York City; and Henry M. Crane, technical assistant to the president of General Motors Corporation, New York City. Members of the institute at the conference were Dean Charles H. Warren, Sheffield Scientific School; Dean M. C. Winternitz, Yale School of Medicine; Dean Edgar S. Furniss, Yale Graduate School; George Parmly Day, treasurer, Yale University; Professor S. W. Dudley; Professor Mark A. May, executive secretary of the Institute of Human Relations, and Professor Elliott D. Smith, Yale University, director of the study.

The industrial committee of the institute, already formed and at work, includes among others a psychiatrist, a psychologist, an economist, a lawyer and a sociologist, directed by an engineering and management group interested in focusing the attention of these specialists upon various phases of the development of human problems in specific industrial organizations.

"In the solution of this problem," the committee states, "there arise many important questions related to the major human sciences; such physiological problems as fatigue, such medical problems as occupational diseases, such psychological problems as capacity to learn, such psychiatric problems as the emotional effects of fear of loss of job, such social problems as absorption by the community of workers thrown out of employment, such economic problems as the absorption of increased output, such legal problems as adaptation of labor legislation to technological change, while in its very structure it is a problem of engineering and of management."

The first instance of increased technological efficiency to be studied will be the "stretch-out"—the recent rapid increase in the number of spinning frames and looms tended by the individual worker. This preliminary study will provide material for a comparison of procedures and effects. It will be a contribution of distinct practical value, the committee believes, by calling to the attention of managers the nature of the social problems involved and the extent to which they are dependent upon good managerial handling.

AMERICAN ASSOCIATION OF TEACHERS OF PHYSICS

AT the Cleveland meeting of the American Association for the Advancement of Science an organization was formed for the purpose of promoting and improving the teaching of physics of college and university grade, under the name "American Association of Teachers of Physics." The new organization fills a need long felt by those interested in methods of instruction, from the pedagogical as well as from the laboratory and demonstration points of view. A tentative constitution was adopted, and an executive committee chosen to perfect plans for the organization, which are to be discussed and acted upon at the New Orleans meeting. Regional, as well as general, meetings are to be held. The first general meeting is to take place at the Bureau of Standards in April, in connection with the regular meeting of the American Physical Society. At this meeting, Dr. A. W. Hull, assistant director of research of the General Electric Company, will present a paper on the training of physicists for industry.

Officers elected for the ensuing year are: *President,* Dean Homer L. Dodge, University of Oklahoma; *Vice-president,* Dr. P. E. Klopsteg, Central Scientific Company; *Secretary-Treasurer,* Professor W. S. Webb, University of Kentucky. The executive committee consists of the officers and the following members: Professor O. B. Blackwood, University of Pittsburgh; President Karl T. Compton, Massachusetts Institute of Technology; Professor R. S. Minor, University of California; Dean F. K. Richtmyer, Cornell University; Professor M. N. States, University of Kentucky; Professor B. A. Wooten, University of Alabama. Applications for charter membership will be received until June 1, 1931.

SCIENTIFIC NOTES AND NEWS

THE William Wood Gerhard Gold Medal of the Pathological Society of Philadelphia was presented on January 8 to Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research.

PROFESSOR ERNST VON ROMBERG, of Munich, informs the *British Medical Journal* that the commission entrusted with the grant of the Dr. Sophie A. Nordhoff-Jung Cancer Prize for the best work of recent years in the field of cancer research has unanimously awarded this prize to Dr. Alexis Carrel, of the Rockefeller Institute for Medical Research, for his development of the method of tissue cultivation and his application of it in the solution of the basic problems of pathological growths, especially the growth of malignant tumors. The commission was composed of Professors Borst, Döderlein, von Romberg and Sauerbruch.

THE Geological Society of London on January 16 awarded the Bigsby Medal to Dr. Norman L. Bowen, of the Geophysical Laboratory of the Carnegie Institution at Washington, in recognition of the value of his study of the physical chemistry of igneous rocks.

AWARD of the William H. Nichols Medal of the New York Section of the American Chemical Society for 1931 to Dr. John Arthur Wilson, of Milwaukee, Wisconsin, is announced. The award, bestowed for outstanding achievement in colloid chemistry, applied particularly to leather and sanitation, will be presented to Dr. Wilson at a national gathering of chemists in New York on March 13. Speakers at the ceremony will include Professor Arthur W. Thomas, of Columbia University, and Dr. Clarke E. Davis, production manager of the National Biscuit Company.

