

Eight sections of subject matter will be handled by eighty special editors. Cooperating foreign correspondents and libraries will help to scan the 5,000 serials for significant papers. Authors and editorial collaborators will prepare the abstracts. By the use of small but legible type and a thin opaque paper 1,030 large pages will occupy only an inch of shelf room. When once under way it is expected that twelve monthly numbers with elaborate annual indexes will run to between 3,000 and 3,500 pages. The entire enterprise will be directed by a small full-time central staff of editors.

#### THE FOURTH AMERICAN ASSOCIATION PRIZE

THE thousand-dollar prize that is to be awarded at the fifth Philadelphia meeting of the American Association for the Advancement of Science will be the fourth annual prize of the association. The prize is awarded each year to some one who presents at the annual meeting of the association and associated organizations a paper making a noteworthy contribution to the advancement of science. There is no formal competition for the prize and all papers on the program are to be considered. The winner of the prize need not necessarily be a member of the American Association nor of any of the associated organizations. The prize is awarded at the close of the annual meeting and disbursement from the treasury is made within about a week thereafter.

Funds for these annual American Association prizes were given to the association by one of its members who wishes his name withheld. There is now available sufficient money for two more prizes after the one to be awarded at Philadelphia. These will be awarded at the Nashville meeting (1927-28) and at the fifth New York meeting (1928-29).

The following is the roll of the American Association prizemen. The Washington prize was divided equally between two winners.

1. Dr. L. E. Dickson, professor of mathematics in the University of Chicago. Awarded the first American Association prize, at Cincinnati, January, 1924, for a noteworthy contribution on "Algebras and their Arithmetics." (See SCIENCE for January 25, 1924, p. 77.)

2a. Dr. L. R. Cleveland, research worker in medical zoology at the School of Hygiene and Public Health, the Johns Hopkins University. Awarded half of the second American Association prize, at Washington, January, 1925, for noteworthy contributions on "The Ability of Termites to Live Perhaps Indefinitely on a Diet of Pure Cellulose" and "The Effects of Starvation and Oxygenation on the Symbiosis between Termites and their Intestinal Protozoa, together with the Toxicity of Oxygen for Free-living and Parasitic Protozoa." (See SCIENCE for March 13, 1925, pp. 277-279.)

2b. Dr. Edwin P. Hubble, astronomer at Mt. Wilson Observatory, Pasadena. Awarded half of the second

American Association prize, at Washington, January, 1925, for a noteworthy contribution on "Cepheids in Spiral Nebulae." (See SCIENCE for March 13, 1925, pp. 277-279.)

3. Dr. Dayton C. Miller, professor of physics in the Case School of Applied Science, Cleveland. Awarded the third American Association prize, at Kansas City, January, 1926, for a noteworthy contribution on "The Michelson-Morley Ether-Drift Experiment: its History and Significance." (See SCIENCE for January 29, 1926, pp. 105-106, and for April 30, 1926, pp. 433-443.)

By vote of the association council, the annual prizes are not to be divided in the future, the entire amount of the prize going each year to a single winner. The award is decided by a special committee on prize award. This committee for the fifth Philadelphia meeting has been named as follows:

C. E. Seashore, *chairman*; dean of the Graduate College, University of Iowa.

Otis W. Caldwell; director of the Lincoln School, Teachers College, New York City.

Charles B. Davenport; director of the Station for Experimental Evolution, Cold Spring Harbor, N. Y.

Lauder W. Jones; professor of chemistry, Princeton University.

C. F. Marbut; chief of the Division of Soil Survey, Bureau of Soils, U. S. Department of Agriculture.

The committee receives suggestions from the secretaries of the sections and societies that take part in the general program of the meeting, studies these suggestions and reports its decision to the permanent secretary, who announces the award through the daily and scientific press at the close of the annual meeting.

BURTON E. LIVINGSTON,  
*Permanent Secretary*

#### SCIENTIFIC NOTES AND NEWS

THE degree of doctor of science has been conferred by the University of Oxford on Professor A. C. Seward, professor of botany, master of Downing College and vice-chancellor of the University of Cambridge; Sir William Bragg, Fullerian professor of chemistry and director of the Davy Faraday Research Laboratory of the Royal Institution, London, and Sir Walter Morley Fletcher, secretary of the British Medical Research Council.

THE degree of doctor of science will be conferred in October by the University of Cambridge on Sir Ernest Rutherford and on Professor W. S. Holdsworth on the occasion of the celebration by Trinity College of the Bacon Tercentenary.

