

SCIENTIFIC NOTES AND NEWS

MAJOR GENERAL NORMAN T. KIRK, Surgeon General of the Army, has been awarded the Distinguished Service Medal by General Brehon Somervell, Commanding General of the Army Service Forces, in recognition of his "outstanding leadership . . . in directing the largest Medical Department in the history of the United States Army."

DR. ALBERT F. BLAKESLEE, visiting professor of botany at Smith College, has been elected a foreign member of the Royal Swedish Academy of Sciences.

DR. GARRETT BIRKHOFF, associate professor of mathematics at Harvard University, has been elected honorary associate of the Sociedad Matemática Mexicana.

At the recent annual meeting in Cleveland of the American Society for Metals, Dr. Charles H. Herty, Jr., of Bethlehem, Pa., was elected president.

PROFESSOR PAUL H. BUCK, dean of the Faculty of Arts and Sciences, has been appointed to the newly established position of provost of Harvard University. He also will serve, *ex-officio*, as dean of the Faculty of Arts and Sciences.

DR. LEON O. JACOBSON, assistant professor of medicine at the University of Chicago, who for the past three years has been associate director of the division of biology and medicine of the metallurgical project at the university, has been appointed associate dean of the division of biological sciences.

DR. NORMAN D. NEWELL, of the department of geology of the University of Wisconsin, more recently connected with the Department of State in Peru, has been appointed to the joint position of curator of historical geology and fossil invertebrates at the American Museum of Natural History and professor of invertebrate paleontology in the department of geology of Columbia University. He will direct instruction in invertebrate paleontology at Columbia University and will have charge of the Invertebrate Fossil Collections at the museum. Students at the university will have the privilege of carrying on research making use of the facilities of the museum.

DR. ISAAC STARR, Milton Bixler Hartzell research professor of therapeutics, has been elected dean of the School of Medicine of the University of Pennsylvania. Dr. William Pepper, dean of the school for thirty-three years, will become dean emeritus.

PROFESSOR WILLIAM PHELPS KIMBALL, assistant dean and professor of civil engineering of the Thayer School of Engineering of Dartmouth College, has been appointed dean of the school.

DR. J. ROBERT OPPENHEIMER, retiring director of the atomic bomb laboratories at Los Alamos, New Mexico, has become professor of theoretical physics at the California Institute of Technology. Dr. Norman E. Bradbury, professor of physics on leave from Stanford University, has been appointed to succeed him at Los Alamos.

DR. WILLIAM F. O'CONNOR has been appointed to the newly established post of professor of safety engineering at the College of Engineering of New York University. It is planned to cooperate with the Georgia School of Technology, with the Illinois Institute of Technology, with New York University and with the University of California in a national plan to introduce safety engineering at the college level.

DRS. E. M. PURCELL, J. S. Schwinger and R. R. Wilson have been appointed associate professors in the department of physics at Harvard University.

DR. COURTNEY WERNER, of Washington University, St. Louis, has been promoted from an assistant professorship to an associate professorship of geology.

DR. HOWARD E. SHEFFER has been appointed assistant professor of chemistry at Union College, Schenectady, N. Y.

DR. EUGENE C. COYNER, formerly instructor of chemistry at the University of Minnesota, now with the Experimental Station of E. I. du Pont de Nemours and Company, Wilmington, Del., has been appointed, from January 1, assistant professor of organic chemistry at the University of Tennessee.

THE following promotions of members of the department of chemistry have been made at the University of Pittsburgh: W. E. Baldwin to an associate professorship; B. F. Daubert and Klaus Hofmann to associate research professorships. R. E. McClure has become associate professor, Hurd W. Safford assistant professor and W. E. Wallace assistant research professor. Captain Douglas G. Nicholson, C.W.S., formerly associate in chemistry at the University of Illinois, has been appointed associate professor of inorganic chemistry.

DR. PHILIP R. WHITE, after thirteen years of association with the Rockefeller Institute for Medical Research at Princeton, N. J., has resigned to accept an appointment at the Institute for Cancer Research at the Lankenau Hospital Research Institute in Philadelphia. He will organize and direct a division of general physiology and tissue culture dealing with problems in tumor growth. He will take up his new work on December 1.

THE John and Mary R. Markle Foundation has granted the sum of \$7,000 to continue the support for two years of the study of filariasis under the direction of Dr. J. Allen Scott, associate professor of preventive medicine at the Medical Branch at Galveston of the University of Texas. The Sugar Foundation, Inc., of New York City, has made a grant of \$1,000 for the support of research on the influence of carbohydrates on experimental liver cancer under the direction of W. A. Selle, professor of physiology.