DR. HERBERT LEVINSTEIN, the English chemist, has been awarded the medal of the Society of Chemical Industry. The medal is awarded not more frequently than once every two years for "conspicuous services to applied chemistry by research, discovery, invention or improvement." Dr. Levinstein, who is the eighteenth recipient of the honor, did much work on the Chemical Warfare Committee and is known as an authority on poison gas.

THE Swedish Gold Medal for physical education, awarded by the Swedish Gymnastic Federation, was presented to Dr. Philippe Tissié at the International Ling Congress, recently held at Stockholm.

DR. E. R. CUMINGS, head of the department of geology of Indiana University, was elected president of the American Paleontological Society at the twenty-second annual meeting at Toronto.

DR. W. P. FRASER, of the University of Saskatchewan, has been elected president of the Phytopathological Society of Canada.

THE Pathological Society of Philadelphia has re-elected for the year 1931 the officers of the previous year, namely, Dr. Balduin Lucke, *president;* Dr. V. H. Moon, *vice-president,* and Dr. Isolde T. Zeckwer, *secretary-treasurer-recorder.*

DR. KARL VON GOEBEL, professor of botany in the University of Munich, has been elected president of the Bavarian Academy of Sciences.

PROFESSOR EDWARD SAPIR, of the University of Chicago, has been appointed Sterling professor of anthropology and linguistics at Yale University. Dr. Sapir will also be a member of the staff of the university's Institute of Human Relations and will act as chairman of a new section of the department of social sciences devoted to cultural anthropology.

DR. MARGARET E. MALTBY, associate professor of physics at Barnard College, will retire at the end of the college year after serving as a member of the faculty for thirty years.

DR. OWEN THOMAS JONES, Woodwardian professor of geology at the University of Cambridge, has been elected to a professorial fellowship at Clare College.

DR. HERMON CAREY BUMPUS has been appointed chairman of the educational advisory board of the National Park Service, succeeding Dr. John C. Merriam.

THE members of the new National Advisory Health Council, created by an act of Congress to advise the Surgeon General of the U. S. Public Health Service on matters pertaining to the health of the country at large, have been appointed. Four members of the advisory committee of the old Hygienic Laboratory who will serve on the council are: Dr. Simon Flexner, director of the Rockefeller Institute for Medical Research; Dr. M. P. Ravenel, professor of bacteriology at the University of Missouri; Dr. M. J. Rosenau, professor of public health and hygiene at the Harvard Medical School, and Dr. William H. Welch, of the Johns Hopkins University. The other members are: Dr. W. S. Leathers, dean of Vanderbilt University School of Medicine; Dr. Haven Emerson, professor of public health and hygiene at Columbia University; Professor S. C. Lind, head of the department of chemistry, University of Minnesota; Dr. W. H. Howell, director of the Johns Hopkins School of Hygiene; Dr. C.-E. A. Winslow, professor of public health at Yale University, and Dr. Alfred Stengel, professor of the practice of medicine at the University of Pennsylvania.

DR. EDWARD LAURENS MARK, of Harvard University, director of the Bermuda Biological Research Institute, sailed for Bermuda on January 17. He was accompanied by a number of scientific men, including Dr. Charles Benedict Davenport, Dr. Ross Granville Harrison and Dr. Edwin Grant Conklin.

DR. JOHN C. MERRIAM, president of the Carnegie Institution; Dr. A. V. Kidder, chairman of the division of historical research, and Mr. H. B. Roberts, staff archeologist, have left Washington to undertake a tour of inspection of the ruins of the old Mayan Empire in northern Guatemala. They were expected to reach Puerto Barrios about January 19. The ruins at Uaxactun, the oldest of known Mayan cities, have been the scene of Carnegie Institution excavations since 1926. In addition it is planned to make a brief reconnaissance of certain areas which have been considered in connection with the program of the institution.

PROFESSOR M. F. JORDAN, of the University of Maine, is spending a sabbatical leave at the Perkins Observatory, conducting special investigations in cooperation with the research program of the observatory.

