this can only mean that penicillin K is very rapidly destroyed in the body—so rapidly that its therapeutic effectiveness must be very small indeed. These excretion figures also indicate the incorrectness of the original premise which formed the basis of the experiments. It would appear that, in the dosage used, penicillins G and X are excreted at about the same rate, even though twice as many molecules of X were used, and that the rate of excretion of penicillin K is obscured by its high rate of inactivation. At the very low concentrations in which penicillin occurs in the blood it is apparently almost completely removed in one passage through the kidneys.

A check experiment was made with a recent commercial lot of penicillin. Chromatographic examination and corollary checks (including crystallization of its penicillin G) showed this lot to contain approximately 92 per cent of G and 8 per cent of K. Examination of the blood levels and excretion data indicates that this commercial penicillin behaved in every way as did the pure penicillin G—that is, within experimental error.

Conclusions

On the basis of this admittedly preliminary and meager experimental evidence, one would be justified in concluding that (1) penicillin K is so unstable in the human that its therapeutic usefulness when used parenterally is open to very serious question; (2) penicillins G and X are sufficiently stable that their excretion by the kidney represents the limiting factor in the maintenance of therapeutic blood levels; and (3) penicillin X is sufficiently more active (on an International Unit basis) against at least one strain of a hemolytic streptococcus that its use would be indicated for an infection caused by any organism of similar sensitivity.

Reference

1. Heilman, D. H., and Herrell, W. E. *Amer. J. chem. Path.*, 1945, **15**, 7–9.

News and Notes

George Briggs Collins, professor of physics at the University of Notre Dame, has been appointed head of the Department of Physics at the University of Rochester. Dr. Collins, who will begin his new duties with the fall semester in September 1946, succeeds Lee A. DuBridge, head of the Rochester Physics Department for the last 12 years, who has resigned to become president of California Institute of Technology. Dr. DuBridge, as director of the Radiation Laboratory, was closely associated with Dr. Collins at M.I.T. during the war.

Paul Willard Merrill, of the staff of the Mt. Wilson Observatory, was awarded the Henry Draper medal by the National Academy of Sciences on 23 April for his numerous important contributions, particularly those on stellar spectroscopy.

David Glick has been appointed associate professor of physiological chemistry at the University of Minnesota and consultant in biochemistry to the Veterans' Hospital, Minneapolis. His appointment was effective 1 April 1946.

Frank B. Jewett, president, National Academy of Sciences, delivered a lecture on 10 May before the Sigma Xi Chapter of North Carolina State College. Dr. Jewett spoke on "The Future of Scientific Research in the Postwar World."

Kazimierz Sembrat, Instytut Zoologiczny Uniwersytetu, Wroctaw, Poland, lost all of his academic literature during the war and suffered severe physical injuries from bombings. He is greatly in need of reprints and textbooks in zoology, particularly in the field of experimental embryology. Dr. Sembrat was a Rockefeller fellow at the University of Chicago, Yale University, and the Marine Biological Laboratory at Woods Hole during 1936–37.

Ernest H. Volwiler, executive vice-president of Abbott Laboratories, was granted a D.Sc. degree at Miami University, Ohio, on 2 June. Dr. Volwiler has been a member of the board of directors of Abbott Laboratories, Chicago, and director of research since 1930. He was elected vice-president in charge of research and development in 1933, and became executive vice-president of the Laboratories last March.

John R. Ball, professor of geology and paleontology at Northwestern University and for 30 years a member of the staff, will retire at the end of the current academic year but expects to continue active geologic work.

Alpheus W. Smith, physicist and retiring dean of Ohio State University Graduate School, was awarded an LL.D. at the Ohio State commencement exercises on 7 June.

William C. Krumbein, Gulf Research and Development Company, has accepted an appointment as professor of geology at Northwestern University, effective in September. Dr. Krumbein will participate in development of geological work in the Northwestern Technological Institute, as well as in the teaching program.

