News and Notes

The Thyroid

Under the general title, "The thyroid," the 7th annual symposium sponsored by the Biology Department of Brookhaven National Laboratory took place at the laboratory on 9–11 June. Ten papers dealt directly with the synthesis, distribution, and metabolism of the thyroid hormone. Four papers were concerned with experimental or spontaneous atypical or neoplastic growths in which the thyroid is involved.

The conference was opened with the introductory remarks of E. B. Astwood, who assessed the accomplishments and directions of recent research on the thyroid. In the first paper, Aubrey Gorbman described the evolutionary and embryonic development of the thyroid with emphasis on the synthesis of thyroxine and its precursors in certain invertebrates.

S. A. D'Angelo presented a study of pituitary control of thyroid function which included essential data from simultaneous measurements of thyrotrophic hormone levels in the pituitary and blood serum. The ability of thyroidal tissue to maintain large differences in iodide concentration from the body fluids and the factors modifying this ability were the subjects of W. P. Vanderlaan's presentation.

N. J. Nadler reported on collaborative work with C. P. Leblond in which the exact cellular site and the kinetics of thyroid hormone formation were investigated. It appeared from this paper and the discussion following it that the extracellular colloid may, in fact, be the place where thyroxine is synthesized. In concluding the discussion on thyroxinogenesis, Astwood analyzed the possible mechanism of action of those chemical substances that interfere with hormone production.

In the series of papers concerned with the distribution of thyroid hormone, S. B. Barker reviewed the chemical nature of the circulating hormone. Jack Gross reported on the relative concentrations and mobilities of thyroxine and tri-iodothyronine in various tissues. Alvin Taurog described work in which the excreted form of thyroxine was identified as a glucuronic acid conjugate.

The physiological effects of thyroid hormone on the cellular level were considered by Henry Lardy, who detailed the relationship of thyroid hormone to the cellular oxidative enzymes. The interrelationships of the function of the adrenal and thyroid glands were discussed by W. L. Money.

Hans G. Schlumberger reviewed the field of comparative thyroidal oncology and correlated atypical growth with geography and local conditions. H. P. Morris gave an extensive description of experimentally produced thyroidal cancers in which it was possible to relate different functional abilities with varying morphologic properties. The different patterns of radioiodine metabolism in various types of clinical and laboratory thyroid tumors were delineated by P. J. Fitzgerald. A. Edelmann discussed the factors governing the genesis of pituitary tumors in mice after radiothyroidectomy.

No small degree of credit for the success of this symposium was due to the spirited and thoughtful discussion that followed each paper. In this connection the following moderators deserve mention: A. S. Gordon, E. D. Goldsmith, Aubrey Gorbman, Jack Godwin, and Jacob Furth. The papers and the discussions of them will be published by Brookhaven National Laboratory as No. 7 of the *Brookhaven Symposia in Biology*.

H. J. Curtis
Brookhaven National Laboratory, Upton, New York

The Teaching of Physics

The American Association of Physics Teachers met on 28–30 June at the University of Minnesota in Minneapolis in conjunction with the American Physical Society. Aside from a thunderstorm, the weather, though hot, was mostly clear. This cooperation of the weather was especially appreciated Wednesday morning at the time of the total eclipse of the sun.

Consideration of various teaching aids occupied two of the sessions, one of which was devoted to invited papers by F. E. Christensen on effective demonstration experiments and by H. Kruglak on a successful type of laboratory examination, and to a showing by V. E. Eaton of recent McGraw-Hill physics motion pictures. On Monday afternoon, the association joined with the APS for invited papers on astronomical topics.

The remaining two half-days were devoted to the discussion of general problems of particular interest to college teachers. During a round-table discussion on "Methods of accomplishing the function and mission of the AAPT," with Marsh W. White as moderator, it was brought out that the objectives of the association are twofold: (i) to enable physics teachers in colleges and universities to improve their teaching, and (ii) to further the appreciation of the role of physics in our culture. These objectives have been implemented by meetings, committees, the *Journal*, awards, and cooperative efforts with other groups, such as the American Institute of Physics. Projects that were suggested for sponsorship by the association include better methods for stimulating instruction in secondary schools, a definite program for the training of physics teachers, investigations of methods of teaching, and cooperative efforts to interest more students, particularly those in secondary schools, in physics and mathematics. The *American Journal of Physics* is a valuable aid in these fields of activity, since, as T. H. Osgood pointed out, its aims are educational, informative, pedagogic, professional, and inspirational, in contrast to the aims of the purely archive journals. It was recommended that

commissions (expanded committees) should be appointed to work on these projects and that they should be enthusiastically and actively supported.

The second discussion, led by J. G. Potter, was concerned with the "Report of the ASEE symposium on physics in engineering education," a report that was both surprising and disturbing. Engineers are dissatisfied with the way the physicists are teaching physics to the engineers. They would "relieve" the physicists of teaching mechanics, heat, and electricity (light and sound seem to have been lost sight of) and would ask them to concentrate at the senior level on modern physics and the solid state. The physicist does recognize that drastic surgery is needed in teaching elementary physics, but he believes that the fundamental roots should be deeper rather than shallower; he is quite content to leave the applications to the engineer. Both groups, physicists and engineers, need tolerance and cooperation in dealing with these problems. The two associations will meet conjointly at Pennsylvania State University in the summer of 1955.

The final discussion was on the "Preparation of college teachers" and on the "Training of graduate student assistants." In discussing the former, attempts were made to list the qualities that a college teacher of physics should have:

1) Knowledge or understanding (i) of his subject (with a broad grasp of the basic elements), (ii) of a wide range of subjects, thus having a broad general education and commanding the respect of the students, and (iii) of the implications of physics with respect to the present world.

2) Ability to convey knowledge to the student in such a way that he is activated to think for himself, an ability that demands a vital interest in young people.

3) Interest and capacity to become a constructive member of the faculty, which involves acquaintance with the issues of higher education and their relationship to modern society.

To these qualities, many of which were suggested by R. M. Cooper, chairman of general studies at Minnesota, T. H. Osgood added, as criterions, politics (which was not discussed), creativity, good personal impression, "drive" as indicative of usefulness, and lucidity of explanation, with experience and interest in teaching. It was further brought out that the good teacher has a real concern for the student as an individual, an adult point of view, and a realization of his responsibilities. The suggestion was made that a teacher's moral and religious philosophy of life should be compatible with that of the institution involved and should be a live issue in his life.

Certain graduate schools give special training to those going into college teaching. However, many prospective teachers get their training by serving as laboratory assistants. For these latter, many institutions have regular meetings with the professor in charge of the laboratory, at which time there is a discussion of appropriate teaching techniques and of problems that may arise with respect to the theory and operation of the experiments. The chief failures have been in not giving these assistants clear ideas of the underlying philosophy of laboratory work and a realization of their importance in the over-all scheme of the course. Only a few institutions *require* the assistants to work through the experiments themselves. In the ensuing discussion, another side to the question was brought out: namely, that a conscientious and interested assistant may need to be protected from spending too much time on laboratory assisting.

The superb total eclipse of the sun was, of course, the highlight of the whole meeting. No clouds obscured the view; 76 sec was all too short to gaze upon the beauty of the corona. A debt of gratitude is owed to J. W. Buchta of Minnesota who was responsible for the idea of inviting the AAPT and the APS to meet in Minneapolis, since the successful viewing of the eclipse will be remembered long after many details of this meeting have faded.

MILDRED ALLEN
Mount Holyoke College, South Hadley, Massachusetts

Science News

That the notorious Piltdown affair is even more of a fraud than was at first suspected was revealed at the 30 June meeting of the Geological Society of London [*Nature* **174,** 61 (10 July 1954)]. Representatives of anthropology, anatomy, dentistry, chemistry, mineralogy, and art analysis reported on various aspects of the problem. Further studies not only have confirmed the earlier conclusion that the teeth of **"Piltdown man"** are artificially altered (W. E. Le Gros Clark, J. S. Weiner), but also have demonstrated that the chin region of the broken lower jaw resembles that of an orang-utan (Weiner) and that the fragments of the so-called "turbinal bone" are actually those of a small limb bone of some animal (Clark).

