

stitution the following have been made emeritus professors following their retirement on July 1, 1938: Dr. St. George T. Grinnan, emeritus professor of pediatrics; Dr. Emory Hill, emeritus professor of ophthalmology; Dr. E. P. McGavock, emeritus professor of dermatology and syphilology; Dr. Charles R. Robins, emeritus professor of gynecology, and Dr. Beverley R. Tucker, emeritus professor of neuropsychiatry.

In the School of Dentistry Dr. Grant Van Huysen has resigned as assistant professor of anatomy and Dr. Alton Brashear has been appointed in his place as associate in anatomy. Dr. Webb B. Gurley has resigned as assistant professor of operative dentistry and Dr. H. D. Coy has joined the staff as professor of operative dentistry. Dr. A. Hubert Fee has been promoted to assistant professor of operative dentistry.

In the School of Pharmacy Dr. J. A. Reese has returned from the University of Florida, where he recently completed his work for the Ph.D. degree. He has been made assistant professor of pharmacognosy.

In the School of Nursing Miss Frances H. Zeigler, dean of the school of nursing, and Miss Lulu K. Wolf, associate professor of nursing, have resigned to accept similar positions at Vanderbilt University. Miss Ann Parsons has been made acting dean of the school of nursing for the session 1938-39.

The Public Works Administration has made a grant of \$880,623 towards the construction of a new sixteen story hospital and the rehabilitation of the historic Egyptian Building. The total construction cost is estimated at \$1,920,441.

IN HONOR OF DR. AUGUST KROGH

THE honorary degree of doctor of science was conferred on Dr. August Krogh by Rutgers University on October 11. Dr. Krogh was one of the principal

speakers at the dedication of the new research laboratory of the Squibb Institute for Medical Research at New Brunswick. The presentation of Dr. Krogh was made by Dr. William H. Cole, professor of physiology at the university. He said:

All of us who are engaged in research in physiology, wherever our researches may have been conducted, have in spirit, at least, sat at the feet of Dr. Schack August Steenberg Krogh. Dr. Krogh first won international recognition when he received the Vienna Academy of Science prize for his work on the gaseous exchange in lungs.

Brilliant investigator of respiration, he published in 1916 his authoritative volume on "Respiratory Exchange in Animals and Men." In a related field he extended his researches to the functions of the capillaries, and in 1920 was awarded the Nobel Prize in physiology and medicine. While Silliman Lecturer at Yale, he published in 1923 his second authoritative volume "The Anatomy and Physiology of Capillaries." Subsequently he has boldly attacked other secrets of nature, investigating life in salt and fresh water, studying the effects of heavy water on organisms and the innervation of cold spots in the skin. His example and influence, Mr. President, have stimulated the efforts of physiologists the world over and greatly augmented our wealth of scientific knowledge. I have the honor to present Dr. Schack August Steenberg Krogh for the honorary degree of Doctor of Science.

The citation made by President Robert C. Clothier read:

Dr. Krogh, your long and distinguished pursuit of truth among the mysteries of life has lighted dark places in the borderland of human knowledge. You have exerted a profound influence upon the endeavors of your fellow physiologists. Your researches have enriched our scientific heritage. With the approval of the trustees of Rutgers University it is my privilege to confer upon you, *honoris causa*, the degree of Doctor of Science.

SCIENTIFIC NOTES AND NEWS

PROFESSOR R. H. FOWLER, at his own request for reasons of health, has been released from the engagement to assume the directorship of the British National Physical Laboratory in succession to Dr. W. L. Bragg. Dr. Charles Galton Darwin, master of Christ's College, Cambridge, has been appointed in his place. For the period until Dr. Darwin can take up the work, the office of director will be held by Sir Frank Smith, secretary of the Department of Scientific and Industrial Research.

THE evening lecture at the autumn meeting to be held at the University of North Carolina of the National Academy of Sciences will be given on the evening of Monday, October 24, by Dr. E. C. Stakman, professor and head of the department of plant pathol-

ogy at the University of Minnesota. His subject will be "Plant Disease Fungi Constantly Evolving New Types."

A PORTRAIT of Dr. Henry A. Christian, physician-in-chief at the Peter Bent Brigham Hospital, was presented to the hospital corporation on October 13. Dr. Christian will retire next year. The portrait was accepted by William Amory. Dr. Elliott C. Cutler, surgeon-in-chief, spoke of Dr. Christian as "a man whom we deeply respect and greatly admire, one whose devotion to this hospital and whose name will travel down the years as part of our institutional tradition."

