MRS. MCKINLEY has given the medical library of Earl Baldwin McKinley, who lost his life on the Hawaii Clipper last summer, to the Leonard Wood Memorial (American Leprosy Foundation). This gift has been accepted with deep appreciation by the Medical Advisory Board and the Board of Trustees of the foundation and is to be placed in the Culion Library at Culion, Philippine Islands. The collection will constitute the "Earl Baldwin McKinley Memorial Library." The Leonard Wood Memorial plans to keep the library active by subscribing for the various journals which are now included in it.

SCIENTIFIC NOTES AND NEWS

SIR WILLIAM BRAGG, who came to the United States to deliver the Pilgrim Trust Lecture before the National Academy of Sciences, returned to England on *The Washington* on May 17. The lecture is printed in the present issue of SCIENCE.

A FEW days after the death on January 26 of Professor Albert Sauveur, emeritus professor of metallurgy and metallography at Harvard University, the Association des Ingénieurs, Sortis de l'Ecole de Liége, where Dr. Sauveur studied before coming to America, voted to award to him the Trasenster Medal in recognition of his work in the field of metallurgy and metallography. On learning of his death the association decided to confer posthumously on Dr. Sauveur the medal and the accompanying diploma.

THE E. J. Fox Medal of the Institute of British Foundrymen will be awarded to H. A. Schwartz, manager of research of the National Malleable and Steel Castings Company and professorial lecturer in metallurgy at the Case School of Applied Science, Cleveland, "for his contribution to the manufacture of malleable castings." This is the first time the medal has been awarded to any one outside of Great Britain.

IT is reported in *Nature* that the Makdougall-Brisbane prize of the Royal Society of Edinburgh for 1934 to 1938 has been awarded to Professor D. M. S. Watson for his paper published in the *Transactions* of the society, entitled "On *Rhamphodopsis,* a Ptyctodont from the Middle Old Red Sandstone of Scotland," and for his many distinguished contributions to the science of vertebrate paleontology.

DR. A. E. KENNELLY, professor emeritus of electrical engineering of Harvard University and at the Massachusetts Institute of Technology, was elected on April 14 a member of the Royal Academy of Sciences of Upsala, Sweden.

AMONG honorary degrees to be conferred at the commencement exercises in June of the University of Wisconsin is the doctorate of engineering on Roy C. Muir, engineer and executive of the General Electric Company.

DR. G. GREY TURNER, professor of surgery at the University of London and director of the department of surgery at the British Post-Graduate Hospital and Medical School, will receive on June 21 the honorary degree of doctor of laws from the University of Glasgow.

THE University of Aberdeen has conferred the doctorate of laws on Dr. James McIntosh, director of the Bland-Sutton Institute of Pathology, Middlesex Hospital, London, and on Dr. James Gray, professor of zoology at the University of Cambridge.

DR. CARL SUMNER KNOPF, archeologist and dean of the School of Religion at the University of Southern California, has been elected president of the Academy of Sciences of Southern California; Dr. Howard R. Hill first vice-president; Dr. William A. Bryan second vice-president, and Dr. John A. Comstock secretary-treasurer.

DR. WALTER L. OBOLD, associate professor of biochemistry at the Drexel Institute of Technology, Philadelphia, has been elected chairman of the Pennsylvania Section of the American Institute of Chemists. Other officers elected for the coming year are Dr. Addison C. Angus, of the Philadelphia Clinical Laboratories, *vice-president,* and Dr. Harry C. Winter, of the Biochemical Research Foundation of the Franklin Institute, *secretary.*

DR. WARREN P. TUFTS, head of the division of pomology of the College of Agriculture of the University of California at Davis, has been made chairman of the newly organized Western Section of the American Society for Horticultural Science.

NATIONAL officers to serve during the triennium 1939–41 were recently elected by Phi Lambda Upsilon as follows: *President,* Dr. W. M. Sandstrom, associate professor of agricultural biochemistry at the University of Minnesota; *Vice-president,* Dr. W. T. Read, dean of the School of Chemistry at Rutgers University; *Secretary-treasurer,* Dr. T. F. Buehrer, professor of agricultural chemistry at the University of Arizona; *Editor of The Register,* Dr. L. F. Audrieth, assistant professor of inorganic chemistry at the University of Illinois.

DR. WILLIAM H. TALIAFERRO, dean of the Division of Biological Sciences and professor of parasitology at the University of Chicago, has been appointed to the Eliakim H. Moore distinguished service professorship.

