

Congress, especially appointed by the Research Council for this purpose, of which Dr. Charles B. Lipman, dean of the Graduate School of the University of California at Berkeley, is the chairman.

In accordance with the plans of previous congresses of this series, the program of the sixth congress will "emphasize the discussion of comprehensive scientific topics of general interest to the peoples living within the Pacific basin," and the theme of the congress will be "the present stage of knowledge of Pacific scientific problems and methods by which that knowledge may be most profitably enlarged." As the congress is designed for discussion and interchange of ideas rather than for precise formulation of attempted solution of problems, the program is being arranged as a series of symposia rather than as a list of independent papers. Among the subjects to be discussed are:

The Pacific Basin: structure and dynamics; geophysics and geology.

The Pacific Ocean: properties, dynamics and life; oceanography.

Pacific climates, past and present: meteorology, paleontology, paleobotany.

Man and culture in the Pacific region; characteristics, dispersal and development, objectives and results of research; anthropology, human geography and ethnobotany.

Territorial fauna of Pacific islands: characteristics, origin, distribution, human relations; chiefly entomology, malacology and ornithology.

Terrestrial flora of Pacific islands and border lands: characteristics, origin, distribution, human relations; botany.

Classification and utilization of Pacific lands.

Communicable diseases of the Pacific area: origin, history, distribution; tropical medicine.

Nutritional problems of the Pacific area.

Conservation of the marine life of the Pacific Ocean.

Soil resources of the Pacific islands and borders: characteristics, conservation.

Miscellaneous topics:

Facilities and program of institutions interested in scientific studies of the Pacific area.

Means and methods for cooperative research.

Present status of research in Pacific scientific problems and the outstanding problems that merit attention.

General lectures on regions and special topics.

Additional information concerning the congress may be obtained by addressing the secretary-general, Dr. Roy E. Clausen, Room 205 Hilgard Hall, University of California, Berkeley, California.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE AND THE NATIONAL EDUCATION ASSOCIATION

JUST before the meeting in Richmond, on December 24, the officers of the association received the following letter from Dr. Reuben T. Shaw, president of the National Education Association:

As a fellow of long standing in the American Association for the Advancement of Science, who is now honored with the leadership of the National Education Association, I extend to you the greetings of the nation's teachers and their best wishes for the success of your convention at Richmond.

Scientists and teachers have a community of interest. The scientist discovers truth, the teacher interprets it. We hope that both may cooperate as one profession, interested in aiding man on his road to happiness. In that capacity let us appraise the results of research and investigation, not so much in terms of scientific achievement as in terms of their effect upon the democratic society which the American people have adopted as the Good Life.

It is one thing to shout the alarm that democracy is challenged to-day. That alarm has often been sounded. It is another thing quietly to answer that challenge with the effective weapons that lie in truth and its acceptance and application by mankind. Those weapons are the tools with which the scientist and the teacher work each day. With them let us lay impregnable foundations for the security of free self-government.

By unanimous vote of the council on December 30, the officers of the association sent the following reply to Dr. Shaw:

The Council of the American Association for the Advancement of Science has received with lively appreciation the friendly greetings of the National Education Association which are conveyed in your letter of December 23. It is a source of satisfaction that two of the largest organizations of teachers and scientists in the world are affiliated and consciously cooperating in the increase and diffusion of knowledge among men. Many of the members of the American Association for the Advancement of Science are teachers, many of the National Education Association are scientists, and in large part the ultimate aims of our two associations are complementary.

With the belief that there can be no permanent progress of mankind except through the discovery and promulgation of truth and that science and education are now the principal means of human progress, the American Association for the Advancement of Science welcomes the cordial cooperation of the National Education Association and in turn desires to offer its support in your efforts to increase and improve education.

SCIENTIFIC NOTES AND NEWS

DR. WILLIAM D. COOLIDGE, director of the Research Laboratory of the General Electric Company, has been awarded the Faraday Medal for 1938 for "notable scientific and industrial achievement" by the council of

the British Institution of Electrical Engineers. Dr. Coolidge is the second member of the General Electric Company to receive the medal, the other having been the late Dr. Elihu Thomson.

THE second annual award of the British Institute of Metals has been made to Sir Harold Carpenter, professor of metallurgy in the Royal School of Mines, London, and will be presented to him on March 8. The medal, which is of platinum, is the gift to the council of the institute of the Mond Nickel Company. The first award of the medal was made last year to Sir William Bragg.