Radiometric assays (S. H. U. Bowie and C. F. Davidson) of the Piltdown vertebrate remains indicate that the primate fragments are Holocene rather than Pleistocene. The other vertebrate remains give a remarkably wide range of radioactivity: the teeth of *Elephas* differ from any British mammalian bones of Tertiary or later age studied and resemble a specimen from Tunisia, and the hippopotamus teeth and some of the beaver bones are quite unlike any other British or foreign Tertiary fossils examined. Accordingly, it appears certain that the bones of the Piltdown "assemblage" had very different geologic and geochemical histories. Mineralogic and chemical tests were reported (G. F. Claringbull and M. H. Hey). Although R. C. Hoather and C. Bloomfield found the gravel and loam from the site and from nearby ground water to be notably low in sulfate content, x-ray diffraction studies revealed mixtures of apatite and gypsum in the Piltdown cranium, and gypsum was later found in many other Piltdown specimens. In experiments on white bone from a neolithic skull, a solution of weak iron alum produced a full-brown color accompanied by conversion of the apatite to gypsum. Since no nat-

ural conditions seem likely to have produced this effect, it appears that the gypsum in the Piltdown specimens was incidental to artificial treatment by iron solutions in order to produce brown staining.

In summing up, K. P. Oakley emphasized that other tests confirm the entire recency of the Piltdown mandible: its organic content is that of fresh bone; and J. T. Randall and A. V. W. Martin, using the electron microscope, found intact collagen fibers in the mandible but not in the brain-case. Oakley reported that A. E. Werner and R. J. Plesters had identified the black coating on the canine tooth as a paint, probably Vandyke brown. It is indicated, therefore, that both the Piltdown skulls I and II are fraudulent; however, on the basis of their composition they are not modern like the mandible, but subfossil though post-Pleistocene. All of the Piltdown flint "paleoliths," Oakley said, are artificially stained, and the worked elephant bone could not have been carved while fresh. From the total evidence, it was judged that the Piltdown bones and teeth had been assembled from a wide variety of sources, some of them foreign. For its low nitrogen and low fluorine content, the hippopotamus molar tooth can be matched only by cave-deposit material, for example, in Malta.

The only dissenter on the symposium was A. T. Marston, who, on the basis of attempts at staining modern bone and experiments with teeth, reiterated his belief that, although the Piltdown jaw and canine tooth are those of an ape and unrelated to the skull fragments, they have not been deliberately faked. From the evidence now brought together, however, it seems virtually indisputable that the Piltdown finds represent a deliberate fraud of almost unbelievable elaborateness. Indeed, it appears likely that none of the specimens are native to Piltdown. However, as Sir Gavin de Beer emphasized, the author of the hoax remains unknown. And, it might be added, the motive remains a matter of speculation of special interest to psychologists and psychiatrists.—W. L. S., Jr.

The Carnegie Institution of Washington has announced that radio astronomical observations have begun with a new **narrow beam cross antenna** built at Seneca, Md., by the institution's department of terrestrial magnetism. F. Graham Smith, visiting investigator from the Cavendish Laboratory, Cambridge, England, and Harry W. Wells and Bernard F. Burke, staff members of the department, cooperated in the development of the antenna array, which occupies a flat 90-acre field and consists of 128 dipoles arranged along the two diagonals of the field. Each line of 64 dipoles is 2040 ft long, and the dipoles are connected to a central point by a branched feeder system. At the central point is a receiver which is sensitive only to signals picked up simultaneously in both lines of dipoles. The effective angular resolving power corresponds to that of an area of about 50 acres covered with dipoles. With the feeder cables of equal length, the antenna beam is directed straight upwards and receives radio waves from any object which crosses the zenith. By adjusting the feeder lengths, the beam may be directed toward any part of the northern sky.

The new principle in the construction of antennas of high resolving power at long wavelengths was first used by B. Y. Mills in Australia, and his antenna, known now as the "Mills Cross," largely inspired the design of the present one, which is for a wavelength of 14 m.

Although the earliest radio-astronomical observations were made at long wavelengths—around 20 m—most of the recent work has been carried out at shorter wavelengths where better angular resolution can more readily be obtained. Examples of large antennas for this work are the large dish under construction at Manchester, England; the dish to be built in Australia (see cover *The Scientific Monthly,* September); the interferometer in Cambridge, England; and a large antenna at Ohio State University. These are mostly used at wavelengths in the region of 1 m or less.

The Seneca installation returns to an intermediate wavelength. It will be used for the study of radio radiations not only from the sun and radiating gases in our galaxy, but also from radiating gases in other galaxies. In this latter class of objects, several appear to be associated with the collisions of galaxies. An enormous amount of radio noise appears to be generated by this process, although the power received on the earth is small since these collisions are occurring many millions of light years away.

The Na and K values of mammalian red cells can be accurately and rapidly estimated by **flame spectrophotometry** according to R. E. Bernstein in a paper in a forthcoming issue of *Science*. The movement of Na and K into and from mammalian red cells is an active process dependent on erythrocyte glycolysis, in contrast to the diffusion process for anions and hydrogen ions. It can be calculated that a red cell lacking a K transport system would have a *p*H of about 6.0 and would contribute less effectively to oxygen carriage and the acid-base equilibrium of the blood.

A technique by which a so-called **"wisdom tooth" can be transplanted** to take the place of a missing permanent molar in the mouth of the same individual was described in a recent issue of the *Journal of the American Dental Association* by Merle L. Hale, professor of oral surgery at the College of Dentistry, State University of Iowa. He cautioned, however, that the procedure can be carried out effectively only on carefully selected persons.

The Military Operations Subcommittee of the House Committee on Government Operations, under the chairmanship of Rep. Riehlman (R, N. Y.), after having conducted extensive hearings, has issued a report that severely **criticizes the Department of Defense** for its administration of scientific research and development. The Riehlman subcommittee stresses that it is especially important to improve the personnel security clearance policies.

The U. S. Department of Agriculture states that the **Khapra beetle,** an insect unknown on this continent until last November, has been found infesting grain warehouses in 12 counties in California, Arizona, and New Mexico. USDA entomologists, who are familiar with the insect's destructive grain-feeding habits in many European and Asian countries, say that it could become a serious pest in the southern states and, possibly, could establish itself in heated mills and warehouses in the North.

A fundamental difference exists between the English and continental attitudes toward the development of **atomic energy** programs, according to D. J. Hughes of the Brookhaven National Laboratory in a recent issue of *Nucleonics*. The British view is that Britain itself should develop all phases of atomic energy, whereas continental scientists are more inclined to cooperate among themselves, with the British, and with the United States.

The British attitude is based not so much on the present lack of exchange of information, but more on the feeling that the only way to develop a sound and substantial atomic energy industry is to become expert in all of its aspects. The British program covers all phases, the article notes, in a planned, orderly way so that, while practical results will be felt as soon as possible, over-all understanding will be promoted simultaneously.

The dwindling coal supply which makes Britain's need for some other source of power acute is well known, but not so well known is the fact that French scientists feel that atomically produced electricity is urgent for their country. Emphasis in other European countries also is on power development.

A striking characteristic of neutron physics research both in England and France is the concentration on basic pile physics. The intense interest of the Europeans in the basic neutron physics of reactors is revealed in plans for piles intended exclusively for research. In this respect, the article points out, the possible superiority of European research piles to ours in the next few years deserves serious consideration.

The **mile used in navigation** on sea and in the air is now a little more than 4 ft shorter than it used to be. The National Bureau of Standards has announced that by international agreement the international nautical mile of 6076.1 ft will be used instead of the U.S. nautical mile of 6080.2 ft.

J. F. Gates Clarke, U.S. Department of Agriculture entomologist now working at the U.S. National Museum, Smithsonian Institution, collected between 50,000 and 60,000 specimens during a 3½-mo exploration of the 43-mi² area of **Kusaie, an island in the Carolines.** Between 800 and 900 distinct insect species have already been found by scientists now studying Clarke's collection.