DR. PAUL LESLIE HOOVER, of Rutgers University, has been appointed professor of electrical engineering and head of the department at the Case School of Applied Science, Cleveland. He will assume active work on July 1, when Professor Henry B. Dates, who has been a member of the faculty for thirty-four years, will retire from active service with the title of professor emeritus.

DR. CHESTER H. FORSYTH has been promoted to a full professorship of mathematics at Dartmouth College.

PROFESSOR C. P. OLIVER, of the department of zoology of the University of Minnesota, and Professor L. M. Winters, of the division of animal husbandry at University Farm, will represent the university at the seventh International Congress of Genetics to be held in Edinburgh next August.

DR. H. H. LOVE, professor of plant breeding at Cornell University, is spending the months of May and June at the Agricultural Experiment Station of the University of Puerto Rico. He has been invited by the director of the station, Dr. J. A. B. Nolla, to advise with the staff regarding research projects. Dr. Love has done similar work in Hawaii, China and several centers in the United States.

DONALD B. MACMILLAN will sail on June 24 on the schooner *Bowdoin* from Boothbay Harbor, Me., on a scientific expedition to Labrador, North Greenland and Baffin Land. Nine college students, who will work in ornithology, botany, geology and glaciology, will accompany the expedition. The *Bowdoin* will carry supplies to the MacMillan-Moravian School of forty Eskimo children at Nain, Labrador.

DR. MARGARET MEAD, assistant curator of ethnology of the American Museum of Natural History, has returned to the United States after spending three years of ethnological research in Bali and New Guinea.

RECENT visitors to the School of Tropical Medicine at Puerto Rico were Dr. James W. Jobling, of the department of pathology of the College of Physicians and Surgeons, who represented Columbia University at the annual meeting of the board on April 26, and R. G. Stone, of the Blue Hill Meteorological Observatory of Harvard University, who has been preparing for publication data for the book on the climate of Puerto Rico, left in manuscript by the late Dr. Oliver L. Fassig.

PROFESSOR PASTEUR VALLERY-RADOT, of the Paris Faculty of Medicine, has left for French Equatorial Africa and the Cameroons to study the general organization of native medical services.

SIR WILLIAM HENRY BRAGG, president of the Royal Society, London, was the guest speaker on May 15 at a luncheon given at the tenth anniversary meeting of the Acoustical Society of America, which was held in New York City. He spoke on the history of acoustics. Other speakers at the luncheon were Dr. Harvey Fletcher, of the Bell Telephone Laboratories, Professor F. A. Saunders, of Harvard University, and W. Waterfall, of the Celotex Company.

DR. AUGUST KROGH, professor of physiology at the University of Copenhagen, who has been visiting the United States, gave an address on "The Teaching of Physiology" before the American Academy of Arts and Sciences on May 10. He left for Europe on May 13.

FORMER PRESIDENT HERBERT HOOVER spoke at the meeting of the alumni of Northwestern University on May 1 on "The Future of Technology." Among other speakers were Dr. Glenn Frank, an alumnus, formerly president of the University of Wisconsin, and Dr. Carl E. Seashore, research professor of psychology at the State University of Iowa.

DR. LEWIS HILL WEED, professor of anatomy and director of the School of Medicine of the Johns Hopkins University, gave on May 17 the first lecture under the Robert J. Terry Lectureship Foundation at the Washington University School of Medicine, St. Louis. His subject was "Anatomy in the Medical Curriculum."

DR. HUGH S. TAYLOR, chairman of the department of chemistry of Princeton University, addressed on April 26 the sixteenth annual meeting of the Virginia Chapter of Sigma Xi. He spoke on the "Significance of Speed in Chemistry and Other Sciences." At this meeting seventeen new members recently elected were initiated.

DR. ROY WALDO MINER, curator of living invertebrates at the American Museum of Natural History, New York City, delivered on May 6 the annual lecture of the University of Cincinnati Chapter of Sigma Xi. The lecture was entitled "On the Bottom of a South Sea Pearl Lagoon."

THE two hundred and twenty-eighth regular meeting of the American Physical Society will be held in Princeton, New Jersey, on June 23 and 24. The preliminary arrangements for the meeting include a symposium of invited papers on uranium splitting. The two hundred and twenty-ninth meeting of the society will be held at Stanford University, California, on June 28, 29 and 30. There will be a joint meeting with the Astronomical Society of the Pacific on Thursday afternoon, which will consist of a symposium on "Continuous Absorption in Stellar Atmospheres." On Friday afternoon there will be a symposium and demonstration related to high-frequency electromagnetic waves. On Saturday afternoon a symposium on the use of x-rays in structure determination will be

held. Contributed papers will be presented in the mornings.

