

thur D. Little and James F. Norris. The medal was designed by Mr. Cyrus E. Dallin, who was an intimate friend of Professor Richards.

Dr. Arthur Amos Noyes, the first recipient of the Richards Medal, was born at Newburyport, Massachusetts, in 1866. After graduation from the Massachusetts Institute of Technology he studied in Leipzig, where he received the degree of Ph.D. in 1890. He taught at the institute from 1890 to 1919, and was acting president 1907-1909. He went to the California Institute of Technology in 1915 to assist in its organization and took up permanent residence

there as professor of chemistry in 1919. In recognition of his contributions to chemistry he has been elected to numerous scientific societies, has received many honorary degrees and has been awarded several medals including the Davy medal of the Royal Society of London. He is the author of books in qualitative analysis, organic chemistry and physical chemistry, and has published a large number of articles on his original researches in theoretical, analytical and organic chemistry in American and foreign journals. Professor Noyes was a charter member of the North-eastern Section of the American Chemical Society.

SCIENTIFIC NOTES AND NEWS

IN the British New Year honor list science is recognized in knighthoods conferred on Mr. George Buckston Browne, the donor of Darwin's house at Down to the British Association and of generous gifts to medical research; Dr. H. H. Dale, secretary of the Royal Society and director-in-chief of the National Institute for Medical Research; Dr. Patrick Geddes, late professor of botany at St. Andrews and professor of sociology and civics at Bombay, and Mr. H. S. Wellcome, the founder of the Wellcome Research Institution and the Wellcome Tropical Research Laboratories at Khartum.

PROFESSOR CHARLES RICHTER, the physiologist, has been elected vice-president of the Paris Academy of Sciences for 1932 and will become president in 1933.

DR. HUGO ECKENER, commander of the dirigible *Graf Zeppelin*, received on January 16 the award of the 1931 medal of the International Aeronautic Federation.

M. LUCIEN CUÉNOT, professor of zoology at the University of Nancy, who in 1918 was elected a correspondent of the Paris Academy of Sciences, has now been elected a non-resident member to succeed the late M. Cosserat.

PROFESSOR E. L. NICHOLS, of the department of physics of Cornell University, has been elected an honorary member of the Association des Ingenieurs de l'Eclairage, Paris.

At a special meeting held at the St. Louis Medical Society, by friends of Dr. Amand N. Ravold in recognition of his completion of fifty years in the practice of medicine, a plaque was presented to him by Mr. Victor Holm. Dr. Augustus G. Pohlman, Washington University School of Medicine, extended greetings; Professor Arthur I. Kendall, of the department of research bacteriology, Northwestern University Medical School, Chicago, gave an address on "Fifty Golden Years"; Dr. William W. Graves, "Amand

Ravold the Builder," and Dr. Joseph Grindon, "Amand Ravold the Man."

MR. WILLIAM S. LEE, of Charlotte, North Carolina, known for his work on high-tension hydro-electric power development and transmission, has been elected president of the American Engineering Council. He is president of the W. S. Lee Engineering Corporation and vice-chairman of the Duke Endowment.

DR. SCOTT TURNER, chief of the U. S. Bureau of Mines, has been nominated for the presidency of the American Institute of Mining and Metallurgical Engineers for 1932.

OFFICERS elected at the twenty-fourth annual meeting at Atlantic City of the American Institute of Chemical Engineers were as follows: J. V. N. Dorr, *president*; A. E. Marshall, *vice-president*; F. J. LeMaistre, *secretary*; Martin H. Ittner, *treasurer*; David Wesson, *auditor*, and H. C. Parmelee, Willard Dow, J. G. Vail and R. T. Haslam, *directors*.

DR. R. S. BASSLER, since 1929 head curator at the U. S. National Museum and professor of geology at George Washington University, was elected president of the Paleontological Society of America and vice-president of the Geological Society of America at the recent meetings at Tulsa, Oklahoma.

At the annual meeting of the Mineralogical Society of America, held at Tulsa, from December 29 to 31, the following officers and fellows were elected: *President*, Alexander N. Winchell, University of Wisconsin; *Vice-president*, Joseph L. Gillson, E. I. du Pont de Nemours and Company, Delaware; *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; *Councilor*, 1932-1935, William J. McCaughey, the Ohio State University. The following fellows were elected: Dr. Olaf Anderson, Research Laboratory, United States Steel Corporation, Kearny,

New Jersey; Dr. Richard C. Emmons, assistant professor of geology, University of Wisconsin, and Dr. James E. Hawley, professor of mineralogy, Queen's University, Canada.

