cervical cancer has been indicated in many clinical investigations (*6*). One of the most recent studies concerned more than 5000 women who received cytologic examinations by private physicians (*7*). The study reported that the examinations had revealed 48 definitely curable asymptomatic cervical cancers. The study also pointed out the economic feasibility of this screening procedure, estimating that its cost per private case is within the keeping of many other laboratory procedures.

Cytology provides not only a means of detecting cervical cancer in its incipiency but also material for study of the development of the disease. Research of this type is underway which may answer questions that bear directly on the problem of controlling uterine cancer, questions such as: Do the intraepithelial or "early" cancers progress invariably to invasiveness? How frequent is "early" cervical cancer? How many of these cancers regress spontaneously?

A number of studies seeking the answers to these questions have yielded significant preliminary findings. The University of Tennessee College of Medicine, with the support of the National Cancer Institute and other groups, is applying vaginal cytology in a mass-screening survey for uterine cancer and intraepithelial cancer among 165,000 women in Memphis and Shelby County, Tennessee.

The results obtained in the screening of the first 70,000 women are very encouraging. The cytology findings were suspicious or positive in 1327, or 1.9 percent, of the women. Tissue biopsy studies have been completed in 1076 of the 1327 cases. The biopsy diagnoses were positive in 51 percent of the cases; borderline, suspicious, or inconclusive in 15 percent; and negative in 34 percent. Vaginal cytology resulted in false positives in only 369 cases, or one-half of 1 percent, of the 70,000 women screened. From the point of view of cancer control, it is especially significant that 88 percent of the 282 confirmed cases of intraepithelial cancer of the cervix were unsuspected prior to cytology, and 29 percent of the 245 confirmed cases of invasive uterine cancer were unsuspected.

Also of particular interest is the age distribution of these cancers among the cases screened in the Memphis cytology study. On the average, the women with intraepithelial cancer are about 20 years younger than the women with invasive uterine cancer. The median age of the women with early cervical cancer is 33, while the median age of those with invasive cancer is 52. This suggests that preinvasive lesions are present for a long enough time to allow for their eradication.

The Memphis study was begun in July 1952. Cytologic examinations of the women will be repeated at yearly intervals, and the study will be continued until the incidence of intraepithelial cancer and its relationship to the incidence of invasive uterine cancer are determined.

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* Based on an address before the Southern Society of Cancer Cytology in St. Louis, Mo., 8 Nov. 1954.

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# *News and Notes*

## Events Related to Differentiation of Cells

A conference on *Molecular Events in Differentiation Related to Specificity of Cell Type* was held under the auspices of the New York Academy of Sciences at the Barbizon Plaza Hotel in New York, 8–9 Oct. Among the many informative papers given was one by J. D. Ebert *et al.* (Indiana) who reported: (i) The major synthesis of cardiac myosin is initiated during formation of the primitive streak; this protein can first be detected (by immunological methods) at the midstreak stage; (ii) in the definitive primitive streak stage embryonic cardiac myosin is distributed throughout the ectoderm; it has not been detected in the entoderm; (iii) the restriction in distribution of cardiac myosin coincides with the initiation of synthesis of at least one antigen of the cardiac actin complex, which is already limited in distribution to the heart-forming areas at the time it is first detected. C. L. Markert (Michigan) recounted the use of various substrates for melanogenesis in tissue culture, including $C^{14}$-labeled tyrosine, dopa, tryptophan, glucose, glycine, and unidentified oxidation products of tyrosine. Of these, only uniformly labeled tyrosine and its oxidation products were differentially incorporated into melanin granules as shown by autoradiograms. He reported that since tyrosine with a $C^{14}$ in the side chain did not serve as a melanin precursor, doubt is cast upon the generally accepted scheme for melanogenesis. C. E. Wilde, Jr., (Pennsylvania) reported that the differentiation of the cells of the Urodela neural crest in tissue culture appears to be controlled by a special metabolism concerned with phenylalanine

or tyrosine. Of particular interest was his report of specific inhibition of pigmentation and pigment cell differentiation by a hydroxyl-substituted phenylalanine compound. C. Grobstein (NIH), culturing mechanically fragmented chick and mouse embryos, concluded that there is a stage in the origin of nervous tissue when the presumptive area has sufficient stability to continue neuralization when isolated without disruption, but during which the component cells have not been stabilized, or possibly even biased, as to type.

Other significant papers presented were those by L. B. Flexner (Pennsylvania) on "Events associated with the differentiation of nerve and hepatic cells"; E. W. Caspari (Wesleyan) on "The role of genes and cytoplasmic particles in differentiation"; G. W. Nace (Duke) on "Development in the presence of antibodies"; M. Spiegel (Cal. Tech.) on "The reaggregation of dissociated sponge cells"; A. M. Schechtman (California) on "The nucleus of the cell and cellular differentiation"; A. G. Karczmar (Sterling-Winthrop) on "Limb regeneration and 'overt behavior' differentiation in urodeles as studied by means of their response to chemical agents"; and S. M. Rose (Illinois) on "Specific inhibition in growth and differentiation."

