

tiff, Ware Cattell, the sum of Seven Thousand Five Hundred Dollars (\$7,500.00).

2. That the parties hereto consent that the Court enter judgment in the above-entitled action, in the sum of Seven Thousand Five Hundred Dollars (\$7,500.00), in favor of the plaintiff, Ware Cattell, against the Association, for the aforesaid sum of Seven Thousand Five Hundred Dollars (\$7,500.00), without interest and without costs.

(S) DAVID A. FEGAN, Attorney for the plaintiff, Ware Cattell.

(S) WARREN E. MAGEE, Attorney for the defendant, American Association for the Advancement of Science.

The foregoing Stipulation of Settlement in the above-entitled action, Civil Action No. 21,508, is hereby approved, and the Clerk of this Court shall, and he is hereby directed, to enter judgment pursuant to the terms of this Stipulation of Settlement, in favor of the plaintiff, Ware Cattell, and against the defendant, American Association for the Advancement of Science, for the aforesaid sum of Seven Thousand Five Hundred Dollars (\$7,500.00), without interest and without costs.

(S) T. ALAN GOLDSBOROUGH
JUSTICE

Dated this 15th day of January, 1945.

SCIENTIFIC NOTES AND NEWS

THE degree of doctor of laws was conferred at the commencement exercises of the School of Medicine of Temple University, Philadelphia, on Dr. Charles F. Kettering, of the research laboratories of the General Motors Corporation, president of the American Association for the Advancement of Science.

THE honorary doctorate of science was conferred on June 23 at the commencement exercises of Princeton University on Sir Alexander Fleming, of the University of London, the discoverer of penicillin. A dinner, arrangements for which were made by Charles Pfizer & Co., Merck & Co. and E. R. Squibb & Sons, three of the original manufacturers of the drug, was given in his honor on June 25 at the Waldorf-Astoria, at which he made the principal address. The speakers included Dr. Vannevar Bush, director of the Office of Scientific Research and Development, and Dr. Alfred N. Richards, professor of pharmacology at the University of Pennsylvania, chairman of its medical research committee.

THE doctorate of science of Wesleyan University was conferred on June 24 on Dr. Leonard A. Maynard, director of the School of Nutrition and of the U. S. Nutrition Laboratory at the New York State College of Agriculture at Cornell University.

BATES COLLEGE conferred the degree of doctor of science at its seventy-ninth commencement on Thomas Spooner, director of research of the Westinghouse Electric and Manufacturing Company at East Pittsburgh.

THE honorary degree of doctor of laws was conferred on the occasion of the centennial commencement exercises of Baylor University on Brigadier General W. Lee Hart, U. S. Army, medical director of the Eighth Service Command.

THE doctorate of science was conferred on Dr. John L. Atlee, Jr., surgeon-in-chief of St. Joseph's

Hospital, Lancaster, Pa., at the commencement exercises on June 24 of Franklin and Marshall College.

THE following have been cited by the University of Chicago as Distinguished Alumni: Dr. Charles H. Behre, Jr., professor of geology, Columbia University; Dr. Eloise B. Cram, senior zoologist, U. S. Public Health Service, Wash.; Dr. Melville J. Herskovitz, professor of anthropology, Northwestern University, and Walther Loehwing, professor of botany, the State University of Iowa.

THE James Alfred Ewing Medal for 1944 has been awarded to B. N. Wallis, F.R.S., chief of aeronautical research and development of Vickers-Armstrongs, Limited, by the Council of the British Institution of Civil Engineers, on the joint recommendation of the presidents of the Royal Society and the Institution of Civil Engineers. He invented and designed the special type bombs used for the destruction of the Moehne and Eder dams in Germany in 1943, and designed the Tallboy and ten-ton bombs used by the R.A.F. He was responsible for the design and construction of the rigid airship R 100.

THE Chapter of the Society of Sigma Xi at the University of Southern California has elected the following officers for 1945-46: Howard de Forest, *President*; John Dodge, *Vice-president*; Robert I. Rutherford, *Treasurer*, and Winslow Whitney Smith, *Secretary*.

THE Hawaiian Academy of Science held the final sessions of its twentieth annual meeting on May 3, 4 and 5, at the University of Hawaii, Honolulu. The first two evenings were devoted to papers in the fields of chemistry, animal parasitology, ecology of fish, growth of pineapples and organization of agricultural research. Also included were two papers in social science dealing with war-time public opinion and morale. The last evening was given over to a busi-

ness meeting; to the address of the retiring president, J. L. Collins, on "Inter-Specific Hybrids in *Ananas comosus* (Pineapple)," and to a social gathering of members and their friends. Officers elected were: *President*, Peter H. Buck; *Vice-president*, Thomas A. Jaggar, Jr.; *Secretary-Treasurer*, Chester K. Wentworth; *Councilors*, Colin G. Lennox, one year; Christopher J. Hamre, two years; J. L. Collins, *ex officio*.

