obtained a yellow preparation from heart muscle and observed that the yellow color disappeared on reduction and reappeared on oxidation. In 1932 Warburg and Christian described a "yellow ferment" that they had separated from yeast. They and other investigators during the following few years were able to show that the yellow color was due to a substance of small molecular weight that could be separated from the remaining material. The constitution of this dye, riboflavin, was determined independently by Kuhn and coworkers and by Karrer and coworkers in 1935.

Warburg and Christian had thought that the dye was attached to a carbohydrate molecule with high molecular weight. The problem was attacked by Theorell in 1934. He built an apparatus by means of which the enzyme could be purified by electrophoresis and in this way obtained a homogeneous material, the pure enzyme.

He found that the prosthetic group could be separated from the remaining part of the molecule by dialysis in acid solution. The prosthetic group was found to be the monophosphate of riboflavin, the remainder of the molecule being a specific protein. Theorell was able to recombine the riboflavin phosphate with the specific protein to obtain the complete enzyme with its original enzymic activity. This was the first time that an enzyme had been reversibly separated into its prosthetic group and specific protein.

For many years, Theorell has carried out studies of the heme enzymes, including lactoperoxidase, horse-radish peroxidase, and especially cytochrome *c*. These studies have led to a deep understanding of the structure and mechanism of action of these oxidation-reduction enzymes. At first, the work on cytochrome *c* involved the investigation of physical-chemical properties such as absorption spectra and magnetic susceptibility. In connection with the studies of magnetic properties, he devised and constructed a magnetic apparatus with much greater sensitivity than those previously used.

In recent years, Theorell has carried out the peptic degradation of cytochome *c* and has made a study of the structure of the part of the protein that is connected to the heme group by bonds to the sulfur atoms of two cysteine residues. The study, completed by other investigators, showed that the peptide sequence is valine-glutamine-lysine-cysteine - alanine - glutamine - cysteine - histidine-threonine-valine-glutamic acid, and Theorell and Ehrenburg have proposed a detailed three-dimensional molecular structure for this part of the molecule, including the heme.

Theorell was stricken by poliomyelitis when he was a young man, and he then abandoned his career as a medical practitioner. He now walks with some difficulty, with the aid of canes.

He received the prize of $36,720, a medal, and a diploma on 10 Dec. from King Gustav Adolph of Sweden at a ceremony in Stockholm at which the prizes in chemistry, physics, and literature were also awarded.

LINUS PAULING
Gates and Crellin Laboratories of Chemistry, California Institute of Technology, Pasadena

News Briefs

■ Secretary of the Interior Douglas McKay has announced that his department has dropped the plan for a dam at Echo Park that would flood part of the Dinosaur National Monument from its program for developing the upper Colorado River Basin.

■ At the end of November, 14 leading physicians and surgeons from 13 countries completed a 38-day tour of the United States that was devoted to observations and to an exchange of views with American colleagues on developments in the field of atomic medicine. During the visit, the second such tour made under Government sponsorship, special emphasis was given to the application of new techniques in cancer treatment as well as to the general medical applications of atomic energy.

■ Thomas Alva Edison's laboratory at West Orange, N.J., center of his inventive work for the last 44 years of his life, has been given to the Government. It will become a National Monument. Simultaneously, Secretary of the Interior Douglas McKay designated Glenmont, the late inventor's home in West Orange, as a national historic site under non-Federal ownership. The deed to the Edison laboratory land and buildings, donated by Thomas A. Edison, Inc., was presented to McKay by Charles Edison and Mrs. John Eyre Sloane, son and daughter of the inventor.

■ The Atomic Energy Commission has established a 12-member Advisory Committee of State Officials to consult with the commission on regulations concerning health and safety aspects of private atomic energy activities. The first meeting of the committee will take place within 2 months.

The committee members represent state agencies such as health, labor, public utility, and legal departments. Some are from states already doing work in radiation protection. Among advantages expected from the consultative arrangement, the AEC cited the following:

Close cooperation between the AEC and the states should help in attaining uniformity in regulations. Some states have already issued, or are about to issue, codes and regulations on radiation protection; others are doing preliminary work.