At the annual meeting of the American Society of Tropical Medicine held in conjunction with the meeting of the Southern Medical Association at New Orleans, from November 18 to 20, the following officers were elected for the ensuing year: *President*, Dr. Frank Smithies, Chicago; *First Vice-president*, Dr. E. L. Walker, San Francisco; *Second Vice-president*, Dr. G. R. Callender, Washington; *Secretary-treasurer*, Dr. Henry E. Meleney, Nashville; *Assistant Secretary*, Dr. Dámaso de Rivas, Philadelphia; *Councillors*, Dr. Dámaso de Rivas, Philadelphia; Dr. B. C. Crowell, Chicago; Dr. E. B. Vedder, Washington; Dr. E. C. Faust, New Orleans, and Dr. H. C. Clark, Panama.

At the meeting of the Botanical Society of America in New Orleans the Mycological Section voted the establishment of an independent mycological society. Dr. William H. Weston, of Harvard University, was elected president and Dr. H. M. Fitzpatrick, of Cornell University, secretary. A committee of five, including the officers mentioned, was appointed to draw up a constitution and by-laws and negotiate with the New York Botanical Garden looking toward an agreement whereby *Mycologia*, now published by the New York Botanical Garden, can be adopted as the official organ of the newly formed Mycological Society of America. The results of these negotiations will be reported at the meeting held in connection with those of the American Association for the Advancement of Science in Atlantic City next winter.

THE dismissal of Dr. Carl C. Taylor, dean of the Graduate School at the State College of Agriculture and Engineering of North Carolina on June 8, 1931, is found by the committee on academic freedom and tenure of the American Association of University Professors to be "unusual" and to have been caused by other motives than the officially announced necessity of reduced budget. The summary action of the trustees of the college in discharging "the most distinguished member of the faculty" is analyzed by Professor Holland Thompson, of the College of the City of New York, a native of North Carolina, who made the investigation at the request of the committee, and is described by him as arising from several possible causes. The determining factor, however, is declared to be the personal "tension which had developed" between President E. C. Brooks and Dr. Taylor over several years.

DR. ELLIOT CARR CUTLER, director in surgery at the Cleveland Lakeside Hospital and professor of sur-

gery in the Medical School of Western Reserve University, has been appointed Moseley professor of surgery at the Harvard Medical School and surgeon-in-chief at the Peter Bent Brigham Hospital, to succeed Dr. Harvey Cushing, whose resignation takes effect on September 1 after a service of twenty years.

DR. GEORGE BURGESS MAGRATH, medical examiner for Suffolk County, has been appointed the first holder of a new chair of legal medicine which has been founded at the Harvard Medical School. The foundation is the gift of Mrs. Frances Glessner Lee, of Littleton, New Hampshire, and has been established to support a resident professor of legal medicine and to provide for one or more lectures by visitors each year. A provision of the gift provides a plan to accumulate at the medical school a file of cases on the subject, and it is hoped that part of Dr. Magrath's records of nearly 19,000 cases may form the nucleus of this collection.

DR. JOHN CALVERT DONALDSON, associate professor of anatomy in the School of Medicine of the University of Pittsburgh, was promoted to a professorship in anatomy at the beginning of the current term.

MR. O. L. V. DE WESSELOW has been appointed to the chair of medicine at the University of London, tenable at St. Thomas's Hospital Medical School. Since 1920 he has been chemical pathologist to St. Thomas's Hospital.

IN reporting in a recent issue of SCIENCE that Dr. J. S. Plaskett has been awarded the Catherine Wolfe Bruce Gold Medal for the year 1932 it was stated in error that he had been appointed recently Savilian professor of astronomy at the University of Oxford. It is Dr. Plaskett's son, Dr. Harry H. Plaskett, who has become professor at Oxford.

MR. GEORGE T. SANFORD, assistant director of reclamation economics, has been appointed chief of the engineering division of the Bureau of Reclamation.

