Regents of the college and chairman of the Health and Medical Committee of the Federal Security Agency, and Dr. W. Edward Gallie, of Toronto, president of the college. Surgeons General Magee and McIntire and Colonel Baehr will also speak at the presidential meeting and convocation on the same evening.

The Forum on Fundamental Surgical Problems inaugurated at the 1941 Clinical Congress will be repeated to give the younger men, representing various university departments of surgery, an opportunity to present the important results of their clinical and experimental research work before a large surgical meeting. Heretofore these younger men have seldom been able to present their original work and ideas, since many of them have not yet qualified for membership in the principal surgical societies. The forum will be held on three successive mornings.

The officers-elect of the college who will be inaugurated on November 17 are Dr. Irvin Abell, of Louisville, *President;* Dr. Leland S. McKittrick, of Boston, *First Vice-president,* and Dr. F. Phinizy Calhoun, of Atlanta, *Second Vice-president.*

A large technical exhibition, in which leading manufacturers of surgical instruments and supplies, sutures, dressings, pharmaceuticals, operating room equipment, x-ray apparatus and hospital equipment of all kinds, as well as publishers of medical books, will participate, will be as usual a feature of the congress. It will be housed in the exhibit hall of the Cleveland Public Auditorium.

THE GRADUATE FORTNIGHT OF THE NEW YORK ACADEMY OF MEDICINE

DR. MALCOLM GOODRIDGE, president of the New York Academy of Medicine, inaugurated the 1942 Graduate Fortnight, which opened on October 12, with an address of welcome. He drew attention to the fact that this year's Graduate Fortnight is the fifteenth in the series given annually. He paid tribute to the late Dr. Ludwig Kast, on whose recommendation and through whose generous support the institution was realized.

Beginning on October 12 and continuing through October 23, physicians from the metropolitan New York area and from many states in the Union met daily at the clinical conferences, pathological demonstrations, round-table discussions and evening sessions to study and review the best procedures for the diagnosis, treatment and prevention of the disorders of the nervous system likely to be experienced by the armed forces and by our industrial and civil population. The program covered not only those physical injuries which may result from violence and from infections, but also those of a purely psychological origin.

An exhibit embracing the most important phases of the problem, to which the leading medical institutions of the country contributed, was on view at the academy.

At the evening sessions twenty-two addresses were given on a variety of subjects ranging from the pathology of injuries to the head and other portions of the nervous system, to the critical evaluation of vitamin therapy in neurology. A hundred and twenty-one clinical sessions providing "bedside" and other conferences were held in eighteen hospitals of Greater New York. Panel discussions covered the subjects of Poliomyelitis, Psychoneuroses of War, the Vitamins in Disorders of the Nervous System and Psychotherapy. A demonstration of the Kenny method of treatment of poliomyelitis was given daily under the direction of Dr. D. W. Gudakunst, medical director of the National Foundation for Infantile Paralysis.

The Graduate Fortnight was organized by the Committee on Medical Education of the New York Academy of Medicine, of which Dr. Arthur F. Chace is chairman and Dr. Mahlon Ashford is secretary. Dr. Tracy J. Putnam was chairman of the committee in charge.

SCIENTIFIC NOTES AND NEWS

THE doctorate of laws was conferred by Ursinus College on Dr. William D. Coolidge, vice-president and director of research of the General Electric Company, at the dedication on October 13 of the Pfahler Hall of Science, which was erected at a cost of $750,000. A portrait of Dr. George E. Pfahler, known for his work on the use of x-rays and radium in medicine, for whom the building is named, was unveiled. Dr. Coolidge gave the Founders' Day address. He spoke on "The Role of Science Institutions in Our Civilization."

A DINNER in honor of Dr. Gustav Egloff is being given on October 23 by the New York Chapter of the American Institute of Chemists at the Chemists' Club, New York, under the presidency of the chairman, Dr. E. H. Northey. Speakers and their subjects include Dr. Robert J. Moore, "The Personal History of Egloff, the Author"; Colonel George A. Burrell, "Egloff, the Petroleum Expert"; and Dr. Marston T. Bogert, "The Influence of Egloff on the Progress of American Chemistry." The title of Dr. Egloff's address is "The Struggle for Oil and Its Products."