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## Science News

A National Science Foundation **survey of scientific publications** indicates that 70 percent of all papers submitted to editors are eventually published in the journals to which they are submitted; a considerable portion of the remainder are rejected because they have been submitted to the wrong journal. Delays in publication varied from more than 1 yr to less than 6 mo. Average delay was 5.3 mo for journals publishing 500 pp or less per year and 1.9 mo for journals publishing more than 2000 pp per year. Delay in journals in which the average article ran 4 pp or less was 5.6 mo compared with 2.1 for journals in which the average article was 20 pp or more.

The most important **advances and trends** in science and technology during 1954 as picked by Watson Davis, director of Science Service, are (i) conversion of atomic energy radiation directly into electricity, and the development and application of solar batteries turning sunlight into electricity; (ii) demonstration of photosynthesis by nonliving green grains extracted from plant cells, and the elucidation of the role of complex sugars and phosphorus in the photosynthetic process; (iii) mass trials of a vaccine against polio upon 1.5 million school children; (iv) "Pogo" fighter plane that takes off straight up and lands tail-first; (v) use of naturally radioactive tritium to trace age of water in rain and elsewhere; (vi) structure of the center of the Milky Way, our own stellar galaxy, revealed by radio waves generated by the hydrogen gas filling space between the stars; (vi) rising apprehension that radioactive material from atomic and H-bombs will poison the earth's atmosphere and affect the continuance of human life; (viii) discovery that corn is at least 60,000 yr old and native to the Western Hemisphere; (ix) revoking of the security clearance of J. Robert Oppenheimer and similar cases that affected adversely the relationships of scientists to government; (x) the successful use of the international language, Interlingua, for abstracts at world medical meetings and in scientific journals.

In an effort to **destroy the screwworm,** which annually causes millions of dollars in losses, U.S. Department of Agriculture scientists are working with Dutch authorities on the Caribbean island of Curaçao. Since the female mates only once a year and with only one male, research workers released thousands of males made sterile by exposure to gamma rays from radioactive cobalt. It is anticipated that the screwworm population will be smaller next year.

**Silicon crystals** with a lifetime of more than 0.001 sec have been produced in the General Electric Research Laboratory at Schenectady, N.Y.; the usual lifetime of silicon is a few ten thousandths of a second, often considerably less. The "zone melting" process was used. An ingot of high-quality silicon was drawn through a long gas-filled quartz tube. Induction coils melted the element in narrow zones. Impurities remained in the high temperature zone and were swept to the end of the tube, leaving the silicon—thought to be the purest produced to date.

**Calcutta monkey dealers** are protesting an order of the Indian government that bans trapping or exporting monkeys between 1 Apr. and 31 Aug. They point out that America already imports 3000–4000 monkeys every year from Manila.

Edward A. Suchman, Robin M. Williams, and Rose K. Goldsen, all of Cornell University's department of sociology and anthropology, are conducting a **study of the "values" of foreign students** at the university—how such values differ from those of American students, what kind of American friends the foreign students have, how they evaluate their experiences in the United States, and how their values and attitudes may change as a result of their stay here. Suspecting that their association and friendships with American students are important in determining the visitors' reactions during their sojourn here, the sociologists will focus attention on the friendship formation between American and foreign students. The study complements two other research projects centered at Cornell, one on student values in 11 American universities, and one on intergroup relations in five American cities.

The Social Science Research Council is sponsoring this project and parallel investigations at three other universities—New York University, the University of California, and the University of Michigan. It has also sponsored smaller, intensive studies of foreign stu-

dents at the University of Wisconsin, the University of Pennylvania, Ohio State University, and the University of California.

A new kind of high-voltage machine, a **modified van de Graaff generator,** was reported in the 4 Dec. issue of *Nature* by R. E. D. Clark of the Cambridgeshire Technical College and F. T. Farmer of the Royal Victoria Infirmary, Newcastle-upon-Tyne. Instead of carrying electrostatic charges on its moving belt, it carries charged capacitors that are automatically connected in series as they reach the top of the machine. This increases current output and voltage.

The **European rabbit,** one of the worst of animal pests, is being introduced into the United States by sportsmen. Some have already lived through one mild winter in northern Pennsylvania. They are being imported from the San Juan Islands, off the coast of Washington, where colonies have existed for many years.

Missouri has long served as a supplier of native cottontail rabbits for stocking purposes in other states. This practice was recently halted, thus facilitating the development of the San Juan rabbit supplying business. The menace of this creature is so well recognized that a Federal law banning its importation was enacted more than 50 yr ago, although interstate shipment is apparently legal.

Few pests have been more dramatically publicized than the European rabbit; it has devastated large areas in Australia and New Zealand. Damage that it causes amounts to many millions of dollars a year, and control efforts have been costly and largely futile. Myxomatosis recently has reduced numbers in Australia and Europe, but immune strains are already developing. This disease cannot be counted on for lasting control, and there is reason to think it might be ineffective in America. Recent reports on the European rabbit situation may be found in *Ohio Conservation Bulletin* for Aug. 1954, *Pennsylvania Game News* for Sept., and *Science News Letter* for 13 Nov.

