houses; continuous fear for new vexations by the Huns. It was a horrid time.

What belongs to me personally, I had to leave my house in September, 1944, and was still four times obliged to remove. During the time that my house stood empty German and other thieves had been in it and have stolen much, though I had packed up most of my furniture; but in the hurry in which we were obliged to remove it was impossible to pack up all. Just a month before the deliverance twelve Huns were lodged in my house and left it in a state of dirtiness not to describe.

But the worst of all was that I lost my dear wife in December by an accident. This summer I have been very ill, but now my health is again gratifying, regarding my high age.

You do not write how you are yourself and your family. I hope that they and you are in good health. With my kindest regards to my American friends.

LETTER FROM DR. LOUIS HENRY

Dr. L. Morton, associate professor of electron optics at Stanford University, writes, under the date of December 7, that he has just received a letter from his friends, Dr. and Mrs. Louis Henry, of Brussels, Belgium. As part of this letter may be of interest to many American scientists, he has made a résumé of part of it, originally written in French:

The Belgian "Fonds National pour la Recherche Scientifique" has been split in two. The old Fonds National will be, in the future, more specifically devoted to scientific research only and the more industrial research is handled by a new institution called "Institut pour l'Encouragement de la Recherche Scientifique dans l'Industrie et l'Agriculture." The first institution remains under the administration of Dr. Jean Willems. For the director of the second institution, originally Mr. Pierre Beghin was selected. He died suddenly, however, and will be replaced by Dr. Louis Henry as new director. Dr. Henry, up to recently, was professor of physics at the School of Agriculture in Gembloux and research associate of the "Fondation Medicale Reine Elizabeth." During the war, both he and his wife were taken prisoners by the Germans for underground activities, and they spent over two years in German concentration camps. Mrs. Henry is attached as research associate in chemistry to the Fondation Medicale Reine Elizabeth.

The same letter also contains news about several other Belgian scientists, among them Drs. Desclin and Cosyns, of the Fondation Medicale Reine Elizabeth, who are well, and Professors Marchal Hoffmann, Piccard and Kipfer at the University of Brussels. All are well with the exception of Mr. Marchall, who is at present in a sanitarium in Switzerland, recuperating from the after-effects of long imprisonment in Germany.

SCIENTIFIC NOTES AND NEWS

DR. WILLIAM DAVID COOLIDGE, formerly vice-president and director of research of the General Electric Company, who is now touring South America, has been awarded the "Orden al Merito" of the Chilean Government. The award was conferred at a reception at the University of Chile in Santiago, tendered by the faculty of medicine and the faculty of physics and mathematics. As Dr. Armando Larraguibel, dean of the Faculty of Medicine, placed the jewel of the order around Dr. Coolidge's neck, he said: "The scientists of Chile have delegated me to give you this jewel, which is made of the gold of the Chilean mountains and by Chilean hands, and it represents the kindest love of the Chilean people." Dr. Larraguibel and Señor Pablo Krassa, dean of the Faculty of Physics and Mathematics, presented him with a diploma as honorary member of their faculties. He also received an honorary diploma from the Catholic University, and was made an honorary member of the Chilean Radiological Society.

THE "Arnold Reymond Prize, Foundation Ch.Eug. Guye," endowed by the late Ch.Eug. Guye, professor of physics at the University of Geneva, has been awarded for the first time to Dr. Lecomte du Noüy for his three last books on biological time and on evolution. The prize was founded by the University of Lausanne, Switzerland, to be awarded for the best work on the philosophy of science in the course of ten years.

PROFESSOR HOYT G. HOTTEL, director of the fuels research laboratory of the Massachusetts Institute of Technology, is the recipient of the William H. Walker Award for 1945 of the American Institute of Chemical Engineers for his paper prepared in 1942 on radiant heat transmission from water vapor. The award is made annually by the institute to the member who has made the most valuable contribution to chemical engineering literature over the three years prior to its presentation.

THE Robert J. Collier trophy of the National Aeronautical Association, awarded annually to the American making the "outstanding contribution to aviation," has been conferred on General Carl A. Spaatz, commander of Strategic Air Forces in Europe and the Pacific, in recognition of his efforts in "demonstrating the air power concept through employment of aviation in the war against Germany."

SIR ROBERT ROBINSON was elected president of the Royal Society, London, on November 30, at the two hundred and eighty-third meeting and dinner of the society.