THE thirtieth annual meeting of the South Dakota Academy of Science was held on May 4 and 5 at Mitchell, S. D. Officers elected for the year 1945-46 are as follows: *President*, Raymond J. Greb, Huron College; *First Vice-president*, F. L. Bennett, Black Hills Teachers College; *Second Vice-president*, Ernest Griswold, University of South Dakota; *Secretary-Treasurer*, A. L. Haines, Vermillion, S. D. The address, given by Dr. C. H. Werkman, of the department of bacteriology of Iowa State College, was entitled "Metabolic Marvels of the Living Cell." The next annual meeting will be held at Augustana College, Sioux Falls, S. D.

THE annual initiation and dinner of the Mayo Foundation Chapter of the Sigma Xi held on June 7 marked the twenty-fifth anniversary of the founding of the chapter. The meeting was attended by ninety-four members. Dr. A. H. Sanford, first president of the chapter, addressed the initiates and members and outlined its founding and early history. Dr. H. E. Essex, president for the 1944-45 season, gave the annual presidential address. His topic was "Serigraphy." Officers elected for the 1945-46 season are: *President*, Dr. A. R. Barnes; *Vice-president*, Dr. H. W. Woltman, and *Secretary-Treasurer*, Dr. C. F. Code.

SIR FRANK SMITH has been elected president of the British Institute of Physics; Professor A. M. Tyndall, vice-president; Major C. E. S. Phillips, honorary treasurer, and Professor J. A. Crowther, honorary secretary.

PROFESSOR DOUGLAS HAY, managing director of the Barrow Barnsley Main Collieries, Ltd., honorary professor of mining, and a member of the council of the University of Sheffield, has been elected president of the British Institution of Mining Engineers.

SIR JOHN ORR, professor of agriculture in the University of Aberdeen, has been elected a member of Parliament for the Scottish universities.

AMONG members of the faculty of the University of Wisconsin who retire at the end of the present academic year are Dr. C. K. Leith, professor of geology; Dr. W. H. Twenhofel, professor of geology and chairman of the department; Dr. M. F. Guyer, professor of

zoology; Dr. Edwin B. Hart, professor of biochemistry, and Harry D. Tiemann, associated with the Forest Products Laboratory and lecturer in forest products at the university.

It is reported in *The Lancet* that Professor M. Greenwood, F.R.S., will retire from the chair of epidemiology and vital statistics at the School of Hygiene of the University of London. Owing to a change in the distribution of teaching and the steady increase in the volume of research work and teaching within the field of medical statistics, the title of the chair has been altered to that of medical statistics, and Dr. A. Bradford Hill, since 1933 reader in medical statistics in the university, has been appointed to fill the vacancy. The senate has conferred the title of professor emeritus in epidemiology and vital statistics on Dr. Greenwood.

DR. WALLER S. LEATHERS, professor of preventive medicine and public health and since 1928 dean of the School of Medicine of Vanderbilt University, will retire on June 30. He will be succeeded by Dr. Ernest W. Goodpasture, associate dean and since 1924 professor of pathology at the school. Dr. Sam L. Clark, professor of anatomy, has been appointed associate dean. Dr. William W. Frye, associate professor, has been promoted to a professorship and becomes head of the department of preventive medicine and public health.

DR. HANFORD TIFFANY, chairman of the department of botany of Northwestern University, has been appointed William Deering professor of botany, and Dr. N. E. Bingham, of Temple University, and Dr. O. J. Eigsti, of the University of Oklahoma, have been appointed associate professors. Dr. M. S. Doty, of Stanford University, has been appointed instructor, and Dr. Francis Drouet, of the Chicago Natural History Museum (formerly Field Museum), research associate.

DR. HARDY L. SHIRLEY, director of the Northeastern Forest Experiment Station of the U. S. Forest Service at Philadelphia, has been made assistant dean of the New York State College of Forestry at Syracuse University. Dr. Shirley will take up the work on September 1. He succeeds Clyde Leavitt, who retired in November, 1943.

AN Associated Press dispatch states that M. Georges Claude, the French chemist and physicist, since 1924 a member of the Paris Academy of Sciences, has been sentenced to life imprisonment as a Nazi collaborator.

DR. ANDREY AVINOFF, since 1926 director of the Carnegie Museum at Pittsburgh, has resigned for reasons of health. The title emeritus has been conferred on him.