One of the strange specimens brought back is a giant spider, grayish-brown and 4 in. long, that wears "rubbers"—bristle groupings on its feet that let it run swiftly over the surface of jungle streams. Living on rocks in and alongside the streams were black crickets about an inch long that chirped continuously; when frightened, they dived into the streams and swam underwater. Blue-green walking sticks, 7 to 9 in. long with 2-in. legs, were found in the trees. Only one type of tick and three varieties of butterfly were discovered on the island. The majority of insects on the island are harmless, because they feed on dead or decaying vegetable matter.

Papers reporting the survey of Kusaie and other islands will be published in Honolulu under the auspices of the Bishop Museum. The work is sponsored by the Office of Naval Research and the Pacific Science Board of the National Academy of Sciences–National Research Council.

The Memorial Library of the Texas Medical Association has reported that conventional fiber laundry cases have proved to be extremely satisfactory containers for the **two-way shipment of medical journals** and other library reference materials to individual physicians. Materials are returned promptly in good condition.

The foundations of a **Roman farmhouse** were recently discovered in a Westphalian excavation. A little earlier, a Gallo-Roman temple had been found nearby. Both relics stem from the 2nd century B.C. The farmhouse is 60 ft wide and 96 ft long. A floor equipped with heating pipes has survived as well as seven steps leading into a cellar. The period of the building's construction was estimated from coins and articles of earthenware found in and around the house.

These paragraphs are excerpts from an article on **federal support of hospital construction** in Massachusetts by A. D. Rubinstein in the 29 July issue of the *New England Journal of Medicine.*

During the year 1947 an unprecedented and far-reaching experiment in hospital administrative research was initiated . . . throughout the country. Simultaneously throughout the 48 states, Alaska, and Hawaii, after a detailed inventory of existing facilities according to a predetermined plan, federal funds became available on a matching basis for hospital and health-center construction. For the first time in the history of the nation, hospital building was to be undertaken according to one master plan; what may appear to be unbelievable was the certainty that under the provisions of the Hospital Survey and Construction Act (Public Law 725), the American voluntary hospital system was to maintain the independent position it had enjoyed since its inception.

To be sure, there were many who believed that socialized medicine and all the evils it represented would insidiously ensnare first the hospitals and finally the entire system of medical care. It will be recalled that early in the history of this program in Massachusetts the boards of trustees of at least two hospitals, in spite of the availability of federal funds, decided to proceed alone rather than risk the possibility of federal entanglements and

ultimately the loss of control of their institutions. It was difficult to believe that acceptance of federal funds would not, in one way or another, subject the hospital to outside influence and restraining pressures.

Fortunately, these fears proved to be groundless; there were no federal controls. Hospitals aided under the program have maintained absolute freedom of action, and hospital trustees and staffs were completely won over.

Scientists in the News

A. E. Axelrod, associate professor of biochemistry at the Institute of Pathology of Western Reserve University Medical School since 1951, has been appointed professor of biochemistry in the University of Pittsburgh School of Medicine. Prof. Axelrod has published a large number of research papers in the general field of nutrition and enzymology.

Ellis V. Brown, formerly at Fordham University, is now teaching biochemistry at Seton Hall College.

David B. Camp, formerly associate professor of chemistry at the University of South Dakota, is now associate professor at the University of the South.

New members of the department of agronomy and genetics at West Virginia University are **Maria Hilliard Cartledge, Clyde C. Dowler,** and **Thomas R. McCarroll.**

Francis B. Gordon, previously chief of the virus and rickettsia division at Camp Detrick, Frederick, Md., became head of the virology division, Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md., effective 1 Aug.

Robert B. Green, formerly associate professor at Stevens Institute, is now head of the physical research department of Baker & Co., Inc.

Horace S. Isbell, head of carbohydrate research in the National Bureau of Standards, will be honored by the American Chemical Society's Division of Carbohydrate Chemistry as "Man of the Year" at the society's 126th national meeting in New York in September. Allen V. Astin, director of the bureau, will be the principal speaker at a divisional dinner for Dr. Isbell in the Hotel New Yorker on 15 Sept. Dr. Isbell will receive a scroll citing his achievements and contributions to carbohydrate chemistry.

Ernst H. Krause has resigned as associate director of research at the Naval Research Laboratory in Washington, D.C., to become director of research laboratories in the missile systems division of Lockheed Aircraft Corp. at Van Nuys, Calif. Dr. Krause has long been closely associated with missile and nuclear weapons development work for N.R.L., the Los Alamos Scientific Laboratory, and the Atomic Energy Commission. Lockheed has appropriated $10 million to build and equip new laboratories and to institute research work. The laboratories will adjoin present facilities of the missile systems division.

Another new member of the Lockheed division is **Montgomery H. Johnson,** who will be associate director. Dr. Johnson has served on the radiation laboratory staffs at both the University of California and Massachusetts Institute of Technology and at U.C.'s Livermore Laboratory. His fields are atomic and nuclear physics, quantum theory, electrodynamics, absorbent materials, atmospheric physics, and ionosphere research.

The staff as so far organized will also include **Eric Durand,** who has resigned as associate director of Chicago Midway Laboratories. Dr. Durand's fields are solid-state physics, radiation, infrared navigation, test range instruments, rockets, bombing aids, and ordnance devices. Other new appointees are **Edward J. Zadina,** formerly technical advisor and operations analyst for the U.S. Air Force Special Weapons Center, Albuquerque, N. Mex., and **Henry R. Senf,** until recently acting director of development, Air Navigation Development Board, Civil Aeronautics Administration.

Announcement has been made of the appointment of **Ralph W. Kumler** to the staff of Foster D. Snell, Inc., New York, as a pulp and paper consultant.

Douglas H. K. Lee, professor of physiological climatology at Johns Hopkins University, has been invited to lead the 4th study meeting of the European Association for Animal Production to be held at Lucerne, Switzerland, 25 Sept.–2 Oct. in a discussion of "The influence of tropical and sub-tropical climate on animal production."

Walter J. Murphy of Washington, D. C., American Chemical Society editor, will receive a scroll of honor in recognition of his services to the chemical profession during the society's 126th national meeting in New York in September. The scroll will be presented by the ACS Division of Industrial and Engineering Chemistry at a luncheon in the Hotel Statler on 15 Sept. The Division of Chemical Literature and the Division of Chemical Marketing and Economics will cosponsor the event with the Industrial and Engineering Division.

Former chief of the engineering division for the U.S. Air Force in Europe, **James L. Murray,** has joined the Garrett Corp. as engineering representative.

Pandhari-Nath Prabhu, who has been reader in applied psychology and social research at the Tata Institute of Social Sciences, Bombay, is now head of the new psychological laboratory that was set up in the Institute when it moved into its new building at Chembur, near Bombay, in June. Work on the applications of psychology in industry and in experimental social psychology is planned at the laboratory. The address of the Institute is Devnar, P.O. Chembur, Bombay 38, India.

Samuel L. Raines, assistant professor in the department of urological surgery at the University of Tennessee College of Medicine, is to succeed Thomas D. Moore as professor and head of the department.

Announcement has been made of the appointment of **Laszlo Reiner** as staff consultant to Food Research Laboratories in the fields of pharmacology, toxicology, and medicinal chemistry. Formerly with the Burroughs-Wellcome & Co., and Wallace and Tiernan, Dr. Reiner is well known for his development of the first depot-insulin preparation and a number of dermatologic preparations.

Henry Salvatori, president of Western Geophysical Co. of America, has been elected to the board of directors, Consolidated Engineering Corp. He has earned recognition for pioneering geophysical oil exploration techniques that have become industry standards.

New director of research for the Weapons Systems Evaluation Group, Department of Defense, is **William Shockley,** former research physicist of the Bell Telephone Laboratories. Primary function of the WSEG is to respond to calls for service and assistance from the Joint Chiefs of Staff and the Assistant Secretary of Defense (Research and Development) for analytical studies and evaluations of the comparative effectiveness and costs of present and future weapons systems.