THE HONORABLE CHARLES G. DAWES, who will resign in spring as ambassador at London; Robert Walton Moore, member from Virginia of the House of Representatives from 1919 to 1931, and Senator William Cabell Bruce, Maryland, member of the upper house from 1928 to 1929, have been nominated by the Senate as members of the Board of Regents of the Smithsonian Institution.

DR. EDWARD R. WEIDLEIN and Mr. William A. Hamor, of the Mellon Institute of Industrial Research, Pittsburgh, have been appointed by Governor Pinchot to membership on the Greater Pennsylvania Council, which will be concerned with the development of agriculture, the industries, recreational facilities and com-

munity welfare in the state. Mr. Hamor has been made a member of the council's executive committee.

PROFESSOR J. O. SNYDER, of the Stanford zoological department, was recently appointed to the office of state fish culturist by the California Department of Natural Resources. He succeeds Mr. W. H. Shelby, a member of the Fish and Game Commission for the past forty-five years.

DR. E. B. COPELAND, associate curator of the herbarium and lecturer in botany at the University of California, has been granted leave of absence from March 1 to June 30, the leave to be extended later to January 31, 1933.

MR. ALVIN SEALE, superintendent of the Steinhart Aquarium of the California Academy of Sciences, has been placed in charge of the scientific work for an expedition to secure aquatic specimens in the waters around Central and South America.

At the recent annual meeting of the British Science Masters' Association at the Imperial College of Science, London, Mr. Jocelyn Field Thorpe, F.R.S., professor of organic chemistry in the Imperial College of Science, gave an address on the new vista which organic chemistry is opening up, and its bearing on good health and long life.

MR. A. F. MOORE, having examined four high peaks in South West Africa with reference to their availability for solar-constant stations, reports to the Smithsonian Institution that none of them are as favorable as Montezuma, Chile, though one or two may be somewhat superior to Mount Brukkaros, South West Africa. The observatory at Mount Brukkaros has been discontinued and its equipment shipped to Washington. Messrs. Moore and Sordahl will now examine conditions at Mount St. Catherine in the Sinai Peninsula, ten miles south of Mount Sinai.

DR. JOHN HAMMOND, of the department of physiology at the University of Cambridge, will lecture on animal physiology at the Iowa State College of Agriculture and Mechanic Arts during the first term of the summer session of 1932.

DR. M. BODANSKY, director of the John Sealy Memorial Laboratory, Galveston, and professor of pathological chemistry at the University of Texas School of Medicine, will be visiting professor of biological chemistry at the American University of Beirut, Syria, during the fall semester of 1932-33.

DR. ANTON J. CARLSON, of the University of Chicago, gave a lecture on the "Rôle of the Nervous System in Gastro-intestinal Functions and Disorders" before the Los Angeles County Medical Association on December 22; on the previous day Dr. Carlson spoke on "The Present Status of the Problem of En-

doctrines" before the Clinical and Pathological Society.

PROFESSOR G. W. SNEDECOR, of the department of mathematics of the Iowa State College, gave from January 4 to 7 five lectures on "The Analysis and Interpretation of Research Data" before members of the faculty and others engaged in research work at the Louisiana State University.

In the winter and spring Professor Thomas R. Garth, of the department of psychology at the University of Denver, has engaged to give a lecture on "Race Psychology" at various institutions in the Middle West and in the East. His itinerary will include the University of Iowa, Wellesley College, Smith College, the New School of Social Science, New York City; Davidson College, North Carolina, and Washington University, St. Louis.

THE patent obtained by Dr. Edward J. Dyce, of Cornell University, for a new product called crystal honey has been turned over to the university for use in the advancement of the honey industry.

THE Committee on Scientific Research of the American Medical Association invites applications for grants of money to aid in research on problems bearing more or less directly on clinical medicine. Preference is given to requests for moderate amounts to meet specific needs. Application forms may be obtained from the Committee at 535 North Dearborn Street, Chicago, Illinois.

At a meeting of the executive committee of the Southwestern Division of the American Association for the Advancement of Science at Tucson on December 21, it was voted to hold the coming spring meeting of the division at Denver, April 25 to 28, inclusive, under the presidency of Dr. John D. Clark, professor of chemistry and dean of men at the University of New Mexico. On the general program will be the annual John Wesley Powell Memorial Lecture and a symposium on readjustments in the light of changed economic conditions. Scientific organizations in the territory of the Southwestern Division are especially invited to participate in the meeting. On account of the sabbatical leave of Dr. Edwin F. Carpenter, the secretary of the division, Dr. M. M. R. Schneck, of the department of psychology, University of Arizona, was appointed acting secretary until September, 1932.