THE doctorate of laws was conferred at the closing session on October 14 of the seventy-fourth convocation of the University of the State of New York on Dr.

James Rowland Angell, president emeritus of Yale University and educational counselor of the National Broadcasting Company. He was presented with the degree by Owen D. Young. Dr. Angell was professor of psychology at the University of Chicago from 1894 to 1920.

DR. GORDON W. ALLPORT, associate professor of psychology at Harvard University, was elected president at the recent Columbus meeting of the American Psychological Association.

OFFICERS of the American Dairy Science Association for next year are: *President*, Professor Earl Weaver, East Lansing, Mich.; *Vice-president*, Dr. E. S. Guthrie, Cornell University, who under association rules will automatically become president next year; *Secretary*, Professor Robert B. Stoltz, of the Ohio State University; *Directors* elected to serve for three-year terms are Professor J. W. Linn, extension specialist in dairying, Kansas State College, Manhattan, and M. E. Parker, Beatrice Creamery Company, Chicago. At the annual meeting to be held next June, the program will be divided between the state agricultural colleges at Moscow, Idaho, and Pullman, Washington, which are only nine miles apart.

BEFORE sailing for New York on October 1, Dr. Henry Hanson, traveling representative of the Pan American Sanitary Bureau, was decorated with the Order of Merit of the Ecuadorean Government, in recognition of his services in Ecuador in fighting the bubonic plague. The decoration was presented by Dr. Leopold Izquieta, secretary of education.

DR. RICHARD P. STRONG, since 1913 professor of tropical medicine at the Harvard Medical School, has retired from active teaching and has been named professor emeritus.

PROFESSOR HUGH GRAY LIEBER, of Long Island University, and Dr. L. R. Lieber, director of the Galois Institute of Mathematics, have been appointed visiting professors of modern mathematics in the Graduate School of Duquesne University, Pittsburgh.

A DEPARTMENT of forestry has been established at the Illinois Experiment Station, under the directorship of Dr. John Nelson Spaeth, who has been assistant professor of forestry at Cornell University and silviculturist of the Cornell station. Associated with him will be J. E. Davis, extension forester of the college and the State Natural History Survey, and L. B. Culver, assistant in forestry extension.

DR. GREGORY PINCUS has been appointed visiting professor of experimental zoology at Clark University. Dr. N. T. Werthessen and Dr. Mark Graubard have been appointed research associates to collaborate with Dr. Pincus in his studies of the mammalian egg.

DR. ELBERT C. COLE, professor of biology at Williams College, has received a research grant for study at the Marine Biological Laboratory at Woods Hole, Mass.

At the University of London, Dr. F. R. Winton, reader in physiology at the University of Cambridge, has succeeded Professor J. H. Gaddum in the chair of pharmacology; Dr. H. H. Woollard, professor of anatomy, has become head of the department of anatomy and embryology, on the retirement of Professor J. P. Hill from the chair of embryology; Dr. G. R. de Beer, formerly lecturer at the University of Oxford, has been appointed reader in embryology.

DR. HAROLD JAMES PLENDERLEITH has been appointed deputy keeper in charge of the Research Laboratory of the British Museum, in succession to Dr. Alexander Scott, who has been honorary director of the laboratory since its establishment in 1919.

DR. KEMP has been appointed director of the Danish Institute for Human Heredity and Racial Hygiene of the University of Copenhagen.

DR. HAROLD J. CONN, chief of the department of research in soil bacteriology in the New York Agricultural Experiment Station at Geneva, N. Y., and chairman of the Committee for the Standardization of Biological Stains, has taken up special work at the Scripps Institution of Oceanography of the University of California, where he plans to stay until the end of the year. He is making a study of the growth of soil bacteria in synthetic or prepared soils, using materials found in deep-sea bottom deposits.

DR. COMFORT A. ADAMS, Abbott and James Lawrence professor of engineering and Gordon McKay professor of electrical engineering, emeritus, at Harvard University and consulting engineer to the Edward G. Budd Manufacturing Company, Philadelphia, has been appointed a member of the advisory committee of the thirteenth Exposition of Power and Mechanical Engineering, to be held in New York City from December 5 to 10.

DR. DUGALD C. JACKSON is preparing for the Engineers Council of Professional Development a report on trends in engineering education, in which he has the cooperation of Dr. Dugald C. Jackson, Jr., formerly director of the Lewis Institute of Chicago.

