consideration of his inspiring leadership in the movement to reincarnate in our time the homely virtues" of Benjamin Franklin.

Pure science was recognized in the awards of the Elliott Cresson Medals to Dr. Claude S. Hudson, of the National Institute of Health, and to Dr. Isidor I. Rabi, of Columbia University. The former thus receives recognition for his distinguished investigations into the chemistry of sugars, which has greatly enriched our knowledge of the subject. Dr. Rabi receives the award for the development of the Rabi magnetic resonance method of investigating the nucleus of the atom.

Awards of the Longstreth Medal, for an ingenious construction of a thread grinding machine, were made to Ralph E. and Ernest V. Flanders and to Charles Maxwell Kearns for the application of methods for measuring strains in aircraft propellers under flight conditions.

The frequent uses of concrete in structural work gives importance to the research of Duff A. Abrams, who discovered the fundamental bases for concrete and reinforced concrete mixtures. Mr. Abrams received the Frank P. Brown Medal in recognition of his work.

Three Howard N. Potts Medals were awarded: To Dr. Jesse W. Beams, for his contributions to the problems of high-speed rotation which have met with many applications in the development of ultra-high-speed centrifuges; to Harcourt C. Drake, for the development of a rail fissure detection car which has done much to reduce loss of life and property on railroads, and to Dr. Bernard Lyot, the French astronomer, for his method of studying the sun's corona in the absence of a total eclipse.

The Louis E. Levy Medal for the best paper to appear in the *Journal of The Franklin Institute* has been awarded for the year 1941 to Dr. John Donovan Strong, of the California Institute of Technology, for his paper entitled "On a New Method of Measuring the Mean Height of Ozone in the Atmosphere."

Certificates of Merit were awarded to the Goodyear Tire and Rubber Company for their production of an improved safety tire; to Dr. John J. Grebe, inventor of an ingenious metal sun blind, and to Walter Larkin, of Philadelphia, for an admirable design of a circular knitting machine.

The awards were presented by Charles S. Redding, president, at the meeting of the Franklin Institute on April 15. Senator George Wharton Pepper spoke on "Franklin as a Guide in Our Affairs of To-day" at the annual dinner, which was held in the evening.

SCIENTIFIC NOTES AND NEWS

PROFESSOR FREDERICK G. KEYES, head of the department of chemistry and director of the research laboratory of physical chemistry at the Massachusetts Institute of Technology, has been awarded the 1942 Theodore William Richards Medal of the Northeastern Section of the American Chemical Society for "distinguished achievement in chemistry."

THE annual medal of the American Institute of Chemists, awarded for "outstanding service to the science of chemistry and the profession of the chemist in America," will be presented on May 16 at the Claridge Hotel, Atlantic City, N. J., to Professor William Lloyd Evans, emeritus professor of chemistry at the Ohio State University, president in 1941 of the American Chemical Society.

DR. LEO LOEB, emeritus professor of pathology at the School of Medicine of Washington University, St. Louis, was presented on March 3 with the Award of Merit and Gold Medal of the St. Louis Medical Society.

RENO H. SALES, chief geologist of the Anaconda Copper Mining Company, Butte, Mont., has been awarded for distinguished engineering achievement the 1942 Egleston Medal of the Columbia University Engineering Schools Alumni Association. It will be presented to him at the seventy-first annual dinner of the alumni on April 23.

THE honorary doctorate of laws was conferred on February 23 on commemoration day at the Johns Hopkins University on Dr. Ross Granville Harrison, chairman of the National Research Council and Sterling professor of biology, emeritus, at Yale University; on Dr. Frank R. Lillie, emeritus professor of zoology and embryology at the University of Chicago, and on Dr. Henry A. B. Dunning, director of the research laboratory and president of Hynson, Westcott and Dunning, Inc.

PROFESSOR C. LOVATT EVANS, F.R.S., Jodrell professor of physiology at University College, London, has been elected an honorary member of the Sociedad Argentina de Biologia.

IT is stated in *Nature* that the Committee of the Athenaeum, London, under the provision which empowers the annual election of a certain number of those of distinguished eminence in science, literature or the arts, or for their public services, has elected to membership Professor P. M. S. Blackett, Langworthy professor of physics, University of Manchester, and T. D. Kendrick, keeper of British and Medieval Antiquities, British Museum.