At the recent meeting of the executive committee of the American Society of Zoologists in New Orleans, it was voted to hold the next annual meeting in Atlantic City, New Jersey, from December 27 to December 29, in affiliation with the American Association for the Advancement of Science.

It was announced at the close of the Baltimore ses-

sion that the Society of American Bacteriologists will hold their next annual meeting at the University of Michigan.

ON the invitation of the secretary of the Smithsonian Institution, Dr. Charles G. Abbot, and of the assistant secretary in charge of the U. S. National Museum, Dr. Alexander Wetmore, the third annual meeting of the American Association of Physical Anthropologists will be held at the U. S. National Museum, March 21, 22 and 23. This meeting will give opportunity to see or review the extensive collections of anthropological and comparative material acquired by the National Museum. For the benefit of more distant members who belong to the American Association of Anatomists also, the date of the meeting has been arranged to facilitate attendance at both conventions, the anatomists meeting in New York on the three succeeding days.

A CORRESPONDENT writes: "Over five hundred members have already enrolled for the sixth international Congress of Genetics. Many of these have done so recently. Because of the past uncertainty of holding the congress, it seems probable that there are many other individuals who, now that it has been definitely

decided to go ahead, will wish to join as soon as possible. For this reason the council has decided to extend the date for ten dollar memberships until May 1. After that date, the membership will be at an increased fee (\$12.00). Graduate students and assistants may join as six-dollar members until May 1. After that date their memberships will be at the rate of seven dollars. Both of these revisions have been made because of the exceptional economic conditions and because the council is anxious, in so far as it is possible, to avoid having financial considerations a deterrent to memberships. The number of people who have already joined insures a representative and highly successful congress, and reveals as well the great amount of active interest in genetics at the present time. The guarantee that full proceedings will be published and that each member will receive a copy has proved to be a strong attraction, not only to geneticists but to many biologists in other fields."

MRS. HENRY LANG has presented to the Montclair Art Museum in memory of her mother, the late wife of Jasper R. Rand, who died in 1909, an addition, built at the cost of \$100,000, devoted to an exhibition of American Indian material.

DISCUSSION

DEFINITION OF A MATHEMATICAL GROUP

It is just about a century ago that the word group began to be used as a mathematical term by a young Frenchman named Evariste Galois, who died before he reached the age of twenty-one, but who had at that early age inaugurated such fundamental work that he is still ranked among the 25 greatest mathematicians that ever lived and the only one among them who gained this eminence by work accomplished at such an early age. Although the concept of group had been employed occasionally in mathematics before the time of Galois his new uses thereof were probably the most influential in the vast developments relating thereto, which took place during the hundred years just closing. It is well known that these developments are now extending into such subjects as mathematical physics, where they have sometimes been called a pest, and also into elementary mathematics, as may be seen from the fifty-one pages devoted thereto in the recently published volume on analysis of the "Enciclopedia delle Matematiche Elementari."

It may be appropriate to note here in connection with the termination of the first century of the use of the mathematical term group a few elementary notions relating to its definition without entering into technical details relating thereto, especially since widely different definitions of this term appear in

standard works of reference. It seems to have been always assumed therein that the distinct elements of a group satisfy the two conditions that they include the product of every pair as well as the square of every one of them. In many cases the elements are such that no other condition is necessary in order that they must constitute a group even in the most restricted sense of this term. This is true, for instance, when these elements are the permutations with respect to which groups were first studied by J. L. Lagrange, P. Ruffini, E. Galois and others. It may therefore be of interest to note here the circumstances under which one of these two conditions implies the other as regards a given set of such elements.

It is easy to see that the latter of these two conditions implies the former only in the trivial cases when the group is either the identity or of order 2. That is in every other group it is possible to find a set of distinct generating elements so that the set includes the square of each one of these elements but not the product of every pair thereof. On the contrary, the former of these two conditions implies the latter with very few elementary exceptions. One such exception is furnished by the set composed of the identity and the six elements of order 4 of the quaternion group. It is easy to verify that the set of seven elements thus obtained includes the product of every possible pair