

The Forest Service is undertaking the project of mapping about 10,000 square miles by aerial photographic methods. Contracts have been awarded for the photographing of about 7,500 square miles of this area. It is difficult to obtain engineers for this undertaking who are familiar with the interpretation of aerial photographs by the use of stereoscopes and who have been instructed in the fundamental principles involved in the map compilation. The training in this work which has been offered at Syracuse University for the past few years by virtue of a grant for initial equipment from the Guggenheim Fund specifically prepares engineers for this modern method of surveying and has made it possible for this large group of civil engineering graduates to enter this field.

W. H. Baker, of Lafayette, N. Y., and R. T. Hadden, of Robinson, Illinois, both of the class of 1931, and M. K. Linck and George Schmidt, of Syracuse, of the class of 1932, have been chosen to receive appointments as photogrammetrists. This position entails a considerable amount of responsibility, for these men will be placed in direct charge of offices where the technical work of map compilation will be carried on.

THE AWARD OF STERLING FELLOWSHIPS AT YALE UNIVERSITY

THE Yale Graduate School has announced the award of 168 fellowships and scholarships for the academic year 1934-35. The recipients have studied in the graduate and undergraduate schools of 92 American

colleges and universities; the Universities of Munich, Hamburg, Freiburg, South Africa, New Zealand, London; McGill University, the College of Yale-in-China and Cambridge University. They are residents of thirty-four states and Canada, China, England, Germany, Korea, New Zealand and South Africa.

The most important awards are the Sterling fellowships which are given annually to scholars who already hold the degree of doctor of philosophy or its equivalent. Twenty Sterling fellows have been appointed for next year.

These include the following in the sciences: Tze Tuan Chen, of Foochow, China, will extend his present study of the mechanism of heredity among some unicellular organisms; and Dr. Ernest C. Pollard, of Lincolnshire, England, will continue his investigation of the light atomic nuclei by observation of their disintegration under alpha-particle bombardment. Dr. Charles D. Aring, of Cincinnati, Ohio, will work on problems of localization in the cerebral cortex.

The Bishop Museum fellowships, established under an agreement between the Bernice P. Bishop Museum in Hawaii and Yale University to promote scientific investigations within the Pacific Ocean region, have been awarded to Dr. Horace B. Baker, of the Department of Zoology, of the University of Pennsylvania; and for a second year to Dr. Ernest Beaglehole, an anthropologist from Wellington, New Zealand.

SCIENTIFIC NOTES AND NEWS

THE Boston Society of Natural History has awarded the Walker Grand Honorary Prize of \$500 to Professor William Berryman Scott, of Princeton University, for "his half century of conspicuous effort to advance the science of vertebrate paleontology in North America." Professor Scott is professor emeritus at Princeton University, where he held the Blair professorship of geology and paleontology from 1884 to 1932. The Walker Grand Prize is awarded once in five years by the society from a trust fund donated by Dr. William J. Walker in 1864 "for such scientific investigation or discovery in natural history as the society may think deserving thereof, providing such investigation or discovery shall first have been made known and published in the United States."

FOR his contributions to the study of music, Dr. Carl E. Seashore, professor of psychology and dean of the graduate college at the University of Iowa, was honored for the seventh time on May 22 with an annual commemorative concert. Dr. Seashore plans to retire as dean of the Graduate College in 1935. He asked to be relieved of administrative work this spring

in order to devote more time to research, but was persuaded to continue the deanship for another year. Dr. Seashore, who has been connected with the university since 1897, has been head of the department of psychology since 1902 and has served as dean for twenty-six years.

A PORTRAIT of Dr. Harold Dickinson Senior, professor of anatomy at New York University and Bellevue Medical College, was recently presented to the college by the faculty, alumni and student body. The portrait was painted by Charles R. Boynton in recognition of Dr. Senior's twenty-five years of service in the college. Dr. Benjamin Spector, professor of anatomy at Tufts Medical College, who made the presentation, reviewed Dr. Senior's work and spoke of the affection and esteem in which he was held by his students and associates.

DR. LEON J. MENVILLE, assistant professor of medicine and roentgenology at the Tulane University of Louisiana School of Medicine, New Orleans, was presented with the medal of the Louisiana Academy of Sciences at its recent annual meeting, for his paper

on "The Possible Application of a Visualized Lymphatic System to the Cancer Problem."

THE University of Cambridge on May 1 conferred the doctorate of science on Dr. Alfred Fowler, Yarrow research professor of the Royal Society and professor of astrophysics at the University of London.