DR. CHARLES H. ROGERS, of the department of pharmaceutical chemistry of the University of Minnesota, will leave in March for Europe, where he will join Mrs. Rogers, who has been spending the winter in Spain, northern Africa and France with Professor and Mrs. Francis B. Barton, of the department of Romance languages. Besides touring through the principal continental countries, Dr. Rogers will study the chemical and pharmaceutical plants in Europe. He and Mrs. Rogers will return to Minneapolis in time for the fall quarter.

DR. MELVILLE J. HERSKOVITS, associate professor of anthropology at Northwestern University, sailed from New York on January 21 for a six months' expedition to West Africa, to seek further evidence that the slaves of Cuba, Hayti, Brazil and the United States came from this part of West Africa.

PROFESSOR PAUL EHRENFEST, of the University of Leiden, visited the Bartol Laboratory of the Franklin Institute from January 6 to 17, where he conducted a series of colloquia on "Atomic Physics."

DEAN R. L. SACKETT, of the School of Engineering at the Pennsylvania State College, is making a speaking trip through the southern universities at the behest of the American Society of Mechanical Engineers. He will also address the Atlanta and New Orleans sections of the society. Dean Sackett expects to go as far west as Tucson, Arizona, where he will remain for several weeks. He will speak to engineering students in other institutions on his way back, returning to State College in April.

ON December 9, Dr. S. O. Mast, professor of zoology at the Johns Hopkins University, lectured at Cleveland, under the auspices of the McBride Lecture Fund. The subject of his discourse was "Concealing Coloration in Animals."

DR. A. M. BANTA, research professor of biology at Brown University and research associate of the Carnegie Institution, delivered an address on "What the Crustacean Tells us about Evolution," before the Washington Academy of Sciences on December 18.

DR. ALEXANDER SILVERMAN, head of the department of chemistry of the University of Pittsburgh, delivered an illustrated lecture on "The Chemistry and Technology of Glass" before the University of Illinois Section of the American Chemical Society on January 12. The lecture was also given before the Indianapolis Section on January 13, and before the Purdue University Section on January 14.

DR. KARL T. COMPTON, president of the Massachusetts Institute of Technology, recently addressed the Students' Liberal Club on "What Can Science Say Concerning the Origin of Life and the Destiny of the Universe?"

DR. KARL MENGER, professor of mathematics in Vienna, who is lecturing at Harvard University during the winter semester, will lecture during the summer at the Rice Institute, Houston, Texas, on metrical geometry and on the dimension and curve theory.

UNDER the auspices of the Harvard division of philosophy, Professor R. F. Alfred Hoernlé will give a lecture on "Theory of Knowledge at the Crossroads" on January 28. Professor Hoernlé was assistant professor of philosophy at Harvard during the years 1914–20, and is now professor of philosophy at the University of the Witwatersrand, Transvaal, South Africa.

DR. OTHENIO ABEL, professor of paleontology and paleobiology at Vienna, will deliver this spring a course of lectures at the University of Paris.

A BUILDING to be erected for the Harvard College Observatory at a cost of $100,000 is planned for the safe preservation of the photographic collections and other records of the observatory. Irreplaceable pictures of all portions of the sky—the first made in 1850—taken from the Northern and Southern Hemispheres and now stored in a wooden building, will be laid away for future study and reference in special vaults which will be placed in the projected building. Numbering more than 350,000 plates, and collected at a cost in excess of $1,000,000, the collection is five times larger than that of any other institution in the world. Space will be allowed for the collections of the next forty years.

A GIFT of $700,000 eventually will go to the Johns Hopkins Hospital by the will of William A. Marburg, former vice-president of the American Tobacco Company, which disposes of an estate of $2,100,000. The $700,000 goes to the hospital upon the death of the last surviving child of Theodore Marburg, formerly minister to Belgium, a brother of William Marburg. Another trust fund of $50,000 for his sister is to go to the hospital upon her death.

Museum News states that: The Cleveland Museum of Natural History has been given a 100-acre tract of land on Sperry Road to be developed as an arboretum. With the land goes assurance of cooperation and financial backing by the trustees of a large private estate of Cleveland. The land was given to the museum by Mr. and Mrs. Benjamin Patterson Bole and their son, Benjamin Patterson Bole, Jr. For its development as an arboretum the museum will have the larger part of the income from the Elizabeth Davis Holden Memorial Fund, established by the late

Albert F. Holden, Mrs. Bole's brother. In addition, Mr. and Mrs. Bole have given the museum an option to buy additional lands on the basis of present values, and will provide funds for preparing the program of the arboretum, which will be known as the Holden Arboretum. Announcement of the gift and the plan of cooperation between the museum and the trustees of the Holden estate was made at a dinner, attended by 441 people, in celebration of the tenth anniversary of the establishment of the museum.

