February 26.—Dr. V. K. Zworykin, engineering department, research division, R. C. A. Victor Company, Inc., Camden, New Jersey, on "Photo Cells in Theory and Practice."

March 5.—Dr. Judson Daland, Graduate School of Medicine, University of Pennsylvania, on "The Evolution of Modern Printing and the Discovery of Movable Metal Type by the Chinese and Koreans in the Fourteenth Century."

March 18.—Dr. Walter Renton Ingalls, director, American Bureau of Metal Statistics, New York City, on "The Wealth of Nations, With Especial Reference to That of the American People."

March 26.—Dr. Samuel A. Mitchell, director, McCormick Observatory, University of Virginia, on "The Structure of the Atom Under Conditions of Temperatures and Pressures in the Sun's Atmosphere."

April 2.—Captain Nicholas H. Heck, chief, Division of Terrestrial Magnetism and Seismology, U. S. Coast and Geodetic Survey, on "Earthquakes and the Engineer."

April 9.—Nevin E. Funk, vice-president in charge of engineering, Philadelphia Electric Company, on "The Economic Value of Major System Interconnections."

April 15.—Dr. W. F. G. Swann, director, Bartol Research Foundation of The Franklin Institute, on "Report on the Work of the Bartol Research Foundation."

THE BAUSCH MEMORIAL BRIDGE AT ROCHESTER

ON New Year's Day, the city of Rochester dedicated its newest and finest span across the Genessee River as the Bausch Memorial Bridge in honor of John Jacob Bausch, the founder of the Bausch & Lomb Optical Company. The tablet unveiled during the dedication exercises has the inscription here reproduced.

This tablet was unveiled by Eleanor Eisenhart, great granddaughter of John Jacob Bausch, after a speech by Dr. Rush Rhees, president of the University of Rochester:

BAUSCH MEMORIAL BRIDGE
ERECTED 1930
BY THE CITY OF ROCHESTER
**
BY THE WILL OF THE PEOPLE A MEMORIAL TO
JOHN JACOB BAUSCH
PIONEER MANUFACTURER AND INDUSTRIAL LEADER, WHO GAVE ROCHESTER LEADERSHIP IN AMERICA'S OPTICAL INDUSTRY.

A correspondent in sending us this information writes:

In many ways this is regarded as a most fitting tribute. The first bridge to span the river at this point was built in 1873 and the following year the first company-owned Bausch & Lomb plant was built immediately adjacent to it. The plant and the bridge have "grown up together" and it is a coincidence that the new Bausch Memorial Bridge was built in the year that marked the one hundredth anniversary of the birth of John Jacob Bausch.

John Jacob Bausch was born in Gross Suessen, Germany, July 25, 1830. He died in Rochester, New York, February 14, 1926. Perhaps no more fitting epitaph to his life may be found than that written by his own hand. "My life has been a modest one, and was for a long time a struggle for existence. With heavy toil and in the face of many difficulties I was forced to meet its exigencies in early years. Failures have frequently fallen to my lot, but I have never given up hope, and have been astonished frequently at the success which has crowned my efforts in the end. Of a peaceful disposition by nature I have maintained pleasant relationships with my fellow men. Spiritually and morally I have always sought to do my best and have dishonored my family with no stain."

One fortunate circumstance, the importance of which can hardly be overestimated, was his friendship with Henry Lomb. Dating almost from the beginning of his struggle in America this partnership which was spiritual as well as material endured through every vicissitude until they were parted by the death of Captain Lomb, in 1908.

SCIENTIFIC NOTES AND NEWS

FOR the centenary meeting of the British Association, to be held in London from September 23 to 30 under the presidency of General Smuts, the following sectional presidents have been appointed: Section A (Mathematical and Physical Sciences), Professor Sir J. J. Thomson; B (Chemistry), Brigadier-General Sir Harold Hartley; C (Geology), Professor J. W. Gregory; D (Zoology), Professor E. B. Poulton; E (Geography), Sir Halford Mackinder; F (Economic Science and Statistics), Professor E. Cannan; G. (Engineering), Sir J. Alfred Ewing; H (Anthropology), Professor A. R. Radcliffe Brown; I (Physiology), Dr. H. H. Dale; J (Psychology), Dr. C. S. Myers; K (Botany), Professor T. G. Hill; L (Educational Science), Sir Charles Grant Robertson; M (Agriculture), Sir John Russell. On Wednesday, September 23, the ceremony of installing General Smuts as president of the association and a reception of delegates will be held in the Albert Hall during a private view of the exhibition which is being arranged in connection with the Faraday centenary celebrations.