In line with the London and Paris agreements permitting **West Germany to resume nuclear research** and to produce fissionable material on a limited scale, an atomic law is being drawn up by the Federal Government of West Germany. Its primary aim is to prevent misuse of products and to guard against any radioactive dangers threatening the health of the population.

Germany's future stock of nuclear fuels, from its own production as well as from imports, shall not exceed 3500 gr at any time or in any year. This is seven times the amount originally envisaged by the now defunct EDC treaty. As specified in the agreements, such nuclear fuels include plutonium, uranium-233, and uranium-235.

Together with the drawing up of the atomic bill, plans are being developed for the construction of a 10,000-kw reactor. The reactor is primarily to serve research purposes and its costs are estimated at DM. 20 million. It will be located in either Munich or Karlsrhue. In this connection the Society for the Study of Physics was recently founded; its members consist of 16 firms interested in nuclear development.

In preliminary studies made at the University of Illinois by R. P. Link and Jean C. Smith of the college of veterinary medicine, it was found that atabrine purged infected dogs of two species of **tapeworm.** Of 12 dogs treated, 91 percent were free of *Taenia pisiformis* and 85 percent were free of *Dipylidium caninum* within 23 days of the initial treatment. However the drug was not effective in curing the infection of two other parasites, *Ancylostoma canium* and *Toxocara canis.* Previous findings by other scientists have shown that atabrine has been effective in ridding human beings and mice of tapeworm infections.

## Scientists in the News

**Edward U. Condon** released the following statement when he resigned recently as director of research for the Corning Glass Works.

> On July 12, 1954, after a full hearing and after consideration during more than three months, the Eastern Industrial Personnel Security Board decided that I was entitled to full clearance for access to classified information in connection with the work of Corning Glass Works for the military departments. My clearance was reported in the press for the first time on Oct. 19, 1954. On Oct. 21, 1954, the secretary of the Navy, Charles Thomas, announced that he had asked the Board to reconsider its decision and had suspended my clearance.
>
> At the present time I do not feel there is any possibility of my securing a fair and independent judgment in a reconsideration of the decision by the Eastern Industrial Personnel Security Board of last July in favor of my security clearance. This Board had before it the reports of investigations stretching over eleven to fourteen years, since I worked on highly secret defense problems for the Government over a period from 1940 to 1951. In the course of that period, I have been cleared by such agencies as the Manhattan Project, the full membership of the Atomic Energy Commission, the Department of Commerce, and the military departments.
>
> I now am unwilling to continue a potentially indefinite series of reviews and re-reviews. I have therefore withdrawn my application for clearance, with the satisfaction that an objective and unbiased board which has conducted a complete hearing in this matter, which is also the highest board established by the three military departments for this purpose, has, after hearing me and studying the full record, decided that I am entitled to full clearance.
>
> I have served my Government in its efforts to preserve our national security for many years in both public and private capacities, and with a considerable degree of success if the testimony of my fellow scientists, available to the present authorities in this proceeding, is to be believed. In the course of these services my loyalty to this country and its Government has been clearly and formally established, and

these proceedings raise no question on this score. If the duly constituted authorities of Government ever desire or request my services, they will be available and I will undergo any security examination and comply with any security procedures.

I am happy to say that throughout all this difficulty the management of Corning Glass Works has shown confidence in me and my ability, and a willingness to support me in every procedural step to have my clearance re-established.

The long-drawn-out clearance difficulties, however, began to affect my ability to perform my duties efficiently, and even to impair my health, so I began to consider other possibilities of employment. Aside from this, I have long felt a desire to get back entirely to fundamental research in physics.

Corning Glass Works showed an understanding of this problem and has agreed to a solution whereby I will be able to devote my energies to a long-range program of fundamental research on the structure and properties of glass. I expect to establish my home at Berkeley, Calif., where I shall engage in research on special assignments from the company, as well as in other private scientific research.

**William H. Armistead,** manager of the melting department of Corning's research and development division since June, has succeeded Condon. The company has also named **Harry R. Kiehl** associate director of research. He formerly was assistant to the research director and manager of the physics department.

**Vannevar Bush,** retiring president of Carnegie Institution of Washington, received the annual $1000 William Procter prize awarded by the Scientific Research Society of America. The award, given for general scientific achievement, was presented 30 Dec. at the 121st AAAS meeting in Berkeley, Calif. In his acceptance address Bush said:

> . . . Indeed it is a grim world and the future for the moment looks dark. . . . But do we need to be glum about it at all? . . . It is no new thing for man to confront perils in his upward struggle. Life has always been hazardous, civilization has always been threatened, our individual deaths have always been an inevitable certainty. But men have faced uncertain futures before with courage. . . . We are privileged to share together in a great adventure, the very hazards of which should draw us closer together. With determination and wisdom our sorry old world may yet become a happy place to live in, where wars are no more, and where the spirit of brotherhood dominates all we think and do.

**Donald J. Portman,** for the past 5 yr a staff assistant in micrometeorologic research at Johns Hopkins University, has accepted an appointment as a physicist for Beckman and Whitley, Inc., San Carlos, Calif., manufacturer of high-speed research cameras and thermal and meteorologic instruments.