Working through the advisory committee, the commission will keep informed of the needs of the states and will be better able to help states requesting technical guidance.

In general, the arrangement will provide for exchange of information that will be of aid to the commission in discharging its regulatory responsibilities and to the states in keeping themselves informed of the activities of the commission.

■ The first Swedish atomic fuel plant, a new unit near Stockholm, will be in full production toward the end of December. The plant, which is operated by the semipublic Atomic Energy Company, will provide 5 tons of highly refined uranium annually. An experimental reactor for the production of atomic fuel is planned; until it has been completed, the uranium produced will be stored.

■ The Clinic for Reconstructive Plastic Surgery of the Face, perhaps the first of its kind in the United States, is to be established at the Manhattan Eye, Ear and Throat Hospital, New York. John M. Converse of New York University College of Medicine and the Manhattan Eye, Ear and Throat Hospital is surgeon-director of the new clinic, which is being sponsored by the Society for the Rehabilitation of the Facially Disfigured. The clinic will not only treat a patient's physical defect, but it also will provide assistance in personality and vocational problems.

■ Waste heat generated by nuclear reactors is being used for large-scale space heating at the Atomic Energy Commission's Hanford plant, where General Electric Company scientists and engineers are transferring heat obtained from coolant water to air conditioners in various Hanford buildings.

Several buildings are heated by the system. About half goes into a single structure that houses a large reactor that produces plutonium. Equivalent heat would be sufficient to fill the needs of more than 1000 average-sized homes. The new heating system operates as follows:

The coolant water is pumped to a heat exchanger, where it gives up its heat to an ethylene glycol water solu-

tion, which in turn transmits the heat to air conditioning systems in various Hanford buildings. The reactor coolant is held until its radioactivity level has decreased to a point where it can safely be discharged into the river.

■ Two source-of-fact reports on science, *Scientific Personnel Resources* and *Federal Funds for Science,* have been issued by the National Science Foundation under its continuing program of surveying scientific activities in the United States. *Scientific Personnel Resources* is a summary of data on the supply, utilization, and training of scientists and engineers. One section of the report shows, among other things, that there were approximately 200,000 scientists and 650,000 engineers in the United States in 1954; these figures are broken down to indicate distribution by field, age, and level of education. Another section on the education of scientists shows that at a time when the high-school population is rapidly increasing, the number of college graduates completing standard requirements to teach high-school science and mathematics has decreased from a high of 9000 to an estimated 4000 in science, and from a high of 4000 to an estimated 2300 in mathematics between the years 1950 and 1954.

Federal Funds for Science is the fourth report of its kind issued by the foundation designed to provide uniform and accurate data on funds made available by agencies of the Federal Government in support of scientific research and development. Its substance covers fiscal years 1954, 1955, and 1956—the last two estimated. Actual Federal Government expenditures for research and development in fiscal year 1954 were more than $2 billion. This represents approximately a 20-fold increase in Federal expeditures for research and development since 1940. Less than 7 percent of the 1954 total was obligated for basic research—$116,000,000.

Copies of these two publications may be obtained for 50 cents and 30 cents, respectively, from the Superintendent of Documents, Washington 25, D.C.

■ A simple fallout meter to measure the gamma rays resulting from nuclear explosions has been constructed by the Naval Research Laboratory, which has just released a report of this research project. The meter uses a battery, a cadmium sulfide crystal, and a parallel combination of a condenser and neon flash lamp. It uses only commercially available parts, is sensitive over the range of 0.1 to 1000 roentgens per hour, is reasonably energy-independent, and has a flash rate proportional to gamma dose rate.

The report points out that it was felt desirable to construct a simple, small-sized meter that would be inexpensive and that could be distributed widely. *A Simple Meter for Radioactive Fall Out,* Naval Research Laboratory, June 1955, may be obtained from the Office of Technical Services, U.S. Department of Commerce, Washington 25, D.C.; price, 50 cents. Complete with schematic drawings and photographs, the report contains 12 pages.

