News and Notes

The Deep Waters of Lakes

At Pallanza on Lake Maggiore, the Istituto Italiano di Idrobiologia was host to a conference, 21–24 July, on "Biological, physical, and chemical characteristics of the profundal zone of lakes." Sponsor of the conference was the Union Internationale des Sciences Biologiques, for which it was Colloque No. 19. The following limnologists attended: from Italy, Vittorio Tonolli, Livia Pirocchi Tonolli, G. Moretti, N. della Croce, and O. Ravera; from Germany, A. Thienemann, W. Ohle, H.-J. Elster, and Fr. Lenz; from Austria, Fr. Ruttner, O. Steinböck, and I. Findenegg; from Switzerland, E. Thomas, H. Züllig, and R. Vollenwieder; from France, B. Dussart and Denise Schlachter; from England, Winifred Tutin; from Norway, K. M. Strøm; from Finland, H. Järnefelt; from Yugoslavia, S. Stancović; from the United States, E. S. Deevey; and from the Food and Agriculture Organization, G. Kestevan.

Although all the 18 papers presented were discussed thoroughly, only a few can be singled out for comment. Two participants, E. Thomas and Winifred Tutin, had investigated the modern sediment caught in collectors hung from buoys; both found that this material is surprisingly similar to the unconsolidated surface mud of their respective lakes. Thomas had used the chemical analyses of his samples to study the role of sedimentation in the economy of the lake, including the loss of particulate and dissolved materials and their rate of return to the water. Tutin, on the other hand, had used her data to compute a chronology for the total sediment column in Windermere that proved to be in astonishing agreement with other estimates.

H.-J. Elster, in a fundamental paper on hypolimnetic metabolism, sharply criticized the use of hypolimnetic events to infer the productivity of lakes on evidence that a large part of the organic as well as the inorganic material found in deep water is allochthonous. W. Ohle discussed the ion-exchange activity of the colloidal material in lake waters, adducing clear evidence that anions as well as cations can be actively combined, and not merely adsorbed, by humic colloids.

The importance of evolutionary theory in the thinking of modern ecologists was particularly clear in two contributions. O. Ravera demonstrated that definite differences in ecologic preference exist within the oligochaetes, the dominant profundal animals of Lake Maggiore; the various species differ in the amount of mud ingested in a given time and (as shown by N. della Croce) in the particle size of the preferred mud. In discussing the famous fauna of Lake Ochrid, S. Stancović reminded the participants that the profundal zone of that lake contains, in addition to the more celebrated relicts, modern species or subspecies that have clearly been derived from the littoral fauna not very long ago. Some species are represented by three or more distinguishable populations in different regions of the same lake, and in that sense sympatric speciation is certainly taking place in Lake Ochrid.

Particularly favorable reception was accorded the outstanding results of D. G. Frey (Indiana University), who unfortunately was unable to deliver his paper in person. Frey had succeeded in making a complete boring 20 m deep through the sediments of the Längsee, the shallowest of the remarkable meromictic lakes of Carinthia. The late-glacial and early postglacial history of this lake was normal, but, at a level dated by pollen analyses at about 500 B.C., sapropel began to form, at first intermittently. Since sapropel and not ordinary gyttja is the typical profundal sediment of meromictic lakes, the inference was drawn that the Längsee has been continuously meromictic since about the time of Christ. In the early stage of intermittent meromixis, the sapropel layers are separated by bands of clay, evidently resulting from the accelerated slopewash that accompanied the first intensive forest clearance and agricultural activity by the inhabitants of the region. Frey therefore suggested that the increased density of the bottom water, produced by its load of clay minerals, would have inhibited autumnal circulation, thus triggering the meromixis to which the lake was perhaps predisposed by reason of its high productivity and impaired exposure to winds.

The papers presented at this conference will be published in full by the Istituto Italiano di Idrobiologia under the editorship of Tonolli, director of the Istituto and chairman of the conference. Their appearance in print will be eagerly awaited by the participants as well as by less fortunate limnologists.

E. S. Deevey

Yale University

Photoelasticity and Photoplasticity

A colloquium on photoelasticity and photoplasticity sponsored by the International Union of Theoretical and Applied Mechanics and assisted by a UNESCO grant to the International Council of Scientific Unions was held at the University of Brussels, Brussels, Belgium, 29-31 July. The organizing committee consisted of H. Le Boiteux (France), chairman, H. Favre (Switzerland), and M. Hetenyi (United States). Twenty-seven specialists from Belgium, France, Germany, Great Britain, Holland, Italy, Japan, Spain, Sweden, Switzerland, and the United States presented and discussed 36 papers. The U.S. participants were D. C. Drucker, A. J. Durelli, M. M. Frocht, M. Hetenyi, R. Mesmer, R. D. Mindlin, E. Orowan, and C. D. West. Because of the limited funds available and the large number of photographs accompanying the papers, the organizing committee decided that it was feasible only to encourage publication in the

usual journals, and to publish abstracts with reference to the place of publication of the complete paper where available. The program participants and a brief description of their papers follow.

R. Hiltscher (Sweden): Fifteen materials intended for photoelastic models were investigated with respect to sensitivity, creep, linearity, and surface effects; Bakelite and Araldite F gave the most desirable results for general application.

C. D. West (U.S.): Extensive research on the birefringence of inorganic glasses as affected by stress and temperature cycling.

A. Angioletti (Italy): A technique for using rubber as a photoelastic material. The rubber is used in thin sections between glass plates, lubricated to reduce surface stresses, and loaded at the edges.

M. Hetenyi (U.S.): Colored motion pictures of development of strain patterns in nylon in both elastic and plastic range. This material reproduces the flow configurations observed in ductile metals.

L. Föppl (Germany), read by E. Monch: Seven recent projects at Munich. An especially interesting one was study of transition from static to sliding friction.

D. C. Drucker (U.S.): A universal stage photoelastic testing machine suitable for 9- by 9-in. models with heating tank and 20- by 20-in. models without the heating tank. Discussion covered philosophy of large models versus small models and their relative demands on precision of photoelastic measurements.

R. Baud (Switzerland): A specific photoelastic study of a body with an internal partially symmetric tension field.

H. J. Jessop (Great Britain): Description of three projects: the use of the fluid polariscope in the solution of flow problems; stress distribution in prestressed concrete beams; and stresses around tube holes in boiler drums (two-dimensional distribution in flat plates with holes).

R. Fleury and F. Zandman (France), read by J. Foch: Measuring surface strains in any specimen by the use of a 1-mm surface coating of a birefringent substance (résine éthoxylique).

R. B. Heywood (Great Britain): stress concentration factors.

L. C. Baes (Belgium): Proposal to determine by photoelastic techniques the points of inflection of members of statically indeterminate frameworks. Knowledge of the location of the inflection points makes the structure statically determinate, and calculations of stresses are relatively simple.

R. C. Boiten (Holland): Making models with reinforcement and application to study of effects of cracks in reinforced concrete beams on strain distribution.

P. Locatelli (Italy): Producing body forces by linear acceleration or by vibratory motion of the model. Application to stresses in dams. In the discussion there was some question of whether this method accurately reproduced the loading in a dam.

H. Favre and W. Schumann (Switzerland): An interferometric technique using models made of two transparent layers and using two polarized beams. By measuring the difference in retardation and the absolute retardations of the two polarized beams, the two principal moments can be determined. Results were shown for thin circular plates, plates whose contours were parallelograms, and square plates with two edges fixed and two free.

R. Mesmer (U.S.); work carried out in Germany and reported by a German colleague: A method of using a model of varying thickness giving interference patterns between reflections from the front and back surface. Superposition of photographs with and without applied load gives the Moire pattern of isopachics.

A. Pirard (Belgium): Photoelastic investigations for industry—machine parts, crane hooks, locomotive truck frames, underground passages, and so forth.