PROFESSOR M. S. COOVER, head of the department of electrical engineering at Iowa State College, has been appointed for a term of three years representative of the Council for Professional Development of the American Institute of Electrical Engineers.

THE Board of Governors of the Arctic Institute of North America has appointed Dr. A. Lincoln Washburn director of the institute. Permanent headquarters have been opened in Montreal.

DR. VOLNEY C. WILSON, instructor in physics at the University of Chicago; Dr. John P. Howe, assistant professor in the department of chemistry of Brown University, and Dr. John F. Eckel, associate professor of metallurgy at Purdue University, have joined the staff of the research laboratory of the General Electric Company at Schenectady.

SIR JOHN BOYD ORR, Aberdeen, until his election to Parliament this year director of the Rowett Research Institute and of the Imperial Bureau of Animal Nutrition, has been elected unanimously for a two-year term director general of the United Nations Food and Agriculture Organization.

DR. P. JAMES RICH, until recently on the advisory staff of the field director of Ammunition Plants, Army Service Forces, has been appointed director of research for Blanke-Baer Extract and Preserving Company of St. Louis.

UNDER an agreement between the Fish and Wildlife Service and the University of Chicago, W. L. McAtee is in residence at the university, where he will complete a dictionary of vernacular names of North American birds to be published by the University of Chicago Press.

DR. J. OSBOEN FULLER, who was granted leave from West Virginia University to work for the United States Geological Survey on an oil project in southwestern Virginia, has returned to his teaching position in the department of geology.

LIEUTENANT COMMANDER HAROLD T. COOK, USNR, returned from overseas duty on October 21 and was released from active duty on November 1. He will resume his position as head of the Department of Plant Pathology of the Virginia Truck Experimental

Station, at Norfolk, on December 1. He served as officer-in-charge of the fruit and vegetable section of the Food Inspection Division, U. S. Joint Purchasing Board, in New Zealand from December, 1942, to February, 1945, and was then transferred to the Island of Tinian, where he commanded the naval unit that operated farms for the production of fresh vegetables for the military forces in the forward areas.

PROFESSOR H. MUNRO FOX, F.R.S., Professor I. M. Heilbron, F.R.S., and C. C. Paterson, F.R.S., have been appointed members of the British Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research. Professor A. V. Hill, Sir Felix Pole and Sir Robert Robinson retired from the council on completion of their terms of office on September 30.

PROFESSOR I. M. HEILBRON, F.R.S., and Dr. L. H. Lampitt, the chairman and secretary of the British National Committee for Chemistry, on October 16 left on a visit to Paris to re-establish contact with French men of science. The purpose of their visit was to discuss informally the revival of international collaboration in science. Professor G. I. Finch, F.R.S., carried greetings from the Royal Society on behalf of the men of science of Great Britain to their colleagues in Belgium and Holland. It was hoped to renew and re-establish scientific contacts and to see what help could be given by British science towards the rehabilitation of science and scientific education in these two countries. In Belgium Professor Finch was the guest of the Académie Royale des Sciences, des Lettres et des Beaux-Arts in Brussels, and in Holland of the Koninklijke Akademie van Wetenschappen.

PROFESSOR C. R. LONGWELL, chairman of the department of geology of Yale University, is on a lecturing tour under the auspices of the Distinguished Lecture series of the American Association of Petroleum Geologists. Seventeen lectures will be given before groups in several states and in Alberta. The subject of the lecture is "Geology of the Basin Ranges—Revelations and Problems."

THIS year's series of the Laity Lectures of the New York Academy of Medicine, which were inaugurated on the evening of Thursday, November 8, at 8:30 P.M., is devoted to the subject "Medicine To-day." The first lecture in the series was delivered by Dr. John F. Fulton, chairman of the Advisory Board of the Historical Library of the Medical School of Yale University. Preceding Dr. Fulton's address, there was a brief presentation by Dr. Malcolm Goodridge, chairman of the Committee on Medicine and the Changing Order. The address of welcome was made by Dr. Cornelius P. Rhoads, acting president of the academy.

THE Committee on Scientific Research of the Amer-

ican Medical Association invites applications for grants of money to aid in research in problems bearing more or less directly on clinical medicine. Preference is given to requests for moderate amounts to meet specific needs. As a rule grants are not made for the purchase of equipment or apparatus of a permanent nature. For application forms and further information, the committee should be addressed at 535 North Dearborn St., Chicago 10, Ill.

THE Psycho-Acoustic Laboratory, initiated at Harvard University in 1940 as a war research unit, will continue its activities directly under the Faculty of Arts and Sciences. Funds available under a contract with the U. S. Navy, Office of Research and Inven-

tions, will provide for basic research in experimental psychology, with special emphasis on problems of communication (speech, hearing and electronics). There will be a research and teaching staff of about twelve members, including S. S. Stevens, director, and E. B. Newman, associate director.