THE Perkin Medal, awarded annually "to the American chemist who has most distinguished himself by his services to applied chemistry," was presented at Columbia University on January 9 to Dr. Arthur D.

Little, of Cambridge, Massachusetts, at a joint meeting of the Society of Chemical Industry, the American Chemical Society, the Société de Chimie Industrielle and the American Electrochemical Society. Dr. Little spoke on "The Evaluation of Chemical Projects." Other speakers were Professor Frederick G. Keyes, of the Massachusetts Institute of Technology, and Professor Marston T. Bogert, of Columbia University. A dinner at the Faculty Club preceded the meeting. The Perkin Medal was founded in 1906 at the time of the Perkin semi-centennial celebration of his coal-tar discoveries, the first medal being awarded to Sir William H. Perkin himself.

DR. ADOLF MEYER, professor of psychiatry at the Johns Hopkins University and director of the Henry Phipps Psychiatric Clinic at the Johns Hopkins Hospital, was made on January 10 the first recipient of the lectureship award under the recently established Thomas W. Salmon Memorial. The award carries an honorarium of $2,500 to be given annually to a man chosen to deliver the lectures at the New York Academy of Medicine because of his outstanding contribution to psychiatry.

THE Stephen Hales prize "in recognition of service to the science of plant physiology" was awarded to Dr. W. W. Garner, physiologist in charge of tobacco and plant nutrition investigations, U. S. Department of Agriculture, at the annual meeting of the American Society of Plant Physiologists, held at Cleveland on December 29, 30 and 31. This award, established in 1927 by the society in honor of the pioneer plant physiologist for whom it is named, consists of a diploma and a cash sum and was awarded to Dr. Garner for his discoveries of the effect of the length of day on the growth of plants.

DR. WILLIAM H. WELCH, professor of the history of medicine at the Johns Hopkins University, was elected president of the History of Science Society at the recent Cleveland meeting.

PROFESSOR GEORGE GRANT MACCURDY, of Yale University, director of the American School of Prehistoric Research, was elected president of the American Anthropological Association at the recent annual meeting of the association held in Cleveland.

PROFESSOR GEORGE JAMES PEIRCE, of Stanford University, has been elected president of the California Botanical Society.

THE council of the Royal College of Surgeons of Canada recently conferred the honorary fellowship of the college on Dr. Frederick G. Banting, of the University of Toronto, co-discoverer of insulin.

AT a recent joint meeting of the board of trustees and scientific governors of the Chicago Academy of Sciences, the following honorary curators were elected: invertebrate paleontology, Dr. John R. Ball, of Northwestern University; paleobotany, Dr. Adolf C. von Noé, University of Chicago; botany, Dr. H. S. Pepoon, now associated with the Illinois Natural History Survey; mammalogy, Mr. Tappan Gregory; entomology, Dr. Frank J. Psota; oology, Mr. E. R. Ford. The Chicago Entomological Society, the Illinois Audubon Society, and the State Microscopical Society of Illinois have recently become affiliated with the academy as sections.

DR. FREDERICK BECKE, professor of mineralogy in the University of Vienna, celebrated his seventy-fifth birthday on December 31.

Nature calls attention to the birthday anniversaries last month of three British veteran workers in science. It writes: "On December 12 last Professor W. C. Unwin, 'a master and teacher of the science of engineering'—to use the appraising words of the late Sir William White—entered on his ninety-third year. He was born at Coggeshall, Essex, in 1838, educated at the City of London School, and began his notable technical career as a pupil in the firm of William Fairbairn, Manchester. Professor Unwin was elected to the fellowship of the Royal Society in 1886. Dr. William Garnett, who was born at Portsea, will celebrate his eightieth birthday on December 30. Like Professor Unwin, he was educated at the City of London School. Proceeding to St. John's College, Cambridge, he graduated fifth wrangler. Entering the Cavendish Laboratory, Dr. Garnett enjoyed the distinction of being the first demonstrator of physics there under James Clerk Maxwell. From 1904 until 1915, Dr. Garnett was educational adviser to the London County Council. Professor S. H. Vines, who was elected a fellow of the Royal Society in 1885, will be eighty-one years of age on December 31. A graduate of Christ's College, Cambridge, he was formerly Sherardian professor of botany in the University of Oxford."