A. J. Durelli and J. B. Barriage (U.S.): Stresses in square plates loaded hydrostatically in central holes of various ratios of hole diameters to side of square. Isochromatics by photoelastic method, direction of principal stresses by brittle coatings.

C. G. J. Vreedenburgh and F. K. Lichtenberg (Holland): Photoelastic method applied to stresses in reinforced concrete tunnels and to stress distribution in fillet welds.

C. Benito (Spain): work carried out at the Laboratoire d'Essai de Madrid.

R. V. Baud (Switzerland): General survey of problems studied in the materials testing laboratory at the ETH, Zurich.

M. Ballet and C. Salmon-Legagneur (France): Some applications of method of frozen strains to study of screw threads of various thread profiles.

J. Auband, presented by H. Le Boiteux (France): Stress concentrations at a hyperbolic notch in a symmetric specimen in torsion by the method of frozen strains.

M. Nisida (Japan): Application of stress freezing technique to round and square rods with intersecting holes, to twisted square bars with two longitudinal semicircular grooves, and to circular shafts with V-notches of varying angle in tension and compression.

H. J. Jessop (Great Britain): Fedorov's "tilting stage" method of determining the directions of the principal stress axes in a slice from a "frozen stress" model and a scattered light method of observation of stress-differences in a plane of symmetry of a three-dimensional model.

M. M. Frocht (U.S.): Measurement of stresses in five models combining data from frozen stress patterns with numerical integration of one of the differential equations of equilibrium.

R. D. Mindlin (U.S.): Theory of procedures for determining stresses in the interior of a model from measurements of the gross phase retardation.

E. Orowan (U.S.): Refractometric surface stress measurement. The method utilizes the difference between the refractive indices for rays polarized parallel and perpendicular to the surface, measured by observing the corresponding angles of total reflection. Devel-

oped for surface stress measurements in tempered glass.

E. K. Frankl (Great Britain): Photoelastic apparatus for the study of dynamic stresses in gears. Flashing light source permits 10-μsec photographs of stress patterns in rotating gears under load. Vibration of gears and resulting stresses may be studied.

M. M. Frocht and P. D. Flynn (U.S.): Streak photography at rates equivalent to 1,500,000 exposures per second applied to stress waves in bars. Experiments also made on stress concentrations produced by a hole in a bar under impact with full-image photographs of photoelastic patterns at 11,000 frames per second.

M. Hetenyi (U.S.): Two crossed Bonnet-process lenticular grids and moving aperture in rotating disk to record high-speed photoelastic phenomena on a stationary plate.

E. K. Frankl (Great Britain): A relationship expressing relative retardations as a linear function of stress and strain differences has been derived and verified experimentally for a wide variety of model materials.

H. Le Boiteux (France): An irreversible birefringence appears at loads for which mechanical measurements show no permanent deformation. The behavior under cycling is described.

R. Hiltscher (Sweden): Spread of regions of plastic flow and effect on the stresses in the regions still within the elastic range.

C. D. West (U.S.): Geometry of plastic bending deduced from monocrystal corundum. Photoelastic pattern of bent crystal interpreted in terms of slip planes.

E. Monch (Germany): Two photographs of isochromatics in Celluloid with light of different colors gives dispersion which author believes is a measure of plastic deformation.

D. C. Drucker (U.S.): Plastic and elastic strain in metal determined with an elastic birefringent coating. Discussion of techniques and materials.

HUGH L. DRYDEN, *Director*
National Advisory Committee for Aeronautics, Washington, D.C.

Science News

The Most Rev. and Right Hon. Geoffrey Francis Fisher, Archbishop of Canterbury, said recently in an address at the Yale University Divinity School that the dropping of the atom bomb on Hiroshima has led to a **reconciliation between religion and science.** He stated that Christianity is "coming into its own once more," and asserted that the bomb has compelled scientists to realize they have to become humanists whether they want to or not.

He declared that the new alliance between religion and science is spreading widely in Great Britain, especially in universities founded under anti-Christian auspices in the last 100 yr.

The Scientific Manpower Commission has called attention to a recent Presidential directive that should put an end to the uncertainties that have hampered graduate study for the past 16 mo. In accordance with the directive, college students receiving the bachelor's degree may anticipate **deferment for graduate study** provided they have attained a grade of 80 and are in the upper quarter of the graduating class. Chances of deferment will be still further improved, of course, if the student has been accepted in an accredited graduate school.

Once embarked upon graduate study, the student can expect continued deferment until he has completed work for the next higher degree, for his status may not be reviewed during this period. For the master's degree he will be allowed 2 yr beyond the bachelor's, and for the Doctor's degree, 3 yr beyond the master's. In addition he must maintain a satisfactory scholastic record.

The directive includes recommendations that were partly formulated, and that have been persistently advocated, by the Scientific Manpower Commission. Assuming that these new regulations will be followed conscientiously by Selective Service local boards, state directors, and national headquarters, it can be concluded that the graduate problem has been effectively and satisfactorily solved. If there is any apparent violation of the spirit and intent of the President's directive, the Scientific Manpower Commission would appreciate receiving prompt, detailed reports.

In a letter published in the August *Newsletter* of the Society for Social Responsibility in Science, O. Theodor Benfey of the Haverford College chemistry department comments on the **Oppenheimer case.**

> There is discernible an undertone of self-pity: "Oh dear, what has happened? Nobody understands us except our fellow-scientists!"
>
> Everyone is now calling for a review of the security system. But any scientist with a shred of insight could have predicted what would happen if scientists accepted the degree of secrecy now prevailing. They should have refused to work under the imposed conditions.
>
> Such a refusal would not have weakened the country; it would have led to an immediate review of the security system. But it would have required a certain amount of courage, the risk—not very great—of a few months of unemployment. . . . Even now no one seems to be resigning. When will men learn that a country decays unless its citizens are willing to suffer for their convictions? Why should the government review the security system if it can get all the obedient servants it wants?

Jack Cassius Morris, 43, chief librarian at the Oak Ridge National Laboratory since 1948, died of lung cancer on 23 Sept. He previously had held posts at the University of Illinois Library; University of South Dakota Libraries; South Dakota War Information Center; Hercules Powder Co.; Office of Rubber Reserve, Reconstruction Finance Corporation; and the U.S. Patent Office. Before entering the library profession, Mr. Morris was engaged in the book trade.

In October, as part of a National Science Foundation **survey of industrial science,** questionnaires were sent to about 12,000 industrial concerns requesting information on their research and development activities. The U.S. Department of Labor, Bureau of Labor Statistics, is conducting the survey, the second phase of which will consist of intensive interviews with representatives of about 200 selected large corporations. Among the companies being canvassed are 4000 firms that employ 1000 persons or more. The remaining firms in the sample were carefully selected to provide reliable estimates concerning the research activities of approximately 3 million companies in the United States.

The need for full industrial cooperation in order to obtain signficant results was stressed by Alan T. Waterman, director of NSF, in a letter to the firms being surveyed. "The findings should be valuable to companies in planning and appraising their own research programs, besides contributing greatly to the formulation of national policies for the strengthening of scientific research," Waterman stated. Plans for the survey were developed in consultation with the research committee of the National Association of Manufacturers, the Industrial Research Institute, and other industry groups.

The industrial contribution to the $3.5 billion national research and development effort is believed to be well in excess of $1 billion/yr. In addition the Federal Government spends approximately an equal amount each year to support research and development activities in industrial laboratories.

Published information on the survey will not permit identification of data for individual firms, and all company data supplied will be held in strict confidence. Since the survey is being conducted on a sampling basis to reduce cost, it is important for all firms receiving questionnaires to respond, including those having no current research programs.

