

by officers of the U. S. Public Health Service in consultation with state health officers, and if the money becomes available, the program is expected to be in full swing by the end of the fiscal year. Short-term fellowships will be given to nurses to train them for public-health nursing, to physicians to train them to act as public health officers, and to civil engineers to train them as sanitary engineers.

The academic part of this training will be given at various centers throughout the country. One such training center will serve a number of states. Existing educational institutions will be used, selected according to suitability of location and of facilities for such training. Where such facilities need to be enlarged, this will be done, the cost to be prorated among the states served and to be paid for out of their share of the social security funds for public health. Following the academic training the students will be given an opportunity to gain experience of practical work in the field through special field demonstration centers which are to be set up.

Fellowships for longer training courses will also be given, this training to be obtained at the Schools of Public Health already established at a number of universities. Awards of both kinds of fellowships will be made by the state health officers. In making these awards they have for their guidance suggestions of the Conference of State and Territorial Health Officers as to qualifications of applicants for such training for public health work.

#### RECENT DEATHS AND MEMORIALS

DR. HENRY BRIGGS, Hood professor of mining at the University of Edinburgh since 1924, when the chair was established, professor of mining at Heriot-Watt College since 1919 and technical adviser to the British War Office during the war, died on August 26 at the age of fifty-two years.

HENRY ADAMS, consulting engineer and architect, for thirty-five years professor of engineering at the City of London College, died on August 15, at the age of eighty-nine years.

THE death is announced of Dr. Wilhelm Sieglin, professor of historical geography at the University of Munich, and of Dr. Hermann Emde, professor of pharmacology and the chemistry of nutrition at Königsberg.

To celebrate the centenary of the birth of Simon Newcomb, a cairn erected by the Historic Sites and Monuments Board of Canada, four miles from Wallace, Nova Scotia, where he was born, was unveiled on August 30, 1935, by his daughter, Mrs. Joseph Whitney, of Washington. Those present at the dedication included Norman Armour, ambassador of the United States to Canada; Lieutenant-Governor Walter Covert, of Nova Scotia; Premier Macdonald and Chief Justice Sir Joseph Chisholm, of Nova Scotia, and Professor D. C. Harvey, a member of the board. Professor Albert Einstein in a message read at the ceremonies, said, "He was one of the outstanding masters of celestial mechanics." It was because of Newcomb's work that "the infinitely small deviations of the Newtonian principles of mechanics from the actual motions of the celestial bodies have become known with tolerable precision and certainty."

A CORRESPONDENT of the London *Times* in the issue of August 20 writes: "To-day is the twentieth anniversary of the death of Paul Ehrlich, the great bacteriologist. He is most famous for his discovery of 'Salvarsan' or '606,' a cure for syphilis, but two years earlier, in 1908, he had already divided the Nobel prize for medicine with Professor Metchnikoff for their investigations in immunity. To Ehrlich more than to any other man is due the present treatment of infectious diseases with strong chemical preparations which destroy the microbes without damaging the host. It was largely his insistence which led to the wide use of intravenous injection, much against the will of clinicians of his day. In his search for specific preparations to cure disease he has been justly dubbed 'the first real follower of the great Paracelsus.' Paul Ehrlich was born of Jewish parents on March 14, 1854, at Strehlen, in Silesia. His earliest, and some of his best, work was done with the aid of dyes, and in 1908 he discovered the dye 'trypan red,' which was capable of curing trypanosome infection in mice. He died on August 20, 1915, when *The Times*, transcending the animosities of the war, wrote: 'The vast number of problems he set himself bear witness to the strength of his imagination. He opened "new doors to the unknown," and the whole world at this hour is his debtor.' Only in his own country has he lately been without honor; and the celebration which was to have been held on what would have been his eightieth birthday was forbidden."

### SCIENTIFIC NOTES AND NEWS

DR. GRIFFITH EVANS, of Bangor, North Wales, veterinary surgeon, known for his work in protozoology, who first associated trypanosomes with the production of disease, celebrated his hundredth birthday on August 7.

DR. GEORGE A. HULETT, who joined the department of chemistry at Princeton University in 1892, becoming professor of physical chemistry in 1909, retired from active service at the end of the college year.