Roy W. Simonson, director of soil classification and correlation in the national soil survey of the U.S. Department of Agriculture, Washington, D.C., recently spent 2 mo as consultant to the Ministry of Agriculture in Brazil. Sponsored by the Foreign Operations Administration, his mission was to advise the Ministry on the program being initiated for the classification and mapping of the soil resources of the country.

Professor of statistics at Iowa State College, **George W. Snedecor,** has been elected an honorary fellow of the Royal Statistical Society "in consideration of the eminent services rendered to statistics."

Eugene M. Sporn, biochemist, has transferred from Camp Detrick, Frederick, Md., to the office of the chief chemical officer, Washington, D.C. He has been engaged in research with the Chemical Corps for the past 7 yr.

H. F. Sykes, Jr., Col., has been transferred from the staff of the Army War College to assume command of the main research center of the Corps of Engineers, the Engineer Research and Development Laboratories at Ft. Belvoir, Va.

Elza Turner, formerly with the New York Polyclinic school and hospital, is now director of nursing education at South Dakota State College. The nursing education program is conducted jointly by the college and Sioux Valley hospital of Sioux Falls.

Edwin M. Vaughan is returning from the Army in September to the position of chairman of the physics department at St. Ambrose College, Davenport, Iowa. For the past year and a half he has been in Germany instructing officers of NATO countries in technical and tactical applications of atomic weapons.

Two new staff members of the Stanford Research Institute are **James H. Wakelin,** who left Textile Research Institute to become a consultant at SRI, and **E. Finley Carter,** of Sylvania Electric Products, Inc., who has become manager of research operations at the institute.

Fletcher G. Watson, associate professor in the Harvard Graduate School of Education, will be James Bryant Conant lecturer on science education in the School of Education for 1954–55. Trained as an astronomer, Dr. Watson has conducted several major studies of science teaching in the secondary schools.

A year-long research study aimed at evaluating and improving Ohio's services for the delinquent child has been undertaken by the Bureau of Educational Research at Ohio State University. **H. Ashley Weeks,** a visiting professor from New York University's graduate department of sociology, is director of the study.

The International Nickel Co., Inc., has announced the appointment of **W. Andrew Wesley** as manager of the Bayonne research laboratory. He succeeds **Norman B. Pilling,** director since 1939, who becomes assistant to the vice president-manager of the company's development and research division in New York. **John T. Eash** becomes assistant to Dr. Wesley.

Ernest T. F. Wohlenberg, of Ukiah, Calif., has been appointed to the newly created post of professor of industrial forestry at the Yale University School of Forestry. He will head a new graduate program of teaching and research in the problems of private forestry enterprises.

This new professorship is perhaps the first of its kind in American forestry education. It is supported by the Edward Hines Lumber Co. through the Ehlco Foundation of Chicago, Ill., and by the Michigan-California Lumber Co. of Portland, Ore. Prof. Wohlenberg will retire in September as vice president of the Masonite Corp. and general manager of its California operations. He will assume his new duties at the beginning of the fall semester.

Bernard Wolnak has resigned as research and consulting chemist with the Miner Laboratories in Chicago to open his own consulting, research, and development laboratories.

John Kirtland Wright, geographer-historian, has been awarded the Charles P. Daly medal of the American Geographical Society for his outstanding contributions to geography through his administrative services, writing, and research. Dr. Wright is a research

associate of the society. He joined the society's staff in 1920 as librarian and served until 1938 when he became director; in 1949 he resigned this post and since then has devoted his time to research and writing.

Syntex, S. A., of Mexico City has promoted **Alejandro Zaffaroni** from director of biochemical research to director of research, and **Arthur D. Odell** from director of process development to director of production and engineering.

The following are recent appointments at South Dakota State College. **Leon F. Bush,** and **Leo E. DuBose,** animal husbandry; **Everett McC. White,** agronomy; **Harmon E. Calkins,** dairy husbandry-bacteriology; **Joe G. Hennan,** plant pathology; **Louis G. Skubic,** mechanical engineering; **Harvey C. McKenzie,** mathematics; **Warren O. Essler,** electrical engineering; **Glenn Atkinson, Frederick Kurpjuweit,** and **Russel Walsh,** agronomy.

Meetings

Nearly 300 of the nation's ornithologists are expected to attend the annual meeting of the **American Ornithologists Union** to be held 8–12 Sept. at the University of Wisconsin. More than 30 scientists will present research papers that will include reports on banding projects, migration studies, environmental influences, taxonomic and anatomic studies, cycles, local problems of management, songs and calls, hybridization, reproduction studies, ecological and distribution studies, and many other subjects. In addition, two special symposiums are scheduled—one on bird behavior and the other on how the amateur can contribute to ornithological science.

Leaders in the administration of scientific research will meet at New York University, 8–10 Sept., for the 8th annual **Conference on the Administration of Research.** Approximately 250 persons, heads of educational, industrial, and government research units are expected to attend the meeting, which coincides with the opening of the centennial celebration of the university's College of Engineering.

Through case studies, the conferees will consider communications problems in research operations, management and physical facilities for research, the appraisal and reward of research output, and the place of basic research in an applied research laboratory. Past conferences have included discussions of security restrictions in government-sponsored research; international problems; selection, control, and termination of research projects; qualifications of research executives; and many aspects of the financing of research.

The conference was initiated in 1947 by a group of men who, not previously accustomed to administering large organized research groups, had been placed in charge of rapidly expanding laboratories established during World War II. A long list of distinguished speakers on this year's program includes Allan V. Astin, director, Bureau of Standards; Norris E. Bradbury, director of the Los Alamos Scientific Laboratory; Ralph Bown, vice president, Bell Telephone Laboratories; and Helmut E. Landsburg, chief, Climatological Services Division, U.S. Weather Bureau.

The **International Society of Clinical Pathology,** the **International Society of Geographic Pathology,** and the **International Association of Medical Museums** will meet concurrently in Washington, D.C., 6–10 Sept. The planning committee expects approximately 140 overseas guests from 31 countries; many of these are invited speakers. The program of the Conference on Geographic Pathology will be devoted entirely to cancer, that of the Congress of Clinical Pathology will include all aspects of clinical pathology, while the meetings of the International Association of Medical Museums will emphasize both the role of pathology in medical education and the teaching of pathology and clinical pathology.

Following the joint opening session of the three organizations, the College of American Pathologists will sponsor a symposium on diseases caused by fungi. There will be two joint scientific sessions, one on the geographic distribution of cancer and another on the geographic distribution of diseases other than cancer. The American Society of Clinical Pathologists will conduct its regular seminar on the day after the congress. The subject will be "Diseases of the skin" and all overseas registrants will be guests of the society.

The **8th National Chemical Exposition,** which is to take place in the Chicago Coliseum, 12–15 Oct., will also be a center for a series of chemical meetings and other activities. Among the organizations scheduled to meet during the exposition are the Manufacturing Chemists' Association, the Chemical Market Research Association, the Society of Chemical Industry, and the Purchasing Agents' Association. For details write to the exposition headquarters at 86 E. Randolph St., Chicago 1.

The **National Electronics Conference** will take place in Chicago, 4–6 Oct., and the first national annual meeting of the **Professional Group on Nuclear Science** of the Institute of Radio Engineers will be held 6–7 Oct. Both meetings are scheduled for the Hotel Sherman.

A symposium on the **"Nutritional aspects of blood formation,"** made possible by support from the National Vitamin Foundation, will be held at the University of Cincinnati on 22 Oct. The meeting is open to all interested physicians and scientists.

On 14–15 Oct. the Columbia University College of Pharmacy is sponsoring a conference, entitled **"Pharmacy and the conquest of disease,"** that will be dedicated to the advances made in recent years in the treat-

ment of disease and in public health and to a forecast of future research developments. It is a part of the year-long observance of Columbia's bicentennial and also a tribute to the 125th anniversary of the founding of the College of Pharmacy.