Announcements

A Defense Research Laboratory for study in the fields of aeronautics, electronics, chemistry, optics, thermodynamics, acoustics, and mathematics has recently been established at the University of Texas. This organization is one of a series in universities and in industry operating under a Section-T contract with the Bureau of Ordnance. The research goal of the Laboratory, sought through the above fields of study, consists of fundamental problems relating to certain forms of guided missiles.

Dr. C. P. Boner, professor of physics at the University, has been on leave of absence as associate director of the Underwater Sound Laboratory of Harvard University, is the director of the Defense Research Laboratory. Dr. M. J. Thompson, until recently group supervisor for aeronautics at the Applied Physics Laboratory of The Johns Hopkins University, is associate director. The research staff includes members of the University academic staff from the College of Engineering and the Departments of Physics, Chemistry, and Mathematics. This group is augmented by additional full-time research staff members who are being recruited from other laboratories engaged in similar research. The staff numbers approximately 75 people, among them R. C. Anderson, M. L. Begeman, C. P. Boner, H. J. Ettlinger, B. E. Short, M. J. Thompson, and R. B. Watson, all members of the AAAS.

The Michigan College of Mining and Technology announces that the following have returned to its faculty: Chester Russell, associate professor of electrical engineering, from industry; J. H. Service and H. W. Risteen, associate professors of physics and mechanical engineering, respectively, both from the Navy; M. W. Bredekamp, assistant professor of chemical engineering, from the Oak Ridge project; V. W. Johnson, forestry; and Ernest Kemp, geology. Instructors added to the staff are: Clarence Bjork, George Brooks, Lester Dawson, and Harry Winter, mathematics; C. M. Harry, mining engineering; and Thomas Coon, mechanical drawing.

The Lasker Award, presented annually for outstanding service in the field of mental hygiene, will be given this year for the most significant experimental investigation into behavior deviation, it was announced recently by George S. Stevenson, medical director of the National Committee for Mental Hygiene.

Nominations with supporting data, which will be presented to an anonymous jury chosen for its competence to judge accomplishment in the field selected, are now being accepted by the Committee. The work of the candidate must either have been accomplished or have been tested and won general acceptance approximately within the past year. Presentation of the $1,000 award is made each fall at the annual meeting of the Committee, which will be held this year on 30–31 October at the Hotel Pennsylvania. The Lasker Award was established in 1944 by the Albert and Mary Lasker Foundation. Col. William C. Menninger won the award in 1944, and John Rawlings Rees, consultant in psychiatry to the Directorate of Psychiatry of the British Army; and Maj. Gen. G. Brock Chisholm, Deputy Minister of National Health, Federal Department of National Health and Welfare, Canada, received the award jointly in 1945 for outstanding service in rehabilitation.

Plans for construction of a sulfuric acid plant on the James River between Bellwood Road and Kingsland Creek in Bellwood, nine miles southwest of Richmond, Virginia, have been approved by E. I. du Pont de Nemours and Company. The plant, which will be operated by the Grasselli Chemicals Department, will cost approximately $1,500,000. It will be located on a 425-acre site recently purchased by Du Pont and will produce sulfuric acid for local consumers who previously relied on supplies shipped into the area.

Harvard University announces that Gordon M. Fair has been appointed dean of the Graduate School of Engineering, effective 1 July.

Meetings

The Pacific Division of the AAAS will hold its 27th annual meeting at the University of Nevada, Reno, 17–22 June. The following program has been scheduled:

Tuesday morning—A symposium on "Antibiosis," with Thomas L. Jacobs, University of California at Los Angeles; David Bonner and Lowell A. Rantz, Stanford University; and K. S. Pilcher, Cutter Laboratories, Berkeley, California, participating; *Tuesday afternoon,* 4:00–6:00 P. M.—A general reception on the University campus for members of the Association and associated societies and their guests, given by the president of the University, John O. Moseley, and Mrs. Moseley; *Tuesday evening*—A lecture on

"Research in the Social Sciences," by Holbrook Working, Stanford University; *Wednesday evening*—The presidential address on "The Influence of Molecular Structure on Biological Activity," by Linus Pauling, president of the Pacific Division; and *Thursday evening*—A lecture on "Fundamental Particles and Atomic Energy," by Wendell M. Latimer, University of California.