**William S. Boyd,** professor emeritus at the universities of Toronto and British Columbia, will be visiting professor of pathology at Ohio State University in January. Boyd is the author of numerous pathology textbooks.

**John Christian Warner,** president of Carnegie Institute of Technology, has been chosen president-elect of the American Chemical Society. **Joel H. Hildebrand** of the University of California was elected president for 1955. Warner directed and coordinated research on the purification of plutonium during World War II.

**Libbie Henrietta Hyman** of the American Museum of Natural History has been named by the National Academy of Sciences to receive the Daniel Giraud Elliot medal, which is awarded annually in recognition of meritorious work in zoology or paleontology. Hyman won the award for her treatise *The Invertebrates.* The medal and accompanying honorarium will be presented at the 92nd annual meeting of the academy 25–27 Apr. 1955.

**Stanley Cobb,** neuropsychiatrist and Bullard professor emeritus of neuropathology at Harvard Medical School, delivered the fifth annual Leopold Stieglitz lecture at New York University College of Medicine on 15 Dec. The lecture, "Multiple etiology in psychiatry and medicine," was given in conjunction with Cobb's 1-mo stay at N.Y.U. under the **Leopold Stieglitz** visiting professorship. This professorship was established with funds provided by friends and patients of Dr. Stieglitz, who at 86 is in his 63rd year of general practice under the State Board of Regents medical license No. 1.

**Max Tischler,** director of process research and development at Merck and Co., Inc., Rahway, N.J. is to succeed **Per K. Frolich** as vice president for scientific activities of the chemical division. Frolich has resigned to accept the top civilian scientific post in the Army Chemical Corps. Tischler received the Merck Board of Directors scientific award in 1951, an award that has provided for the Max Tischler lectures in chemistry at Harvard University and the Max Tischler scholarship fund at Tufts College.

**Gunnar Pleijel,** Institute of Technology in Stockholm, an expert on natural radiation and solar energy, has arrived in the United States on a fellowship from the Sweden-America Foundation. Pleijel plans to discuss research in his field with scientists at more than 50 American universities and institutions.

**Edwin M. McMillan,** a Nobel prize winner and professor of physics at the University of California, has been named faculty research lecturer for 1954–55. The selection is made by the university's academic senate, which annually selects one of its members for this honor. The lecture is given in March. McMillan was cited by the academic senate committee for his discovery, with P. H. Abelson, of neptunium, his participation in the discovery of plutonium, and for his proposal of a theory that increased the power of atomic particle accelerators in the period following World War II. McMillan was recently appointed by President Eisenhower to the General Advisory Committee of the Atomic Energy Commission.

**Frederick J. Martin,** for the past 8 yr a physical chemist with the M. W. Kellogg Co., Jersey City, N.J., has accepted an appointment as a research associate in the chemistry research department of the General Electric Research Laboratory, Schenectady, N.Y.

The Carnegie Institution of Washington has announced the election of **Caryl P. Haskins,** New York, as its president. Haskins, president and director of research of the Haskins Laboratories, a nonprofit scientific and educational foundation that he established 18 yr ago, will take office 1 Jan. 1956 upon the retirement of **Vannevar Bush.** During World War II Haskins served with the National Defense Research Committee and the Office of Scientific Research and Development. Since the war, he has acted as a consultant to the departments of Defense and State.

**John F. Harris,** lieutenant-colonel, U.S. Army, has received the Maj. Louis Livingston Seaman award from the Association of Military Surgeons for his article, "The military surgeon," that appeared in the association's journal. He is the first Negro doctor ever to be so honored in the history of the association.

**Cedric Beebe,** formerly in charge of the physical analytical laboratory of the Koppers Co., Pittsburgh, has joined the staff of the application engineering group of the Liston-Becker Instrument Co., Inc., Springdale, Conn.

## Necrology

**Crosby F. Baker,** 67, chairman of the chemistry department of Tufts College, Medford, Mass., 9 Dec.; **Joseph D. Evans,** 79, electrical engineer and munitions expert, Lowell, Mass., 10 Dec.; **Jacob A. Goldberg,** 64, social hygienist and author, New York, 12 Dec.; **Mark H. Haller,** 57, research horticulturist with the U.S. Dept. of Agriculture, Beltsville, Md., 1 Dec.; **Robert L. Kelly,** 89, educator, author, and former president of the Association of American Colleges, Claremont, Calif., 12 Dec.; **Frank A. Kittredge,** 71, retired chief engineer for the National Park Service, Palo Alto, Calif., 10 Dec.; **Mario G. Levi,** 76, president of the Italian Chemistry Association, Milan, 9 Dec.; **George J. Peirce,** 87, past president of the Botanical Society of America and professor emeritus of botany and plant physiology, Stanford University, Calif., 15 Oct.; **Philip S. Rosenblum,** 60, medical director and chief of urology of the Eastern Division of the Albert Einstein Medical Center, Philadelphia, 12 Dec.; **J. Melbourne Shortliffe,** 75, retired chairman of the department of economics at Colgate University, Hamilton, N.Y., 13 Dec.; **Olof Sjöqvist,** 53, head of the neurosurgical division at the St. Erik Hospital, Stockholm, 4 Dec.; **Plumer Wheeler,** 78, former superintendent of the engineering department of the American Cyanamid Co., Linden, N.J., 12 Dec.; **John H. Wurdack,** 66, head of the department of chemistry at the University of Pittsburgh School of Pharmacy, Pittsburgh, 8 Dec.