THE bicentenary of the faculty of medicine of the University of Edinburgh was celebrated on June 10

and 11. At the special graduation ceremonial the honorary degree of LL.D. was conferred on the following alumni of Edinburgh: Dr. Andrew Balfour, director of the London School of Hygiene and Tropical Medicine; Professor Robert Howden, professor of anatomy, University of Durham; Professor W. T. A. Jolly, professor of physiology, University of Cape Town; Sir George Newman, Ministry of Health; Professor Alexander Primrose, professor of clinical medicine, University of Toronto; Sir John Robertson, professor of public health, University of Birmingham; Professor Ralph Stockman, professor of materia medica, University of Glasgow; Dr. A. Logan Turner, president of the Royal College of Surgeons, Edinburgh; Sir Norman Walker, treasurer of the Royal College of Physicians, Edinburgh; Professor J. T. Wilson, professor of anatomy, University of Cambridge. Sir George Newman made the principal address.

THE degree of doctor of science was conferred on June 14 by Iowa State College on Matthew Luckiesh, director of the Nela Research Laboratories, Cleveland, Ohio.

DR. FRANKLIN H. MARTIN received the honorary degree of doctor of public health at the recent graduating exercises of the Detroit College of Medicine and Surgery.

DR. EDWARD J. MENGE, head of the department of biology at Marquette University, Milwaukee, has been awarded the honorary degree of doctor of science by De Paul University, Chicago.

CHARLES EMBREE THORNE, former director of the Ohio Agricultural Experiment Station and at present consulting chief in agronomy, has received the degree of doctor of science from the College of Wooster, Ohio.

DR. J. CLARENCE WEBSTER, Shediac, N. B., formerly professor and head of the department of obstetrics and gynecology at Rush Medical College, received the honorary degree of doctor of laws at the recent commencement exercises of Dalhousie University, in recognition of his work in forwarding the interests of education and of his research in the history of the maritime provinces.

SIR HUMPHRY ROLLESTON, Bart., Regius professor of physie in the University of Cambridge and lately president of the Royal College of Physicians, has been awarded the gold medal of the British Medical Association.

THE Paris Academy of Sciences has given the Monaco prize to Dr. Jean Chareot for his scientific expeditions and to help him in a new one he is undertaking in the *Pourquoi-Pas*.

PROFESSOR J. FIBIGER, of Copenhagen, was tendered recently a complimentary dinner by the staff of the Cancer Hospital at London.

NOMINATIONS for election in September for president and vice-presidents of the American Society of Mechanical Engineers are: for president, Charles M. Schwab, chairman of the Bethlehem Steel Corp., New York, N. Y.; vice-presidents, Charles L. Newcomb, manager, Deane Works, Worthington Pump Corporation, Holyoke, Mass.; E. O. Eastwood, professor of mechanical engineering, University of Washington, Seattle, Wash.; Edwards R. Fish, vice-president of the Heine Boiler Co., St. Louis, Mo.

IN order to resume his work as dean of the College of Agriculture and director of the experiment station of the University of Kentucky, Thomas P. Cooper, chief of the bureau of agricultural economics, has tendered his resignation. Lloyd S. Tenny, assistant chief, has been appointed acting chief of the bureau.

DR. B. M. DUGGAR, professor of plant physiology at the University of Missouri and physiologist to the Missouri Botanical Garden, has been elected a member and chairman *pro-tem.* of the board of trustees of the Bermuda Biological Station.

PROFESSOR LEON A. HAUSMAN, of Rutgers University, has recently been made the science editor of *Compton's Pictured Newspaper* of Chicago. He has also been invited to contribute studies of mammal hair and fur to the revised edition of the *Encyclopaedia Britannica*.

DR. FRANCIS L. SIMONS, instructor in chemistry at Brown University, has joined the research staff of Skinner, Sherman and Esselen, Inc., of Boston.

THE British secretary of state for the Colonies has appointed Dr. A. T. Stanton to be his chief medical adviser. Since 1921 Dr. Stanton has held the post of director of government laboratories in the Federated Malay States.

THE *Journal* of the American Medical Association states that Dr. John D. Long, formerly assistant surgeon general of the U. S. Public Health Service, has tendered his resignation as technical adviser in public health to the ministry of hygiene of Chile. Dr. Long was lent by the U. S. government to reorganize the national health service in Chile. According to the *Chicago Daily News*, his efforts to reorganize the health service of Chile were blocked by politics of the Figueroa cabinet and the opposition of the property owning class, who were forced to make their tenements livable and sanitary.