AT the annual meeting of the Mineralogical Society of America, which was held at Toronto from December 29 to 30, in conjunction with the Geological Society of America, the following officers were elected for 1931: *President,* Alexander H. Phillips, Princeton University; *Vice-president,* William F. Foshag, U. S. National Museum, Washington, D. C.; *Treasurer,* Waldemar T. Schaller, U. S. Geological Survey; *Secretary,* Frank R. Van Horn, Case School of Applied Science; *Editor,* Walter F. Hunt, University of Michigan; *Councillor 1931–34,* William S. Bayley, University of Illinois.

AT the annual meeting of the Mathematical Association of America the following officers for 1931 were elected: *President* (two years), Dr. E. T. Bell, of the California Institute of Technology; *Vice-presidents,* Professor Arnold Dresden, of Swarthmore College, and Professor C. N. Moore, of the University of Cincinnati; *Members of the Board of Trustees* (for three years), Dr. L. L. Dines, of the University of Saskatchewan; Dr. T. C. Fry, of the Bell Telephone Laboratories; Dr. J. W. Glover, of the Teachers Insurance and Annuity Association, and E. P. Lane, of the University of Chicago.

DR. EDWARD A. BOYDEN, professor of anatomy at the University of Alabama, has been appointed to succeed Dr. Richard E. Scammon as professor of anatomy at the University of Minnesota. Dr. Boyden will move to Minnesota on June 1.

ANNOUNCEMENT is made of the appointment of William Maughan as assistant director of Duke Forest and assistant professor of forestry in Duke University, effective on January 1. Mr. Maughan's first work at Duke University will be to organize the Duke Forest as an operating demonstration of research and forestry in cooperation with Dr. C. F. Korstian, director of the forest and professor of silviculture. Plans are being formulated to develop a program of research which will be followed eventually by the organization of forestry educational work. This will probably be graduate work, largely of a research nature, leading to the higher degrees in forestry.

DR. HUGH E. BURKE has assumed his work as director of the research laboratory at the New York State Tuberculosis Sanatorium, Ray Brook, succeeding Dr. David T. Smith, who, after five years' service, resigned to become associate professor of medicine at Duke University School of Medicine, Durham, N. C.

THE appointment of W. P. Yant, supervising chemist of the health laboratory of the U. S. Bureau of Mines, as supervising engineer of the Pittsburgh Experiment Station of the U. S. Bureau of Mines, Department of Commerce, is announced by Scott Turner, director of the bureau. Mr. Yant succeeds G. St. J. Perrott, who has accepted a position on the research staff of the A. O. Smith Corporation, Milwaukee, Wisconsin.

CHRIS L. CHRISTENSEN has resigned as secretary of the Farm Board to become dean of the College of Agriculture at the University of Wisconsin. Prior to his association with the Farm Board since its organization in July, 1929, Mr. Christensen for three years was head of the division of cooperative marketing of the Department of Agriculture.

MR. T. W. FAGAN has been appointed to the professorship of agricultural chemistry at University College, Wales.

MR. W. J. PUGH has been appointed professor of geology and director of the geological laboratory of the University of Manchester, from September, 1931.

DR. DAVID RIESMAN, professor of clinical medicine in the University of Pennsylvania School of Medicine, has been appointed consultant to the committee on the costs of medical care.

SIR GEORGE NEWMAN will be Heath Clark lecturer at the University of London for the year 1931.

THE Medical Research Council has, according to the *British Medical Journal,* awarded three Dorothy Temple Cross Research Fellowships for 1930–31, these being the first appointments to be made under the terms of the recent benefaction in that name for research fellowships in tuberculosis, as follows: Arthur Ivan Granville McLaughlin, chief assistant, tuberculosis department, St. Thomas's Hospital, London; Reginald John Matthews, chief tuberculosis officer, Mid-Glamorgan area, and medical superintendent, Cymla Hospital; Sidney Malcolm Burrows, lieutenant, attached Sudan Defence Force. Dr. McLaughlin has received a fellowship for the study of methods of diagnosis and treatment at some chosen center in the United States. Dr. Matthews and Lieutenant Burrows have received senior fellowships, and will make special studies of problems of tuberculosis among the native populations in Zanzibar and in the Bahr-el-Ghazal province of the Sudan, under arrangements made by the council with the respective governments.

DR. S. A. MAHOOD, of the department of chemistry of Tulane University, is on leave from the university for the session 1930–31, and is spending the year on special synthetic work in organic chemistry as Squibb's Research Fellow at Yale University.