THE University of Madrid on April 7 conferred honorary doctorates on Professor H. E. Armstrong, emeritus professor of chemistry at the City and Guilds College, South Kensington, London, and on Dr. Robert Robinson, Waynflete professor of chemistry at the University of Oxford.

THE Garton Prize of £500 and Gold Medal of the British Empire Cancer Campaign has been awarded to Dr. H. A. Colwell, of Middlesex Hospital, London, for an essay on "The Biological Effects and Mode of Action of Radiations upon Malignant and other Cells." A second award of £100 has been made to Dr. F. G. Spear in association with Dr. R. G. Canti, Mr. L. G. Grimmett, Dr. B. Holmes, Miss S. F. Cox and Dr. W. H. Love.

THE Jacksonian Prize of the Royal College of Surgeons, London, for 1933, has been awarded to Edgar Samuel John King, of the University of Melbourne and Melbourne Hospital, for his essay on "The Pathology, Diagnosis, and Treatment of Localized Rarefying Changes in Bones." A certificate of honorable mention for an essay on the same subject was awarded to Mr. H. Jackson Burrows, of St. Bartholomew's Hospital, London. The John Hunter Medal, with the Triennial Prize for 1931-33, was awarded to Dr. Dorothy S. Russell, for her work on the morbid histology of the kidney and brain.

THE Sir Charles Hastings Clinical Prize of £50 for the promotion of observation, research and record in general practise has been awarded by the British Medical Association for 1934 to Dr. Helen Lukis, of New Malden, for her clinical study "The Problems of Anesthesia in General Practise." The Katherine Bishop Harman Prize of £75, given every two years for the encouragement of study and research in avoiding the risks of child bearing, has been given to Professor J. M. Munro Kerr, of Glasgow.

At the recent annual meeting in New York of the American Society of Mammalogists, the following were elected officers for the ensuing year: Vernon Bailey, *president*; H. E. Anthony and T. S. Palmer, *vice-presidents*; Robert K. Enders, *recording secretary*; Robert T. Hatt, *corresponding secretary*; Viola S. Snyder, *treasurer*; Edward A. Preble, *chairman, editorial board*. Directors elected for the class of 1934-1936 were: Charles C. Adams, Rudolph M. Anderson, Lee R. Dice, W. K. Gregory, H. H. T. Jackson.

THE eleventh initiation meeting of the Virginia Chapter of Sigma Xi was held on April 25. The meeting was addressed by Dr. George H. Parker, director of the Zoological Laboratories of Harvard University, who spoke on the "Transmission of Neurohumors." The tenth annual award of the President and Visitors Research Prize of one hundred dollars was awarded to Dr. Carl C. Speidel, of the School of Anatomy, Department of Medicine, for a paper entitled "Studies of Living Nerves." The Andrew Fleming Prize of fifty dollars for the best paper in biology by a graduate student of the School of Biology was awarded to Ladley Husted. The John Horsley Memorial Prize in Medicine was awarded to Dr. Oscar Swineford, Jr., instructor in medicine in the University of Virginia, for a paper bearing the title "The Specific Control of Experimental Serum Reactions."

THE following officers of the Royal Institution, London, were reelected at the annual meeting held on May 1: *President*, Lord Eustace Percy, M.P.; *Treasurer*, Sir Robert Robertson; *Honorary Secretary*, Major Charles E. S. Phillips. The fifteen managers elected included Lord Melchett, Sir James Crichton-Browne, Sir Herbert Jackson, Professor C. S. Myers, Professor F. G. Donnan, Professor G. E. Gask, Dr. C. V. Drysdale, Dr. G. W. C. Kaye and Dr. C. H. Merz.

DR. ALFRED SHERWOOD ROMER, professor of vertebrate paleontology at the University of Chicago, has been elected professor of biology at Harvard University.

DR. HAROLD C. UREY, associate professor of chemistry at Columbia University, has been promoted to a professorship.

DR. ARTHUR C. BACHMEYER, dean of the University of Cincinnati College of Medicine for the past nine years, recently submitted his resignation. Dr. Bachmeyer will continue as superintendent of the Cincinnati General Hospital and as professor of hospital administration.

DR. GEORGE F. ZOOK, U. S. Commissioner of Education, has resigned to accept the directorship of the American Council on Education. His resignation will become effective on July 1. He will be succeeded by John Ward Studebaker, who has obtained leave of absence for one year from the superintendency of schools at Des Moines, Iowa. Dr. Zook, who before his appointment as Commissioner of Education was president of the University of Akron, recently declined an invitation to become president of the State University of Iowa.