DR. THOMAS A. JAGGAR, volcanologist of the U. S. Geological Survey, who is in charge of the investiga-

tions which have been made from Volcano House on the side of Mauna Loa in Hawaii has undertaken to make a comprehensive scientific study of Lassen Peak in Lassen National Park, to cover several months of observation.

DR. A. S. HITCHCOCK has left Washington for the Rocky Mountains, where he will carry on further studies in grasses, especially our native blue-grasses, for his *Manual of Grasses of the United States* now in preparation. Beginning at the south he will visit regions not previously investigated in New Mexico, Colorado, Wyoming and Montana.

DR. CASEY A. WOOD has spent a year in Ceylon collecting material on comparative vision in birds and has now gone to Kashmir to continue this study for six months, when he will return to Chicago by way of China and the Philippine Islands; Dr. Wood has been made honorary collaborator in the Division of Birds, Smithsonian Institution, Washington, D. C., for his contributions to ornithology.

CHARLES T. GREENE, of the Bureau of Entomology, has returned from a four months' stay in the Canal Zone, where, in cooperation with the Federal Horticultural Board, he has been investigating fruit flies.

RALPH A. SAWYER, assistant professor of physics at the University of Michigan, who was awarded a John Simon Guggenheim Memorial Fellowship for the coming year, will make a study of spectral series relations in extreme ultra-violet metallic spectra and the correlation of the results with modern theories of atomic structure. He will work principally in the laboratory of Professor F. Paschen, president of the Imperial Physico-Technical Institute, Charlottenburg, Germany.

DR. WILLIAM H. HOOVER, who has been in charge of the solar observatory of the Smithsonian Institution, at La Quiaca, since 1924, reached Washington on June 26. He will proceed to Mount Brukkaros, Southwest Africa, where he will direct the work of the new observatory in the Eastern Hemisphere recently established by the Smithsonian's solar expedition under the direction of Dr. C. G. Abbot.

DR. ROBERT BALLENEGGER, head of the College of Horticulture, at Budapest, is working in the department of soils in the Michigan Agricultural College, East Lansing, as exchange professor under the American-Hungarian Foundation.

D. MORLAND, apiarist of the Rothamsted Experimental Station, England, has visited Washington to spend some time at the bee culture laboratory of the Bureau of Entomology. He is also visiting Ithaca and western points of interest to advanced beekeepers.

DR. DOUGLAS FRYER, of New York University, left

on July 1 for Europe, where he will make a study of psychological conditions.

DR. O. W. H. MITCHELL, professor of bacteriology, hygiene and sanitation in the college of medicine of Syracuse University, has been granted a year's leave of absence which he will spend in traveling and studying in Europe.

C. B. JORDAN, dean of the school of pharmacy, Purdue University, has been granted a year's leave of absence which he will spend at Cambridge, Mass. He expects to carry on some work in colloid chemistry and physiological chemistry at Harvard University.

DURING the summer session at Columbia University, a series of special lectures on contemporary developments in chemistry will be given by a number of well-known authorities, including M. T. Bogert, J. F. Norris, P. A. Levene, W. M. Clark, R. W. G. Wyckoff, Irving Langmuir, H. T. Taylor, Sir James C. Irvine, E. C. Kendall, H. G. Wells, R. B. Moore, E. E. Reid, Leonor Michaelis, C. A. Kraus, Ernst Cohen, J. A. Wilson, J. C. W. Frazer, R. B. Johnson, W. D. Bancroft, E. V. McCollum, Harry Steenbock, J. N. Brönsted, C. G. Fink, E. C. Franklin, C. A. Browne and Peter Debye. The lectures began on July 6 and will end August 12.

THE annual oration of the London Dermatological Society was delivered on June 16 by Sir Humphry Rolleston, who selected as his subject, "The Relations of Dermatology and General Medicine."

*Nature* records the death of Professor A. Magnin, formerly professor of botany and director of the Botanic Garden, University of Besançon; of Professor W. F. Shanks, professor of physiology in the University of Leeds since 1923 and formerly lecturer in physiology in the University of Glasgow, and of Professor V. A. Steklov, professor of mathematics at the University of Leningrad and vice-president of the U. S. S. R. Academy of Sciences.

THE *Journal* of the American Medical Association reports that the first congress of the Czechoslovakian Society for Roentgenology and Radiology was held in Prague, May 22-24, under the presidency of Professor R. Jedlička, of Prague. Radium was first isolated from the uranium ore of Jachymov, Bohemia. The congress held its sessions in four sections. The first section dealt with roentgenologic diagnosis; the second, with the physics and technic of radiology; the third, with biologic problems of radiology and roentgenology, and the fourth, with treatment of pathologic conditions by the means of roentgen rays and radium. The paper by the chief of the department of physics at the Institute of Radiology, Dr. F. Behounek, was read by title, because, at the time of the congress, he

was participating in Amundsen's expedition to the North Pole.