THE twentieth Exposition of Chemical Industries will be held from February 25 to March 2 in Grand Central Palace, New York. The exposition, on a reduced scale due to war conditions, was last convened in 1943.

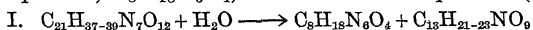
THE Long Island College of Medicine, Brooklyn, N. Y., will give the fourth postgraduate course in industrial medicine from January 14 to February 1.

SPECIAL ARTICLES

STREPTOMYCES ANTIBIOTICS. III. DEGRADATION OF STREPTOMYCIN TO STREPTOBIOSAMINE DERIVATIVES

EXPERIMENTAL results indicate that streptomycin has the general constitution of a hydroxylated base (streptidine)¹ attached through a glycosidic linkage to a nitrogen-containing disaccharide-like molecule. The latter moiety of the streptomycin molecule contains a free or potential carbonyl group and a methyl-amino group.

The hydrolytic cleavage of streptomycin in acid solution and the isolation and characterization of the basic fragment streptidine are described in a forthcoming publication.¹ When the present formula of streptomycin, $C_{21}H_{37-39}N_7O_{12}$,² and the formula of streptidine, $C_8H_{18}N_6O_4$,¹ are used in an equation (I)



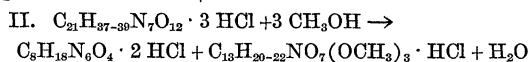
involving the reaction with one molecule of water, it is seen that a product might be formed which is rich in oxygen and contains a nitrogen atom. The formula, $C_{13}H_{21-23}NO_8$, of such a product, the insolubility of streptomycin in water-immiscible organic solvents, the formation of a streptomycin trihydrochloride-calcium chloride double salt,² and the cleavage of streptomycin in acid solution at 25°,¹ are suggestive of the general constitution of a hydroxylated base linked glycosidically to a disaccharide-like molecule. The following experiments yielded further evidence in support of this formulation.

When streptomycin hydrochloride was treated with methanol containing hydrogen chloride, the biological activity decreased markedly. The mixture of products was separated chromatographically into streptidine hydrochloride¹ and the amorphous hydro-

chloride of a base, methyl streptobiosaminide dimethyl acetal hydrochloride³; $(\alpha) \frac{25}{D} - 143^\circ$ (methanol).

Anal. Calcd. for $C_{13}H_{20}NO_7(OCH_3)_3 \cdot HCl$: C, 44.49; H, 7.00; N, 3.24; OCH_3 , 21.6. Calcd. for $C_{13}H_{22}NO_7(OCH_3)_3 \cdot HCl$: C, 44.29; H, 7.57; N, 3.19; OCH_3 , 21.5. Found: C, 44.35; H, 7.13; N, 4.00; OCH_3 , 19.1; amino-nitrogen (van Slyke), none.

The cleavage of streptomycin to give a product of the formula $C_{13}H_{20-22}NO_7(OCH_3)_3 \cdot HCl$, is shown in equation II.



In the infrared, methyl streptobiosaminide dimethyl acetal hydrochloride in tetrachloroethane solution absorbed in the 3μ ($-OH, > NH$) region; no carbonyl absorption could be detected. Since, as will be discussed below, the disaccharide-like portion of the molecule in streptomycin contains a free or potential carbonyl group, it seems likely that in the derivative of streptobiosamine described here, the original carbonyl group has been converted to a dimethyl acetal. The third methoxyl group is presumably that of a methyl glycoside.

Acetylation of methyl streptobiosaminide dimethyl acetal hydrochloride gave a crystalline acetyl derivative, m.p. 124.5–126°, $(\alpha) \frac{25}{D} - 124^\circ$ (chloroform).

Analytical and molecular weight data on material recrystallized to constant properties were in agreement with a composition $C_{13}H_{16-18}NO_7(CH_3CO)_4(OCH_3)_3$, or methyl tetra-acetyl streptobiosaminide dimethyl acetal.

³ Consideration of a convenient trivial name for this product led to the selection of streptobiosamine for the parent disaccharide-like compound. The name streptobiose would imply a neutral material rather than a base, and streptosamine would imply a nitrogen-containing hexose (similar to glucosamine).

¹ Peck, Graber, Walti, Peel, Hoffhine and Folkers, *Jour. Am. Chem. Soc.* (In press.)

² Peck, Brink, Kuehl, Flynn, Walti and Folkers, *Jour. Am. Chem. Soc.*, 67: 1866, 1945.