## Meetings

The influence of the therapist's own personality upon a therapeutic situation was considered in the first of two papers presented at the 2nd annual meeting of the **Southern California Psychiatric Society** held recently in Los Angeles. The paper, "Our values system in psychotherapy," was read by C. H. Hardin Branch, professor and head of the psychiatry department of the University of Utah. Norman Reider, head of the psychiatry department, Mount Zion Hospital, San Francisco, presented the second paper, "Demonology in modern psychiatry."

A symposium on the **Science of Soil Stabilization** will be held on 12 Jan., as a part of the 34th annual meeting of the Highway Research Board of the National Research Council. Sponsored by the committee on physicochemical phenomena in soils under the chairmanship of Hans F. Winterkorn, Princeton University, the symposium will present or summarize 11 papers by scientists from the U.S., Kenya, Mozambique, England, French Equatorial Africa, and West Germany. These papers with a few additional papers that will be presented at the business meeting of the committee are to be issued as a printed volume.

More than 3000 public health workers attended the **82nd annual meeting of the American Public Health Association** and 38 related organizations held recently in Buffalo, N.Y. A foreign delegation was headed by M. G. Candau, director general of the World Health Organization and Rajkumari Amrit Kaur, minister of health for India and president of the 3rd World Health Assembly. Topics of special interest were smoking and lung cancer; infectious hepatitis; newly discovered respiratory viruses; and developments in such health areas as air pollution, child accident prevention, and food sanitation. A two-session symposium, open to all delegates, considered the impact of suburbanization on public health. Officers for 1954–55 are pres. H. E. Hilleboe, New York State Commissioner of Health; pres.-elect, I. V. Hiscock, professor and head of the department of preventive medicine, Yale University.

*Some physiological aspects and consequences of parasitism* will be the theme of the 11th annual **conference on protein metabolism** to be held under the sponsorship of the Rutgers University Bureau of Biological Research on 28 and 29 Jan. Leslie A. Stauber, professor of zoology at Rutgers, will open the conference. William Trager, Rockefeller Institute for Medical Research, will discuss "Studies on the cultivation of intracellular parasites," and James W. Moulder, University of Chicago, will speak on "The protein metabolism of intracellular parasites." Other speakers and their subjects are as follows: Clark P. Read, Johns Hopkins School of Hygiene and Public Health, "The host-parasite relationship"; Ernest Bueding, Louisiana State University, "Glycolytic enzymes"; W. H. Taliaferro, University of Chicago,

"Studies in antibody formation;" and L. A. Stauber, "Leishmaniasis and metabolism of the host." Nearly 200 scientists from the nation's laboratories are expected to attend.

## Education

In connection with the 25th anniversary of the dedication of the **University of Chicago's George Herbert Jones Laboratory,** which was observed in December, the Julius Steiglitz memorial lecture was presented by Paul D. Bartlett, department of chemistry, Harvard University. His subject was the stereochemistry of rings. John G. Kirkwood, department of chemistry, Yale University, delivered the William Draper Harkins lecture on the structure of the liquid state. The university's 263rd convocation further highlighted the celebration and featured an address by Willard F. Libby of the Atomic Energy Commission. The anniversary observance was jointly sponsored by the university's department of chemistry and the Chicago section of the American Chemical Society.

Two continuation **courses in chemistry** are being offered during the winter and spring of 1955 by the chemical education committee of the American Chemical Society, Philadelphia Section, at the Philadelphia College of Pharmacy and Science. An 11-wk course in "Recent progress in organic chemistry" is scheduled to begin 7 Feb. 1955 and a 10-wk course in "Patent law for chemists" opens on 8 Feb. 1955. Information can be obtained from Dr. Paul E. Machemer, Committee Chairman, Dept. of Chemistry, Villanova University, Villanova, Pa.

The recent announcement that the U.S.S.R. "is currently turning out twice as many scientists and engiers as the United States" helped prompt the Carnegie Corp. to grant $20,000 to Massachusetts Institute of Technology for the purpose of studying **Soviet advances in scientific and engineering education.** Carnegie officials, in announcing the grant, explained that the Soviet advantage over the U.S. in these fields "gives an added urgency to the study." At the same time the corporation granted an additional $1,261,000 to other institutions for varied projects in research.

George P. Berry, dean of the faculty of medicine of the **Harvard Medical School,** recently announced the establishment of a new professorship to be known as the **Samuel A. Levine** professorship of medicine. The endowment has been provided by Charles E. Merrill, New York investment banker, who made an initial gift of $400,000 and asked that the professorship be named for Levine, who is clinical professor of medicine at Harvard and a member of the staff of Peter Bent Brigham Hospital as well as other medical institutions. In making the announcement, Berry said that the Levine professorship "would be devoted for the foreseeable future to the study and treatment of heart conditions and cardiovascular diseases."