THE Walter Reed Medal of the American Society of Tropical Medicine has been awarded to the Federal Government of Brazil in recognition of the "invaluable work" accomplished in the sphere of preventive medicine.

AN expansion of the curriculum in geology has been announced by Indiana University under an arrangement whereby the department of geology will conduct the work of the State Division of Geology. New courses will include non-metals, mineralogy, petrology and petrography, and areas of study determined by war experience to be important as an aid to industry. Dr. Charles F. Deiss is chairman of the department of geology and director of the State Division of Geology. Dr. Eugene Callaghan, commodity geologist of the U. S. Geological Survey, has been appointed professor of economic geology at the university, and Dr. George T. Faust, associate mineralogist of the survey, has been appointed professor of mineralogy. Both will serve on the staff of the State Division of Geology.

DR. RALPH LINTON, professor of anthropology at Columbia University and head of the department, has been appointed Sterling professor of anthropology at Yale University.

DR. LYMAN E. JACKSON, secretary of the National Association of Land Grant Colleges and Universities, president of South Dakota State College of Agriculture and Mechanical Arts, has been elected dean of agriculture at Pennsylvania State College.

DR. HAROLD C. BOLD, formerly on the faculty of Barnard College, Columbia University, and more recently a lieutenant commander in the Navy, has been appointed associate professor of botany at Vanderbilt University. Dr. Fred T. Wolfe, who has been on leave from his position as assistant professor of botany for the past three years for duty in the Army, will return in January.

PROFESSOR MARCEL K. NEWMAN, a member of the department of aeronautical engineering of the Polytechnic Institute of Brooklyn, has been appointed associate professor of mechanical engineering in the College of Applied Science of Syracuse University.

DR. WILLIAM B. WENDELL, associate professor of chemistry of the College of Medicine and of the School of Biological Sciences of the University of Tennessee, has been appointed professor and head of the department of biochemistry at the School of Medicine of Tulane University, New Orleans.

DR. STUART MCLAIN, Lieutenant Colonel and chief of the Arms and Ammunition Division of the Research Development Center at Aberdeen, has been appointed professor and head of the chemical engineering department of the College of Engineering of Wayne University.

DR. KURT G. STERN has become professor of biochemistry at the Polytechnic Institute of Brooklyn. In that capacity, he will continue to teach courses on physical methods in biology and medicine in the Graduate School and to direct research on biochemical problems in the newly established High Polymer Research Institute, the director of which is Dr. Herman F. Mark.

CAPTAIN CHARLES G. WILBER, aviation physiologist, Air Corps, has been released from active service and has joined the faculty of Fordham University.

DR. RICHARD W. DODSON, recently of Los Alamos, has been appointed assistant professor of chemistry at the California Institute of Technology. He will carry on a program of research in nuclear chemistry.

DR. JOHN D. FERRY has been appointed assistant professor and research associate at the University of Wisconsin. He will conduct research and give courses on high polymers. Dr. Ferry is now engaged on war research at the Harvard Medical School and at Woods Hole. He will take up his new work on January 21.

DR. ROUSSEAU H. FLOWER has been appointed assistant state paleontologist in the New York State Science Service and the New York State Museum. Since September 1, 1944, he has been a member of the staff of the office of the state paleontologist. He held an instructorship at Bryn Mawr College during the school year of 1943–1944.

DR. JACINTO STEINHARDT has been appointed director of research of the operations evaluation group attached to the Office of the Chief of Naval Operations under a contract between the Navy and the Massachusetts Institute of Technology. Dr. Steinhardt, whose research on proteins was formerly carried on at the National Bureau of Standards, became affiliated with the operations research group of the Navy soon after its formation. During the war he worked with this group in Washington, and overseas in the South Atlantic and in the Southwest Pacific areas.

JAMES C. LEARY, science editor of the Chicago *Daily News*, has resigned to become research associate with Lawrence C. Salter and Associates, consultants for science, Chicago and New York. Mr. Leary will make his headquarters at the home office of the organization in Chicago.

DR. J. S. H. DAVIES, formerly of the Imperial Chemical Industries, Ltd., London, has become director of research of the British Schering Research Institute in succession to Professor D. H. Hey, who was recently appointed professor of chemistry at the University of London.