DR. W. V. LAMBERT, who recently was appointed assistant research administrator in the Agricultural Research Administration of the U. S. Department of Agriculture, has resigned as secretary-treasurer of the American Society of Animal Production, of which Dr. A. D. Weber, head of the department of animal husbandry of Kansas State College, Manhattan, is president. The executive committee has appointed Dr. W. G. Kammlade, of the department of animal husbandry of the University of Illinois, secretary-treasurer, the appointment to be effective at once. Dr. Kammlade also will serve as business manager of the *Journal of Animal Science*, which is published quarterly by the American Society of Animal Production.

FRANK E. MURPHY, assistant to the manager of research of the development division of the Research and Development Department of the Pennsylvania Salt Manufacturing Company, Philadelphia, has been made director. He will have charge of chemical engineering activities, including pilot plant operations, engineering research and related fields of work. His headquarters will be at the Whitmarsh Research Laboratories.

DR. PIERRE DANSEREAU, director of the Service de Biogéographie at the Université de Montréal, will leave for Brazil in July for a one-year research fellowship awarded by the Brazilian government.

DR. A. C. GOODINGS, of the Ontario Research Foundation; B. H. Wilson, director of the British Wool Industries Research Association; Professor J. B. Speakman, of the University of Leeds; and Dr. F. T. Peirce, of the British Cotton Industries Research Association, are visiting Australia by invitation of the Commonwealth Government to assist in formulating plans for research designed to help Australian and overseas manufacturers and processors of wool.

DR. HERBERT C. HANSON, formerly general manager of the Alaska Rural Rehabilitation Corporation, is leaving shortly for Norway as Agricultural Rehabilitation Officer for the UNRRA.

DR. OLOF LARSELL, professor of anatomy at the School of Medicine at Portland of the University of Oregon, gave on May 11 at the School of Medicine of the University of Minnesota the first J. B. Johnston Lecture on neurology. His subject was "Comparative Neurology and Our Present Knowledge of the Cerebellum."

THE De Lamar Lecture in Hygiene at the Johns Hopkins University School of Hygiene and Public Health was given on May 17 by Dr. George Baehr, clinical professor of medicine at the College of

Physicians and Surgeons, New York. He spoke on "Medical Service under the Health Insurance Plan of Greater New York."

VICE ADMIRAL ROSS T. MCINTIRE, Surgeon General of the U. S. Navy, and Dr. James L. Morrill, president-elect of the University of Minnesota, were the speakers at a dinner meeting held on June 5 under the sponsorship of the committee of founders of the Mayo Memorial. The subject of the meeting was "Health and Medicine in War and Peace."

THE National Research Council is anxious to obtain data on the composition of foreign foods, particularly Far Eastern Foods, and earnestly solicits such information. Address communications to Dr. L. J. Teply, secretary of the Committee on Food Composition and of the Committee on International Food Value Problems, Food and Nutrition Board, National Research Council, 2101 Constitution Avenue, Washington 25, D. C.

THE Ohio State University has received gifts and bequests amounting to \$20,175. The largest of these gifts was the sum of \$6,500 for the College of Medicine.

DR. H. A. B. DUNNING, of Hynson, Wescott and Dunning, Inc., of Baltimore, Md., has given to the department of pharmacology of the Medical School of the University of Maryland the sum of one thousand dollars to be used for research.

A SEED storage and processing plant for the handling of inbred lines and single crosses is being constructed at the University Farm of the Department of Agriculture of the University of Minnesota. The building will be used almost entirely for the handling of inbred lines of corn and single crosses that are used in the hybrid varieties recommended by the Minnesota Experiment Station. In Minnesota the inbred lines used in varieties bred by the station remain under its control, and single crosses used by seed growers in producing double crossed seed of station recommended hybrids are produced under its immediate supervision.

A SURVEY in the field of biogeochemistry will be sponsored by the American Museum of Natural History. A preliminary three-year study has been made possible by gifts received from Robert Earl McConnell, trustee of the museum, and George M. Moffett, president of the Corn Products Refining Company. Dr. G. Evelyn Hutchinson, professor of zoology at Yale University and consultant in biogeochemistry of the museum, will direct the survey with the cooperation of various specialists.

It is reported in the *Experiment Station Record* that the University of Minnesota has entered into an

agreement with the newly organized Mayo Forestry and Horticultural Institute whereby several tracts of land will be made available to the university for research and demonstration in forestry and horticulture. The Mayo Properties Association has appropriated \$25,000 for tools, labor and planting materials. The forestry work will occupy about 140 acres of land in or near Rochester, Minn., mostly on property of the Institute of Experimental Medicine, and will include studies on erosion control in cooperation with the Soil Conservation Service of the U. S. Department of

Agriculture. The university division of horticulture plans to use about 40 acres of this tract, originally developed as an orchard under private ownership prior to its donation in 1943 to the Mayo Properties Association. Variety tests and demonstrations with apples are to be continued and enlarged, and several acres will be used for small fruit plantings. W. H. Alderman, chief of the division of horticulture, has been given charge of the fruits projects, and Dean Henry Schmitz, of the College of Agriculture, Forestry and Home Economics, of the forestry areas.