Scientists in the News

DETLEV W. BRONK, president of the Rockefeller Institute for Medical Research, is the newly elected chairman of the National Science Board, governing body of the National Science Foundation. He succeeds CHESTER I. BARNARD, whose term as chairman has expired.

PAUL M. GROSS, vice president and dean of Duke University, is the new vice chairman of the board and chairman of the executive committee.

MEREDITH R. GARDINER has been named chief of the new division of pathology, Eaton Laboratories, Norwich, N. Y. All toxicological work in the research department, including the histologic examination of animal tissues, will be handled by his division. Gardiner has worked as a veterinary scientist or practitioner since his graduation from the School of Veterinary Medicine, University of Pennsylvania, in 1940. As an animal pathologist, he has been associated with the University of Pennsylvania, the Georgia Coastal Plain Station, the Wyoming State Veterinary Laboratory, and the University of Delaware.

JAMES L. WHITTENBERGER, professor of physiology at the Harvard University School of Public Health, has been named assistant dean of the university's faculty of public health. He will share the administrative responsibilities of the assistant deanship with Hugh R. Leavell, who has served as an assistant dean since July 1954.

New appointments to associate professorships at the University of Mississippi are VIRGIL BENSON, chemistry; GERALD C. TANGER and HUGH B. KERR, mechanical engineering; JOHN DOUGLAS, geology; W. L. BYATT, physics; THOMAS L. SWIHART, physics and astronomy; and JOHN B. MORRIS, psychology.

A. L. COPLEY of New York has been appointed Chargé de Récherches at the Institut National d'Hygiène in Paris, France. He has completed his work on experimental tuberculosis at the Laboratory of Physiology of the International Children's Centre in Paris. His studies, which he has conducted since 1952 at this United Nations affiliate, dealt with the effects of mycobacteria on capillary blood vessels and on platelets.

BRET RATNER of New York recently received the following tribute: "By unanimous vote of the Section on Allergy of the American Academy of Pediatrics, assembled in Chicago at the Twenty-third Annual Meeting of the Academy, this Scroll is awarded . . . as an expression of gratitude and appreciation for his untiring services in advancing Pediatric Allergy, as a pioneer investigator and teacher, as organizer of the Section on Allergy and its first Chairman, for his successful efforts in obtaining recognition by certification for Pediatric Allergists in the Subspecialty of Pediatric Allergy."

WILLIAM A. LADD, specialist in electron microscopy, has become associated with Foster D. Snell, Inc., New York. Ladd was with Columbian Carbon Company for 15 years, where he led work on the use of the electron beam to measure the extremely fine particles of carbon black.

Ladd was a member of the original group at the University of Toronto, headed by E. F. Burton, that pioneered the use of the electron microscope in North America. His most recent achievement has been the development of an x-ray microscope that gives high-resolution micrographs at magnifications of 10,000 to 25,000 diameters.

HOWARD HASTINGS CUMMINGS has retired from the University of Michigan with the title of professor emeritus of postgraduate medical education. He first joined the university in 1906 as a student in the medical school, where he was made an assistant in the department of gynecology and obstetrics in 1910. Cummings has been chairman of the department of postgraduate medicine since 1942.

HERBERT FRIEDMANN, curator of birds for the U.S. National Museum, Washington, D.C., has been awarded the 1955 Leidy medal of the Academy of Natural Sciences, Philadelphia, Pa. The medal is awarded every 3 years for the best publication, exploration, discovery, or research in the natural sciences in such particular branches thereof as may be designated.

Friedmann is being honored for his research in ornithology, his study of the biology of parasitic birds, the monographic works he has published dealing with them, and the discovery of wax digestion by honey guides. His study of these small birds, which lead men and animals to nests of bees, may provide a new means of attacking the tubercle bacillus.