THE London correspondent of the *Journal* of the

American Medical Association reports that the following have been elected to the honorary fellowship of the Royal Society of Medicine: Great Britain, Lord Horder and Sir John Herbert Parsons, ophthalmologist, a former president of the society; from Canada, Professor W. E. Gallie, dean of the Medical Faculty of the University of Toronto, and Professor Jonathan Meakins, director of the Department of Medicine, McGill University; from Australia, Sir Charles Blackburn, consulting physician, Royal Prince Alfred Hospital, Sydney, and Sir Hugh Devine, lecturer in surgery, University of Melbourne. New Zealand is represented by Sir Henry Lindo, professor of ophthalmology and dean of the medical faculty, Otago University, and South Africa by Dr. A. W. Falconer, professor of medicine, University of Capetown. From the United States, Dr. Hugh Cabot, consulting surgeon of the Mayo Clinic; Dr. David Cheever, associate professor of surgical anatomy, Harvard Medical School (who had charge of the Harvard Surgical Unit in the last war), and Dr. W. T. Longcope, physician-in-chief of the Johns Hopkins Hospital.

SIR WILLIAM J. COLLINS, chairman of the Chadwick Trustees, presided on the occasion of the delivery on October 6 of the first lecture in the autumn program of the thirtieth annual series of the Chadwick Public Lectures of the Royal Society of Tropical Medicine. He presented the Chadwick Medal and Prize to Wilfred Glyndon May, of University College, London. Sir Leonard Hill made the address which was entitled "The Inter-relation of Clothing and Shortage of Fuel in Matters of Health."

SIR D'ARCY WENTWORTH THOMPSON, professor of natural history in the University of St. Andrews, will succeed the Earl of Rosebery as president of the Royal Scottish Geographical Society.

DR. ARTHUR I. KENDALL, research professor of bacteriology at the Medical School of Northwestern University, having reached the age of sixty-five years, retired on September 1.

DR. MARION WINIFRED HOOD, formerly of the College of Medicine of the University of Illinois, has been appointed assistant professor of parasitology in the Department of Public Health of the Louisiana State University School of Medicine.

DR. HENRY P. THIELMAN, of the College of St. Thomas, St. Paul, has been appointed assistant professor of mathematics at Iowa State College.

E. H. PETERSON, formerly of the University of Wisconsin, has joined the staff of the department of animal pathology at the Illinois College of Agriculture.

CHARLES G. MAIER, research metallurgist for nearly twenty years associated with the U. S. Bureau of Mines, has become a member of the supervisory staff of Battelle Memorial Institute, Columbus. He will direct and correlate an enlarged program of fundamental research and will serve as adviser and consultant to the war research for the Government and for industry conducted by the institute.

THE *Journal* of the American Medical Association states that Dr. Hermina H. Hartig has been appointed acting director of hygiene and health education of Minneapolis. Dr. Arthur E. Karlstrom, who has been director since 1940, has resigned to devote his entire time to private practice.

DR. JOHN L. LAVAN, health commissioner of Toledo and director of the health service in Toledo schools, has resigned to become director of scientific research for the National Foundation of Infantile Paralysis, New York.

JOHN C. MCGREGOR, curator of archeology and dendrochronology at the Museum of Northern Arizona at Flagstaff, has been appointed acting chief of the Illinois State Museum to take charge of the work of Major Thorne Deuel, who has leave of absence to serve with the U. S. Air Force.

PROFESSOR GEORGE W. SWANSON, head of the department of electrical engineering at the Michigan College of Mining and Technology, has been granted leave of absence to serve as a special consultant and operational analyst for the Army Air Corps. During his absence, Associate Professor Chester Russell will act as head of the department, and Nicholas Kaiser, Jr., will direct the war-training program.

DR. STANLEY B. FREEBORN, assistant dean of the College of Agriculture of the University of California and assistant director of the Experiment Station, has joined the Army. He is in charge of malaria research on the Pacific coast.

DR. SHEFFIELD A. NEAVE, assistant director of the Imperial Institute of Entomology, London, was elected on September 16 honorary secretary of the Zoological Society of London to fill the vacancy caused by the resignation of Dr. Julian Huxley. Dr. Neave will hold the office until April, 1943, when the next annual meeting will be held.

DR. VINCENT DU VIGNEAUD, professor of biochemistry, Cornell University Medical College, will deliver the first Harvey Society lecture of the current series at the New York Academy of Medicine on October 29. He will speak on "The Significance of Labile Methyl Groups in the Diet and Their Relation to Transmethylation."

THE 1942–43 Vanuxem Lectures of Princeton University will be given on December 1, 2, 8 and 9 by Dr. W. M. Stanley, of the Rockefeller Institute for Medical Research at Princeton, N. J., on "The Chemical and Biological Aspects of Viruses."