CHARLES HENRY KUNSMAN, acting chief of the Fertilizer Laboratory of the Bureau of Chemistry and Soils, Washington, D. C., has been appointed chief of the laboratory.

C. P. CLAUSEN, who has conducted several insect exploration trips to the Far East, will be in charge of a new division of foreign parasite introduction which has been established in the Bureau of Entomology of the U. S. Department of Agriculture, to direct the importation of parasites and other natural enemies of crop insect pests.

Nature reports that Dr. R. Madwar has been appointed director of Helwan Observatory, near Cairo, in succession to P. A. Curry, who is the deputy director general of the physical department of the Ministry of Public Works, Egypt.

DR. J. HARTMANN, since 1922 director of the Observatory of the National University at La Plata, Argentina, has asked to be relieved from this post on account of failing health, and Ing. Félix Aguilar has been elected to succeed him. Ing. Aguilar was in charge of the observatory from 1915 to 1920 and since 1922 has been chief of the division of geodesy of the Instituto Geográfico Militar, in Buenos Aires. Dr. Hartmann will return to Germany.

FRANK W. LOVEJOY, who joined the Eastman Kodak Company as a chemist thirty-seven years ago, has been elected president. Mr. Lovejoy has been vice-president of the company since 1919 and general manager since 1925. He succeeds William G. Shuler, who has become chairman of the board.

DR. MARSTON T. BOGERT, professor of organic chemistry at Columbia University, has been appointed chairman of a committee to consider a federation of American chemical societies.

DR. Z. P. METCALF, professor of zoology at the State College of Agriculture and Engineering of the University of North Carolina and entomologist of the Experiment Station, Raleigh, has been appointed a member of the committee to survey the research work on cotton insects of the U. S. Bureau of Entomology.

DR. WILLIAM H. F. ADDISON, professor of histology and embryology at the University of Pennsylvania, who has been studying in Madrid in the laboratories of Dr. P. del Rio Hortega, will return in June.

DR. MARGARET C. FERGUSON and Dr. Alice M. Ottley left Wellesley in February for a seven months' trip through southern Arizona, Texas, New Mexico and Mexico, where they are collecting specimens of the flora for the herbarium at Wellesley College.

THE annual Alpha Omega Alpha dinner and lecture will be held at the time of the annual meeting of the American Medical Association in Cleveland at the Hotel Statler on the evening of June 14. Dr. Lewellys F. Barker will give the principal address. He will speak on the life of the late Dr. William H. Welch.

"THE Rift Valleys of Central Africa" was the subject of a lecture delivered on May 24 at the University of Minnesota by Dr. Bailey Willis, professor of geology at Stanford University. He spoke under the auspices of the department of geology.

DR. OTTO STRUVE, director of the Yerkes Observatory and of the McDonald Observatory, recently gave a lecture at the University of Texas entitled "Some of the Work That is Being Done with Large Telescopes."

DR. ARNO B. LUCKHARDT, of the University of Chicago, president of the American Physiological Society, delivered two lectures recently before the Medical School of the University of Minnesota. His subjects were: "Academic, or Unsuccessful, Research" and "An Adventure in Research—Ethylene Anesthesia." The lectures were sponsored by the Graduate School and the Minnesota Chapter of Sigma Xi.

DAVID DIETZ, science editor of the Scripps-Howard newspapers, was guest of honor at a tea given by the Buffalo Museum of Science on May 3. On May 4, Mr. Dietz delivered an illustrated lecture on astronomy entitled "A Trip through the Universe."

THE third Spiers' Memorial Lecture of the Faraday Society was delivered at the Royal Institution, London, on May 16 by Sir William Bragg, who spoke on "Molecule Planning."

THE 193rd regular meeting of the American Physical Society will be held in Ann Arbor, Michigan, on Friday and Saturday, June 29–30, 1934. The society will be the guest of the University of Michigan. Tentative plans for the program consist of a special address by Professor George Gamow, of the Polytechnical Institute, Leningrad, Russia; a symposium on hyperfine structure; one half day for the reading of ten-minute contributed papers; an excursion to the Ford plant and to Ford's museum at Dearborn, and a picnic supper at a near-by lake. It is hoped that all visitors may be entertained in one of the university dormitories. Other meetings for the current season are as follows: June 18–23, 1934—Berkeley, California, joint meeting with A.A.A.S.; November 30–December 1, 1934—St. Louis, Missouri; December, 1934—Pacific coast, time and place to be announced later; annual meeting, December 27–29, 1934—Pittsburgh, Pennsylvania.