DR. CHARLES E. KELLOGG, of the Bureau of Chem-

istry and Soils of the U. S. Department of Agriculture, has been appointed chief of the Soil Survey Division. He succeeds Dr. Curtis F. Marbut, who died on August 25. Dr. Kellogg is called upon to direct the most extensive program of soil survey and land classification which his division has yet been asked to carry out, including important work in cooperation with such governmental agencies as the Tennessee Valley Authority and the Agricultural Adjustment Administration.

DR. KNIGHT DUNLAP, professor of psychology at the Johns Hopkins University, has accepted a similar position at the University of California at Los Angeles. He succeeds the late Shepherd Ivory Franz. Dr. Dunlap was visiting professor of psychology at Los Angeles during the spring semester of 1935. He will take up the work of the position in February, 1936.

DR. CLARENCE A. PATTEN, associate professor of neurology at the University of Pennsylvania Graduate School of Medicine, has been appointed professor of neurology to succeed the late Dr. Theodore H. Weisenburg.

DR. ALFRED M. LUCAS, assistant professor of cytology, Washington University Medical School, St. Louis, has been appointed associate professor of zoology at the Iowa State College.

DR. ELDON THORP, research associate at the Scripps Institution of Oceanography of the University of California, has been elected professor of geology and geography at Baylor University, to succeed the late Dr. Frank Carney.

EDWARD TELLER, of Hungary, a theoretical physicist, who has recently been engaged in research at the University of London, will join the faculty of the George Washington University as visiting professor of physics for the coming year. In addition to the courses that he will give, Dr. Teller will offer a series of public lectures, following up those on modern physics given at the university last winter by Dr. Gamow. He also will take part in the Conference on Theoretical Physics held annually under the joint auspices of the Carnegie Institution of Washington and the George Washington University, which this year will place the emphasis on certain problems related to chemistry.

DELEGATES to the seventh American Scientific Congress, to be held in Mexico City from September 8 to 17, have been appointed by the United States Government as follows: Dr. Cloyd Heck Marvin, president of the George Washington University, *chairman*; Dr. Wallace Walter Atwood, president of Clark University; J. McKeen Cattell, editor of *SCIENCE*, New York;

Dr. Franklin Stewart Harris, president of Brigham Young University, Provo, Utah; Dr. Edward V. Huntington, professor of mechanics, Harvard University; Neil M. Judd, curator of archeology, U. S. National Museum; Francee V. Scholes, Division of Historical Research of the Carnegie Institution of Washington, and William W. Schott, second secretary of the American Embassy, Mexico City.

DE PAUL UNIVERSITY, Chicago, at its summer commencement, conferred *in absentia* the honorary doctorate in science upon Dr. Carlos E. Porter, the Chilean entomologist. The citation, read by the chairman of the University Council, was: "Professor Doctor Carlos E. Porter: Chevalier of the Crown of Italy, professor in the National University and in the Catholic University of Chile; president of the National Academy of Natural Sciences; vice-president of the International Faculty of Sciences of Great Britain; medallist of many organizations in various foreign lands for distinctive service; director of the Institute of General and Systematic Zoology; author of untold numbers of scientific articles and volumes; honorary member of more than one hundred foreign scientific societies, and decorated by three governments—who, by his intensive research in such important scientific fields as that of poisonous spiders and his contributions in the realm of yellow fever, has made the world his debtor—who has brought to the world's ken many new species of insects, of fossil molluscs and of hitherto unknown plants—who founded the world-famed *Chilean Review of Natural History* which for thirty-eight years has owed its inspiration and its wide influence to its founder—and who above all has been the most outstanding scientist on an entire continent—who by his work has made the world conscious of the great work that is being done in the world of science in Latin America—is entitled to the highest honor that a university can confer—and De Paul University this day honors itself in honoring Latin America's most distinguished scientist, by conferring upon him the degree of Doctor of Science, *honoris causa*."

IN honor of Dr. Witmer Stone, vice-president of the Academy of Natural Sciences of Philadelphia, who has made a life-long study of the birds and plants in that region, an emergency landing field for migrant birds has been established at Cape May Point, N. J. The project is under the auspices of the National Association of Audubon Societies, with the support of the New Jersey Audubon Society. The tract is a natural concentration ground for many thousands of migrant birds.