DR. FRANZ ALEXANDER, of the University of Chicago, delivered the fourth Harvey Society lecture at the New York Academy of Medicine on January 15. His subject was "Psychoanalysis and Medicine."

DR. ELWOOD MEAD, commissioner of reclamation in the Department of the Interior, gave an illustrated lecture on "The Boulder Canyon Project" in the Aldred Series at the Massachusetts Institute of Technology on January 9.

PROFESSOR JAMES H. MCGREGOR, of Columbia University, gave on January 13 an illustrated lecture on "Primitive Man" before the Middletown, Connecticut, Scientific Association.

SIR D'ARCY POWER, of London, spoke on "The Royal Gift of Healing" before the College of Physicians of Philadelphia on December 8.

THE annual meeting of the American Heart Association will be held on Monday, February 2, at the Academy of Medicine, New York City.

THE First Congress of Latin American Ophthalmology will be held at Santiago (Chili) in 1931, under the presidency of Professor Charlin.

THE French Government has accepted an offer of the Rockefeller Foundation to establish a center for the study of undulant fever at Montpellier.

ADDITIONAL details in regard to the new observatory to be erected near Toronto by Mrs. D. A. Dunlap and her son, D. Moffat Dunlap, as a memorial to the late David A. Dunlap, who died in 1926, have been sent to us by a correspondent. Its distinguishing feature will be a 74-inch reflecting telescope, which is now being constructed by Sir Howard Grubb, Parsons and Co., of Newcastle-on-Tyne, England. Sir Charles Parsons, the proprietor of this firm, is the youngest son of the Earl of Rosse, who built the famous 6-foot reflector at Birr Castle some eighty-five years ago. The great telescope will be housed in a circular sheet metal building, as is usual now, while the offices and other necessary accommodation, together with auxiliary instruments, will be in a separate building which will be fine architecturally. The observatory will be located not far from Toronto but the exact site has not been determined. It is intended to have it in the midst of a park. When completed the observatory will be presented to the University of Toronto and will be under the department of astronomy.

AT a recent meeting of the deans of the professional colleges and the director of Hooper Foundation for Medical Research of the University of California, it was voted to apply the term, "Medical Center," to the schools, colleges and research centers considered collectively. The Medical Center is now taking steps to protect California from tropical and Oriental diseases which might be brought in through development of world commerce. To centralize efforts in this direction the regents of the university recently authorized the inauguration of a Pacific Institute of Tropical Medicine, and this organization is now functioning on many projects.

A CHEMICAL map of North America, the first attempt of its kind to show the wide range of sources of medicinal chemicals, has been prepared by Professor H. V. Arny, dean of the College of Pharmacy, Columbia University, and E. L. Newcomb, secretary of the National Wholesale Druggists Association. The map, in five colors, represents all countries from the Panama Canal Zone to Hudson Bay. Names of ores, minerals, chemicals and elements appear approximately at the point of origin. Countries, states and provinces are shown in yellow; oceans and lakes in blue; political boundaries and important cities in red; mountains in sepia, and rivers and most type matter in black. In the border are photographs and sketches of mining operations and chemical plants.

ADDITIONAL canyons were on January 5 added to the Bryce Canyon National Park, in southwestern Utah, by the proclamation signed by the President, upon the joint recommendation of the Secretary of the Interior and the Secretary of Agriculture. The park, as established in 1928, contained the remarkable Bryce Canyon, a horseshoe-shaped amphitheater cut by erosion into one of Utah's colorful plateaus and filled to the brim with a myriad of fantastically carved figures. The original boundaries, however, did not take in some adjoining canyon country needed to complete the park. Congress, realizing this, authorized the president to add additional lands, and the recently promulgated proclamation increases the park area from 14,480 to 30,560 acres. The newly-acquired lands were transferred from the Powell National Forest. The addition ranks in scenic grandeur with that portion included in the original park and includes a great crescent of eroded area in the Pink Cliffs with an air-line distance between tips of eight miles which gives an incomparable display of color. It has been likened to a giant rainbow fallen over on its side. From one elevated point in the newly added territory there is a circle of unobstructed vision of at least 320 degrees. From it on a clear day mountain ranges in the five states of Utah, Arizona, Colorado, New Mexico and Nevada may be seen. In this view, looking from southwest to southeast, the foreground is the magnificently eroded, brilliantly-colored area breaking into the Colorado River.