DR. HERMAN SHAW, keeper in the Science Museum, London, has been appointed director and secretary of the museum in succession to Colonel E. E. B. Mackintosh, who retired on November 30 at the age of sixty-five years. He had been director of the museum since 1933, when he succeeded Sir Henry Lyons.

DR. JACQUES ROUSSEAU, director of the Montreal Botanical Garden, has returned from Mexico where he lectured during a month at the Institut Français d'Amérique Latine.

DR. WILLIAM A. MOSHER, head of the department of chemistry of the University of Delaware, addressed the Philadelphia Organic Chemists' Club on November 29 on "Recent Advances in Terpene Chemistry." At a dinner preceding the regular meeting, Dr. Edward H. Cox, professor of organic chemistry at Swarthmore College, gave an account of his recent experiences in Europe. Dr. T. F. Lavine, a charter member of the club, presided on both occasions.

A SERIES of six lectures on "Genetics, Medicine and Man" under the Messenger Lecture Foundation were given at Cornell University on November 26 and 28, and December 3, 5, 10 and 12. Dr. Herman J. Muller, formerly of Amherst College, who was recently appointed professor of zoology at Indiana University, spoke on "The Work of the Genes," and "The Dance of the Genes." Dr. Clarence C. Little, managing director of the Society for the Control of Cancer and director of the Jackson Memorial Laboratory, spoke on "The Nature of Parental Influence," and "Growth and Individuality" and Dr. Laurence H. Snyder, professor of medical genetics and chairman of the department of zoology at the Ohio State University, spoke on "Human Heredity" and "The Mutant Gene."

PROFESSOR GREGORY BREIT, of the University of Wisconsin, on December 10 gave two graduate lectures at the University of Iowa. These were on "Forces Between Nuclear Particles" and "Resonances in Nuclear Reactions."

SIR HAROLD HARTLEY, F.R.S., delivered the first Armstrong Memorial Lecture before the Society of Chemical Industry at the Royal Institution on November 21. He spoke on the part taken by Henry Edward Armstrong in the development of technical education in Great Britain and in the establishment of the City and Guilds Central College as a center of scientific activity. The president, Professor E. K. Rideal, presided.

THE American Association of Anatomists will hold its regular annual meeting in Cleveland, Ohio, at the invitation of the School of Medicine of the Western Reserve University, on April 4, 5 and 6, 1946.

THE twelfth annual chemical engineering symposium of the Division of Industrial and Engineering Chemistry of the American Chemical Society will be held at the Polytechnic Institute of Brooklyn on December 27. At a dinner in the Hotel Bossert following the symposium, Colonel Ralph Hufferd, of Edgewood Arsenal, Maryland, will report on "Munitions Developments of the Chemical Warfare Service." Dr. Joseph C. Elgin, chairman of the department of chemical engineering of Princeton University, is chairman of the symposium committee, and Dr. Donald F. Othmer, head of the department of chemical engineering at the Polytechnic Institute, is chairman of the local arrangements committee. Thomas H. Chilton, director of the technical division of the engineering department of the experimental station of the du Pont Company in Wilmington, is chairman of the division.

Two graduate research fellowships have been established at the Philadelphia College of Pharmacy and Science by the Lederle Laboratories. These fellowships extend over a period of two years and afford the recipients the opportunity to do original research and, at the same time, complete the prescribed studies leading to the master's degree. Inclusive of tuition, the value of the awards will amount to over $1,000 per year.

THE U. S. Patent Office offers opportunities to engineering graduates as members of its examining corps for lifetime careers in the service of the Federal Government. The present entrance salary is $2,320 per year for a junior patent examiner, professional and scientific grade 1. After three months of satisfactory service a junior examiner is eligible for promotion to grade P-2, $2,980; after three and a half years in the office to grade P-3, $3,640, and after six years to grade P-4, $4,300. At present, grades P-5, P-6 and P-7, $5,180, $6,230 and $7,175, are the ratings of assistant division chiefs, primary examiners and examiners-in-chief, and the positions are filled by promotion from the examining corps. The Personnel Office of the U. S. Patent Office will be glad to supply any additional information upon request.

THE Wellcome trustees have endowed a chair of tropical medicine, tenable at the London School of Hygiene and Tropical Medicine of the University of London.