DR. STUART MUDD, professor of bacteriology at the School of Medicine of the University of Pennsylvania, gave on October 15 an address at a joint meeting of the Washington Academy of Sciences and the Washington Branch of the Society of American Bacteriologists. He spoke on "Structural Differentiation within the Bacterial Cell as Shown by the Electron Microscope."

DR. EMILIO MIRA, professor of psychiatry at the University of Buenos Aires, formerly professor of psychiatry at the University of Barcelona, has been appointed Salmon Lecturer for 1942 by the Salmon Committee on Psychiatry and Mental Hygiene of the New York Academy of Medicine. The lectures will be given on three successive Friday evenings, November 6, 13 and 20, in the building of the New York Academy of Medicine. The subject of the lectures will be "Psychiatry at War."

IN SCIENCE for October 9 it was stated erroneously that the Remington Medal is an award of the Philadelphia College of Pharmacy. The medal is awarded by the New York Branch of the American Pharmaceutical Association.

PROFESSOR H. R. ALDRICH, secretary of the Geological Society of America, announces that following a complete understanding and agreement with the Geological Survey of Canada the 1942 annual meeting scheduled to be held at Ottawa has been cancelled. The regular annual meeting of the society will be held on December 29 at the headquarters of the society. From a desire to cooperate with the Federal Government in reducing civilian travel and to encourage full concentration on the war effort, the meeting will be limited to the usual business sessions. Meetings of the council will be held as usual immediately before and after the annual meeting. Abstracts of the year will be printed as usual in the December *Bulletin*, and forms may be had on application to the secretary. Fellows who offered papers for oral presentation at Ottawa are reminded that plans for the New York meeting of the American Association for the Advancement of Science are proceeding and that it will be possible to present papers before Section E. Transfers of titles will be made to that program only on direct instructions from the authors.

DR. RUDOLF BENNITT, professor of zoology at the University of Missouri, announces that, by a three-to-one vote of organizations and individuals participating in earlier meetings of the Midwest Wildlife Conference, it has been decided owing to war conditions to postpone further meetings for the present. The conference has been held annually since 1935, and was to have been held in Missouri in December, 1942. The region embraced includes the north-central states of Missouri, Iowa, Minnesota, Wisconsin, Illinois, Indiana, Michigan and Ohio, though many representatives of bordering states attend each year. Missouri has been charged with the responsibility of reconvening the conference. The two host-organizations will be the Missouri Conservation Commission and the University of Missouri, the location of the Cooperative Wildlife Research Unit.

THE Illinois State Museum was host to the annual meeting of the Midwest Museums Conference held in Springfield on October 15, 16 and 17. New exhibits included the diorama hall with the Frost Illinois series of historical dioramas.

THE *Journal* of the American Medical Association reports that a conference was recently held with Dr. Bernardo A. Houssay as chairman for the appointment of an executive committee of the third Pan American Congress of Endocrinology, which will be held in Buenos Aires in July, 1943. The official topics will be (1) endocrine factors of diabetes, (2) gonadotropins and (3) the adrenal cortex. There will also be several lectures on endocrinology. The official headquarters of the executive committee of the congress is the Instituto de Fisiología de la Facultad de Ciencias Médicas of Buenos Aires, Calle Córdoba 2122. Letters requesting information should be sent to the secretary of the congress, Dr. Eduardo Braun Menéndez, at that address.

ON nomination by the council of the New York Academy of Medicine and by vote of its fellowship, fifty-seven physicians in South America have been elected corresponding fellows of the academy. Previously, but four South American physicians had been elected corresponding fellows. They were Dr. Angel Aballi, professor of pediatrics, University of Havana; Dr. Mariano R. Castex, professor of clinical medicine, Buenos Aires; Dr. Lucas Sierra, professor of clinical surgery, Santiago, and Dr. Luthero Vargas, chief orthopedic surgeon, Centro Medico Pedagogico, Oswaldo Cruz, Rio de Janeiro. The newly elected members are citizens of the following countries: Argentina, Colombia, Ecuador, Guatemala, Nicaragua, Peru, Brazil, Bolivia, Costa Rica, El Salvador, Honduras, Panama, Puerto Rico, Venezuela, Chile, Dominican Republic, Mexico, Paraguay, Uruguay and Cuba.

NOMINATIONS are requested for the 1943 award of $1,000 established by Mead Johnson and Company to promote research dealing with the B complex vitamins. The recipient of this award will be chosen by

a committee of judges of the American Institute of Nutrition, and the formal presentation will be made at the Cleveland meeting on April 7. The award will be given to the laboratory or clinical research worker in the United States or Canada who, in the opinion of the judges, has published during the previous calendar year January 1 to December 31 the most meritorious scientific report dealing with the field of the B complex vitamins. Further information can be obtained from Dr. Arthur H. Smith, of the College of Medicine of Wayne University, Detroit, who is secretary of the American Institute of Nutrition.