A comprehensive examination of plastic products—their utilitarian and decorative uses and their increasing role in the light and heavy construction industries—will highlight a conference on **Plastics in Building** scheduled for 27–28 Oct. at the National Academy of Sciences in Washington, D.C. The conference is sponsored by the Society of the Plastics Industry, Inc., the Maufacturing Chemists' Association, and the Building Research Advisory Board. The meeting, the first of its kind, is expected to attract architects, designers, engineers, builders, and manufacturers of component parts of buildings. Fifteen speakers have been scheduled, and a summary session will be conducted by two speakers, one representing the plastics industry and one the building industry. Each session will have a discussion period to explore the practical, as well as the theoretical, uses of plastics in construction.

Society Elections

American Neurological Association: pres., Percival Bailey; pres.-elect, J. M. Nielsen; 1st v. pres., A. R. Vonderahe; 2nd v. pres., Paul C. Bucy; sec.-treas., H. Houston Merritt.

American Pomological Society: pres., A. S. Colby, University of Illinois, Urbana; vice presidents, A. Grant Fox, Simcoe, Ont., Canada, and W. P. Judkins, Virginia Polytechnic Institute, Blacksburg; sec.-treas., Ronald B. Tukey, Purdue University, Lafayette, Ind.

American Society for Metals: pres., George A. Roberts, Vanadium-Alloys Steel Co., Latrobe, Pa.; v. pres., A. O. Schaefer, Midvale Co., Nicetown, Pa.; sec., W. H. Eisenman, Cleveland, Ohio; treas., W. A. Pennington, The Carrier Corp., Syracuse, N.Y.

Hawaiian Academy of Science: pres., Colin G. Lennox, Honolulu; pres.-elect, William A. Gortner, Pineapple Research Institute, Honolulu; sec., Doak C. Cox, Hawaiian Sugar Planters Association Experiment Station, Honolulu; treas., Beatrice Krauss, Pineapple Research Institute, Honolulu.

Pacific Southwest Association of Chemistry Teachers: pres., Howard Benninghof, San Francisco City College; vice presidents, E. B. Womack, Fresno State College, and Roy Newsom, Whittier College; sec., Mother Agnes Schmit, San Francisco College for Women; treas., Sister Agnes Ann, Immaculate Heart College, Los Angeles.

Phi Sigma Society: chancellor, Karl F. Lagler, University of Michigan, Ann Arbor; v. chancellor, Erwine Hall Stewart, Mesa, Colo.; exec. sec., Fred S. Orcutt, Virginia Polytechnic Institute, Blacksburg; treas., Tema Shults Clare, University of Southern California, Los Angeles.

Society for Non-Destructive Testing: Gerold H. Tinney, Los Alamos Scientific Laboratory; Wm. C. Hitt, Douglas Aircraft Corp., Santa Monica, Calif.; sec., Philip D. Johnson, Evanston, Ill.; treas., Hamilton Migel, Magnaflux Corp.

Education

President Eisenhower has appointed a **Cabinet committee on the training of scientists and engineers.** The committee includes the secretaries of Commerce, of Labor, and of Health, Education, and Welfare; the Assistant Secretary of Defense for Manpower; and the directors of the Atomic Energy Commission, the National Science Foundation, and the Office of Defense Mobilization. The committee, appointed in May, held its first meeting on 21 July. Realization of the rapid advances in Soviet science and technology, and of the phenomenal growth of Russia's manpower pool of engineers, scientists, and technicians, in contrast to the shrinkage of our professional output, was a factor in prompting the Presidential action.

A census of engineering and science teachers, compiled by the Educational Directory, University of Chicago Press, represents a count of faculties in colleges, universities, and junior colleges in the continental U.S. during the second semester of the academic year 1953–54.

Biological sciences, 28,168: medical (does not include physicians or nurses), 12,945; general, 5499; agriculture, 5795; psychology, 3929.

Physical sciences, 17,459: astronomy, 305; chemistry, 5916; geology, 1205; mathematics, 5290; physics, 4208; meteorology, 132; statistics, 403.

Aeronautics, 2297.

Atomic energy, 193.

Engineering, 8648: chemical, 726; civil, 1528; electrical, 1803; industrial, 422; mechanical, 2118; mechanical drawing, 709; mining, 155; metallurgy, 440; miscellaneous, 746.

Naval science, 476.

In the junior colleges 4110 teachers are listed in the following fields: aeronautics, 69; agriculture, 371; biology, 644; chemistry, 540; earth sciences, 155; engineering, 589; general science, 348; mathematics, 1064; physics, 330. In addition to the 61,351 teachers included in this count, there are 6382 in medicine, 4514 in home economics, 2298 in nursing, and 1592 in health and hygiene.

Eight speakers are scheduled for the **Frontiers in Chemistry lecture series** at Wayne University this fall. The series is cosponsored by the International Society of the Friends of the Kresge-Hooker Library and Wayne's chemistry department. On 4 Oct. Sune Bergstrom of the University of Lund (Sweden), will deliver the first lecture, on "Formation and the metabolism of bile acids."

The other lecturers and their subjects are: 8 Oct., Hans Schmid, University of Zurich, "Chemistry of some natural products from tropical plants"; 18 Oct., Anton B. Burg, University of Southern California, "Chemical consequences of the borine group, BH_3"; 25 Oct., R. Norman Jones, National Research Council, Ottawa, Canada, "Infrared spectrometry—a tool in research in organic chemistry"; 1 Nov., P. W. Selwood, Northwestern University, "Thermomagnetic analysis and structure of supported nickel catalysis"; 8 Nov., to be announced; 15 Nov., Donald D. DeFord, Northwestern University, "Coulometric titrations"; 22 Nov., J. O'M Bockris, University of Notre Dame, "Structure of liquid silicates."

All professionally interested persons are invited to attend the lectures. Additional information may be obtained through Dr. Wendell H. Powers, Wayne University, Detroit, Mich.

The first **laboratory in Latin America to utilize radioactive carbon** to determine the age of archeological, geologic, and paleontological specimens is being established at the University of Mexico. Agosto Moreno y Moreno will head the new laboratory.

Reports made at the end of the first year of operation of the **open-stack system** in the University of Georgia's Ilah Dunlap Little Memorial Library show an 85-percent increase in student use of nonreserve volumes over that of the preceding year. Faculty use of the library increased almost 18 percent. Rare books and certain collections are the only materials still kept in traditional library fashion rather than placed in open stacks.

A new **School of Dentistry building** is under construction on the Loma Linda campus of the College of Medical Evagenists. The 2-story structure will include 132 dental operating units and chairs, lecture halls, and laboratories for teaching and research. The estimated cost of the building and equipment is approximately $1 million.

Camera equipment valued at $1235 has been given to **South Dakota State College** by the Stephen F. Briggs and Beatrice B. Briggs Foundation. Previous donations of equipment by the foundation for use by the department of photography and audio-visual education total more than $6377.

Stanford University scientists, now moving into their new $200,000 Microwave Laboratory, are starting construction of another electron linear accelerator to be known as "Mark IV."

Tufts College has announced a new cooperative program with the **General Electric Co.** of Lynn, Mass. Under the plan, which goes into effect this fall, the company will send a group of selected students to the Tufts Engineering School to study mechanical engineering in a 4-yr apprentice-training program leading to an associate degree in science.

A plan to raise the level of medicine in Indonesia has been initiated by the **University of California School of Medicine,** San Francisco, with the financial aid of the Foreign Operations Administration. Under terms of a contract between the university and F.O.A., the medical school will cooperate with the **University of Indonesia** in the training of medical educators and doctors. F.O.A. is providing $692,000 to support the 3-yr program. Francis S. Smyth, former dean of the School of Medicine and at present professor of pediatrics, is director of the plan, called the Indonesian Project in Medical Education.

Under the program the university will send 10 American medical educators to serve on the medical faculty in Djakarta, and in turn the University of Indonesia will send doctors here for training in American medical education techniques. The first American to go to Indonesia is William R. Lyons, professor of anatomy in the School of Medicine and a noted researcher in endocrinology. Dr. Smyth is making arrangements with other scientists, on the University of California and other faculties, to take temporary posts at Djakarta.

A $100,000 expansion of research and educational services is underway in the **University of Georgia's School of Forestry.** It will provide for extensive study of forest genetics and silviculture and a broadening of the Forestry School's program of study at the graduate level. All research will be done in cooperation with the college's experiment station.