In the 9 Oct. issue of *Nature* N. Takemori *et al.,* of the Japanese National Institute of Health, Minatoku, Tokyo, have reported that the virus of Rift Valley fever has an **anticancer action.** The virus had a "marked destructive action" on one kind of rat cancer cell growing in tissue culture outside the animal body. Further study showed it could destroy cells of nonfatal tumors growing in mice. Rift Valley fever is a disease of sheep that also can spread to man, causing an influenza-like illness. Study of the virus as an anticancer agent seems so far to have been limited to laboratory experiments.

There is strong evidence that archeologic excavations in Turkey have revealed information about the **Empire of Arzawa,** which flourished about 1400 B.C., and disappeared from history 200 yr later. The finds, made by the British Institute of Archeology in Ankara, accord strikingly with the known history, according to Seton Lloyd, director of the institute. They show also that the Arzawans, at the peak of their civilization, were skillful architects and builders and produced, among other articles, beautiful pottery. Lloyd, in an article for *The Times* of London, places the empire geographically in the Beycesultan area, which is 150 mi from the coast of what is now Turkey. Remains of a city with imposing palaces, burned and looted in war, have been found there.

In a wide and fertile plateau near the headwaters of the Maeander River, the excavators found a constellation of minor ancient settlements (50 within a radius of 30 mi) around one of the largest city-mounds yet observed in Anatolia.

Lloyd stated that historians know that Arzawa flourished in the Late Bronze Age; the city uncovered at Beycesultan shows signs of a final occupation at the end of the Bronze Age. The distinctive pottery of the Arzawans is found at almost every digging site.

The Moscow radio has reported that a Russian shipyard is constructing a tugboat to be powered by **electromagnetic induction.** The tug's masts, which look like overhead cable grids, pick up current by induction from cables laid along the banks of a canal. It is reported that a stretch of the Moscow–Volga Canal has been fitted with cables.

The following is an excerpt from an article on the **responsibilities of scientists** in the 18 Sept. issue of *Nature.*

> The task of the scientist or technologist is to place at the service of the community the resources it needs, and to show how best they can be used. He has the responsibility of warning the community of the dangers that may attend the misuse of such knowledge and the failure to use it with due safeguards. The decision whether or not to use that knowledge in a particular way or for a specific purpose is one which he shares with the community as a whole.
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> In that sense, accordingly, the problem for the scientist or technologist is one not of power but of influence. . . . The hydrogen bomb, in fact, involves no fresh responsibility for the scientist as such, least of all any new moral dilemma; and once these false ideas are cleared out of the mind of the scientist himself and of the society in which he lives, there will be the less risk either of an anti-scientific attitude on the part of the public or of the scientist being charged with a responsibility which he only shares with the whole community. . . .
>
> He is not entitled . . . to withhold knowledge from the community he serves any more than . . . he is entitled to dictate to the nation about his own discoveries. He must be content to use his influence to guide his fellow-citizens to wise decisions; but he cannot impose these decisions. In return he can ask, in a free society, that he shall himself be free to follow his own conscience and that society shall not dictate his life to him. He is entitled to urge on society the conditions in which effective scientific work is possible and to direct attention to the consequences which may attend restraints on the freedom of scientific investigation and intercourse.
>
> The real challenge of the hydrogen bomb to the scientist is to consider even more carefully how best scientific thought can be put at the service of the

community. . . . This means much more than questions of the presentation of his own ideas and findings. It involves questions of education and of public understanding, so that the issue is seen not as one of science letting natural forces get out of hand, but of man's self-control and his use of forces able to destroy him and his works.

Freedom of communication is vital. . . . Security considerations may reasonably prevent the public discussion of technical details; but once such restrictions operate beyond the narrowest of such limits, they do more than impede the exchange of ideas and the advance of science and technology: they endanger national security itself. Once the scientist comes to be silent, to experiment or inquire only along orthodox lines, science itself will atrophy and at last fail the nation in which it is thus pursued. Without freedom for science, and by attempting to silence or intimidate original and creative minds, in the end we forfeit security itself.

Here, too, the scientist has a duty to speak. . . . His immediate responsibility is . . . with the way in which he can most speedily and effectively clarify public thinking about . . . scientific and technical aspects . . . and facilitate an understanding of the far-reaching military, economic and political decisions which are now imperative. He will be conscious that what he has to say as a scientist represents only one factor in a complex situation. . . . The task of education to be undertaken must include that of the leaders of the community as well as of the general public. Above all, the extent to which the influence of the scientist is brought to bear on the formation of policy or the re-shaping of institutions will depend on the willingness of the individual scientist to attempt the prosaic task of improving the channels of communication.

Much will depend upon the effectiveness and clarity with which he presents and interprets his results and ideas to the community, and the fidelity and courage with which he and his professional institutions defend the freedom of science, not simply for the advancement of science itself but also as an essential element in the preservation of a free society.

Nancy Atkinson, bacteriologist at the University of Adelaide, South Australia, has reported in *Nature* that in 1946 she discovered an **antibiotic chemical,** called psalliotin, in an edible mushroom. It was so unstable that it could not be concentrated and purified. When she resumed her work recently she resorted to paper chromatography of water extracts of mushroom stems and found that activity depended on length of exposure to light. Light from a yellow darkroom globe produced the best results. The antibiotic is now being tested with various disease germs to determine its potential medical usefulness.

Methods used to **detect atomic explosions** in another nation's territory, a subject of strictest secrecy in the U.S. and Europe, are described in the 11 Oct. issue of *Time* by Yasuo Miyake of the Japanese Government's Meteorological Research Organization in Tokyo. An unofficial group of scientists in Japan has kept track of both U.S. and Soviet explosions since last spring. Their detection apparatus measures four phenomena: disturbances of atmospheric pressure; variations of tide level (if the explosion is oceanic); variations in atmospheric electricity; and radioactivity in rain.

The Polish Academy of Sciences has announced the forthcoming publication of the complete original texts of the scientific **papers of Maria Sklodowska-Curie,** the Polish scientist who, with her husband Pierre, discovered radium in 1898. The papers are to be issued as part of Poland's nationwide commemoration this year of the 20th anniversary of Mme. Sklodowska-Curie's death. An introduction has been written by one of the scientist's daughters, physicist Irene Joliot-Curie.

Scientists in the News

Boris Ephrussi of the University of Paris is at Harvard University for the fall term (1954) as an exchange professor. He is giving a course in physiological genetics in the department of biology. During the same period **K. V. Thimann,** professor of biology at Harvard, is giving a course in plant physiology at the University of Paris. Ephrussi is noted for his research on cytoplasmic heredity in yeast as revealed through studies of the inheritance of enzymes connected with the breathing functions of these organisms.

L. Farrell McGhie, associate director of Stanford University's Electronics Research Laboratory, has been named assistant dean of the School of Engineering. He is also an associate general secretary for the university.

The André Dreyfus Foundation has awarded the 1954 Dreyfus prize to **Hans Kalmus** of the Galton Laboratory, University College, London. Kalmus will use his prize to spend a semester (April to September 1955) in Brazil where he will conduct research in human genetics.

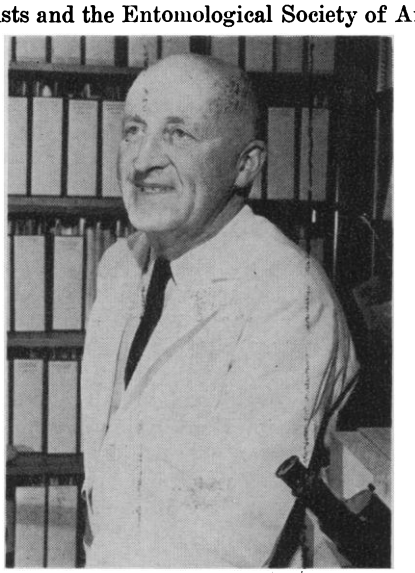
Irving S. Bengelsdorf, formerly a faculty member at the University of California at Los Angeles, has joined the staff of the General Electric Research Laboratory, Schenectady, as a research associate in the chemistry research department.