AT the recent New York meeting of the American Society for the Control of Cancer, officers were elected as follows: Dr. Herman C. Pitts, Providence, R. I., *President;* Dr. Frank E. Adair, New York, *Vice-president;* Dr. Cornelius P. Rhoads, New York, *Secretary;* James H. Ripley, New York, *Treasurer,* and Dr. Clarence C. Little, Bar Harbor, Maine, *Managing Director.*

IT is announced that Dr. Edward W. Berry, professor of paleontology at the Johns Hopkins University, will retire as dean and provost of the university in order to devote more time to his scientific work. He has been dean of the College of Arts and Sciences since 1929 and provost since 1935. He will continue as professor of paleontology. Dr. G. Wilson Shaffer, professor of physical education, has been named acting dean of the College of Arts and Sciences, and P. Stewart Macaulay, secretary of the university, has been appointed provost. These appointments will become effective in October when Dr. Berry retires.

THE *Journal* of the American Medical Association states that Dr. Leslie L. Bigelow, clinical professor of surgery at the Ohio State University College of Medicine, Columbus, has been appointed acting dean of the school. He succeeds Dr. Hardy A. Kemp, dean since September 1, 1941, who as a major in the medical reserve corps of the U. S. Army has been called into active service at the Army Medical School, Washington, D. C.

ALBERT EIDE PARR, professor of zoology at Yale University and director of the Peabody Museum, has been elected director of the American Museum of Natural History, New York, to succeed Dr. Roy Chapman Andrews, whose resignation takes effect on June 1. Mr. Parr was formerly scientific director of oceanographic expeditions at Yale University and is now director of marine research.

T. ROY REID, who has served as chief assistant to Secretary of Agriculture Claude R. Wickard, has been named director of personnel for the U. S. Department of Agriculture.

LIEUTENANT COLONEL THOMAS B. TURNER, Medical Reserve Corps, U. S. Army, professor of bacteriology at the Johns Hopkins School of Hygiene and Public Health, has been ordered to active duty in the Surgeon General's Office, Washington, D. C., as chief of the subdivision of venereal disease control.

DR. MARCUS S. GOLDSTEIN, research fellow of the Institute for Latin-American Studies at the University of Texas, has returned from a three months stay in Mexico, where a check sample of families was obtained following a study in Texas of the physical anthropology of Mexican families and their American-born descendants.

The Experiment Station Record states that Dr. Lindsey A. Brown, associate agronomist in charge of soil surveys at Colorado State College and Experiment Station, has leave of absence for a year to become special consultant in soils with the Farm Security Administration at Denver, of the U. S. Department of Agriculture. His work at Colorado has been taken over by Dale S. Romine, instructor and assistant in soils.

R. A. BUTLER, president of the British Board of Education, has been made chairman of the Scientific Advisory and Engineering Advisory Committees in succession to Lord Hankey.

DR. B. E. DAHLGREN, chief curator of the department of botany of Field Museum, Chicago, has returned from a brief collecting trip to Cuba undertaken for the purpose of adding to the palm herbarium. He also investigated potential sources of economic plant products.

DR. JAMES M. MACKINTOSH, professor of public health at the University of Glasgow, has returned to Scotland after spending several months in the United States as the guest of the Rockefeller Foundation. Dr. Mackintosh, who was from 1937 to 1941 chief medical officer of the Department of Health for Scotland, acted as consultant to the Medical Division of the Office of Civilian Defense, Washington, D. C., and in that capacity visited many parts of the United States, lecturing and advising on Emergency Medical Service for Civilian Defense.

THE annual Christian A. Herter lectures at the New York University College of Medicine were delivered on April 6 and 7 by Dr. Conrad A. Elvehjem, professor of biochemistry at the University of Wisconsin.

DR. WALLACE W. ATWOOD, president of Clark University and founder of the Graduate School of Geography, lectured at the University of Texas on April 9 and 10. He spoke on "The Geography of Colorado" and on "The Geography of China."

EACH year the Sigma Xi chapter of the Iowa State College presents as speaker at one of the regular meetings a member of the staff who has made distinguished contributions to scientific research. In accordance with this custom, Dr. Alfred M. Lucas, associate professor of zoology at the college, has been chosen to address the society. He will speak on "The Effects of Viruses on Tissue Cells."

DR. LIONEL S. MARKS, professor of mechanical engineering, emeritus, Graduate School of Engineering, Harvard University, is delivering during April a Sigma Xi lecture at a number of colleges and universities. They are the Polytechnic Institute of Brook-

lyn, West Virginia University, Washington University, the University of Nebraska, the University of Colorado, the Louisiana State University, the North Carolina State College, the University of North Carolina, Miami University, the University of Michigan and the Illinois Institute of Technology.