During the coming academic year the **University of Texas** department of chemistry will have four visiting lecturers. Peter Debye of Cornell University will speak in October; Joel H. Hildebrand of the University of California at Berkeley will discuss education for science, 22–24 Nov.; George B. Kistiakowski of Harvard University will lecture 24–25 Jan.; and next spring Farrington Daniels of the University of Wisconsin will discuss solar energy and photosynthesis.

Regular visits in the homes of patients, applied sociology in the form of medical social service, are the basis of the course called "Social and environmental medicine" that is required of all students in the **Vanderbilt University School of Medicine.** The student acts as family health advisor among selected families, continuing contact throughout his 4 yr of training.

Available Fellowships and Awards

An annual research award established by the **Aero Supply Manufacturing Co.** of Corry, Pa., will give $1000 to the engineering student who makes the greatest contribution to original research in **aircraft and guided missile fuel systems.** Second and third place awards will be $500 and $300, and there will be two $100 "consolation" awards. The judging committee will include an officer of the Air Force's Air Research and Development Command, power plant engineers

from airframe manufacturers, an engineering professor, a representative of the American Institute of Aviation, and an Aero Supply research engineer.

The **Arctic Institute of North America** is offering a number of research grants in 1955 for scientific investigations dealing with the arctic and subarctic regions. Research must include either field investigations in North America or studies at one of the institute offices. Applications for grants will be considered from those who have demonstrated their ability to conduct research work of superior quality in some field of science. *Completed applications must be received before 1 Nov.* Forms may be obtained from the Arctic Institute of North America, 1530 P St. NW, Washington, D.C.

The **Ciba Foundation,** wishing to encourage well-conceived research relevant to basic problems of ageing, invites candidates to submit work in the field for awards for 1954–55. Five awards of an average value of £300 each are available; preference will be given to younger workers. The work submitted should be unpublished (but may be under consideration for publication) at the closing date for entries. The papers may be in the candidate's own language, but a summary in English not exceeding 500 words must be attached. Entries must be received *not later than 28 Feb. 1955.* For details write to G. E. W. Wolstenholme, Ciba Foundation, 41, Portland Pl., London, W.1.

A new series of grants to spur mental health research and to assist in opening research careers to qualified young psychiatrists and scientists in related disciplines has been announced by the National Institute of Mental Health. The new program, known as the **Mental Health Career Investigator Program,** was initiated upon the recommendation of the National Mental Health Council and is expected to enable a limited number of highly qualified young men and women to devote from 3 to 5 yr in full-time research investigations. The first grants in the new series were recently awarded to investigators at university medical schools in Maryland, Massachusetts, and Louisiana. Information and application forms are available from the NIMH's Research Grants and Fellowships Branch. *The deadline for receipt of applications for the coming year is 1 Nov.*

The **National Science Foundation** will award individual grants to defray partial travel expenses for a limited number of scientists who will attend the **3rd Pan-African Congress on Prehistory** to be held in Livingston, Northern Rhodesia, July 1955. Application blanks may be obtained from the National Science Foundation, Washington 25, D.C. *Completed forms must be submitted by 1 Jan. 1955.*

The Children's Division of the Institute of Physical Medicine and Rehabilitation, New York University-Bellevue Medical Center, and the Association for the Aid of Crippled Children, New York, have jointly announced the availability of fellowships for social workers in the field of **pediatric rehabilitation.** These fellowships provide from 6 to 11 mo of specialized clinical experience in the rehabilitation of physically handicapped children and youth. The fellowships pay a stipend of $250 a month and are open to graduates of approved schools of social work who have had a minimum of 2 yr of experience, preferably in a hospital. Applications may be made to Miss Florence I. Mosher, Children's Division, Institute of Physical Medicine and Rehabilitation, 400 E. 34th St., New York 16.

Grants and Fellowships Awarded

The July allocations of the **Damon Runyon Memorial Fund for Cancer Research** amount to $126,890.

Lobund Institute, University of Notre Dame. Germ-free life as a biological tool for cancer research, $19,000.

J. Heyman, Radiumhemmet, Stockholm. Tour of several countries to study results of treatment of carcinoma of the uterus, $8000.

American Museum of Natural History. C. M. Breder, Lerner Marine Laboratory. Environmental endocrine control of cell proliferation, $10,000.

Sloan-Kettering Institute. Environmental factors in cancer of the respiratory and upper gastrointestinal tracts, $20,000.

State University of New York. P. J. Fitzgerald. Tests of cervix and lung cancer, $9450.

University of Louisville. Evaluation of diagnostic radioisotope procedures in brain tumor localization, $7350.

Institute for Cancer Research, Lankenau Hospital Research Institute, Philadelphia. Analysis of neoplastic cell populations with special emphasis on the immunogenetic and metastatic properties of component cell types, $13,500.

University of California, Los Angeles. Mechanism of metabolite antagonism in relation to tumor chemotherapy, $12,000.

University of Delaware. Factors influencing recovery of roots *Zea mays* after exposure to sublethal doses of x-rays or nitrogen mustard compounds, $2900.

Wayne University. Identification of steroids by rotary dispersion, $4590.

Michael Reese Hospital. Factors controlling the genesis of neoplasms, $13,600.

This year for the first time the **National Fund for Medical Education's awards** to the nation's medical schools will reach more than $2 million. The grants, totaling $2,176,904.71, represent an increase of 12 percent over 1953 and bring to just under $7 million the total awarded by the Fund since 1951 when the first grants were made. Business corporations contributed $1,075,326.40 through the Fund's Committee of American Industry, and the balance was contributed by physicians through the American Medical Education Foundation, which was set up by the American Medical Association.

Accreditation of the University of Puerto Rico School of Medicine in June 1954 brought the number of American medical schools to 80—74 4-yr schools and six 2-yr basic science schools. Each 4-yr school received $15,000 plus $25 per undergraduate medical student. Each 2-yr school received $7500 plus $25 per student. Added to these grants were the individual gifts of physicians to designated schools.

Though the grants are nearly a quarter of a million dollars larger than last year, the total still falls far

short of the annual need of $10,000,000. Nevertheless, these contributions are evidence of a growing partnership between medicine and industry.

In June the **National Institute of Mental Health** of the U. S. Department of Health, Education, and Welfare awarded the following grants. The amount given is that allocated for the first year. This list does not include the 42 grants awarded for the continuation of projects previously supported by the Institute.

J. E. Anderson and D. B. Harris, Univesrity of Minnesota. Relation of childhood behavior to adjustment in adulthood, 3 yr, $14,796.

A. Bandura, Stanford University. Relation of therapeutic competence to personality of psychotherapist, 1 yr, $1851.

D. Blocksma, R. Fox, and R. Lippitt, University of Michigan. Methods for improving social acceptance and participation of rejected children, 3 yr, $27,972.

G. E. Blom and R. Long, Massachusetts General Hospital. Emotional factors in children with rheumatoid arthritis, 4 yr, $17,981.

E. W. Busse, Duke University. Effect of aging upon the central nervous system, 2 yr, $14,534.

L. D. Cohen, Duke University. Assessment of change in anxiety level, 1 yr, $5400.

J. F. Dean and R. M. Williams, Jr., Cornell University. Social and cultural factors in adjustment of American women, 1½ yr, $10,770.

M. E. Drake, Vineland State School. Metabolism of phenylpyruvic acid in mental deficiency, 3 yr, $15,869.

M. Fink, Hillside Hospital. Perceptual changes induced by drugs and electroshock, 2 yr, $9612.

F. J. Gerty, A. M. Garner, and C. Wenar, University of Illinois College of Medicine. Psychosomatic disorders in children, 2 yr. $22,396.

E. A. Haggard, University of Chicago. Family adjustment, personality, and mental processes, 2 yr, $14,018.

H. F. Harlow, University of Wisconsin. Symposium on interdisciplinary research in the behavioral, biological, and biochemical sciences, 1 yr, $8910.