George H. Gehrmann, director of Du Pont's medical division since 1926, has retired as director but will continue as associate medical director until his retirement from the company on 1 Nov. next year. **Allan J. Fleming,** who has been assistant director since 1948, has succeeded Gehrmann. **C. A. D'Alonzo,** assistant to the management of the division, has been named assistant director. The medical division is responsible for safeguarding the health of company employees and, through the Haskell Laboratory for Toxicology and Industrial Medicine, it conducts extensive research on problems of industrial health.

Zeno Wicks, affiliated with the Interchemical Corp. since 1944, has been appointed general manager of the company's central research laboratories in New York.

Edward O. Essig, well-known entomologist who from 1941–51 was chairman of the department of entomology and parasitology at the University of California, became professor emeritus on 1 July after a career of 40 yr in the university. Prior to his service in the university, Essig was secretary of the California State Horticulture Commission and horticulture commissioner of Ventura County.

Essig's contributions range over most of the field of entomology and allied sciences, with an emphasis on economic entomology, insect biology, taxonomy, and the history of entomology. He is the author of five books and more than 450 scientific papers. He has served as an officer of many scientific societies and, prior to their consolidation in 1952, he was president of both the American Association of Economic Entomologists and the Entomological Society of America.



Several times he was president of the Pacific Coast Entomological Society, and from 1943–47 he was a member of the National Research Council. France awarded him the Chevalier du Mérite Agricole. He has broad botanical knowledge and produced many iris hybrids of high merit for which he was awarded the Dykes medal. Essig is now engaged in a revision of one of his books, *Insects of Western North America,* and in the study of the family Aphididae, of which his collection is one of the largest in the world.

On 29 Sept. Essig celebrated his 70th birthday and in his honor the department of entomology and parasitology of the University of California sponsored a banquet in Berkeley attended by 225 of his friends and colleagues, many of whom were his former students. He was presented with a television set and a leather-bound volume of letters from more than 300 of his friends throughout the world.

James Watson Cox, director of the electronics laboratory of the Defence Research Board of Canada, has been appointed to the visiting faculty of the School of Electrical Engineering at Cornell University for the current academic year. He will teach a course on electromagnetic theory and conduct research on the ionosphere.

Taine G. McDougal, director of spark plug engineering and research at AC Spark Plug Division of General Motors, retired on 1 Oct., after 40 yr of service. McDougal earned his engineering degree at Ohio State University in 1911, and began his career the same year as superintendent of the Clay Products Co. at Spokane. The following year he went to Universal Sanitary Manufacturing Co., New Castle, Pa., as research engineer. He remained there until 1914 when he joined AC. In addition to being an authority on spark plugs, McDougal is well known for his work in the ignition and ceramic fields.

David A. Rytand, specialist in cardiology at Stanford University since 1936, has been promoted to full professor and on 1 Sept. became acting executive head of the department of medicine. He succeeds **Arthur L. Bloomfield,** who is now emeritus after nearly 30 yr as department head. Other appointments are as follows:

A. Kenneth Schellinger, former faculty member who has been research director for Cerro de Pasco Mining Co. laboratories in Peru for the past 2 yr, will return in March 1955 as associate professor of metallurgy.

John J. Osborn, who has been a research fellow with the American Heart Association, is acting associate professor of medicine, teaching pediatrics and serving as research associate in cardiovascular surgery.

Lorus J. and Margery Milne of the department of zoology at the University of New Hampshire have just returned from a year's expedition into Central America and various parts of the U.S. Their travels were supported by the Ford Foundation and the Explorers Club.

Laurence E. Morehouse, associate professor of physical education and research physiologist in aviation medicine at the University of Southern California since 1946, has been appointed professor of physical education at the University of California at Los Angeles. Morehouse, formerly a fellow in the Harvard University fatigue laboratory, will head a new program of research in health, physical education, and rehabilitation.

William J. Barclay, formerly of the Oregon State College faculty, has been appointed associate professor of electrical engineering at North Carolina State College. He is noted for perfecting an electric method for measuring the speed of light. The U.S. Bureau of Standards and the National Physical Laboratory, England, use this method for precision measurements.

Hartwig Kuhlenbeck, professor of anatomy at the Woman's Medical College of Pennsylvania, has been elected an honorary member of the Japanese Anatomical Society. He is the first honorary member, and is being so recognized for his contributions to the science of anatomy in Japan. Upon two occasions he was visiting professor in the University of Tokyo, and he has also had Japanese anatomists working in his university laboratory.

The Atomic Energy Commission has announced the appointment of **C. D. W. Thornton** as chief of the Office of Operations Analysis. During the last 6 yr he has held responsible positions in the AEC, including those of technical adviser on source and fissionable materials accountability and chairman of the fissionable standard samples committee.

Rev. George J. Hilsdorf, chairman of the chemistry department at St. Peter's College, Jersey City, has been elected president of the Eastern States division of the American Association of Jesuit Scientists.

Harriet M. Boyd, who served for 2 yr in Japan with the Atomic Bomb Casualty Commission studying the victims of the nuclear fission missiles dropped upon Hiroshima, has joined the University of Pennsylvania's School of Auxiliary Medical Services as director of the division of medical technology. In that capacity she will train medical technicians both to qualify for the B.S. degree in medical technology and to take the examination of the Registry of Medical Technologists, American Society of Clinical Pathologists.

Richard H. Bolt, director of the interdepartmental Acoustics Laboratory at Massachusetts Institute of Technology since 1946, has been appointed to the newly created post of professor of acoustics in the institute's department of electrical engineering.

Georg H. Hass, chief of the physics laboratory at the Corps of Engineers' Research and Development Laboratories at Fort Belvoir, Va., has been awarded an outstanding performance rating for his technical proficiency. The award was made on the basis of the work of the German-born scientist in providing the Army and other government agencies with optical coatings far in advance of present commercial technology. In addition, he was cited for his research on semiconductor intermetallic compounds and electrical discharges in gases, both important in the development of military infrared equipment.

At Mississippi State College **Lois Almon,,** for 14 yr associated with the Wisconsin Public Health Service, has been appointed Experiment Station associate in home economics research to succeed **Olive Sheets,** who is retiring after serving 27 yr in this position. Almon's work will be concerned with the broader aspects of human nutrition.

Alfred E. Livingston, professor and head of the department of pharmacology from 1950 to 1954 at the Temple University School of Pharmacy, has been appointed professor of pharmacology at the College of Pharmacy of St. John's University, Brooklyn.

George W. Howard, one of 11 winners of $15,000 Rockefeller public service awards last year, has returned to work at the Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Va., after 12 mo of studying methods of directing, planning, and managing similar agencies here and abroad. He visited 62 research and development laboratories in the United States and Canada and 18 in Europe during his year's leave.

While on a 3-mo tour of research agencies in Austria, Germany, Italy, Switzerland, France, and the Netherlands, he found time to earn a doctor's degree from the Technical University at Graz, Austria, last July.

Frank A. Parker, former research director of the Detroit Controls Corp. research division at Redwood City, Calif., has been appointed director of research and engineering, Detroit.

Frank J. Soday, vice president and director of research and development for the Chemstrand Corp., has been elected president of the Southern Association of Science and Industry.

Hubert O. Jenkins, professor of natural sciences at Sacramento State College, has been appointed director of Sacramento Field Tours, a public service sponsored by the college and the California Junior Museum at Sacramento.

James Bond, curator of the birds of America collection at the Academy of Natural Sciences of Philadelphia, received the annual Brewster memorial award, a medal, at the recent meeting of the American Ornithologists Union. Bond was honored for his work on the birds of the West Indies.