SPECIAL ARTICLES

LYCOPERSICIN, A FUNGISTATIC AGENT FROM THE TOMATO PLANT

FUSARIUM wilt, caused by *Fusarium oxysporum* f. *lycopersici* (Snyder and Hansen),¹ is one of the most prevalent and damaging diseases of tomatoes in many regions of the United States. The mechanism of the wilting caused by this vascular parasite is obscure, but wilting of tomato plants infected with *F. oxysporum* f. *lycopersici* (hereafter designated Fol.) can be correlated with the presence in the tracheal fluid of the host of a toxin which is presumably elaborated by the fungus.² Since tomato varieties vary in their susceptibility to Fusarium wilt³ it might be postulated variously that (1) certain varieties are wilt-resistant because they are able to produce a substance or substances which either neutralize the toxin directly or inhibit the growth of the fungus; (2) certain varieties are susceptible because they produce a substance or substances that promote or make possible growth of the parasite, or (3) differences in susceptibility or resistance are due to differences in amounts of such substances common to both categories of plants. Fisher⁴ and more recently Gottlieb⁵ have obtained evidence to indicate that the expressed juice from tomato plants retards growth of Fol. in culture in proportion to the wilt-resistance of the tomato varieties tested.

In this laboratory we have obtained from the expressed juice of Pan America tomato plants, a variety which exhibits a high degree of wilt resistance,⁶ a preparation which, though still impure, possesses marked fungistatic activity toward Fol. This antibiotic agent, which will be designated "lycopersicin," occurs throughout the mature plant. In the crude

preparations available, lycopersicin is completely stable, as indicated by assay, for at least 1 hour at 100° C and withstands autoclaving for at least 15 minutes at 15 pounds pressure. It is dialyzable (Visking, Cellophane membrane), adsorbed from aqueous solution at pH 5.5 on charcoal (unactivated Norit A), soluble in water and methanol, partially soluble in ethanol, and insoluble in chloroform, acetone, ethyl acetate, ether, petroleum ether and benzene.

A rapid and accurate method for the assay of the fungistatic activity of lycopersicin, patterned after the cylinder-plate method now used for the assay of penicillin and related antibiotic agents,⁷ has been developed. Sterile, 90 mm Petri dishes, containing 20 ml of solidified Czapek-dextrose agar,⁸ are warmed to approximately 45° C. and flooded with 3.5 ml of a suspension of spores of Fol.⁹ in the same medium. To prepare the inoculum 5 ml of sterile distilled water are added to a 5-day-old potato-dextrose slant of the organism and the surface is gently stroked with a sterile loop to yield a heavy aqueous suspension of spores. The suspension is filtered through a thin, sterile cotton plug (to remove bits of mycelium which, if allowed to remain, give rise to growth irregularities on the assay plate) into 40 ml of Czapek-dextrose agar maintained at 45° C. After thorough mixing, the inoculum is flooded evenly over the agar surface in the Petri dish and is allowed to solidify. Porcelain

⁷ W. H. Schmidt and A. J. Moyer, *Jour. Bact.*, 47: 1, 1944.

⁸ NaNO₃, 3.0 g; K₂HPO₄ · 3H₂O, 1.0 g; MgSO₄ · 7H₂O, 0.5 g; KCl, 0.5 g; FeSO₄ · 7H₂O, 0.01 g; dextrose, 30 g; agar, 20 g; water, 1,000 ml.

⁹ The culture used throughout this work was a transfer from the R-5-6 strain of Wellman (*Phytopathology* 32: 271, 1942) that was originally selected for its high pathogenicity. At the start of the present investigation a large stock of lyophil tubes of spores of this organism was prepared (see method of Raper and Alexander to be published in *Mycologia*, July-August, 1945) from vigorously growing potato-dextrose agar slants. To obtain the spores necessary for preparing inoculum for the assay plates potato-dextrose slants are inoculated weekly from a newly broken lyophil tube. In this manner the source of inoculum for the assay plates is maintained constant both as to age and virulence and the danger of introducing contaminants is minimized.

¹ Synonymous with *Fusarium bulbigenum* var. *lycopersici* (Brushi) Wr. and R.

² D. Gottlieb, *Phytopathology*, 34: 41, 1944.

³ W. S. Porte and F. L. Wellman, *U. S. Dept. Agr. Circ. No. 584*: 1941.

⁴ P. L. Fisher, *Maryland Agr. Expt. Sta. Bul.* 374: 1935.

⁵ D. Gottlieb, *Phytopathology*, 33: 1111, 1943.

⁶ W. S. Porte and H. B. Walker, *U. S. Dept. Agr. Circ. No. 611*: 1941.