THE American Society of Mammalogists held its sixteenth annual meeting at The American Museum of Natural History on May 8 to 12. A program of fifty papers was presented. At the business meeting a resolution was passed protesting the passage of House Resolution No. 8639, a bill removing all protection from the sea-lions of Alaska, a matter which the society deems without economic advisability, and one threatening the existence of these animals.

At the annual meeting recently held in New York City the secretary of the American Society of Biological Chemists was instructed to give publicity to the following motion which was passed: "The American Society of Biological Chemists favors the passage of a more stringent food and drugs act, so designed as to afford ultimate protection for the consumer."

It is reported from the University of Michigan that the university has received as a gift from the Pennsylvania Salt Manufacturing Company, of Wyandotte, Michigan, 2,500 gallons of water which will after treatment produce at least two quarts of "heavy water."

By the will of the late Mrs. Helen Hartley Jenkins \$50,000 is added to the principal of the Marcellus Hartley chair of medicine, which Mrs. Jenkins founded several years ago in the medical department of New York University. Among other public bequests was one providing \$2,000 for the training of a nurse for three years in the Department of Nursing and Health at Columbia University and Morristown Memorial Hospital.

THE sixth International Congress on Industrial Accidents and Diseases offers a prize of 1,000 Swiss francs as an award to the author of the best (unpublished) original work on the subject, "The Importance of Previous Physical Condition in Estimating the

Sequelae of an Industrial Accident." Physicians in all countries are permitted to take part. Manuscripts must be in hand by December 31, 1934. The award will be made at the time of the seventh congress to be held in Brussels, mid-July, 1935. Those interested should communicate with Dr. Fred H. Albee, 57 West 57th Street, New York City, or Dr. Emery R. Hayhurst, Ohio Health Department, Columbus.

BRITISH INDUSTRIES HOUSE, near Marble Arch, is being equipped as a permanent exhibition center at which wholesale buyers may find, conveniently grouped, many different kinds of British and Empire merchandise. The extensive third floor and the basement have been allotted to a medical section, containing showrooms, showcases and manufacturers' sample and pattern rooms for the display of supplies and appliances used by hospitals, doctors and chemists. The *London Times* reports that the medical center will be officially opened on July 18, to enable delegates to the annual conference of the British Medical Association to be present before assembling at Bournemouth, where their conference will begin the next day. Delegates to the British Hospitals' Association conference in June will similarly be invited to visit the center. It will be run with the guidance of an advisory committee, of which the chairman will be Dr. Alfred Cox, who till 1932 was medical secretary of the British Medical Association.

DISCUSSION

SPIRALITY IN THE GROWTH OF WOOL FIBERS

RECENT issues of *SCIENCE* contain various references to the spiral habit of growth in organisms.¹ Among the many examples given, in both plants and animals, no mention is made of the hairs of mammals, though in these spirality in one form or another is of general occurrence. Special attention has recently been directed to its prevalence in the wool fibers of sheep, where it is of some industrial significance. Its expression, however, tends to be obscured by periodic reversals in the direction of rotation, resulting from an axial twisting of the fibers superimposed on the fundamental spirality. Moreover, wool fibers are rarely disposed singly, but are aggregated into wavy tufts or staples to the contours of which the constituent fibers closely conform.

The simplest expression of spirality in wool is to be found in the well-known curly tufts which for the most part constitute the coat of the new-born lamb. Some of these are represented in Fig. 1 (a-e), where

the close spiral whorls above indicate the prenatal or prototrichial growth, and the more open turns below the early postnatal or definitive growth, the former persisting on the fleece as apical tips to the latter. The first staple, Fig. 1a, is from a five months' South Devon lamb. With the addition of new fibers the simple spiral increases in diameter and pitch from above downwards and passes directly into the definitive part of the staple, which is more openly spiral. The direction of rotation, positive or negative, right- or left-handed, clockwise or counter-clockwise, varies in the different staples, the number one way or the other being about equal, showing it to be a matter of indifference.

Fig. 1b represents a more usual form of staple from the same fleece, where the direction of rotation of the spiral undergoes a reversal about midway. This is shown to be due to the introduction of an axial twist of 90°, which changes the direction of the fibers, so that for a short distance they come to lie nearly parallel with the long axis of the tuft, and at the same time the twist brings into view the other, the minor, axial aspect of the elliptical fibers. It is then fol-

¹ *SCIENCE*, May 1, 1931; January 13, 1933; March 7, 1933; June 16, 1933; July 21, 1933; October 20, 1933; November 17, 1933.