Edwin L. Zebroski, formerly project engineer for the submarine advanced reactor project at General Electric's Knolls Atomic Power Laboratory, Schenectady, N.Y., has become manager of the nuclear engineering section in the physics department of Stanford Research Institute.

The 1953 Henderson award of the Royal Photographic Society of Great Britain has been granted to **Edwin E. Jelley,** research associate of Kodak Research Laboratories, for outstanding work in photographic chemistry. The citation reads: "in recognition of your researches in the chemistry of photography (especially those employing the microscope) and in particular for your paper, with Dr. R. B. Pontius, on the 'Diffusion of Dyes in Gelatin' presented to the International Conference on the Science and Application of Photography in 1953."

At Duke University two scientists have been named to James B. Duke professorships. They are **Paul K. Kramer,** professor of botany, and **D. T. Smith,** chairman of the department of bacteriology.

Leslie W. Orr of Ogden, Utah, has been put in charge of the research on forest insects at the U.S. Forest Service's Southern Forest Experiment Station in New Orleans. He succeeds **R. J. Kowal,** who has been transferred to Asheville, N.C., to head similar work at the Southeastern Forest Experiment Station.

Charles G. Zubrod, associate professor of medicine and director of research in the department of medicine at St. Louis University, has been appointed clinical director at the National Cancer Institute of the National Institutes of Health. Zubrod, who has had extensive experience in pharmacology, particularly in the use of drugs for the treatment of human diseases, will have a major share of the responsibility for the institute's clinical investigations.

Recent appointments to assistant professor are as follows. St. John's University (Brooklyn): **Henry Eisen,** pharmacy. Polytechnic Institute of Brooklyn: **Ernst Loebl,** chemistry. Harvard University: **Taylor A. Steeves,** botany.

Necrology

Charles E. Allen, 82, author, former editor of the *American Journal of Botany,* past president of the Botanical Society of America and American Society of Naturalists, and professor emeritus of botany at the University of Wisconsin, Madison, Wis., 25 June; **Henry K. Benson,** 77, author, investigator of soils, land clearing, and pulp, and professor emeritus of chemistry at the University of Washington, Seattle, Wash., 27 Sept.; **Sophia H. Eckerson,** author and retired plant microchemist at Boyce Thompson Institute, Yonkers, N.Y., 19 July; **José N. Gandara,** 45, heart specialist and chairman of the Puerto Rico Housing Authority, Rio Piedras, P.R., 12 Oct.; **Harold A. Lewis,** 60, manager of the technical service section of the E. I. du Pont de Nemours and Co. explosives department, Wilmington, Del., 12 Oct.; **Theodore Lyman,** 79, leader in the investigation of extreme ultraviolet radiations, author, past president of the American Academy of Arts and Sciences and of the American Physical Society, and Hollis professor emeritus of natural philosophy at Harvard University, Cambridge, Mass., 11 Oct.; **Jack C. Morris,** 43, chief librarian of the Oak Ridge National Laboratory, Oak Ridge, Tenn., 23 Sept.; **Grady Norton,** 60, meteorologist and specialist in hurricane forecasting for the Miami Weather Bureau, Miami, Fla., 9 Oct.; **Gerhard Sander,** 39, research cytologist and geneticist, former research associate in psychiatry at Columbia University, and assistant professor of botany at the University of Wisconsin, Madison, Wis., 23 July; **Edward H. Sargent,** 69, chief engineer of the Hudson River Regulating District, Albany, N.Y., 9 Oct.; **James C. Sargent,** 62, urologist, lecturer, and professor at the Marquette University School of Medicine, Milwaukee, Wis., 7 Oct.; **August F. Schulze,** 68, expert on animal diseases and professor emeritus of zoology at the University of Connecticut, Storrs, Conn., 10 Oct.; **Melvin J. Tamari,** 60, professor of eye, ear, nose, and throat medicine and surgery at the University of Illinois Medical School, Chicago, Ill., 11 Oct.

Meetings

More than 3100 registrants from 50 nations attended the 2nd **World Congress of Cardiology,** which was combined with the 27th Scientific Sessions of the American Heart Association in Washington, D.C., 12–17 Sept. Approximately one-third of the participants were physicians from abroad.

Paul D. White of Boston, who served as president of the congress, was elected president of the International Society of Cardiology, which sponsors these congresses. He succeeded Charles Laubry of Paris, who has held the post for the past 4 yr, and who presided over the first international cardiology congress in Paris in 1950. Other officers named at a meeting of the society's council include: 1st v. pres., Ignacio Chavez, Mexico City; 2nd v. pres., D. E. Bedford, London; sec.-gen., Pierre Duchosal, Geneva; treas., Louis N. Katz, Chicago; asst. sec., John Palmer, Montreal. Brussels, Belgium, was chosen for the 3rd World Congress of Cardiology to be held in 1958. The Inter-European Congress of Cardiology will be held in Stockholm in 1956, and the Inter-American Congress of Cardiology will convene in Havana in the same year.

The **Southern Society of Cancer Cytology** will meet conjointly with the Southern Medical Association in St. Louis, 8–9 Nov. The cancer society's program will be divided into the following major sections: *General Cytology,* F. Bayard Carter of Durham, N.C., president of the society, presiding; *Gynecological Cytology,* Robert W. Barter of Washington, D.C., presiding; and *Gynecological Cytology and Special Technics,* Harold R. Pratt-Thomas of Charleston, S.C., presiding. Twenty-one papers will be delivered and four will be read by title. At a dinner meeting John R. Heller, director of the National Cancer Institute, will make an address entitled "New horizons in cancer: cytology in research and practice."

The **American Dental Association** will hold its 95th annual session in Miami, Fla., 8–11 Nov. More than 12,000 dentists are expected to attend. Every phase of dentistry will be discussed in reports presented during the scientific program; at other sessions the house of delegates, composed of 402 elected representatives of the Association's 82,000 members, will consider issues of significance to the nation's dental health. Immedi-

ately prior to the annual session, more than 20 associated dental groups will hold meetings in Miami and Miami Beach.

A representative group of 29 nuclear scientists and engineers met in Washington on 11 Oct. to organize the **American Nuclear Society.** An additional 200 senior atomic scientists and engineers have accepted invitations to become charter members. This is the first professional society of scientists and engineers representative of all scientific disciplines engaged in research, development, and application of nuclear technology. A principal purpose of the group is to foster the integration and advancement of nuclear science and technology through the interchange of information and ideas in every field of research involving nuclear techniques. Although nuclear power will be of primary interest, other subjects of interest to the membership will include uses of radioisotopes, effects of radiation on materials, radiation-sterilization of foods, and so forth.

The group has offered to assist in the implementation of the international nuclear energy conference proposed by President Eisenhower. United Nations sponsorship of such a conference is now being considered. Membership in the Society will not be limited to U.S. citizens and it is expected that cooperative conferences will be held with foreign technical groups.

The list of charter members includes such men as J. G. Beckerley, U.S. Atomic Energy Commission; J. W. Landis, Babcock and Wilcox Co.; J. A. Lane, Oak Ridge National Laboratory; D. H. Loughridge, Northwestern University; C. R. McCullough, Monsanto Chemical Co.; J. R. Menke, Nuclear Development Associates, Inc.; W. G. Pollard, Oak Ridge Institute of Nuclear Studies; Philip Sporn, American Gas and Electric Co.; and Chauncey Starr, North American Aviation, Inc.

The new organization plans its first technical conference 27–29 June at Pennsylvania State University, where a "swimming pool" type of nuclear reactor is under construction.