DR. ALEXIS CARREL, of the Rockefeller Institute for Medical Research, returned to New York on October 8. He will carry on his work at the institute during the winter.

DR. BARNUM BROWN, curator of fossil reptiles at the American Museum of Natural History, and O. S. Chapin, of Calgary, Alberta, left New York on Sep-

tember 15 for an aerial survey for dinosaur remains over Montana and the province of Alberta, Canada. A new model Fairchild plane will meet the party at Billings, Mont., the starting point of the survey. The principal bases will be Calgary and Edmonton.

DR. PAUL S. MARTIN, chief curator of the department of anthropology at the Field Museum of Natural History and leader of the archeological expedition which has made during the season of 1938 an extensive survey in Montezuma County, Colorado, and the adjoining country, returned to Chicago on October 16. It will now be possible from the data and artifacts collected to construct a complete sequence of the history of the earliest known inhabitants of southeastern Colorado—the prehistoric Basket-maker Indians who occupied the region from about A.D. 600 to 1200.

DR. EMMANUEL FRITZ, associate professor of forestry in the University of California, has leave of absence for three months in order that he may assist in the preparation of a report on the coordination of forestry activities in the Department of the Interior. While in Washington he will be stationed in the Division of Forests.

DR. ARTHUR H. COMPTON, professor of physics at the University of Chicago, lectured at a convocation at Wayne University on October 17. His address was entitled "Shall Science Point the Way?"—a discussion of the relationship between scientific and religious thought.

PROFESSOR WALTER MULFORD, head of the Division of Forestry of the College of Agriculture of the University of California, delivered the principal address at the convocation of the University of Michigan on October 7, when the thirty-fifth anniversary of the founding of instruction in forestry was commemorated. Professor Mulford was a member of the department of forestry from 1905 to 1911. He spoke on the progress and policies of the Michigan School of Forestry.

DR. A. V. KIDDER, chairman of the Division of Historical Research of the Carnegie Institution of Washington, is giving on Monday and Thursday afternoons, beginning on October 17, a series of eight Lowell lectures on "The Pre-Columbian New World" in the lecture hall of the Boston Public Library.

IN order to meet the need for pathologists skilled in the diagnosis of tumors, the Surgeon General of the Public Health Service has announced that in making appointments for training under the provisions of the National Cancer Institute Act, special consideration will be given to qualified pathologists who wish to secure additional training and instruction in the pathology and diagnosis of tumors.

SEVERAL Benjamin Peirce instructorships at Har-

vard University are open for the academic year 1939-1940. These instructorships are ordinarily awarded to men who have recently received the Ph.D. degree or have had equivalent training. Those interested in applying should write to the chairman of the Division of Mathematics.

ACCORDING to the constitution of the American Society of Naturalists, members may submit to the executive committee names of candidates for membership. Such nominations must remain in the hands of the executive committee for at least one year before action can be taken upon them. Members of the society are invited to send nominations at this time to the secretary, Ralph E. Cleland, department of botany, Indiana University, Bloomington, Ind.

THE Premio Alvarenga do Piahy (Brazil) Prize for 1939, about \$200, will be conferred by the College of Physicians of Philadelphia on July 14, 1939, upon the author either of the best memorial or of the best unpublished essay on any branch of medicine which may be deemed worthy of the prize. In selecting the winner of the award the committee will consider recent publications brought to its attention prior to May 1, 1939; also unpublished typewritten manuscripts submitted to the committee before that date. Manuscripts not in English must be accompanied by a translation into English.

THE School of Medicine of the University of Pennsylvania will receive eventually the bulk of the estate of the late Dr. George E. de Schweinitz to found a chair of ophthalmology. Except for one bequest of \$6,000, the estate of \$105,000 was left in trust for a sister of Dr. de Schweinitz. After her death \$5,000 will go to the College of Physicians of Philadelphia and the residue to the university. His medical library is left to the College of Physicians.

WESTERN RESERVE UNIVERSITY came into possession of the principal of the Albert Fairchild Holden Trust Fund on August 25, which was the twenty-fifth anniversary of the death of the late Liberty E. Holden, who established the foundation as a memorial to his son. The fund, which, at a conservative estimate, is said to be worth a million and a half dollars, will continue to be used, as directed by Mr. Holden, for lectures and research in the School of Medicine. The trustees of the foundation are Ben P. Bole, I. F. Freiberger and Guerdon Holden.