THE Meuller Medal of the Science Congress, which opened in Canberra, New South Wales, on January 11, was awarded to Dr. T. H. Johnston, professor of zoology at the University of Adelaide, in recognition of his "outstanding published scientific works."

DR. W. R. DOBSON, professor of agronomy in the College of Agriculture of Louisiana State University, was tendered a testimonial dinner on February 2 by the section of animal husbandry of the Association of Southern Agricultural Workers. Dr. H. P. Cooper, president of the association, presided, and Professor J. B. Francioni, Jr., head of the department of animal husbandry at Louisiana State University, was toastmaster. The speakers included: Dr. J. G. Lee, Jr., dean of agriculture, Louisiana State University, and Dr. E. W. Sheets, of the Mississippi State College, chairman of the section of animal husbandry of the association.

THE National Museum of Natural History, Paris, has awarded to Dr. Howard S. Reed, professor of plant physiology at the College of Agriculture of the University of California, a diploma conferring the title of "Correspondant du Museum."

THE degree of doctor of science was conferred on Sir Arthur Stanley Eddington on the occasion of the installation of the Duke of Devonshire as chancellor of the University of Leeds.

It is announced in *Nature* that Arthur Conway, professor of mathematical physics in University College, Dublin, has been appointed a member of the Pontifical Academy of Sciences to occupy the seat left vacant by the death of Lord Rutherford.

PROFESSOR ARTHUR FREDERICK BERNARD SHAW, who was recently elected to the professorship of pathology at the University of Durham, has been given authority to wear the insignia of Commander of the Order of the Nile, conferred upon him by the King of Egypt in recognition of services rendered by him as professor of pathology in the Egyptian University, Cairo.

WILLIAM ABBETT LEWIS, JR., engineer of the Westinghouse Electric and Manufacturing Company, in Pittsburgh, and a Westinghouse lecturer in electrical engineering at the University of Pittsburgh, has been appointed director of the School of Electrical Engineering of the College of Engineering, Cornell Uni-

versity. The title of emeritus has been conferred on Paul M. Lincoln, who retired in June from the directorship, a position that he had held since 1922. Dr. Lincoln continued as acting director of the school until the appointment of Dr. Lewis as his successor on February 1.

DR. CHARLES D. LUKE, who joined the faculty of the College of Applied Science of Syracuse University in September, 1937, has been appointed acting head of the department of chemical engineering, succeeding Dr. Lloyd Logan, who died in December.

PROFESSOR WALTER P. KELLEY, who has served at the Citrus Experiment Station of the University of California at Riverside since 1914 as professor of agricultural chemistry and professor of soil chemistry, has joined the faculty of the College of Agriculture at Berkeley in the latter capacity and as chemist in the Agricultural Experiment Station.

A BUREAU of Instructional Research has been established at the University of Nebraska, with Dr. J. P. Guilford, professor of psychology, as director. He will continue to devote part of his time to teaching. H. M. Cox, of the University of Georgia, has been appointed to full-time work in the bureau.

PROFESSOR G. R. GIRDLESTONE has tendered his resignation as Nuffield professor of orthopedic surgery at the University of Oxford.

C. C. L. GREGORY, lecturer in astronomy at University College, London, has been appointed director of the observatory.

DR. R. L. SMITH-ROSE has been appointed superintendent of the Radio Department of the British National Physical Laboratory, which includes the Radio Research Station at Slough in addition to the section of the department at Teddington. Dr. Smith-Rose since 1936 has been principal scientific officer-in-charge of the departments.

At the Long Island College of Medicine, Dr. Cassius Hinds Watson, medical director of the American Telephone and Telegraph Company, has been elected a member of the board of trustees. A graduate of the class of 1905, he succeeds the late Dr. Frederick Tilney, of the class of 1903, as alumni trustee. Health Officer Fred L. Moore has become associate professor in the department of preventive medicine and community health. The development of the work of the department has been made possible by a grant of \$43,750 from the Commonwealth Fund.

DR. JAMES K. WILSON, professor of agronomy at Cornell University, who has spent three months making a collection of leguminous plants and of soil bacteria in the West and South, has returned to Ithaca.