DR. J. DUFRENOY, director of the Station of Plant Pathology at Bordeaux, France, who visited the United States at the time of the Chicago Exposition, has re-

ceived from the Ministry of Colonies the decoration of Chevalier de l'Ordre de l'Etoile Noire in recognition of his work at the Institute of Colonial Agriculture.

DR. RICHARD PFEIFFER, professor of hygiene at the University of Breslau, has been elected an honorary member of the Royal Society of Medicine, London.

THE Medical Faculty of the University of Berne, Switzerland, has awarded a prize of 1,000 Swiss francs to Dr. Leslie T. Webster, of the Rockefeller Institute for Medical Research, for his investigations in the field of encephalitis.

DR. WILLIAM C. ANDERSON, dean of the Brooklyn College of Pharmacy, was recently elected president of the New York State Pharmaceutical Association.

L. F. LIVINGSTON, formerly of the agricultural engineering staff of the University of Wisconsin, was elected president of the American Society of Agricultural Engineers at the recent convention at Athens, Georgia.

DR. CARL E. LADD, dean of agriculture and home economics at Cornell University, has been appointed by Governor Lehman one of five members of a committee to study rural electrification in New York State.

HENRY FAIRFIELD OSBORN, JR., son of the honorary president of the American Museum of Natural History, has been named director of the New York Division of the National Youth Administration.

PROFESSOR J. A. NIXON, professor of medicine at the University of Bristol, and Dr. R. E. Lane have been appointed members of the British Industrial Health Research Board.

THE British Medical Research Council, according to *Nature*, has undertaken to promote investigation into the question whether various volatile substances might injure the health of workers using them under industrial conditions. The council has appointed the following special committee to assist and advise in this matter: Sir Joseph Barcroft (*chairman*), J. C. Bridge, Professor A. J. Clark, Professor A. G. Green, Professor J. A. Gunn, Professor E. H. Kettle, Dr. H. B. Morgan, J. Davidson Pratt, D. R. Wilson and Sir David Munro, *secretary*.

DR. JOHN T. HALSEY, professor of pharmacology at Tulane University, has this summer been making investigations at the Woods Hole Marine Biological Laboratory on the effect of pituitary extracts on the blood pressure of fishes. Associated with him in the work are Drs. Margaret M. Lewis and Earl O. Butcher.

DR. DONALD F. JONES, president of the Genetics Society of America and head of the department of genetics at the Agricultural Experimental Station at

New Haven, Conn., has been granted a leave of absence beginning on September 1. He will work at the California Institute of Technology at Pasadena.

DR. ISSAC, second imperial entomologist, Pusa, India, after attending the Imperial Entomological Conference in London, will visit the United States, Puerto Rico and the Hawaiian Islands. He plans to study methods of pest control in regard to sugar cane.

THE seventeenth International Geological Congress will take place in Moscow in the summer of 1937. Reports will be made on the oil problem and the calculation of its total world deposits, the geology of coal deposits, the deposits of rare elements and geophysical methods in geology.

THE International Pacific Health Conference takes place at the School of Public Health and Tropical Medicine in the University of Sydney from September 3 to 6. Among the subjects to be discussed are leprosy, malaria and intestinal infections. The dates of the sessions have been so arranged that delegates will be enabled to go to Melbourne to attend the annual meeting of the British Medical Association, which begins on September 9. It was expected that at least twenty-two institutions in the Pacific would be represented at the conference in addition to Australian delegates.

THE Belgian Society of Ophthalmology, on the occasion of the International Exhibition, will hold a special meeting at Brussels on September 22, to which all ophthalmologists are invited.

AT the request of the German Minister of the Interior the German Society of Neurologists has become merged with the German Association of Neurologists and Psychiatrists under the presidency of Professor Rudin of Munich.

THE sum of \$10,000 has been bequeathed to the New York Botanical Garden through the will of the late Mrs. Mary Strong Shattuck.

THE *Journal* of the American Medical Association states that the West Virginia University School of Medicine, Morgantown, which was disapproved by the Council on Medical Education and Hospitals of the American Medical Association in February without prejudice to the students enrolled, is undergoing a complete reorganization. Plans are largely matured and are being carried out as rapidly as possible in an attempt to maintain a school of small size and high standards.