## Available Fellowships and Awards

**Daniel and Florence Guggenheim jet propulsion fellowships** will be awarded for graduate study at Princeton University and California Institute of Technology in the jet propulsion centers established in those universities by the Daniel and Florence Guggenheim Foundation. Fellowships carry a stipend ranging from $1200 to $2000 annually, as well as tuition, for study toward advanced degrees. The purpose of these fellowships is to select and train outstanding men for basic research and for leadership in the development of rockets and jet propulsion, with particular emphasis on peacetime uses.

The fellowships are open to those having suitable engineering or scientific undergraduate preparation. Candidates must have outstanding technical ability, demonstrated leadership qualities, and deep interest in rockets and jet propulsion. *Applications must be received by 1 Mar. 1955*; they will be acted upon by 1 Apr. For applications and information, address the foundation at 120 Broadway, New York 5.

**Michigan State College** offers ten Graduate Council fellowships for predoctoral study for the year 1955–56. Each carries a stipend of $700 payable in nine monthly installments, as well as a waiver of course and tuition fees. Every application for a fellowship must be complete, and every applicant must have been admitted to the School of Graduate Studies, *before 1 Mar. 1955.* Further information may be obtained from the Dean of the School of Graduate Studies, Michigan State College, East Lansing, Mich.

The University of Hawaii fellowships in Pacific science were instituted at the time that the university, Yale University, and the Bishop Museum embarked on the Tri-Institutional Pacific Program. One **University of Hawaii fellowship** in the amount of $4000 is awarded every year. *The application deadline is 1 Mar.* Preference is given to applicants working in the social sciences. Applications should be addressed to the Dean of Faculties, University of Hawaii, Honolulu. Stewart Cameron, a lecturer in the geography department of Auckland University College, New Zealand, has been granted the 1954 fellowship for a 1-yr study of the forests of Western Samoa.

In addition, Yale and the Bishop Museum have agreed to support one research fellowship each, awarded by Yale and known as the **Yale-Bishop Museum fellowships.** These fellowships also are for $4000 and applications must be submitted to the Dean of the Graduate School, Yale University, New Haven, Conn., by *1 Mar.* Preference is given to applicants who plan to work in the biological sciences.

The 1954 Yale-Bishop Museum fellowships have been awarded to Ichizo Nishiyama of Kihara Institute of Biological Research, University of Kyoto, and to H. S. Shirakawa of the University of Notre Dame. Nishiyama plans a study of the cytogenetics of cultivated sugar canes in the Pacific region and will work

at the Experiment Station of the Hawaiian Sugar Planters' Association in Honolulu. Shirakawa is to work in the Hawaiian Islands on fungal leaf parasites of Hawaiian plants.

## Grants and Fellowships Awarded

The Biological Sciences Division of the **Office of Naval Research,** Department of the Navy, has awarded the following research contracts to universities and nonprofit research institutions for periods of from 1 to 3 yr.

*Biology*

University of Hawaii, Honolulu. P. B. van Weel. Digestive physiology of marine animals in relation to coral reef destruction.

University of Maryland. Hugh G. Gauch. Mass culture of unicellular algae.

Marine Biological Laboratory, Woods Hole, Mass. Philip B. Armstrong. Studies in marine biology.

Scripps Institution of Oceanography, University of California, La Jolla. Martin W. Johnson. Marine wood boring organisms.

University of California, Santa Barbara. Demorest Davenport. Behavior and specificity in marine symbioses.

Scripps Institution of Oceanography, University of California, La Jolla. Theodore J. Walker. Studies of Biological mechanism of obstacle detection.

Bermuda Biological Station for Research, St. George's. Talbot H. Waterman. Nutrition, feeding, and physiology of deep sea animals.

University of Delaware. R. R. Ronkin. Energetics of ciliary motion.

University of Southern California. W. E. Martin. Marine organisms producing swimmer's itch.

Duke University. J. G. Pratt. Studies of orientation in animals.

State College of Washington. Donald S. Farner. Studies of photoperiodic influence on animals.

University of California, Santa Barbara. J. E. Cushing, Jr. Immunology of marine animals.

University of Miami, Coral Gables. Charles Lane. General biology of marine borers.

University of Wisconsin. A. D. Hasler. Mass movement of fish.

Marine Biological Laboratory, Woods Hole, Mass. William E. Schevill. Underwater biologic noise.

National Research Council, National Academy of Sciences, Washington, D.C. Paul Weiss. An international conference of marine biological laboratory directors.

Haskins Laboratories, New York. Luigi Provasoli. Factors determining growth in marine algae and protozoa.

University of Michigan. Henry van der Schalie. Studies of organisms related to the vector of the disease schistosomiases.

*Microbiology*

University of Tennessee. J. M. Woodward. The effect of bacterium tularense on animal hosts.

University of Maryland, School of Medicine. Edward Steers. The metabolism of purines.

University of Pittsburgh. Max Lauffer. Biophysical investigations on bacteriophages.

University of Kansas. Cora M. Downs. Pathogenesis and immunity in tularemia.

University of North Carolina, Raleigh. M. L. Speck. Study of certain growth stimulants for lactic acid bacteria.

University of North Carolina, Chapel Hill. Milton Huppert. Study of yeast infections following antibiotic therapy.

