor of chemistry in the University of Glasgow, who will take as the subject for his address "The Publication of Chemical Literature." This will be the first official visit of the society to Scotland.

THE House Committee on Foreign Affairs, after hearing on February 24 the director of the U. S.

Geological Survey, Dr. W. C. Mendenhall, deferred action on the resolution to authorize an appropriation of $85,000 for the expenses of the sixteenth session of the International Geological Congress to be held in the United States in June, 1933. Dr. Mendenhall told the committee that there will be from 300 to 500 delegates from foreign countries, and that a program for excursions, to be financed privately, was planned.

THE library of the late Dr. Calvin H. Kauffman, professor of botany and director of the herbarium of the University of Michigan, has been presented to the university by Mrs. Kauffman. It contains 365 volumes and a collection of about six thousand reprints.

ENGLISH exchanges state that owing to the closing of Chillingham Castle, Northumberland, efforts are being made to keep together the herd of wild cattle which is believed to have roamed in the castle enclosure since the thirteenth century. The Zoological Society of London has undertaken to contribute £100 a year for seven years if a lease at £500 a year for that period is granted to three trustees nominated by the society. The remainder of the £500 a year is to be provided by public subscription. The trustees are Lord Grey of Fallodon, Mr. Hugh S. Gladstone and Sir Peter Chalmers Mitchell.

A NEW zoological park "The Provincial Sanctuary and Zoo of Vancouver," is to be established at Vancouver, British Columbia. It is to be entirely for North American mammals and birds and is laid out through natural pine forests connecting two artificial lakes. Enclosures for the exhibits will be placed along trails in the woods. The plan of the zoo was prepared by Mr. C. Emerson Brown, director of the Philadelphia Zoological Garden.

THE Rockefeller Foundation recently granted $250,000 to Vanderbilt University School of Medicine for a research fund, with the understanding that a supplementary amount shall be secured by the authorities of the school. An appropriation of $50,000 has also been made by the General Education Board for the medical library. The research fund will be divided and distributed over a period of eight years, while the medical library grant will be distributed over a period of four years.

THE New York Hospital's new medical center, covering three square blocks along the East River between Sixty-eighth and Seventy-first Streets, is to be opened on September 1. New quarters will be provided for the Cornell University Medical College and a new psychiatric hospital and a new children's hospital will be added to the city's medical facilities. The hospital will have a potential capacity of 1,000. More than half the beds will be available for occupancy at the outset. Equipment and space for medical teaching and special research in all the major fields of medicine will be provided. The Cornell University Medical College will begin to move as soon as its present term ends next June. The college will occupy the buildings joined to those of the New York Hospital on the York Avenue side of the center, between Sixty-eighth and Seventieth Streets. Its fall term will open there on September 29. In its main building, which faces Sixty-eighth Street and rises twenty-six stories to a height of approximately 400 feet above the river, the New York Hospital will devote the two south wings to the public pavilions for medicine and surgery. The north wings will be occupied by the out-patient department and special therapies. The ninth floor will be given over to the James Buchanan Brady Urological Clinic. Private patients are to have a self-contained hospital which will occupy the lower section of the tower, the twelfth to the seventeenth floor. The upper floors are to be used as quarters for the resident medical, surgical and executive staffs.

THE Paris correspondent of *The British Medical Journal* writes: "The congresses are over, and every department of medicine has been discussed. France should now be able to take good care of her population, but, as it was forcibly pointed out at the Congress of Social Hygiene held at Mulhouse, the first necessity is that there should be a population. Exclusive of foreigners the population of France is about 38 millions, roughly the same as it was just before the war of 1870. The population of Germany over this period, however, has increased from 39 to 65 millions, and that of Italy from 25 to 42 millions. The birth rate of France has decreased by more than 30 per cent., and it is probable that it will go on decreasing; this is partly because of the comparatively small number of births during the war, and partly because the younger generation seems strongly in favor of birth control. A declining population is the greatest danger we have to face. The medical profession is doing its utmost to fight infant mortality, and Dr. Devraigne, well known as an ardent protector of both mother and child, showed us a film, which is to travel throughout France, illustrating the principles of hygiene—the care of the child, hygiene in the home, the consequences of alcoholism, protection against infectious diseases, etc. The congress dispersed after having proposed that the government should consider all questions connected with ante- and post-natal care of the mother and child as of the first importance, and, further, that taxation should vary in accordance with the number of children in the family."