J. FRANCIS MACBRIDE, associate curator of the her-

barium of the Field Museum, Chicago, who has been in Europe since 1929 obtaining photographs of type specimens of plants in herbaria of various countries, has returned to his headquarters at the Paris Jardin des Plantes, after several months of work in Geneva and Florence. The museum recently received from him about 1,500 additional negatives, bringing the total number in the collection to 36,000. Prints from these are made available at cost to botanists and institutions all over the world.

DR. C. L. TURNER, of the department of zoology of Northwestern University, has leave of absence for the second semester of this year. He will continue his research on viviparous fishes in Mexico.

DR. H. W. NORRIS, of Grinnell College, is spending a few months at the Bass Biological Laboratory in Englewood, Fla. He is engaged in further work on the pituitary bodies of sharks and rays. Dr. Madelene Pierce, of Vassar College, expects to spend some weeks at the laboratory, where she will undertake ecological studies of the local fauna.

DR. HERBERT H. WHETZEL, professor of plant pathology at Cornell University, sailed on February 10 for Venezuela, where he plans to stay for two months continuing the plant disease and mycological survey of the American tropics. He goes as a collaborator of the U. S. Department of Agriculture, in cooperation with the Venezuelan Department of Agriculture. He will collect fungi and diseased plants to add to the collection of the department. Dr. Carlos E. Chardon, formerly president of the University of Puerto Rico and now in charge of cotton production at Maracay, and Albert S. Muller, plant pathologist at the government agricultural experiment station at Caracas, will take part in the work.

DR. T. LYNN SMITH, head of the department of sociology of the Louisiana State University, has been granted leave of absence for the 1939 summer session to conduct a social and economic survey of Central and South American countries. His survey will be in furtherance of the program initiated last summer for the promotion of greater cooperation between the Americas. A school of Pan-American agriculture, to operate as a unit of the College of Agriculture of the Louisiana State University, is now in progress of organization and, it is expected, will be opened with the 1939-40 session. Representatives of Central and South American governments are cooperating in the organization of the school. A conference with representatives of the U. S. Department of Agriculture is to be held at the university within a few weeks.

PROFESSOR HARRY S. SMITH, head of the division of beneficial insect investigations of the Citrus Experi-

ment Station of the University of California at Riverside, has left for Europe to find parasites of insect pests of the deciduous fruits of California. He plans to visit the Universities of Cambridge and Oxford and the Farnham Royal Laboratory of the Imperial Institute of Entomology, London; the Laboratories of the French Ministry of Agriculture, and the Royal School of Agriculture at Portici, Italy. It is expected that his search will be conducted primarily in France, Italy, Switzerland, Yugoslavia, Hungary, Czechoslovakia and south Germany.

DR. HENRY E. SIGERIST, William H. Welch professor and director of the Institute of the History of Medicine at the Johns Hopkins University, has been appointed to the South African visiting lectureship for 1939. He will speak at the chief universities of the Union throughout August, September and October and will gather material there and in Egypt for his four-volume history of medicine. He will return in December.

DR. JACOB MARSCHAK, director of the Statistical Institute of the University of Oxford, spoke at Iowa State College on January 26 on "The Concept of Liquidity" and on January 27 on "Statistical and Economic Research." Dr. Claude E. ZoBell, of the Scripps Institution of Oceanography, La Jolla, Calif., at present visiting professor of marine microbiology in the College of Agriculture, University of Wisconsin, lectured at the college on January 20 on "The Other Two-thirds of the Earth." He gave a second lecture, under the auspices of Sigma Xi, on "The World Below Sea Level."

A JOINT meeting of the American Philosophical Society and the Franklin Institute is being held in Philadelphia on February 16 and 17. The first day of the meeting at the Franklin Institute was devoted to the commemoration of the life and work of Elihu Thomson. It was held under the auspices of the society and the institute, of the Central High School of Philadelphia, of the Massachusetts Institute of Technology and of the General Electric Company. Among the speakers announced for the afternoon were: Dr. Vannevar Bush, Dr. William D. Coolidge and Dr. Dugald C. Jackson, and in the evening John L. Haney, president of the Central High School, Philadelphia; Roland S. Morris, president of the society, and Dr. Karl T. Compton, president of the Massachusetts Institute of Technology. A film was exhibited showing Professor Thomson in conversation with the late president of the General Electric Company, E. W. Rice, Jr., and there was an exhibition of apparatus invented by Professor Thomson. A symposium on "Progress in Astrophysics" in the Hall of the American Philosophical Society was planned for February 17, the morning session to

be presided over by Dr. Harlow Shapley, director of the Harvard College Observatory, and the afternoon session by Dr. W. F. G. Swann, director of the Bartol Foundation of the Franklin Institute. In the evening there will be a lecture by Dr. Henry Norris Russell, professor of astronomy and director of the Princeton University Observatory, on "Stellar Energy and the Evolution of Atoms," at which Roland S. Morris, president of the society, will preside.