THE annual meeting of the American Psychological Association will be held at the Hotel Statler and at Harvard University on September 2, 3, 4 and 5, under the presidency of Dr. Calvin P. Stone, of Stanford University. His presidential address will be delivered on the evening of September 4. A panel discussion on "Psychology in Civilian Service," under the direction of Dr. Karl M. Dallenbach, of Cornell University, chairman of the Emergency Committee in Psychology, has been arranged for Wednesday, and on Friday a second panel discussion on "Psychology in Government Service" is planned under the chairmanship of President Leonard Carmichael, of Tufts College, director of the National Roster of Scientific and Specialized Personnel. Plans have been completed for the celebration of the fiftieth anniversary of the American Psychological Association and of the centennial of William James.

THE thirteenth annual meeting of the American Association of Physical Anthropologists was held at Harvard University on April 16, 17 and 18. The annual public address was given by Dr. R. C. Carpenter, on the "Behavior and Social Relations of the Rhesus Monkey" (with motion pictures). In addition to papers read before the sections, there were two symposia, one on "Present-day Aims and Interests in Physical Anthropology," presided over by Dr. E. W. Count, and one on "Techniques in Physical Anthropology," presided over by Dr. H. L. Shapiro.

THE annual joint meeting of the Wisconsin Museum Conference, the Wisconsin Academy of Science, Arts and Letters, the Wisconsin Archeological Society and the Wisconsin Folklore Society was planned for April 17 and 18 at the University of Wisconsin. All the state societies offered papers in the programs. The annual dinner was held at the University Memorial Union.

THE Medical Library Association will hold its forty-fourth annual meeting in New Orleans on May 7, 8 and 9. The hosts are the Rudolph Matas Medical Library of Tulane University, the Orleans Parish Medical Society Library and the Agramonte Memorial Library of Louisiana State University Medical Center. Hotel headquarters will be at the Jung Hotel. The program will feature tropical medicine and southern medical history. The president of the association, Miss Mary Louise Marshall, will preside.

IT is reported in *Nature* that the inaugural meetings of the newly formed optical group of the British Physical Society were held on March 6. It is ten years ago since the Optical Society was merged with the Physical Society, and although in this period a good number of meetings have been devoted to optical subjects, there has been a widely expressed desire for the formation of a group for discussions and lectures of a less exacting and critical character than those associated with papers intended as original contributions to science. A preliminary meeting was held in December, 1941, at which a draft constitution was approved. This was adopted at the inaugural meeting. Dr. A. O. Rankine was elected chairman and Dr. L. C. Martin was made honorary secretary.

THE U. S. Civil Service Commission announces further open competitive examinations for technologists, with salaries ranging from $2,000 to $5,600 a year. Applicants must not have passed their sixtieth birthday. Junior chemists to perform research, investigative or other work in some branch of chemistry also are needed. The positions pay $2,000 a year. Women especially are urged to apply. The Navy yards, arsenals and other Government laboratories are now employing women in chemical work. Completion of a four-year course in a recognized college with 30 semester hours in chemistry is required. Further information in regard to these positions can be obtained from the Civil Service Commission, Washington, D. C.

UNDER the will of the late Dr. Menas S. Gregory, formerly professor of psychiatry in the New York University College of Medicine, the sum of $40,000 is left to that institution. Twenty thousand dollars will be used to establish an annual lectureship and the balance will be given toward the endowment of a professorship in the department of psychiatry.

THE Indian Society of Genetics and Plant Breeding, which was established at New Delhi in January, has issued the first number of a new journal entitled the *Indian Journal of Genetics and Plant Breeding*. It is edited on behalf of the executive council of the society by Dr. B. P. Pal, Imperial Agricultural Research Institute, New Delhi.

ACCORDING to the *Journal* of the American Medical Association the new Churchill Hospital is to be opened at Oxford. It will be administered by a group of American surgeons who arrived in England on the first day of the air raids on London. The hospital was built in 1941 and therefore is the first to be built with the horrors of modern warfare in mind. It is so designed that a bomb could do no great damage to the hospital as a whole. The wards are built round a courtyard, each ward having its own air raid shelter. Six hundred patients can be accommodated. The staff comprises twelve American doctors and fifty American and Canadian nurses. Its main function will be

reconstruction, of which the two branches will be orthopedic and plastic. A medical service and other types of surgery will be provided as necessity arises. After the war it is intended, if possible, to keep the hospital as a permanent American hospital in relation with the Oxford Medical School. It is hoped that a similar British organization may be initiated in relation with a university in the United States.