Iowa State College of Agriculture and Mechanic Arts. F. G. Smith. Preservation of spores of puccinia by lyophilization.

Massachusetts Memorial Hospitals. Louis Weinstein. Production of immune substances in living bodies.

Yale University. Helen Simpson Vishniac. Research in marine fungi.

University of Utah. Stanley Marcus. Laboratory diagnosis, treatment and resistance in systemic myotic infection.

George Washington University. P. K. Smith. Possible inhibitors in the virus-host relationship.

State University of Iowa. Albert P. McKee. The role of complement in the body.

University of Minnesota. H. C. Lichstein. Enzymic factors concerned with the virulence of certain bacterial species.

University of Illinois. H. O. Halvorson. The mechanism of heat resistance of bacterial spores.

University of Pennsylvania School of Medicine. Harry E. Morton, Studies on pleuropneumonia-like organisms.

Hahnemann Medical College. B. A. Briody. Study of variation in viruses.

Reed College. Ralph W. Macy. Studies on animal parasites.

University of Illinois. H. H. Thornberry. Factors influencing plant virus infections.

Indiana University. W. J. van Wagtendonk. Role of steroids in the metabolism of microorganisms.

University of Texas. J. W. Foster. Spore formation and germination in bacteria.

University of Colorado School of Medicine. J. Carroll Bell. The effects of chemical compounds on the tubercle bacillus.

Yale University. D. Weinman. Transmission and epidemiology of toxoplasmosis.

University of New Mexico. R. B. Johnson. Isolation, purification, and testing of bacterial somatic antigens.

State Unviersity of Iowa. R. E. Kallio. Production and purification of clostridial collagenase.

University of Texas. Orville Wyss. Variation in the genus azotobacter.

State College of Washington. Torbjorn Moll. Concurrent effect between virus and bacteria in enteric infections.

Colorado A & M College. N. R. Gerhold. Spore dispersal patterns of plant pathogens.

Tulane University School of Medicine. Morris F. Shaffer. Antigenic and cultural properties of nocardia.

University of California, Berkeley. S. S. Elberg. Trace elements and bacterial virulence.

University of Pittsburgh. Horace M. Gezon. The effect of antibiotics on shigella organisms.

University of Chicago. Edward D. Garber. The nature of resistance and susceptibility to infectious agents.

University of Miami, South Miami. Murray Sanders. Propagation of animal viruses in marine embryonic cells.

Colorado A & M College. J. J. Lehman. Use of metabolites in the reactivation of microorganisms.

University of Texas Medical Branch. C. M. Pomerat. Studies on cellular mechanisms in relation to body defenses.

Louisiana State University. R. J. Strawinski. Microbial oxidation of hydrocarbon gases.

Columbia University. S. P. Halbert. The relationship of a bacterial toxin to the pathogenesis of rheumatic fever.

Long Island Biological Association, Inc. M. Demerec. Microbial resistance to chemical and physical agents.

Loyola University School of Medicine, Chicago. Rolf Freter. Experimental enteric infections of laboratory animals.

University of Chicago. C. Phillip Miller. Role of the intestinal microflora in resistance to enteric infections.

George Washington University. L. W. Parr. Factors involved in resistance to and recovery from shigellosis.

Johns Hopkins University School of Hygiene and Public Health. W. H. Price. Certain disease agents and their insect vectors.

*Physiology*

Cornell University. E. Sheppard and I. S. Wright. Electrostatic forces in blood.

University of Illinois. W. J. Fry. Effects of ultrasound on nerve tissue.

Johns Hopkins University. R. L. Riley. Instrumentation and research on pulmonary function.

Duke University. K. E. Penrod. Mechanism of oxygen toxicity.

National Institutes of Health, Bethesda, Md. H. Specht. Respiratory function in underwater swimmers.

Massachusetts Institute of Technology. F. O. Schmitt. Composition and properties of nerve proteins.

University of Washington. A. A. Ward. Experimental concussion.

Wayne University. E. D. Gardner. Study of certain pathways in the nervous system.

Indiana University. A. W. Richardson. Biological effects of microwave irradiation.

Brown University. R. Truell. Biological effects of ultrasound.

Tulane University. R. T. Nieset. Physical and physiological factors in the biological effects of microwaves.

University of Pennsylvania. H. P. Schwan. Influence of ultra high-frequency electromagnetic radiation on biological material.

George Washington University. H. Bacchus and C. E. Leese. Ascorbic acid and adrenal cortex relationships.