DISCUSSION

THE BACTERIAL OXIDATION OF RUBBER[1]

IN studying the biological oxygen demand of sea water[2] it has been observed that rubber stoppers increase the amount of oxygen consumed. In fact, the small amount of rubber gasket exposed to the water in citrate of magnesia bottles perceptibly increases the amount of oxygen consumed after 5 to 10 days incubation. Heat-sterilized, as well as formaldehyde-preserved, controls prove that the increased oxygen consumption is attributable to biological activity.

One-gram quantities of various kinds of rubber cut in small pieces to give a surface area of approximately 10 sq. cm were placed in 160 ml glass-stoppered bottles. After sterilizing in the autoclave at 120° C. for 20 minutes the bottles were filled with sterile water saturated with oxygen. Half of the bottles were inoculated and the others remained sterile. Duplicate bottles were analyzed for oxygen immediately using the Winkler technique, and the others were incubated in the water bath for one to five days at 22° C. after which the amount of oxygen consumed was determined. It is necessary to decant or siphon the water from the rubber before treating it with the Winkler reagents because free iodine reacts with rubber.

Using samples of rubber stoppers, rubber tubing, pure gum rubber, duprene and neoprene it was found that whereas 0.53 to 0.88 mgm/l of oxygen was consumed in the sterile controls after 5 days incubation, 5.11 to 6.74 mgm/l of oxygen was consumed in the inoculated water. Similar results were obtained when the controls were preserved with 1.0 per cent. formaldehyde. That the increased oxygen consumption is caused by microorganisms is indicated by the fact that the rate of oxygen consumption increases exponentially with time typical of a growth-curve and, more convincingly, by the multiplication of microorganisms.

Realizing that most of the aforementioned rubber products contain sulphur and other oxidizable constituents used as fillers or impurities, the experiments were repeated with several samples of highly purified (non-vulcanized) caoutchouc or latex obtained from the Goodyear Tire and Rubber Company. Small quantities dissolved in C.P. benzene were distributed in bottles which were manipulated to form a thin film of the purified rubber on the inside of the bottles as the benzene evaporated. After driving off all the benzene the bottles were filled with oxygenated water. Following the incubation of inoculated water it was found that 2 to 2.5 mgm of oxygen was consumed in the presence of 1 mgm of purified rubber. This together with the production of carbon dioxide which was estimated manometrically indicated that most of the rubber was oxidized. Considering rubber to be $(C_5H_8)_x$, it would require about 3.3 mgm of oxygen to completely oxidize 1 mgm of rubber. Part of the rubber was converted into bacterial protoplasm as shown by the number of bacteria which appeared. The perforation of thin films of rubber on agar and on glass slides immersed in culture solutions gives further proof that rubber is utilized by microorganisms.

Confirming the observations of Söhngen and Fol[3] and Spence and van Niel[4] most of the rubber oxidizing microorganisms which have been observed belong to the genus *Actinomyces* or *Proactinomyces*. Many of the latter utilize complex hydrocarbons according to Umbreit.[5] Rubber oxidizing *Mycobacterium* and *Pseudomonas* have also been isolated from our enrichment cultures. The aerial mycelium of an unidentified mold virtually enveloped the moist rubber on which it was growing and its substrate mycelium seemed to penetrate the rubber.

Using oxygen consumption with adequate controls as a criterion of their presence, rubber oxidizing bacteria have been found to be quite widely distributed in the sea and in garden soil. Neither in nature nor in the laboratory do the rubber oxidizing microorganisms appear to require rubber or related hydrocarbons for their multiplicaion but old pieces of rubber hose and the cracks in tires found in moist places have proved to be good sources of cultures.

Besides showing that neither synthetic nor pure India rubber is biologically inert and proving that rubber oxidizing microorganisms occur fairly abundantly in nature, the observations suggest that such

[1] Contribution from the Scripps Institution of Oceanography, New Series No. 179.

[2] C. E. ZoBell, *Jour. Mar. Res.*, 3: 211, 1940.

[3] N. L. Söhngen and J. G. Fol, *Centralbl. f. Bakt.*, II. Abt., 40: 87, 1914.

[4] D. Spence and C. B. van Niel, *Ind. and Eng. Chem.*, 28: 849, 1936.

[5] W. W. Umbreit, *Jour. Bact.*, 38: 73, 1939.