The creation of the **General Committee on Nuclear Engineering and Science** was announced on 29 Sept. Organized under the sponsorship of Engineers Joint Council, the new body has been established to "meet the pressing problems of nuclear engineering and the related sciences," with emphasis on the "industrial usefulness" of atomic power. The Engineers Joint Council is constituted of eight leading engineering societies with a total membership of 170,000. The American Chemical Society, which has joined the engineers in the nuclear unit, has 70,000 members. John R. Dunning, dean of engineering at Columbia University, has been elected chairman of the General Committee on Nuclear Engineering and Science; Donald L. Katz of the University of Michigan is secretary and program chairman. The new group has invited the participation, as members, of organizations of physicists and others concerned with nuclear development. A nuclear congress is scheduled for 11–16 July 1955 with an expected attendance of 1500. The holding of this congress, however, is conditioned on the action of the United Nations on the proposal of Secretary of State Dulles for an international conference on the creation of a world bank of fissionable material for peaceful productivity. The new committee's announcement said

> If the United Nations designates a city in North America for a conference in 1955, we shall forego our own Nuclear Congress for that year and we shall be willing to accept the responsibilities for the civilian aspects of the meeting. If the UN conference is held abroad, our Nuclear Congress will be held in a city in the United States to be designated later.

The **Fluid Dynamics Division** of the American Physical Society will meet 22–24 Nov. at Langley Aeronautical Laboratory, Langley Field, Va., and at the Hotel Chamberlain, Old Point Comfort, Ft. Monroe, Va. The meeting will feature a number of invited papers, including one by Hugh L. Dryden on "Fifty years of boundary layer theory and experiment." There will also be a large number of contributed papers on turbulance, boundary layer theory, and aerodynamics. Anyone wishing to attend should notify Joseph O. Hirschfelder, Secretary, Fluid Dynamics Division, P.O. Box 2127, Madison 6, Wis.

The 34th annual meeting of the **Association for the Education of Teachers in Science** will take place at Teachers College, Columbia University, 4–6 Nov. This year the conference will center attention upon the use of audiovisual aids, and will feature the actual demonstration of such aids.

Society Elections

Gamma Sigma Delta: pres., W. V. Lambert, University of Nebraska; v. pres., Louis M. Thompson, Iowa State College; sec., John A. Johnson, Kansas State College; treas., Homer J. L'Hote, University of Missouri.

Botanical Society of America: pres., Oswald Tippo, University of Illinois; v. pres., Harriet B. Creighton, Wellesley College; sec., Harold C. Bold, Vanderbilt University; treas., Harry J. Fuller, University of Illinois.

Conference on Weights and Measures: pres., A. V. Astin, National Bureau of Standards, Washington 25, D.C.; sec., W. S. Bussey, National Bureau of Standards; treas., G. F. Austin, Jr., Detroit, Mich. The vice presidents are J. Roy Jones, J. W. Reese, C. A. Lyon, G. L. Johnson, A. O. Oslund, and W. L. Daniels.

Botanical Society of America, Central States Section: chairman, T. G. Yuncker, DePauw University; v. chairman, P. Weatherwax, Indiana University; sec.-treas., L. J. Gier, William Jewell College.

Education

Lee A. DuBridge, president of the California Institute of Technology and chairman, Science Advisory Committee, Office of Defense Mobilization, delivered the principal address at the opening ceremonies of the new $2,000,000 building of the **Applied Physics Laboratory of The Johns Hopkins University** in Howard County, Md. In his speech DuBridge warned that if the government and the nation are to get the most out of scientific research, scientists and military men will have to do more basic planning together, and Congress and the rest of government will have to drop some ideas and policies that retard research.

The auditorium in the new building was dedicated to the memory of the late William Sterling Parsons, rear admiral who died last November while serving as deputy chief of the Bureau of Ordnance, U.S. Navy. With R. E. Gibson, director of the Applied Physics Laboratory, presiding, Vannevar Bush paid tribute to Admiral Parsons as a scientist, and M. S. Schoeffel, rear admiral and chief of the Bureau of Ordnance, paid tribute to him as a naval officer. Admiral Parsons was closely associated with the laboratory for many years in connection with the development of the proximity fuze and later, guided missiles.

Lowell J. Reed, president of The Johns Hopkins University, presided at the opening ceremonies held in front of the building, during which Admiral Schoeffel presented the laboratory with its second Naval Ordnance development award for "continued outstanding scientific achievement since 1945 and in appreciation of exceptional service to Naval Ordnance development."

Graduate training related to the field of **aviation medicine,** a medical specialty recently certified by the American Board of Preventive Medicine, is being offered for the first time this year by the Harvard School of Public Health. The program, directed by Ross A. McFarland, associate professor of industrial hygiene, meets the Board requirement of 1 yr of graduate training in the areas of basic sciences related to aviation medicine and also will lead to a degree of master of public health.

The **University of Pennsylvania's** new $3,000,000 physics, mathematics, and astronomy building is now being used. The building, which will be dedicated later, has a particle accelerator, provisions for closed-circuit televising of microscopic experiments, equipment for the safe handling and storage of radioactive material, a "penthouse" astronomical observatory, and shops for the manufacture of glass, mechanical, and electronic apparatus.

For the physics department, it supplants the Randal Morgan Laboratory, a pair of smaller buildings erected before the turn of the century; and for the mathematics and astronomy departments, it centralizes classes and offices previously scattered among other buildings.

A contribution of $25,000 toward the erection and equipment of a Science Hall on the Hillcrest campus of **St. John's University,** Brooklyn, has been announced. It is the gift of William L. Burgoyne, president of the Burgoyne Aircraft Engineering and Maintenance Corp., and will be used for a biology laboratory in the new building.

The New York Academy of Medicine's 20th series of **Lectures to the Laity** on *Medicine in the Changing Panorama of Science* will commence on 17 Nov. with the Linsly R. Williams memorial lecture "Chemotherapy of cancer," which will be delivered by Sidney Farber of the Children's Cancer Research Foundation, Boston, Mass. Other lectures are as follows:

1 Dec., "Is psychiatry a science?" Jules H. Masserman, professor of neurology and psychiatry, Northwestern University.

5 Jan., "The philosopher looks at science." Ernest Nagel, professor of philosophy, Columbia University.

19 Jan., "Life is for living." D. Ewen Cameron, Allan Memorial Institute of Psychiatry, Montreal.

2 Feb., "Psychosomatic notions—a review." Aldwyn B. Stokes, professor and head, department of psychiatry, University of Toronto.

16 Feb., "Man and his nutrition." Charles G. King, scientific director, The Nutrition Foundation, and professor of chemistry, Columbia University.

The new geochemical laboratory, which is under the direction of J. Laurence Kulp, has just been completed at **Columbia University's Lamont Geological Observatory,** Palisades, N.Y. The research being conducted at the laboratory includes age determinations of everything from the earth itself to mummy wrappings from Peru, measurements of natural radioactivity in the crust of the earth and in the atmosphere, and general geochemical investigations into such things as the origin of petroleum and sulfur.

Modern geochemistry, the application of quantitative chemical measurements to geology, is barely 10 yr old. It began in the early 1940's when war-spurred atomic research produced the delicate instruments and basic knowledge necessary to increase the sensitivity of analytical techniques, particularly those relating to isotopic assay. With the new equipment just installed Kulp expects to double the range of radioactive carbon dating shortly—making it possible to establish the age of organic objects as much as 60,000 yr old.

Though C^{14} is so far the best material for the dating technique, the Columbia geochemists have pioneered in the use of several other isotopes, many of them extremely promising. Improvements on the uranium "clock" now give it a range of 1 billion yr to an accuracy of 2 percent. The ionium found in muds on the deep ocean floor has been used to study the rate of sedimentation in the mid-Atlantic Ocean. Tritium is being used to tag air masses by the age of the moisture in them, thereby helping meteorologists to study the movement and mixing that goes on in the atmosphere.