DISCUSSION

CYTOCHROME B_2

IN the course of isolation of cytochrome *c* reductase from yeast,[1] the presence of a new hemin compound was reported. This observation is of particular interest now because of the report of Bach, Dixon and Keilin[2] of the discovery of a new cytochrome b_2, which, from spectrometric evidence, seems to be identical with the one we have reported. These investigators ascribe two bands to the compound, one at 530 mμ and the other at 557 mμ. The position of the Soret band was not given. The spectrum of an impure sample of cytochrome *c* reductase, both in the oxidized and reduced forms, is given in Fig. 1. In the

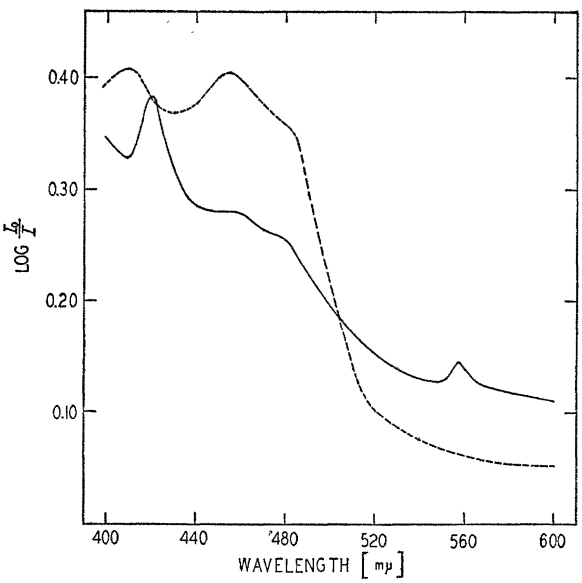

FIG. 1

reduced form the α band of the hemin compound which was present in our preparation was observed at 557 mμ and the Soret band at 420 mμ. Upon oxidation the α band disappears, whereas the Soret band shifts to 410 mμ. The peak at 455 mμ is that of the cytochrome *c* reductase.

This hemin compound is reduced by addition of hexose monophosphate, *Zwischenferment,* and triphosphopyridine nucleotide.

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1 *Jour. Biol. Chem.,* 136: 747, 1940.
2 *Nature,* 149: 21, 1942.

ON THE WIDTH AND ORIGIN OF BACTERIAL FLAGELLA

THE writer was recently examining a photograph of *Aerobacter cloacae* taken with the electron microscope and released by the RCA Manufacturing Company[1] and was struck by its bearing on two controversial points regarding bacterial flagella, namely, the width of a single, unstained flagellum and its origin in the cell.

The thickness of a single, dried, unstained flagellum has been indirectly estimated for a number of bacteria (Migula,[2] Reichert,[3] Meyer[4]). The methods used were based on uncertain and objectionable assumptions. Therefore, one can not help but welcome the heretofore scanty material made available by the electron microscope and hope for more. Accurate measurement of the width of the flagellum of *A. cloacae* were made by drawing a scale, like the one previously used by the writer,[5] on transparent material and by properly superimposing the scale on the photograph of the flagellum. This gave a thickness of 0.02 μ, and an average ratio of 1/22 between the width of the dried flagellum and that of the dried cytoplasm. This ratio is about the same as the one estimated by Migula[2] and is at variance with Meyer's[4] ratio of 1/10. Whether this ratio will hold for other bacteria remains to be seen. Furthermore, by assuming that the faint outer zones of the cells shown in the photograph represent the cell walls, we are justified in assuming that their boundary represents the boundary of the living cells, and that the shrunken cytoplasm has, on the average, about three fourths of its original width (slightly higher than the two thirds found in the literature[6]). On this basis, the width of a single flagellum of *A. cloacae* in the living condition will be about 0.0267 μ or, roughly, 0.03 μ.

Regarding the origin of the flagellum, we have those who believe that it originates from the cell wall and those who believe that it originates in the cytoplasm and extends through pores in the cell wall. The literature has been reviewed by the writer.[6] In the above-

1 Wallerstein Laboratories Communications, 4: 3, 1941.
2 W. Migula, "System der Bakterien," 1, 96–138, Jena, 1897.
3 K. Reichert, *Centralbl. f. Bakt..* I, Orig., 51: 14–94, 1909.
4 A. Meyer, "Die Zelle der Bakterien," 119–120, Jena, 1912.
5 G. Knaysi, *Jour. Inf. Dis.,* 45: 13–33, 1929.
6 G. Knaysi, *Bot. Rev.,* 4: 86–87 and 99, 1938.