Industrial and Engineering Chemistry writes: "The Chemical Laboratory of the American Medical Asso-

ciation, established in 1906, celebrated its twenty-fifth anniversary in October, having functioned continuously for a quarter of a century. The primary reason for its establishment was that the Council on Pharmacy found it difficult to secure satisfactory outside help in checking the composition and properties of newer drugs under investigation and in watching over market supplies of non-official preparations. Since that time the work of the laboratory has been greatly extended, it has aided the medical profession in taking a much more scientific attitude toward drugs, and has rationalized prescribing. It has also been the means of informing the medical profession whether compounds are of the chemical composition claimed. Gross deceit has lessened, though subtle forms of fraud are still practiced. It has been due in great part to the work of the laboratory that the boards of directors of progressive pharmaceutical firms have seen the necessity of maintaining high-grade scientific staffs in order that their products may be carefully watched and freed from criticism and that research may be along lines of genuine value. The laboratory has had a large part to play in scientific nomenclature, in controlling scientific names which twenty-five years ago were in a chaotic condition, and has done its part in developing better methods of standardization and maintaining the best chemical technic and procedure. It has been an aid to public health, in that certain new developments which could not meet its tests have gone no farther than the laboratory."

DISCUSSION

THE GLACIAL CONTROL THEORY APPLIED TO BERMUDA

OUT in the Atlantic Ocean, 675 nautical miles southeast of New York City, stands the submerged volcano making the limestone-covered islands of Bermuda, with their winter resorts, their international biological station, and their naval base of the far-flung British Empire. When this old volcano was active, and when its fires died out, is not known, but presumably at some time in the late Cenozoic. To these beautiful islands Dr. Robert W. Sayles, of the Harvard Department of Geology, went on a vacation trip during the winter of 1923, and in his walks he noted at many places the more or less red residual soils interbedded in the wind-blown dune limestones, now more or less consolidated. Then and there the thought came to him that in these soils, with their living and extinct land snails, might lie the means of correlating these strata with the various epochs of the Pleistocene glacial history of North America. Since then he has revisited Bermuda several times, and now we have his matured considerations, set forth in an interesting memoir[1] that shows much originality and industry. It blazes a new line of endeavor in testing the glacial control theory of Daly, and the method should next be applied to the Bahamas.

The residual soils, Sayles discovered, occur throughout the islands, and they contain 24 described forms of land snails, of which at least 6 and possibly 11 are extinct. These snails furnish the chief means of determining the age of the soils. Probably not enough detailed collecting and study was done to prove beyond a doubt the time correlations. However this may be, many of the local soils are arranged into five named horizons that are separated from one another by the dune limestones, and are correlated with the warm intermediate times between the Wisconsin, Illinoian and Yarmouth epochs of the glacial record. The underlying, much consolidated Walsingham limestone, also largely of dune origin, is correlated with the Kansan and older divisions of the Pleistocene. The underlying basis of interpretation is Daly's Glacial Control Theory, which holds that great quantities of water were subtracted from the oceans to form the continental ice-sheets:

> When the ice was at its maximum extent the strandline fell as much as 260 feet below modern sea-level. While the ice-cap grew, large parts of the Bermuda banks, covered by mollusc shells and unprotected by vegetation, were exposed to the sweep of the winds and the dried sands were piled up in great dunes. . . . When the sea rose at the close of each glacial stage, the source of supply for the dunes was buried beneath the ocean waves, the winds became less violent, and a permanent flora anchored the dunes. A long period of slow decay began, during which red and brown soils accumulated [p. 460].

Accordingly, the Bermudas are considered to have stood highest above sea-level, with the stormiest climate, during the glacial times, causing the formation of the dunes, now consolidated into eolianites, a term here proposed "for all consolidated sedimentary rocks which have been deposited by the wind." During the interglacial warmer times, the sea-level rose and the islands were reduced in size to about their present extent, and this is when the residual soils were formed and the snails entombed.

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[1] "Bermuda during the Ice Age." By Robert W. Sayles. Proc. Amer. Acad. Arts Sci., Vol. 66, No. 11, November, 1931, pp. 379–467, pls. 1–13, text figs. 1–18.

COBALT IN PLANT ASH

IT was observed when vegetables were being ashed for calcium determinations that some gave a white