Most promising development for dating older rocks

is the potassium clock. The common occurrence of potassium in nature makes it possible to date practically any rock older than 10,000,000 yr. Its range extends from 10 million yr ago to the very beginnings of the earth, which geologists estimate now at approximately 5 billion yr ago. A similar clock, rubidium-strontium, extends back from about 100 million yr.

Available Fellowships and Awards

The fellowship office of the National Academy of Sciences–National Research Council is now accepting applications for the following predoctoral and postdoctoral **fellowship programs in the natural sciences** that are being administered by the Academy–Research Council for the academic year 1955–56. These fellowships, which are open only to U.S. citizens, were established to give young persons of unusual promise and ability special opportunities to gain advanced study and training in fundamental research.

American Chemical Society Petroleum Research Fund Postdoctoral Fellowships. Supported by the American Chemical Society, these fellowships are designed to be used exclusively for advanced scientific education and fundamental research in the "petroleum field." The term "petroleum field" as used comprises (i) exploration for, and the production, transportation and refining of petroleum, petroleum products, and natural gas, and (ii) the production and refining of substitutes for petroleum and petroleum products from natural gas, coal, shale, tar sands, and like materials. Applicants must produce evidence of training in one of the natural sciences equivalent to that represented by the Ph.D. or Sc.D. degree and must have demonstrated superior ability for creative research.

Lilly Research Laboratories Postdoctoral Fellowships in the Natural Sciences. Supported by the Lilly Research Laboratories, these fellowships are for the purpose of giving further enducation, training, and development to young men and women in the sciences fundamental to the understanding of biological phenomena, especially in the borderline fields between chemistry, biology, and physics. Evidence of training in one of the natural sciences equivalent to that represented by the Ph.D. or Sc.D. degree must be produced by the applicant and he must have demonstrated superior ability for creative research. Applicants of extraordinary competence and promise who have had 1 or 2 yr of postdoctoral or professional experience are especially invited to apply.

Merck Senior Postdoctoral Fellowships in the Natural Sciences. Supported by Merck, Inc., these senior fellowships, which have no age restrictions, are awarded for the purpose of giving advanced education, training, and development to individuals who have demonstrated marked ability in research in the physical, chemical, or biological sciences and who wish to broaden their fields of investigational activity by acquiring some familiarity with another area. Applicants must produce evidence of training in physics, chemistry, or biology equivalent to that represented by the Ph.D. degree, and must have had at least 3 yr of postdoctoral professional experience in their major field, only 1 yr of which may have been fellowship work.

RCA Predoctoral Fellowships in Electronics. Supported by the Radio Corporation of America, these predoctoral fellowships are offered to give special graduate training and experience to young men and women in the general field of electronics, either as a branch of electrical engineering or as a part of the general field of physics. Candidates must have demonstrated ability and aptitude for advanced work and must have had training in electronics equivalent to that represented by 1 yr beyond the bachelor's degree in a university of recognized merit in this field. It is understood that the training for the bachelor's degree may come from the general area of electrical engineering or physics.

Detailed information and application material may be secured for any of the programs by writing to the Fellowship Office, National Research Council, 2101 Constitution Ave. NW, Washington 25, D.C. Fellowships are awarded in the late winter or early spring. *All applications for any of these programs must be submitted on or before 10 Dec.*

The Lederle Laboratories Division of the American Cyanamid Company has announced the second year of the **Lederle medical faculty awards** for the academic year 1955–56. The purpose of this program is to encourage men and women who have progressed beyond the stage of development which is now encompassed by the postdoctorate fellowships or the so-called senior fellowships in preclinical sciences. The program will aid in the support of promising teachers and investigators, particularly in the fields of anatomy, biochemistry, microbiology, pathology, pharmacology, and physiology, for a limited period in the hope and expectation that the medical schools which have appointed them, or some other schools, will thereafter be ready and willing to provide for their future support. The plan is also intended to assist departments which could benefit by expansion and which can offer opportunities for the development of promising individuals.

Candidates must hold faculty rank or its equivalent. Awards will be made for a term not exceeding 3 yr. The only restriction in the case of each recipient is that the total amount, which will be awarded at a rate to be determined by the awards committee, shall not exceed $10,000 in any 1 yr to any one grantee.

The funds should be used primarily to increase or to create salaries for the designated individuals, but they may be used in part to support the departmental activities of the individual. The funds are meant to augment, but not to replace, funds already available for the department in question.

There are no formal application blanks. Nominations, accompanied by the specific information that is designated in detailed instructions, should be sub-

mitted through the office of the dean of the medical school and should be endorsed by him. Only one candidate from each school will be considered in any given year. It is suggested that the most suitable candidate be selected by a committee of the faculty on the basis of personal qualifications and departmental needs. Nominations for awards to be activated during the academic year 1955–56 *should be submitted by 1 Feb. 1955.*

Grants and Fellowships Awarded

The following AAAS research grants have been awarded:

Wisconsin Academy of Science, Arts, and Letters to W. L. Culberson, University of Wisconsin. Ecological study of the bark-inhabiting cryptogamic vegetation of Wisconsin.

Wisconsin Academy of Science, Arts, and Letters to W. L. Wittry, State Historical Museum. Excavations of prehistoric habitation sites in Wisconsin.

American Cancer Society institutional and special purpose research grants for 1954–55 are as follows:

Boston University. C. S. Keefer. Chemical structure and function of human malignant tumors.

Brown University. J. W. Wilson. Histophysiology, histopathology, and cytology of liver and skin.

University of Buffalo. S. Kimball. Institutional cancer research program of the University of Buffalo.

University of California. D. A. Wood. Cancer research in action.

University of Chicago. L. T. Coggeshall. Cause, diagnosis, and treatment of cancer.

University of Colorado. R. C. Lewis. Cellular biology, tissue growth, and endocrinology.

Columbia University. W. C. Rappleye. Research studies of cancer.

Detroit Institute of Cancer Research and Wayne University. W. L. Simpson and G. H. Scott. Integrated studies of experimental and clinical cancer.

Emory University. A. P. Richardson. Basic research in cancer.

George Washington University. W. A. Bloedorn. Clinical and research program.

Harvard University. J. C. Aub. Research in growth and cancer.

Indiana University Medical Center. E. A. Lawrence. Metabolic changes in natural and induced resistance to malignant neoplasms.

Institute for Cancer Research, Philadelphia. S. P. Reimann. Cancer research through application of various techniques.

State University of Iowa. N. B. Nelson. Fundamental studies in cellular physiology.

Johns Hopkins University. W. W. Scott. Studies on the etiology and treatment of tumors.

University of Kansas. R. E. Stowell. Physical, chemical, structural, and functional changes associated with cancer.

Massachusetts General Hospital. P. Zamecnik. Basic science and clinical investigations into cause and cure of cancer.

University of Michigan. A. C. Furstenberg. Integrated studies of the nature, detection, and cure of cancer.

University of Minnesota. H. S. Diehl. Institutional cancer research program.

New York University, Bellevue Medical Center. G. H. Twombly. Cancer research at New York University Medical School with clinical research at Bellevue.

Ohio State University. C. A. Doan. Coordinated institutional cancer research program.

Oklahoma Medical Research Foundation. C. D. Kochakian. Clinical and basic research in normal and abnormal growth.

University of Pennsylvania. E. P. Pendergrass. Cancer research program.

University of Rochester. J. J. Morton and E. H. Keutmann. Tumor host relationships.

Roscoe B. Jackson Memorial Laboratory. Exploration of research leads in growth and cancer.

Rutgers University. J. B. Allison. Dynamic state of cancerous and other tissues.

Sloan-Kettering Institute for Cancer Research. C. P. Rhoads. Cancer chemotherapy program.

University of Southern California. I. Macdonald. Cancer research coordinating plan.

Stanford University. W. H. Carnes. Cancer research.