THE University of Florida, under the auspices of the committee of university publications, has inaugurated the issuing of a series of research monographs, under the general heading of Biological Science Series, Physical Science Series, etc., in which research work will be published from time to time by the university. The first of these monographs to appear was published May, 1930, under the title "A Contribution to the Knowledge of Florida Odonata" by Dr. C. Francis Byers. Other works are in progress. The University of Florida publications are offered in exchange for the publications of learned societies and institutions, universities and libraries.

THE annual report of the Science Museum, South Kensington, issued by the Board of Education, records the visit in 1929 of 1,061,754 members of the public, an increase of 161,700 over the figures for 1928. In August, 1929, the monthly total reached the record number of 144,655, while the total number

for the first six months of the present year has been 100,000 above that of 1929. The attraction of the museum (especially the working models) to children is noted, and the purpose of a special children's gallery or galleries set forward. The advisory committee comment gratefully upon the support received from industrial firms, institutions and private individuals in the form of gifts and loans, which have totalled 1,150, apart from three exhibitions. Willingness to offer objects of historical worth and interest to the museum maintains the collections, it is observed, at a trifling cost to the state. The need for the center block of new buildings is described as urgent, since it is space which is lacking to show current practice in the various collections of the museum, rather than willingness to lend. The lectures given normally by guide-lecturers were attended by 20,845 persons, compared with 10,600 in 1928. Special lectures were given to 3,851 persons, composing 155 parties, and 7,000 persons also visited the museum in parties under their own arrangements. The work of extending the library periodical collections has been extended, and both periodicals and books have been lent in increasing numbers.

DISCUSSION

THE BARRINGER METEORITE

I WAS much interested in Professor Fairchild's article, in SCIENCE for November 7, 1930, on the "Nature and Fate of the Meteor Crater Bolide." Especially was my attention attracted because he presents therein a completely new conception of the extra-terrestrial body that made the crater. He visualizes it as a single, stony meteorite, containing nodules or segregations of metallic nickel-iron; further, he conceives of the stony part (the major part) of the body having been totally destroyed by the impact and by subsequent weathering, leaving only the minor iron nodules, of which many representatives have been found.

The article, while extremely interesting, is not convincing in its proof of the above hypothesis. May I call attention to some of the reasons why my brothers and I have not been persuaded by it to alter our conception (which was my father's) of the body? That theory visualized the body as a compact swarm of nickel-iron meteorites, containing in all probability no stony individuals whatever. Professor Fairchild appears to ignore this theory, but raises several objections to the bolide's having been a solid spheroidal mass of iron 400 feet or so in diameter. Such a body would certainly not fulfil some of the conditions found at the crater, and the idea has not been seriously entertained by us.

Many of the iron individuals, or parts of individuals, of the swarm contained sufficient chlorine to cause rapid oxidation on exposure to ordinary atmospheric conditions. Those that had been so exposed before the discovery of the crater were promptly converted to the hydrated oxides of iron and nickel, giving rise to the material known as "iron shale." But quite a number of others, dug up since the discovery of the crater, were found to have been so well protected by the rock flour of crushed sandstone grains from the Coconino that oxidation had made little or no headway in them. Upon exposure to the air they oxidized rapidly, some of them going entirely to oxide in a year or two. Others, of course, have been preserved in paraffin. Still others exhibited unoxidizable nuclei, which stayed metallic and bright even after years of exposure.

From this it is seen that burial in the rock flour around the crater was a nearly perfect protection from all forms of erosion, for of course no frictional erosion could have taken place without breaking the air-seal and allowing penetration of oxygen. Now a great many iron meteorites have been found in the silica by trenches and shafts. But not a single stony meteorite, or a single piece of rock in any way foreign to the normal geology of the region, has so far been discovered. If the original mass had consisted largely, or even partly, of stone, and if any stone had survived the impact, some of it would without question have been preserved in the ejected débris.

To this argument Professor Fairchild replies that all the stone was destroyed at the instant of impact, leaving only the metallic nuclei broken entirely free of their matrix. This means that not even a minute chip or fragment of stone could have survived, or remained adhering to the iron, for some of it would otherwise have been found. Such complete destruction is hardly conceivable. Meteoric stone is usually of the nature of a dense crystalline igneous rock, certainly harder and more resistant than the soft Coconino sandstone, and probably just as tough as the Kaibab limestone. Yet great masses of the Kaibab escaped the pulverization supposed to have been meted out to the stony bolide, and even boulders of the Coconino were thrown out of the hole at the moment of impact without great damage to themselves. That part of the Coconino which was in immediate contact with the impinging mass should have been even more seriously affected than the mass itself. Yet