ACCORDING to a recent vote of the council, the next meeting of the Society of American Bacteriologists will be held in Detroit, Mich., on May 21–24, 1946. The headquarters will be at the Book-Cadillac Hotel. Plans for the program include reports on recent research from members of the society together with addresses by at least two speakers on topics of general interest. Round-table and symposia sessions on a variety of problems, including war-time research in bacteriology, will be included in the program. There will also be scientific and commercial exhibits. Members of the society should note that March 4, 1946, is the deadline for acceptance of abstracts and requests for exhibits. All abstracts should be submitted to the chairman of the program committee, Dr. L. S. McClung, 420 Kirkwood Hall, Bloomington, Ind. Requests for exhibits should be addressed to Dr. Joseph A. Kasper, Bureau of Health Laboratory, Herman Kiefer Hospital, Detroit 2, Mich.

THE Division of High-Polymer Physics of the American Physical Society will hold its second regular meeting at Columbia University, on January 24, 25 and 26, as one of the features of the general, annual meeting of the society. On the program of the division meeting are approximately twenty-five papers on rubbers, plastics and other high-polymeric materials, covering both the analysis of physical behavior and experimental techniques.

THE Rocky Mountain Biological Laboratory, closed for the duration of the war, will reopen for classes for students next summer, beginning on July 15. The courses scheduled are ecology, field botany and parasitology. The laboratory is situated eight miles from Crested Butte, Colo., in the Gunnison National Forest at an altitude of 9,500 feet; surrounding mountains rise to an altitude exceeding 13,500 feet. Much of the area around the laboratory is almost virgin territory for the research biologist. Independent investigators are welcome to carry on research on alpine biological problems. Communications should be addressed to Dr. John C. Johnson, director of the laboratory, Box 262, Edinboro, Pennsylvania, or to Dr. A. O. Weese, professor of zoology, University of Oklahoma, Norman, president of the board of trustees of the laboratory.

THE correspondent at Delhi, India, of *The Times*, London, announces that the establishment of an Indian National Research Council, authorized to initiate immediately a five-year program of development in the field of scientific and industrial research, is recommended to the Government of India in a report by the Industrial Research Planning Committee. The plan includes the building and equipment of national chemical and physical laboratories and of nine specialized research institutes—for food technology, metallurgy, fuel, glass and silicate, oils and paints, buildings and roads, leather and tanning, industrial fermentation and electro-chemistry; the all-round strengthening of existing research organizations; and the obtaining of seven hundred research workers to man the laboratories by the award of scholarships tenable in India and abroad. All the provinces and larger states are advised to set up laboratories for the investigation of scientific questions of local interest. The committee remarks that current scientific research in India does not represent the bare minimum, whether judged by international standards or by the requirements of India in its present state of industrial development.

SPECIAL ARTICLES

ORAL PENICILLIN—A COMPARISON OF VARIOUS MODES OF ADMINISTRATION[1]

IT has been demonstrated by Free, Leonards, McCullagh and Biro[2] that orally ingested penicillin is absorbed from the gastrointestinal tract in significant amounts. This finding has been confirmed by many laboratories and György, Vandergrift, Elias, Colio, Barry and Pilcher[3] and Free, Huffman, Trattner and Brown[4] have shown that gonorrhea may be successfully treated by orally administered penicillin.

The relative effectiveness of oral and parenteral penicillin in the treatment of disease has not been definitely established, but the general feeling is that perhaps 4 to 5 times as much oral penicillin is required to produce the same therapeutic effect as parenteral penicillin. Most investigators have ascribed this difference to the destruction of penicillin by gastric acid when it is given orally. The present report describes studies of the destruction of penicillin by gastric acidity and the efficacy of different forms of oral penicillin.

The subjects used in the first part of the present study were healthy young adults with both sexes equally represented. The subjects reported at the laboratory after an overnight fast voided and were

[1] From the Departments of Biochemistry and Medicine, School of Medicine, Western Reserve University, the Medical Service of University Hospitals, Cleveland, Ohio, and the Ben Venue Laboratories, Inc., Bedford, Ohio.

[2] A. H. Free, J. R. Leonards, D. R. McCullagh and B. E. Biro, SCIENCE, 100: 431, 1944.

[3] P. György, H. N. Vandergrift, W. Elias, L. G. Colio, F. M. Barry and J. D. Pilcher, *Jour. Am. Med. Asn.*, 127: 639, 1945.

[4] A. H. Free, L. F. Huffman, H. R. Trattner and H. B. Brown, *Jour. Lab. and Clin. Med.*, 30: 738, 1945.