THE seventeenth annual meeting of the American Institute of Chemists was held at the World's Fair, New York, on May 13, under the presidency of Robert J. Moore. A tour of the grounds was conducted by Dr. Gerald Wendt, director of science and education of the World's Fair.

THE third international Congress for Microbiologists will be held in New York from September 2 to 9. Officers of the congress are: *President,* Dr. T. H. Rivers, member of the Rockefeller Institute for Medical Research and director of the Rockefeller Hospital; *General secretary,* Dr. M. H. Dawson, associate professor of medicine at the College of Physicians and Surgeons, Columbia University; *General treasurer,* Dr. Kenneth Goodner, associate of the Rockefeller Institute for Medical Research.

GROUND was broken on May 11 for a high-voltage laboratory at the National Bureau of Standards, which will carry on studies pertaining to industry and phases of medical science. These will include studies of x-ray apparatus, measurement of electrical energy and the testing of electrical installations.

AT the annual meeting of the Special Board of Trustees of the School of Tropical Medicine at San Juan, Puerto Rico, Dr. George W. Bachman, director, announced gifts to the school in the amount of $497,260, of which sum $425,000 were granted by the Puerto Rico Reconstruction Administration for the construction of a new library and a tropical physiology building, and $13,500 were appropriated by the Carnegie Corporation of New York for library development.

THE Minnesota Academy of Science held its seventh annual meeting at Macalester College in St. Paul on April 22. A general program was held in the morning, and papers were presented in the Biological, Physical and Science Education Sections in the afternoon. The Junior Academy of Science presented a full program and a series of exhibits and demonstrations. Grants for research from the American Association for the Advancement of Science were made to Dr. Ralph W. Macy, of the College of St. Thomas, and to John Marr, of the University of Minnesota. In the evening, a public lecture by Dr. L. H. Powell, of the St. Paul Institute, introduced the group to the new science museum. Officers for 1939–40 include: *President,* O. T. Walter, Macalester College; *Vice-president,* A. M. Elliott, Bemidji Teachers College; *Secretary-Treasurer,* H. K. Wilson, University of Minnesota; *Councilors,* E. M. Freeman, University of Minnesota; E. T. Tufte, St. Olaf College; H. E. Essex, Mayo Clinic, and L. M. Gould, Carleton College. The 1940 meeting will be held on April 20 at the University of Minnesota.

THE annual meeting of the New England Section of the American Society of Plant Physiologists opened at New Haven on May 12. Dr. H. B. Vickery, chief biochemist at the Agricultural Experiment Station, is chairman of the New England Section. The program included technical sessions on Friday afternoon and Saturday morning, and a banquet at the Hotel Garde on Friday night. A special subsection interested in blueberry culture met on Friday afternoon and a forum on teaching methods in plant physiology, arranged by Dr. C. J. Lyon, of Dartmouth College, was held on Saturday morning. After the dinner at the Hotel Garde, Professor G. R. Cowgill, of Yale University, described the experiences of a biochemist in Cuba and Panama.

THE formal organization of a Soil Science Society of Florida took place at a meeting held in conjunction with the Florida State Horticultural Society at the Hollywood Beach Hotel, on April 18. Officers of the society elected are: *President,* Dr. R. V. Allison, head of the department of chemistry and soils, Agricultural Experiment Station, University of Florida, Gainesville; *Vice-president,* Dr. Michael Peech, soils chemist, Citrus Experiment Station, Lake Alfred; *Secretary-treasurer,* Richard A. Carrigan, assistant chemist, department of chemistry and soils, Agricultural Experiment Station, University of Florida. These, together with Henry C. Henricksen, Eustis, constitute the executive committee.

THE Arnold Arboretum Expedition of 1939 to the Mackenzie basin planned to leave Boston about May 20. The objective for this season will be the South Nahanni River region. The South Nahanni is a tributary of the Liard River and drains the southern portion of the Mackenzie Mountain system. The Mackenzie Mountains are almost unknown botanically, and constitute one of the largest blank spots on the botanical map of Canada. The purpose of the expedition will be to make a representative collection of plants, and to study the local distribution of species and plant communities. It is expected that the results will contribute to an understanding of the major problems of plant distribution in Arctic and Subarctic America. The field party will be in charge of Dr. Hugh M. Raup, of Harvard University, who will collect mainly flowering plants and ferns. His wife, Lucy C. Raup, will collect lichens and mosses. The present journey is the eighth of a series conducted by Dr. and Mrs. Raup in the Mackenzie basin since 1926. It is supported by the Arnold Arboretum and the National Museum of Canada, and by grants from the Milton Fund of Harvard, the American Academy of Arts and Sciences, and the National Academy of Sciences. The party expects to return to Boston during the latter half of September.