A conference on algebra will be held at the University of Chicago during the week of 15–19 July. Some of the sessions will emphasize the recent contacts of algebra with other branches of mathematics such as topology, function theory, and geometry. It is hoped that the meetings will be held in Eckhart Hall. Reservations should be made directly with Chicago hotels. Hotels in the vicinity of the University of Chicago are the Broadview, 5540 South Hyde Park Boulevard; Del Prado, 5307 South Hyde Park Boulevard; Shoreland, 5454 South Shore Drive; Windermere, 1642 East 56th Street; Mira-Mar, 6218 South Woodlawn. Because of the acute shortage of hotel space, reservations should be made as soon as possible.

New Units for the Measurement of Radioactivity

It has become the custom to express the strength of radioactive sources in terms of curies. This is an erroneous use of this unit, since by original definition the curie is that "amount of radon in equilibrium with one gram of radium" (Rutherford's *Radioactive substances and their radioactivity,* 1913, p. 479; The radioactive constants as of 1930. *Rev. mod. Phys.,* 1931, **3**, 427), as defined by the Radiology Congress in Brussels in 1910. Therefore, the curie can be used only to represent a rate of disintegration in the radium family. It then represents the disintegration rate of radium or its products in equilibrium. Such a use has been endorsed by the International Radium Commission.

The quantity to be specified in designating the strength of radioactive sources in general is the disintegration rate, determined by the decay constant and the number of atoms of the radioactive isotope in the source. This is simply a number, and therefore, to establish a suitable unit, the only requirement is to select a convenient number of disintegrations per second and give it a name. In selecting this number consideration should be given to insure that it can be readily expressed in submultiples, and multiples by the usual prefixes, kilo-, milli-, micro-, etc. A number which fits this requirement is 10^6. Since the curie was named in the honor of M. and Mme. Curie, the co-discovers of radium, it is natural to select the name "rutherford" for the new unit. The appropriate abbreviation is "rd," which conflicts with the abbreviation of no other well-accepted physical unit. The micro-rutherford would become one disintegration per second—a convenient number to remember. Furthermore, the rutherford itself is a small unit of the order of magnitude of many sources used in laboratory measurements. It is sufficiently different in size from the curie that no confusion can arise with the curie in connection with measurements of activities in the radium family. Large sources would require the use of positive powers of 10, which would be preferable to the use of a large unit requiring negative powers of 10.

It should be pointed out not only that continued use of the curie for all radioisotopes requires a redefinition of the curie, but also that the value of the curie is uncertain to at least 4 per cent and values in current use are well outside this limit. The rutherford provides a definite unit. In addition to eliminating the undesirable use of the curie, the proposed unit also eliminates the basic necessity for measuring radioisotopes in terms of a standard. Any measuring device which will determine the total number of disintegrations per second will provide directly the strength of the source in rutherfords. A counting arrangement for which the solid angle factor is known is an example. Radioactive standards may be used to determine this factor for a given geometrical arrangement, but other methods are also available.

In the measurement of sources of gamma rays the roentgen has gained increasing use, largely because this unit is independent of the quality (electron volts) of the gamma radiation. There is need for a unit in which the intensity of gamma ray sources can be expressed to eliminate the use of the curie for this purpose. An obvious unit derived from the definition of the roentgen is a roentgen-per-hour at one meter. The roentgen-per-hour at one meter can be abbreviated to r.h.m., which again is not readily confused with any other common abbreviation. It has been suggested that this abbreviation can be pronounced "rum." It should be noted that a gamma ray source equal to one r.h.m. will have a gamma ray strength 1.18 times that of one curie of radium. Therefore, the roentgen-per-hour at one meter has the same order of magnitude as the curie in the measurement of gamma ray sources.

The National Bureau of Standards, at the suggestion of the Committee on Radioactivity of the National Research Council, recommends the general use of these units.—*E. U. Condon* and *L. F. Curtiss* (National Bureau of Standards).