THE council of the senate of the University of Cambridge has recommended the acceptance of the offer of the council of the Royal Society to provide within three years a sum of £15,000 towards the building and equipment of a laboratory for special physical investigations in the University of Cambridge, to be used in the first instance for magnetic and cryogenic research.

THE editor of *Chemical Reviews,* Dr. Gerald Wendt, announces that beginning with 1931 the journal will be doubled in volume, carrying twice as much material as heretofore. The journal will be published in two volumes instead of one, and will be changed from a quarterly to a bi-monthly. The volumes will begin in February and August. The expansion makes it possible for *Chemical Reviews* to publish promptly the papers of the important symposia of the society, as well as others from all over the world. To members of the American Chemical Society *Chemical Reviews* will continue to sell for $4.00 a volume, or $7.00 for both volumes when they are ordered at one time. The price to non-members is $5.00, or $9.00 for both volumes.

Industrial and Engineering Chemistry reports that the thirteenth exposition of Chemical Industries will include exhibits on three floors of the Grand Central Palace, New York, devoted to the raw materials for the manufacture of chemicals and chemical products, technical products used in the arts and industries, apparatus and equipment, machinery and the finished products of the chemical industries. The exposition will be held during the week of May 4, 1931. Special sections will be devoted to the showing of raw materials from the Southern States, the natural resources of Canada and its provinces, new metals and alloys, laboratory supplies and equipment, materials handling and containers. The machinery and apparatus will vary from laboratory equipment through instruments of precision to equipment for large-scale operations. Special fundamental operations of the chemical industries will be shown in demonstrations including disintegration, crushing, grinding, grading, mechanical separation, including filtration, classification, settling, thickening, evaporation, distillation, drying, weighing, measuring, mechanical handling and conveying. Demonstration of the materials of construction will include ceramic materials, glassware, metals, alloys, plastics, wood fibers, fabrics and materials developed for special purposes. The students' course on the fundamentals of chemistry and chemical engineering will again be under the chairmanship of W. T. Read, dean of the School of Chemistry at Rutgers University.

Nature states that the section for scientific and optical instruments and photographic apparatus at the British Industries Fair, Olympia, London, which will be held from February 16 to 27, will occupy some 6,000 square feet on the ground floor of the Grand Hall. A joint exhibit has again been organized by the British Optical Instrument Manufacturers Association. There will be instruments for all branches of research and industry and for educational purposes, including a particularly fine exhibit of visual aids to teaching. It is, perhaps, not generally known that British manufacturers of optical glass supply lenses to America for cinema cameras and projectors, and that one firm is actually exporting the bulk of its spectacle lenses to the United States. Every kind of modern optical instrument is obtainable from British manufacturers, and there are some British instruments not made elsewhere which are used all over the world, including Germany. There will be a novel display of marine and aerial lighting equipment, including a flashing buoy-light and aerodrome floodlights and models of lighthouses and airway beacons. The section for chemicals at the fair will occupy some 11,000 square feet on the ground floor of the grand hall. Invitations to the fair may be obtained by scientific workers, teachers and others on application to the Department of Overseas Trade, London, which entitle the holder to travel to and from the fair by rail at the rate for a single journey plus a third.

AN exhibition of the Andrée Expedition relics opened in Liljevalch's Art Gallery in Stockholm on January 6. The exhibition, which occupies eight large rooms, consists of 550 objects, and gives a vivid impression of the immense difficulties surmounted by Andrée and his two companions in carrying such a large number of things, including a big canvas boat three sledges, food supplies, and a medicine chest, still well stocked. Special interest centers in Andrée's woollen jersey, in which the famous notebook was wrapped; the Primus stove, which still works perfectly; and lantern slides reproduced from the 30 or so remarkable photographic negatives skilfully developed after they had rested 33 years in an icy wilderness.