THE departments of botany, zoology, bacteriology, agronomy, horticulture, animal husbandry and landscape architecture of Brigham Young University at Provo, Utah, will be moved in the near future into

larger, better equipped laboratories and offices in the new George H. Brimhall Building, now nearing completion on University Hill. The late Dr. Brimhall was president of the university from 1903 to 1921, when he became president emeritus and professor of religious education.

THE *St. Louis Post-Dispatch* reports that seven Russian geologists, exploring for the first time the crater of Kliutcheff volcano in the Kamchatka Peninsula, barely escaped with their lives when the crater suddenly filled with smoke and sulfur gas. The expedition, which was sent out by the Academy of Sciences, is said to have pulled to the top with most of its members in a semi-asphyxiated condition. Kliutcheff is 15,750 feet high.

A PWA appropriation to scientific and medical institutions in New York City includes: To supplement the staff in the Department of Health's clinics, baby health stations, school hygiene and tuberculosis registration—\$321,732. To enable the twenty-six city hospitals to cope with demands, including additional hospital help, social, medical and nursing service, clerical and research work—\$4,112,148. For the New York Botanical Garden to carry on labeling and preparing descriptions of various plants and for genetic studies—\$149,340. For laboratory and curatorial assistance in the Brooklyn Botanic Garden—\$55,654. For study involving tabulation and analysis of meteorological data to provide a basis for the rendition of accurate visibility forecasts in the Port of New York—\$13,740.

## DISCUSSION

### EARTHQUAKE PREDICTION

EVERY once in a while, as recently, the claim that earthquakes can be predicted is brought to public attention in the press or in other ways. Some of the claimants are obviously not competent; others proceed along rational lines but without due regard to the difficulties involved. Some may be publicity seekers; others are undoubtedly sincere.

In a recent number of *SCIENCE*, July 12, 1935, Dr. H. Landsberg stated quite correctly that in the present state of knowledge reliable earthquake prediction is impossible; and he went on to mention briefly some of the lines of research which have been suggested as prerequisite to any competent prediction, neglecting to mention others equally or more important, for example, study of foreshocks and measurement of strain by geodetic means.

To have any useful meaning the prediction of an earthquake must indicate accurately, *within narrow limits*, the region or district where and the time when it will occur—and, unless otherwise specified, it must refer to a shock of important size and strength, since small shocks are very frequent in all seismic regions.

On the other hand, generalized forecasting of the occurrence of shocks in regions known to be seismically active is entirely possible, but this is not earthquake prediction in the proper sense. The exact, or even approximate, time, place and magnitude can not be stated; only that shocks will occur and that some will be strong, so that proper safeguards should be set up to minimize the risk incurred from them.

Earthquake prediction has two aspects, one relating to the development of seismologic science and one relating to public welfare. With respect to the latter,

unless and until such prediction can be reduced to a very precise procedure, giving place, time and magnitude reliably and almost infallibly, the public announcement of a prediction is likely to be harmful and mischievous, causing unwarranted worry and apprehension among large numbers of the population. On the other hand, even only approximately successful forecasting of earthquake occurrence on a rational basis, or even only empirically, would be an important forward step in seismology, for it would mean the attainment of a better understanding of the action of the forces which produce earthquakes, or at least a better grasp of their occurrence statistically. Such prediction or forecasting should not be made public in the press, however, but simply notified to proper scientific groups who would subject it to test as to its realization and rational method, to determine its value.

Most of the earthquake prophets who are sincere do not realize the obstacles which confront successful prediction—the limitations as to place of occurrence and the high frequency of occurrence of shocks.

In the very strictest sense we do not know what causes earthquakes, but the evidence is well-nigh overwhelming that nearly all are caused by the sudden release of elastic strain when rock strained beyond its strength breaks and slips in geologic faulting, with attendant friction and vibration and the radiation of elastic waves. (A few other earthquakes are, or may be, due to underground collapse or rock-fall or explosion or sudden magma movement in volcanoes.) Again in a very strict sense we do not know whether the rock strain is developed suddenly or slowly, but once more the evidence is very strong that in most cases it is of slow growth, due to forces active in the