C. Landis, New York State Psychiatric Institute. Sensory and motor tests of CNS efficiency, 3 yr, $21,956.

D. W. Lauer, Indiana University. Response variables in classical conditioning, 2 yr, $8760.

N. H. Ledwith, Pittsburgh Child Guidance Center. Rorschach responses of elementary school children, 1 yr, $9720.

M. B. Loeb, Community Studies, Inc. Interaction patterns in a psychiatric hospital, 1½ yr, $20,262.

F. E. Nulsen and D. Crocker, University Hospitals. Evaluation and treatment of chronic pain, 2 yr, $5972.

E. Pavenstedt and D. M. Greeley, Boston University School of Medicine. Effect of maternal maturity and immaturity on child development, 2 yr, $36,085.

L. Phillips, Clark University. Application of developmental theory to problems of social adaptation, 3 yr, $16,102.

J. W. Riley, Jr., Rutgers University. Analysis of small group and interpersonal relations, 3 yr, $13,859.

C. R. Rogers, University of Chicago. Process and facilitation of personality change, 3 yr, $40,000.

W. L. Sawrey, University of Colorado School of Medicine. Role of psychological factors in production of gastric ulcers, 2 yr, $8817.

E. V. Semrad and M. Greenblatt, Harvard College. Relation of social interaction process and clinical changes to outcome of psychotherapy, 1 yr, $11,930.

E. Stellar, University of Pennsylvania. Experimental study of the behavior of the marmoset, 2 yr, $4644.

A. F. C. Wallace, University of Pennsylvania. Mental health aspects of cultism, 2 yr, $10,962.

The **Ramsay Memorial Fellowships Trust,** University College, London, Gower St., W.C.1, has made the following awards of new fellowships in chemistry for 1954–55: J. R. Anderson, British fellowship at the University of Cambridge; G. A. Sim, Glasgow fellowship; J. A. Davies, Canadian fellowship at the University of Leeds; Georges Moralli, French fellowship at King's College, Newcastle-upon-Tyne; Casiano Alfonso, Spanish fellowship at the University of Birmingham; Hans Jucker, Swiss fellowship at King's College, London; O. R. Rodig, United States fellowship at the University of Manchester.

The following fellowships have been renewed: G. T. Rogers, British fellowship at the University of Cambridge; K. Saito, Japanese fellowship at University College, London; W. G. Hanger, New Zealand fellowship at the University of Cambridge; Santos Amer, Spanish fellowship at the University of Cambridge; R. H. Doremus, United States fellowship at the University of Cambridge.

The **U.S. Atomic Energy Commission** has announced award of 20 unclassified physical research contracts. Five are new; the remainder are renewals.

Illinois Institute of Technology. M. L. Bender. Correlation of isotopic effect on reaction rate with reaction mechanism, $7776.

Oklahoma A. & M. College. E. M. Hodnett. Isotope effect in the study of chemical reactions, $6000.

Pennsylvania State University. C. R. Kinney and P. L. Walker, Jr. Factors affecting the mechanism of graphitization and the heterogeneous gas reactions of graphites, $29,700.

Polytechnic Institute of Brooklyn. R. B. Mesrobian and H. Morawetz. Radiation induced solid state polymerization, $12,160.

State College of Washington. S. T. Stephenson and S. E. Hazlet. Design of low-powered reactor. No monetary grant.

Alfred University. V. C. Frechette. Graphitization of carbon, $3925.

Case Institute of Technology. W. M. Baldwin. Scaling of zirconium in air at elevated temperatures, $23,000.

University of Colorado. R. N. Keller. Scintillation properties of coordination compounds, $8645.

Columbia University. V. K. LaMer. Fundamental investigation of phosphate slimes, $25,000.

Columbia University. R. M. Noyes. Photochemical reactions of iodine, $9750.

Columbia University. W. A. Selke. Ion exchange chromatography, $2691.

Indiana University Foundation. W. B. Schaap and F. C. Schmidt. Electrochemical research in amine solvents, $14,721.

Johns Hopkins University. W. S. Koski. Nuclear chemistry, $17,982.

Massachusetts Institute of Technology. F. H. Norton. Measurement of thermal conductivity of refractory materials, $33,984.

Massachusetts Institute of Technology. T. Sherwood. Mechanism of mass transfer to drops, $9960.

University of Michigan. H. J. Gomberg. Research reactor studies. No monetary grant.

Pennsylvania State University. R. Pepinsky. Neutron single crystal structure analysis, $11,960.

George Washington University. T. Perros. Fluorides of the rare earth elements, $4466.

Western Reserve University. E. L. Pace. Thermodynamic properties of gases absorbed on solids, $7260.

University of Wisconsin. E. L. King. Rates and equilibriums of inorganic reactions in solution, $8618.

Research conducted this year at the **University of Michigan** under grants from the Horace H. Rackham School of Graduate Studies included the following projects.

John E. Bardach, fisheries. Temperature sense of fish.

Ernest F. Brater, hydraulic engineering. Study of water waves striking objects.

Philip J. Elving, chemistry. Organic electrochemical processes.

Robert B. Harris, civil engineering. Study of the structural action of steel beams subject to torsion and direct bending.

Paul M. Naghdi, engineering mechanics. Problem in the theory of shells.

C. S. Rondestvedt, Jr., chemistry. Mechanisms of arylation by free radical generators.

M. L. Wiedenbeck, physics. Determination of nuclear moments of excited states.

Adam A. Christman, biological chemistry. Study of the muscle extractives carnosine and anserine.

Great Lakes Research Institute. Synoptic limnological study of Lake Huron.

Felix G. Gustafson, botany. Synthesis of B-vitamin by the root, hypocotyl, and epicotyl of the white lupine, when cultured in solution.

Robert L. Hunter, anatomy. Study of the relationship between aliesterase and gonadal hormones.

Carl D. LaRue, botany. Effects of various morphogenetic factors on the morphology of the gametophytes and sporophytes of bryophytes, pteridophytes, and spermatophytes.

Gordon E. Peterson, speech. Method of speech synthesis.

Lawrence B. Slobodkin, zoology. Effect of exploitation of daphnia populations.

Alexander H. Smith, botany. Manual of the fleshy hymenomycetes of the western United States.

L. C. Stuart, zoology. Studies of the herpetofauna of the Sierra De Los Cuchumatanes of Guatemala.

Elman R. Service, anthropology. Ethnological reconnaissance of the Sierra Madre region of Mexico.

Louise A. Shier, curator, Kelsey Museum of Archeology. Research abroad in preparation for publication of a description of lamps and textiles from Egypt in Kelsey Museum's collection.

Irwin Brown, speech clinician. Drug therapy in the rehabilitation of dysphasic patients.

Russell N. DeJong, neurology, and Elizabeth C. Crosby, anatomy. Experimental studies on the central nervous system.

Robert E. Moyers, dentistry. Study of the instantaneous centers of the rotation of the jaw.

Albert H. Wheeler, bacteriology. Immunologic studies to resistance to induced and transplantable tumors in tissue treated mice.

L. M. Legatski, civil engineering. Use of iteration techniques with a matrix analog computer for the solution of space frameworks.

Robert W. Parry, chemistry. Reduction of complex ions at a streaming electrode.

Donald B. Canham, physical education. Comparative study of European physiological experiments and training.

John Carow, director of Camp Filibert Roth. Adaptation of the bitterlich angle count method to the estimation of pulpwood volumes.

George R. L. Gaughran, anatomy. Muscle group forces at joints.

Volney H. Jones, Museum of Anthropology. Preparation of a compendium of data on economic botany of Indians of the Southwest.

George H. Lauff, zoology. Primary production of organic matter in an aquatic environment.

Clifford R. Noll, Jr., biological chemistry. Study of the organic acid and amino acid composition of plants.

Frederick K. Sparrow, botany. Revision of "Aquatic Phycomycetes."

Lewis E. Wehmeyer, botany. Perithecial development in the pyrenomycetous fungi.

Richard K. Beardsley, anthropology. Study of the rural foundations of Japan.

Daniel Katz, psychology. Comparative effect of two methods of changing attitudes upon people who vary in ego defensiveness.