University of Illinois, Chicago. S. R. Rosenthal. A study of perfusates of thermally injured skin.
New York University. R. Soberman. Determination of basic differences in edema of various pathologic origins.
University of Pennsylvania. G. M. Austin. Investigation of neurophysiological properties of the human spinal cord.
Medical College of Virginia. E. C. Hoff. Cerebral regulation of the autonomic nervous system.
University of Minnesota. N. Lifson. Development of technique to measure total carbon dioxide output by use of doubly labeled body water.
Georgetown University. L. H. Kyle. Use of specific gravity method to study body joints.
University of Michigan. S. T. Dempster. Study of the coordinated action of muscles on body joints.
Management and Marketing Research Corporation. C. Wilson and L. E. Morehouse. Measurement of accelerative forces on bodies in aircraft accidents.
University of California, Berkeley. N. Pace. Physiological properties of intracellular components.
University of Maryland, Baltimore. R. G. Grenell. Effects of anoxia on neuronal structure and function.
University of Wisconsin. J. N. Williams. Effects of enzyme activity on animal tissues.
Syracuse University. V. J. Wulff. Electrophysiology of the visual pathway.
University of Alberta. J. C. Opsahl. Pituitary and adrenal-hyaluronidase relationships.
Yale University. J. M. R. Delgado. Neurological mechanisms in anoxia and epilepsy.
University of North Carolina. A. T. Miller. Influence of body type and composition on work capacity and thermal regulation.
University of Pennsylvania. J. D. Hardy. Effects of thermal radiation on skin.
University of Pennsylvania. J. D. Hardy. Thermal radiation and thermal stress.
University of California, Berkeley. S. F. Cook Effects of prolonged exposure to high altitudes on growth and metabolism.
University of Pennsylvania. H. P. Schwan. Electrical and mechanical properties of biological materials.
Naval Radiological Defense Laboratory, San Francisco. E. L. Alpen. Symposium on thermal injury.
Cornell Unviersity, New York. H. H. Hasbrook. Crash injury research.

## Miscellaneous

Among the articles that appear in the January issue of ***The Scientific Monthly*** are the following three papers that were read before the symposium on *Organism and Machine*: "Direction of processes in living systems" by Wolfgang Köhler; "Is the concept of an organism as a machine a useful one?" by N. Rashevsky; and "Mysterium iniquitatis of sinful man aspiring into the place of God" by Warren S. McCulloch.

Additional articles featured in *The Scientific Monthly* for January are "Flames," Herbert P. Broida and Harold J. Morowitz; "Acceptance of science," Alan T. Waterman; "Some problems in large-scale culture of algae," Harold W. Milner; "Nutrient supply for large-scale algal cultures," Robert W. Krauss; "The transistor as an industrial research episode," Ralph Bown; "Facts, thoughts, and dreams," J. A. Gengerelli; and "Validity of test items that involve finding a pattern in data," Richard H. Lampkin. The papers by Milner and Krauss were presented at the Boston meeting of the AAAS as a part of the symposium on *Uses of Large-Scale Algal Cultures*. In the "Science on the march" section, there is an article by Betty Appleton on "LOBUND comes of age." This issue also contains 22 book reviews.

Marvin C. Meyer of the department of zoology, University of Maine, Orono, has announced that after considerable searching a copy in Russian of **Waldimir D. Selensky's** *Etudes Morphologiques et Systématiques sur les Hirudinées: I. L'Organisation des Ichthyobdellides* (Petrograd, 1915), was finally located abroad. A photostatic copy was obtained and a complete English translation of the text has been made. Museum and university librarians interested in obtaining a copy of this translation, complete with text, figures, and plates, should write to Dr. Meyer.

Selensky, who at the time of his death in 1931 was head of the parasitology department at the University of Leningrad, was one of the leading zoologists in Russia. His researches were devoted chiefly to the morphology, biology, and systematics of leeches, the most important contribution being the volume mentioned here.

***Proceedings of the First Conference on Training Personnel for the Computing Machine Field*** is now available for $5 per copy from the Wayne University Press, Detroit 1, Mich. The volume consists of some 35 papers relating to educational and manpower problems brought about by the emergence of the automatic computer. As a result of extensive investigations, perhaps for the first time some idea of the magnitude of the manpower requirements at the various levels of competence was obtained. Basic questions dealing with educational practices and objectives are discussed at length and with considerable unanimity.

The following **chemicals** are wanted by the Registry of Rare Chemicals, Armour Research Foundation of Illinois Institute of Technology, 35 W. 33 St., Chicago 16: aluminum nitride; silver hyponitrite; sodium telluride; phosphonium iodide; diethylgermanium iodide; 1,4-cyclohexanediamine; anthracene-9,10-dicarboxylic acid; 2-chlorocyclopentene-1; 7-nitrohydrindene; 2,3,5,6-tetramethylbenzoic acid; 2,5-dihydroxyphenylalanine; 2,4,2′,4′-tetrahydroxydiphenyl; 2,3-dichlorobenzyl alcohol; epifluorohydrin; 10-methyl-1,2-benzanthracene; β-chlorolactic acid; murexine; tangeretin; nobiletin; muscarine.

The American Institute of Chemical Engineers, 25 W. 45th St., New York 36, has announced a new publication, the ***A.I.Ch.E. Journal***. For the first year the *Journal* will be a quarterly, but eventually it is to become a bimonthly or monthly. The publication will be devoted to research results based on new data; new devices, tools, instruments for research, development, and design; new theoretical and statistical methods; new correlation; process design, kinetics, thermodynamics, and so forth; research projects in allied branches of engineering, chemistry, and physics; and topics of general value to educators and researchers. Harding Bliss of the Chemical Engineering Department of Yale University has accepted the editorship. The first issue will be released in March. A member-subscription is $4.50; non-member, $9.