NATURE states that further details of Miss Garrod's discovery of a skull, presumably of Mousterian age, at Gibraltar, tend to confirm the first impressions of its importance. In addition to the frontal bone another large piece of bone was found, but owing to the hardness of the matrix in which it is imbedded it is impossible yet to say whether it is the parietal or the occipital. Decision on this and other points must wait until it has been cleared.

### UNIVERSITY AND EDUCATIONAL NOTES

CHARLES HAYDEN, a New York banker, retiring president of the Alumni Association of the Massachusetts Institute of Technology, has given \$100,000 toward the dormitories to be erected at the institute, planned to accommodate 800 students.

DEAN ARTHUR M. GREEN, Jr., of the engineering school at Princeton University, has announced plans for a proposed half-million-dollar engineering building. The Princeton Engineering Alumni Association is raising an additional \$350,000 to equip the building. The new building will be of stone, three stories high, with a basement for service rooms, and will provide 70,000 square feet of floor space. It will house the mechanical engineering laboratory, the electrical laboratory, the hydraulic laboratory and the machine shop.

DR. WILLIAM BENJAMIN SMITH, professor of physics in the University of Missouri, 1885-88, and professor of mathematics, 1888-93, has given to the university library 325 volumes in the field of mathematics and physics; 300 volumes in philosophy; 900 volumes on theology and religion, and 525 volumes on history, literature and the world war. Dr. Smith's library includes numerous rare books.

LAFAYETTE COLLEGE has appointed Freeman Ward, Ph.D., professor of geology at the University of South Dakota and state geologist of South Dakota, to the chair of geology vacant by the death of the late Professor Peck.

AT Brown University, Dr. Mark H. Ingraham, of the University of Wisconsin, has been appointed assistant professor of mathematics, and Paul N. Kistler, of Lehigh University, assistant professor of mechanical engineering.

DR. DAVID H. BERGEY has been promoted to an assistant professorship of hygiene and bacteriology in the medical school of the University of Pennsylvania. Dr. Morton McCutcheon has been appointed assistant professor of pathology.

THE following promotions will take effect at George Washington University next autumn: Dr. Edwin A. Hill, to be professor of chemistry; Arthur F. Johnson, to be associate professor of mechanical drawing; Norman B. Ames, to be associate professor of electrical engineering, and Paul H. Brattain, to be assistant professor of chemical engineering.

DR. W. E. H. BERWICK, reader in mathematics in the University of Leeds, has been appointed to the chair of mathematics at the University College of North Wales, Bangor.

ARTHUR HUTCHINSON, F.R.S., fellow of Pembroke College, University of Cambridge, has been elected to the professorship of mineralogy, in succession to the late Professor W. J. Lewis.

### DISCUSSION

#### THE STRUCTURE AND FORMATION OF BAST FIBERS IN FLAX

MICROCHEMICAL work upon the history of bast fiber wall development in flax (*Linum usitatissimum*) has led to a somewhat different conception of cell wall formation and to the discovery of some interesting facts concerning cell wall structure. Bast fiber cells are distinguishable in the stem tip about the time that the vascular elements are clearly differentiated. The primary walls consist of cellulose containing pectose in the region of the middle lamella. Subsequent additions to this membrane are not continuous and gradual but by successive deposits of definite cellulose lamellae. The lamellae first appear in a gelatinous and much infolded condition, out of contact with the existing wall. Each lamella is pushed against the already existing cell wall, where its gelatinous consistency permits it to be closely fitted. In this position it loses its gelatinous consistency and becomes a part of the wall itself. The wall of the bast fiber then is formed by periodic deposits of cellulose lamellae. There is no cementing material between the lamellae, and by the use of suitable reagents the layers may be readily separated from each other, even in mature fibers. The zonation visible in the cross-section of the bast fiber results from these periodic deposits. The fine dark lines do not represent actual material, as has been supposed, but are merely boundaries between the successive lamellae.

When swollen with concentrated sulfuric acid and subjected to pressure while in the swollen condition, the lamellae reveal their basic structure. Each lamella is formed of spirally wound fibrillae and the direction of the spiral is reversed in each successive lamella. The fibrillae give parallel extinction under polarized light and have a high birefringence. The fibrillae are therefore crystalline. The bast fibers of