Industrial and Engineering Chemistry states that at the Atlanta meeting the council of the American

Chemical Society instructed the secretary to report at Cincinnati upon possible plans for providing retiring annuities for the staff of the society. This report was made and the council recommended action on the part of the directors. The directors have now voted that present employees of the society after twenty-five years of service, having hereafter reached the age of at least sixty years, shall on retirement be paid annually for life an amount equal to one per cent. of their average salary for the last five years of their service, multiplied by the number of years of service. It is further understood that this action shall not in any way affect the right of the society to discharge any employee. The directors further instructed the treasurer to set aside a reserve fund of $50,000 for employees' retirement, and recommended to future directors that the amount of the fund be adjusted as needed.

DISCUSSION

THE OCCURRENCE OF NATURAL AND ACQUIRED IMMUNITY TO INFECTIOUS MYXOMATOSIS OF RABBITS[1]

IN reporting investigations concerning the virus of infectious myxomatosis of rabbits, Moses (1911)[1] noted that the wild rabbit of Brazil was resistant to infection except in rare instances. In our work with the virus the common laboratory rabbit has proved susceptible in every case, over two hundred and fifty rabbits being used for various experiments during the last five years. Findlay (1929)[2] has reported the Belgian hare to be susceptible and we have found the Flemish Giant likewise susceptible. This would be expected since they are varieties of the common laboratory rabbit.

In an earlier paper (Hobbs, 1928),[3] it was suggested that the western jack rabbit and the varying hare or northern snowshoe rabbit might also be immune to this virus. Since then it has been possible to secure live specimens of *Lepus californicus* Gray, the black-tailed jack rabbit, *Lepus americanus* Erxleben, the varying hare, and *Sylvilagus transitionalis* Bangs, the common wild cottontail. Two animals of each species were obtained and all proved immune to skin inoculation with the infectious myxomatosis virus. As is true in certain of the other virus diseases, this natural immunity seems to be a tissue immunity since it has not been possible to demonstrate any virucidal property in serum from either the jack rabbit or the wild cottontail. Whether this immunity can be broken down by means of giving massive doses of virus or by using other routes of inoculation and whether virucidal antibodies can be produced in these wild hares and rabbits are among the several problems that suggest themselves.

In the large number of laboratory rabbits which have been used in our experimental work, only one individual has shown any signs of resistance to the virus and it was a member of a group that had received repeated injections of killed virus. It had a severe case but eventually recovered and has proved immune to subsequent inoculation. That its resistance was due to the previous injections of killed virus can not be claimed, of course, since Sanarelli (1898)[4] reported that two of his animals recovered spontaneously from the infection. Virucidal antibodies were demonstrable in its blood two months after its recovery and are still demonstrable, eighteen months after recovery by means of the following technique. A 5 per cent. suspension of virus was prepared by grinding freshly removed myxomatous tissue in normal saline in a mortar. The suspension was then centrifuged for fifteen minutes at low speed and 0.5 cc quantities of the supernatant added to 0.5 cc quantities of serum from the above rabbit, of normal rabbit serum and of normal saline. These mixtures were then incubated at 37° C., being shaken every thirty minutes. At the end of two hours, the mixtures were removed and inoculated into susceptible rabbits. The rabbits inoculated with the immune serum mixtures never showed any signs of myxoma at the sites of inoculation or elsewhere, while the control rabbits developed typical myxoma nodules at the sites of inoculation and died from the infection.

These experiments would suggest the existence of a genus immunity to infection as the laboratory rabbits all belong to the genus *Oryctolagus* (not *Sylvilagus* as stated in my earlier paper), while the wild hares are placed in the genus *Lepus* and the wild wood hares or cottontails of North and South America are placed in the genus *Sylvilagus* according to the classification of M. W. Lyon given in the Encyclopaedia Britannica, thirteenth edition, 1926. In this the wild rabbit of Brazil is called *Sylvilagus* (not *Lepus*)

[1] A. Moses, "O virus do mixoma dos coelhos," Mem. Inst. Oswaldo Cruz, 3, 46, 1911.

[2] G. M. Findlay, "Notes on Infectious Myxomatosis of Rabbits," *Brit. Jour. Exp. Path.*, 10, 214, 1929.

[3] J. R. Hobbs, "Studies on the Nature of Infectious Myxoma of Rabbits," *Amer. Jour. Hyg.*, 8, 800, 1928.

[4] G. Sanarelli, "Das myxomatogene Virus," *Centr. Bakt.*, Abt. 1, 30, 865, 1898.