THE estate of the late Richard Crittenden McGregor, an ornithologist who was attached to the Philippine Bureau of Science for nearly thirty-five years, has presented to the Museum of Vertebrate Zoology of the University of California his collection of Philippine and Alaskan bird specimens. The collection includes

approximately eight hundred specimens, some of the species being now extinct.

THE U. S. Coast and Geodetic Survey has erected a new building at the seaward end of the 1,200-foot pier of the Scripps Institution of Oceanography at La Jolla. It is forty-five by ten feet and is part of a general program of improving the recording tide-gauge stations. Dr. G. F. McEwen, official tidal observer of the U. S. Coast and Geodetic Survey at the Scripps Institution, has been put in charge of construction. In addition to the instruments used in the tidal work, the building will contain equipment for routine observations of meteorological and hydrographic conditions, and for biological studies.

By a cooperative agreement recently concluded between the U. S. Department of Agriculture and the Iowa State College, the statistical laboratory of the college will undertake to perform important services for and with the department, and to this purpose it is increasing both staff and equipment. Provision is made for the addition to the staff, of which Professor G. W. Snedecor is director, of a professor of mathematical statistics, an instructor, four graduate assistants, two collaborators and a sufficient number of

clerical assistants. The purpose of the enlarged laboratory is research in the statistics of agriculture and associated statistical theory. One project is the study of the relation between weather and crop yield. Weather conditions to be considered are change and range of temperature, rainfall, wind. Partial census methods—whose investigation is of great concern to the laboratory—are used for the estimation of acreage and condition of the crop, for the sake of early prediction of yield. In the study of weather prediction, the Massachusetts Institute of Technology is cooperating. Products to be given early consideration are corn, wheat (with the aid of Kansas State College) and cotton. By the study of sampling techniques it is hoped to be able to learn significant economic and social facts of rural life more efficiently and reliably. A further topic of investigation is the analysis of time series.

DURING the recent crisis in Great Britain the aeroplane of 1903 in which the Wright Brothers made their first flight, which has been exhibited on loan in the Science Museum, South Kensington, for the past ten years, was removed to a place of safety in the vaults of the museum.

DISCUSSION

THE HISTORY OF MATHEMATICS FORTY YEARS AGO

IN 1898 the publication of the now widely used "Encyklopädie der mathematischen Wissenschaften" was begun. The first article thereof relates to arithmetic and includes a considerable number of historical statements relating to this subject. It may be assumed that these statements represent about the highest mathematical attainments at the time when they appeared, since this is the most extensive recent mathematical encyclopedia, and more than 200 scholars of various countries cooperated in its preparation. Hence it may be of interest to compare the views contained in some of these statements with those which are now current with a view towards noting progress along various mathematical lines during the last forty years. In particular, the historical statements may be of wide interest, since they can be readily understood and relate to the early training of almost all educated people.

Since note 18 on page 12 of Volume 1 contains an especially large number of statements which have been disproved since their appearance therein we begin with several of these assertions. This note relates to negative numbers and in the third sentence thereof it is asserted that the first traces of these numbers appear in the works of the noted Indian mathematician Bhaskara (born in 1114) who distinguished between the positive and the negative square root of a number.

It is now well known that, on the contrary, even the Indian mathematicians used negative numbers more than 500 years earlier and that, in particular, Brahmagupta (born in 598) placed a dot above a number to indicate that it is negative. It is therefore far from correct to say that the first traces of negative numbers appear in the work of Bhaskara. In the following sentence of the given note it is asserted that the Arabs recognized negative roots of equations, which is also now well known to be untrue.¹

The last sentence of the given note contains two misstatements relating to R. Descartes (1596–1650). The first of these is that the actual calculating with negative numbers begins with R. Descartes, while it is now commonly known that such calculations are posterior to R. Descartes as is also stated in the corresponding note (149) of the French edition of this encyclopedia, page 35 (1904). The said second misstatement in the sentence is that R. Descartes gave to the same letter sometimes a positive value and sometimes a negative value, while, on the contrary, R. Descartes always assumed that a letter represents only a positive number when it is assumed to have a numerical value. It is, however, true that by placing a dot before a letter R. Descartes implied that either a positive or a negative number may be assigned to the letter.

¹ Cf. Tropfke, "Geschichte der Elementar-Mathematik," Volume 2, page 97, 1933.