THE National Advisory Cancer Council has recommended a grant of $23,000 to the University of California for the clinical investigation of cancer therapy with neutron rays, under the direction of Dr. E. O. Lawrence. It has also recommended a grant of $7,500 to the American College of Surgeons toward continuation of a study of hospitals and clinics for the determination of further needs in order to provide adequate clinical cancer service.

THE will of Dr. William Hallock Park, bacteriologist, formerly director of the Bureau of Laboratories of the New York City Department of Health, set aside his residuary estate to establish and maintain a fellowship fund for research in medicine, clinical work and bacteriological and filterable virus diseases. The fund is to continue in perpetuity and is to be known as the "William Hallock Park Research Fund." Dr. Park died on April 6. The trustees are authorized to accept gifts from other donors to the fund. The committee consists of the dean of the New York University College of Medicine, the dean of the College of Physicians and Surgeons of Columbia University, the dean of the Cornell University Medical College, Dr. Camille K. Cayley and Bela Schick. Dr. Cayley receives a bequest of $20,000 with discretionary power to use part of it for research work in medicine.

G. MATHEWS, an Australian ornithologist living in England, has presented to the Commonwealth for the National Library in Canberra what is believed to be the most valuable collection of books on Australian birds in the world. The library was shipped to Australia in April, and Mr. Matthews will visit Australia for two months in order to assist in setting up the books and arranging the catalogue.

DISCUSSION

THE LUMINESCENCE OF ADHESIVE TAPE

INTEREST in bioluminescence has led me to investigate a number of luminescent phenomena which sometimes have been vaguely referred to as triboluminescence and whose explanation does not seem to be widely understood. Most experimenters have observed the transient greenish luminescence which occurs at the point where electricians or surgeons' or "Scotch" tape is stripped from a roll. With some samples this luminescence may be so bright that it is visible with only partially dark-adapted eyes. The phenomenon can be repeated if the tape is rewound and then restripped and also appears when the sticky sides of the tape are pressed together and then separated. It occurs under cold or hot water since a film of air prevents the immediate wetting of the surface. Rubber cement (grippit) whether holding together two pieces of metal, glass, paper, Cellophane or two different materials gives luminescence when the surfaces are separated.

What is not so well known is that many substances when closely adhering to each other will also luminesce when pulled apart. Films when stripped from glass or metal will give a flash of luminescence, for example, collodion dissolved in ether-alcohol mixtures poured on a glass plate and allowed to dry; also ambroid, or rubber latex in aqueous solution such as is used in making toy rubber balloons. However, dextrin as an adhesive separated in the moist stage does not luminesce.

Collodion films are the most striking luminescent bodies. A film removed from glass can be pressed on the glass and will luminesce when removed a second time. Stroking the collodion with the fingers will also result in luminescence but not if the fingers have been moistened with water. Cellophane does not luminesce when stroked with dry fingers.

It is an old observation that mica sheets give a flash of light when split or when crumpled together. Rubber bands will also flash when snapped, although I have only observed the light in one or two instances as the stretched band returned to the short form.

It is apparent that these phenomena have a decidedly electrical flavor. A sheet of collodion stripped from glass or ebonite has a high negative charge, leaving the glass and ebonite positive. It is attracted to the glass with considerable force and sticks to the hand and other objects. The sign of the charge is easily determined by pith ball experiments.

The explanation of such luminescences appears to be this: whenever two surfaces are separated from each other the capacity diminishes and the voltage rises until a discharge takes place, exciting the surrounding gas to luminesce. It is not possible to prove that mica sheets or tire tape, surgeons' tape or Scotch tape are oppositely charged as a whole when pulled apart, but there are no doubt local positive and negative regions developed, the discharge between them giving rise to luminescence.

That a discharge does actually take place can be readily shown by stripping surgeons' tape or Scotch tape in an atmosphere of 2 to 4 cm Hg pressure of neon gas. Then the luminescence is reddish instead of yellowish. Red luminescence also occurs when two strips of mica are pulled apart or when collodion or ambroid or rubber cement is stripped from glass in a low-pressure neon atmosphere. When black tire tape is stripped in neon, the reddish luminescence is not marked. Possibly we have in this case the quenching