THE tenth annual meeting of the American Association of Physical Anthropologists will be held on April 4 and 5 at the Wistar Institute of Anatomy and Biology, Philadelphia.

THE Southeastern Section of the American Physical Society will hold its annual meeting at the University of Georgia, at Athens, on March 31 and April 1. A symposium on biophysics will be a feature of the program at which Dr. Detlev W. Bronk, director of the Eldridge Reeves Johnson Foundation for Medical Physics at the University of Pennsylvania, will be a guest speaker.

THE Midwestern Psychological Association will hold its annual meeting at the University of Nebraska on May 5 and 6, under the presidency of Dr. E. S. Conklin of Indiana University. The title of Dr. Conklin's presidential address will be "The Status of Academic Psychology." A special feature of the meeting will be the commemoration of the fiftieth anniversary of the founding of the psychological laboratory at the University of Nebraska, by Harry Kirke Wolfe.

THE 1938 expedition of the American School of Prehistoric Research was limited to certain parts of Anatolia and Bulgaria. Dr. Dorothy A. E. Garrod, of Cambridge University, the well-known authority on the

prehistory of the Near East and leader of the expedition, was assisted by James H. Gaul and Bruce Howe, both former students of the school and at present enrolled in the Graduate School of Harvard University. In the cave of Batcho Kiro, near Drenovo, Bulgaria, they found a stratified paleolithic sequence (Mousterian and Aurignacian), surrounded by a deposit containing pottery and a recent fauna—the first sequence of this kind to have been reported from Bulgaria. With permission of the government and supervision by the National Museum in Sofia, the school will, in the near future, continue the excavations so auspiciously begun at Batcho Kiro.

THE Standards Association of Australia has established a Chemical Industry Committee, the functions of which are coordination and supervision of preparation of standards of chemical analysis and sampling therefor, and standards for materials and products the manufacture of which may be regarded as coming substantially under the heading "Chemical Industry." It will also act as an Advisory Committee to the Council of the Association on all matters relating to chemical industry. The committee consists of representatives of the Australian Chemical Institute, the Australasian Institute of Mining and Metallurgy, educational and government departments and other organizations with chemical interests. Dr. H. B. Taylor has been appointed chairman.

THE Rockefeller Foundation has offered to the University of Oxford £600 for the year 1939 to provide in the department of pharmacology scientific apparatus, laboratory supplies, technical assistance and a fund for current research expenses for investigation on hormones and on the central nervous system.

DISCUSSION

DESCARTES AND THE MODERN WORLD¹

TO-DAY philosophers and scientists of the world do not hesitate to admit that in the mathematics lies the supreme creation of the human intellect. In every civilization of record the mathematician has occupied himself with the universe of number and of form, the creation of the mind. No external necessity and no practical need determined the developments of mathematical science. However, as developments were made applications were found, and thus, for example, the sciences of astronomy and physics were evolved, in truth, out of the mathematics.

For some thousands of years mathematical science could record a conquest of the material universe in the

laws of number and of form largely only upon the assumption of a reasonable universe. Day follows upon day, season upon season, eclipse upon eclipse, in a determinable order; for many centuries the elementary arithmetic and the algebra with the pure geometry of the conics, the circle and straight line were sufficient for such physical measurements as the physicists and astronomers could achieve.

With Viète, Descartes and Fermat, and Leibniz and Newton a wholly new era of mathematics enters into the panorama of intellectual history. In this period the mathematical achievements of the ages are crystallized into systems that give control over the material universe far beyond simple explanation of known phenomena.

Permit an apparent digression, for a moment, to insist that the veritable proof of science lies not simply

¹ A paper presented in Paris, in July, 1937, at the Third International Congress of Philosophy and the Descartes Tercentenary; the author was one of the official delegates of the United States, appointed by President Roosevelt.