University of Texas, M. D. Anderson Hospital. R. L. Clark, Jr. Factors regulating growth.

Tufts College. F. Homburger. Clinical and experimental studies on cancer.

Tulane University. A. Segaloff. Relationship of hormones to neoplasia.

Washington University. E. Graham and E. V. Cowdry. Interim support for lung research.

Washington University. G. Cori. Investigations on the problem of growth.

University of Wisconsin. H. P. Rusch. Institutional cancer research program.

Worcester Foundation for Experimental Biology. G. Pincus. Steroid metabolism and carcinogenesis.

Yale University. V. W. Lippard. Experimental and clinical cancer.

Airborne Instruments Laboratory, Inc. Development of automatic scanner for Papanicolaou smears.

University of California. W. M. Stanley. Correlative studies on normal, malignant, and virus infected tissues and cells by means of the color translating microscope.

Cornell University Medical College. G. N. Papanicolaou. Exfoliative cytology of the breast, endometrium, and cervix.

Harvard University. J. B. Graham. Study of optimum treatment of uterine cervical cancer.

National Research Council. I. M. Wason. Evaluation of proposed methods for the diagnosis and therapy of cancer.

New England Deaconess Hospital. S. Warren. Use of Polaroid ultraviolet color translating microscope for research.

New York University, Bellevue Medical Center. N. Nelson. Lung cancer research.

Rockefeller Institute for Medical Research. Exploration of possible fields of usefulness of the Polaroid color translating microscope.

Southern Research Institute. H. E. Skipper. Search for useful cancer chemotherapeutic agents.

Stanford Unviersity. E. L. Ginzton and H. S. Kaplan. Development and clinical testing of a medical linear electron accelerator.

Wayne University. A. J. Vorwald. The pathogenesis of pulmonary cancer in experimental animals.

In the Laboratories

The dedication ceremonies for the new **Quartermaster Research and Development Center** in Natick, Mass., took place on 14 Oct. The $11,000,000 scientific center represents a consolidation of Quartermaster Corps research laboratories heretofore scattered throughout the country. The new center is also headquarters of the recently established Quartermaster Research and Development Command, headed by Brig. Gen. Charles G. Calloway.

The facility is unique in that it is the first scientific installation designed to permit study of human physical reaction and evaluation of experimental military equipment under virtually all known climatic conditions. The Climatic Research Building eventually will house climatic chambers in which simulated weather conditions may be produced ranging from 70° below zero to 168° above, from tropical cloudbursts to arctic snowstorms. It also will be possible to create winds of up to 40 mi/hr.

Other laboratories at the center will be equipped to make detailed tests of fabrics, leathers, metals, plastics, chemicals, and other materials and processes involved in fashioning the more than 70,000 items of Quartermaster supply. The facilities are designed to perform both basic scientific research and the prac-

tical testing of so-called end items, including everything from footwear to bakery equipment and from insecticides to canvas.

Situated on a 100-acre site, the center includes 10 reinforced concrete buildings. When in full operation the laboratories will use more than a million gallons of water daily, which will be drawn from nearby Lake Cochituate and returned uncontaminated through special filtering equipment. Personnel will total about 1000, less than 50 of whom are military, and will include several hundred scientists and technologists experienced in the various fields of Quartermaster research.

Two new buildings and additions to a tank farm and power house will be erected at the **Gulf Research and Development Co.'s laboratories** in Harmarville, Pa., to expand its facilities for research into fuels and lubricants. The project, when completed with test engines and related apparatus, will cost in the neighborhood of $2,400,000.

New Jersey industry and Rutgers University are cooperating in the establishment of a **Radioisotope Center** in order to make this by-product of atomic energy more available as a research tool. Ten firms have already signed up for $1000 memberships in the center. Although this $10,000 does not complete financing, Rutgers will proceed immediately with the project and first courses will be offered with the opening of the second semester in February. The new unit will have its headquarters in the university's Physics Building; laboratory sessions will take place in facilities at University Heights.

Miscellaneous

The most important publications of the **International Union of Biological Sciences** are the Proceedings of the symposiums it has sponsored. The publications may be ordered from Prof. R. Ulrich, Laboratoire de Physiologie Végétale, 1, rue Victor Cousin, Paris 5, France. Some of the titles available are as follows: *Trace Elements in Plant Physiology* (Rothamsted, 1947); *Botanical Nomenclature and Taxonomy* (Utrecht, 1948); *Sostanze Interattive Tra Uova e Spermi e Partenogenesi* (Milan, 1948); *Les Bases Scientifiques d'une Organisation Internationale de la Lutte Biologique* (Stockholm, 1948); *Development, Growth and Regeneration of the Nervous System* (Chicago, 1949); *Le Role des Anaérobies dans la Nature* (Bruxelles, 1949); *Problèmes de l'Embryologie Physio-Génétique* (Berne, 1949); *Les Bases Écologiques de la Régénération de la Végétation des Zones Arides* (Stockholm, 1950); *La Symbiose des Insectes avec les Microorganismes* (Amsterdam, 1951); *Le Bactériophage, Royaumont* (Paris, 1952); *Biometric Problems in the Prediction and Estimation of the Growth of Plants in Tropical and Subtropical Regions* (Calcutta, 1951); *Sur l'Organisation des Jardins Botaniques* (Paris, 1953); *Actinomycetales; Morfologia, Biologia e Sistematica* (Rome, 1953).

The union has also published two indexes: the *Index of Geneticists* (listed by name and by country) and the *Index of Zoologists* (listed by name, by country, and by specialty).

Four articles on the general topic *Psychoanalysis and scientific method* appear in the November issue of ***The Scientific Monthly***: "Meaning of psychoanalytic concepts and confirmation of psychoanalytic theories" by Else Frenkel-Brunswik; "Critique of psychoanalytic concepts and theories" by B. F. Skinner; "On the scientific status of psychoanalysis" by Jerome Richfield; and "Notes on the discussion between Frenkel-Brunswik and Skinner" by Michael Scriven.

Other articles featured in the same issue are "Strange life of the dicyemid mesozoans" by Bayard and Evelyn McConnaughey; "The sedentary society" by Herbert Collins; "Chippewa sacred songs in religious metamorphosis" by Gertrude P. Kurath; and the final two articles in the series *Species that feed mankind,* these being "Animal species that feed mankind: The role of physiology" by S. A. Asdell, and "Role of genetics in adapting animals to meet changing requirements for human food" by T. C. Byerly. The issue also contains 25 book reviews.

A new publication called ***Noise Control*** has been announced by the Acoustical Society of America, its sponsor. The new bimonthly journal, the first issue of which will be released in January, will be designed for the reader who has practical noise problems. It will be well illustrated, articles will be as short as possible, with mathematics held to a minimum. Advanced technical knowledge of acoustics will not be necessary for adequate understanding of the contents.

The editor of *Noise Control* is Lewis S. Goodfriend, and his editorial board is composed of Floyd A. Firestone (chairman), Leo L. Beranek (v. chairman), Herbert A. Erf, Robert O. Fehr, Karl D. Kryter, and Haldon A. Leedy. Editorial inquiries and manuscripts should be addressed to the editor, *Noise Control,* 57 E. 55 St., New York 22. Advertising inquiries should be addressed to T. Vorburger, Advertising Manager, American Institute of Physics, 57 E. 55 St., New York 22.

On 15 Oct. the **South Pacific Fishery Investigations** of the U.S. Fish and Wildlife Service moved its headquarters from Stanford University to the Scripps Institution of Oceanography of the University of California at La Jolla, Calif., where a portion of the staff has been located for a number of years. John C. Marr, chief of the South Pacific Fishery Investigations, will also serve as director of the university's Marine Life Research Program.

Erratum. On page 612 (15 Oct. 1954), column 1, line 10: substitute 350 v for 3500.