George Kish, geography. Regional political geography of Italy

George Herman, speech. Quantitative study of recruitment of loudness in hearing loss.

Makepeace U. Tsao, biochemistry. Blood chemical study of uremia.

The **University of Pittsburgh** has received a $500,000 grant from the **Maurice and Laura Falk Foundation,** Pittsburgh, for library facilities in the new $15 million building for the Schools of the Health Professions. The recent gift is in addition to a previous grant of $300,000 provided in 1949 by the Falk Foundation for a medical school library.

Donald B. Zilversmit, associate professor of physiology at the **University of Tennessee Medical Units,** has been awarded a $5292 research grant by the **Life Insurance Medical Research Fund** to continue studies on the mechanism that induces hardening of the arteries in rabbits.

Research grants to two universities have been announced by **The Upjohn Co.** The University of Pennsylvania received $3000 for the support of a fellowship in the School of Veterinary Medicine, and the University of Cincinnati was awarded $2500 to be used by the College of Medicine for a fellowship in the department of pharmacology.

In the Laboratories

Arthur D. Little, Inc., has announced the opening of its Western Laboratories Division (formerly the Merrill Company) through which all ADL research and consulting services are now directly available to West Coast industry. Charles G. Harford is technical director and Raymond E. Byler is business manager of the new division at 114 Sansome St., San Francisco 4, Calif.

After a year of intensive technical investigation, **Aug. Schnackenberg & Co.,** Germany's leading producer of lead chemical equipment, and **Knapp Mills, Inc., of New York,** large producer of Ferrolum lead-clad steel and Cupralum lead-clad copper, have concluded an 18-yr license agreement whereby the German firm employs Knapp's patented processes and methods for the production of lead-clad metals in Germany.

Cellophane is wrenched and twisted, frozen and fried, sealed, folded, glued and printed—in fact, put to every conceivable test in the newly modernized Technical Service Laboratory by Sylvania Division, American Viscose Corporation. Working under the direction of John D. Conti, technicians have developed new equipment that successfully duplicates almost every field condition under which the material is used.

Ground has been broken at Allegheny General Hospital for a new wing to house Pittsburgh's first **cobalt beam therapy unit** and additional facilities for the hospital's department of radiology.

Location of a new **cotton ginning branch laboratory** at Clemson, S.C., for cooperative research with the state agricultural experiment stations and ginners in the Southeast has been announced by the U.S. Department of Agriculture. Establishment of this new facility, strongly endorsed and supported by ginners and various agencies in the cotton industry for several years, was provided for in the 1955 Agricultural Appropriation Bill in the amount of $100,000.

The **Du Pont Co.** has announced acquisition of options on land in California looking forward to the possibility of construction of a plant for the manufacture of tetraethyl lead and Freon refrigerants. Tetraethyl

lead and Freon refrigerants are needed in increasing amounts to meet the requirements of the huge petroleum industry and the rapidly developing refrigeration and aerosol industries on the West Coast.

The General Electric Research Laboratory, Schenectady, N.Y., will produce a **new alloy** capable of withstanding higher temperatures than any wrought alloy now commercially available. G.E. is particularly interested in providing new materials for the better performance of jet engines, rocket motors, gas turbines, and other devices operating at high temperatures. The initial output of the new alloy will be from an experimental vacuum furnace of 400-lb capacity. The pilot plant operation is expected to grow rapidly as a result of the company's metallurgical pioneering. This fall the section devoted to such researches will move into a new $3,000,000 laboratory structure, nearly doubling present facilities and staff.

Vitro Corp. of America has transferred its engineering and development activities being conducted at the Air Force Armament Center, Elgin Air Force Base, Fla., from its Engineering Division to the Laboratories Division, effective 1 July.

Miscellaneous

Volume 4 of *Arctic Bibliography* was published 20 Aug. by the Government Printing Office. It deals largely with the human being in his relationship to the northern environment. The first three volumes of this work, which were released in Aug. 1953, are concerned with the literature of the earth sciences and biological sciences generally. The new volume, however, emphasizes publications in the fields of medicine, public health, housing, sanitation, and water supply. Native peoples, especially those of northern Eurasia, and the various adaptive measures they have developed also receive particular attention. Articles in English, Russian, German, the Scandinavian, and other languages are abstracted, but emphasis is given to writings from northern Scandinavia and Finland, regions where an arctic economy has been operating successfully for some time.

Arctic Bibliography was compiled by the Arctic Institute of North America under a contract with the Office of Naval Research and with funds provided by the Army, Navy, and Air Force. The editor, Marie Tremaine, is known for her previous work in Canadiana. Compilation of the *Bibliography* has been under the direction of a steering committee headed by Henry B. Collins, anthropologist of the Bureau of American Ethnology, Smithsonian Institution, and a member of the board of governors of the Arctic Institute.

The **Centro de Documentación Cientifica y Técnica de México,** a nonprofit organization jointly created by UNESCO and the Mexican Government, has been functioning since its establishment in 1951 as a regional center, its services being available to all Latin American countries. UNESCO terminated its assistance in February 1954, and the center has been run ever since by the Mexican Government "for the collection of the scientific and technical documentation produced in the different countries of the world, to make it be known and distributed in the universities, in the technical institutes, and in the professional schools and in the laboratories of scientific and industrial research, being at the same time a center of coordination of the libraries."

The center now receives some 2000 journals, and the number is increasing by 30 or 40 monthly. From this material a monthly bibliographic bulletin is compiled. For each article contained in the journals the bulletin gives the title translated into Spanish, followed by the title in the original language and the bibliographic reference. In the case of Latin-American articles, an abstract in English or French is provided. The bulletin, which is widely distibuted through subscription and exchange, is divided by subjects into more than 130 sections and subsections.

Another activity of the center is the compiling of bibliographies on particular subjects. In addition, translations of scientific or technical papers are made from any language into Spanish, and courses in technical English, German, and French also are given. The center's address is Plaza de la Ciudadela 6, Mexico 1, D. F.

The New York State Department of Civil Service, 39 Columbia St., Albany 7, has announced an **examination for assistant hydraulic engineer.** *Applications will be accepted until 24 Sept.*

The U.S. Geological Survey is releasing in open files the following maps and reports on the **geology of parts of the United States.** Copies, available for consultation at the Geological Survey, Room 1033 (Library), General Services Administration Building, Washington, D.C., are: Current velocities in Sagadahoc Bay, Maine; high alumina metamorphic rocks of the Kings Mountain district, N.C. and S.C.; copper and uranium mineralization in the Coyote mining district, Mora County, N.Mex.; geology of an area about Yankton, S.Dak.; geologic map of La Sal Mountains, Utah; and geologic map of Morgantown quadrangle, N.C.

The Government Patents Board has announced publication of ***Instrumentation,*** a volume that lists and briefly describes 775 Government-owned inventions in the field of instrumentation. The listings are classified into eight subgroups: Laboratory, scientific and engineering instruments; instruments for indicating, measuring, and recording electrical quantities and characteristics; mechanical measuring and controlling instruments; optical instruments and lenses; surgical and medical instruments; x-ray and therapeutic apparatus, surgical and orthopedic appliances and supplies; photographic equipment and supplies. Also

listed are the addresses of the various field offices of the U.S. Department of Commerce and of the Small Business Administration; they may be consulted concerning the availability and use of these inventions. The volume on instrumentation may be purchased from the Office of Technical Services, U.S. Department of Commerce, Washington 25, D.C.

This volume is the first of a series of seven on Government-owned inventions scheduled for publication this year under the joint sponsorship of the U.S. Department of Commerce and the Small Business Administration. The titles of the other six books, with the number of inventions briefly described in them are *Chemical Products and Processes* (1349); *Food Products and Processes* (265); *Metal Products and Processes, Machinery and Transportation Equipment* (658); *Electrical Apparatus,* including *Electronics* (1920); *Ceramic, Paper, Rubber, Textile, Wood and Other Products and Processes* (308); and *Ordnance* (647).

Organizations accepted for **membership in the Radio Technical Commission for Aeronautics** are Northeast Airlines, Slick Airways, Inc., Westrex Corporation, and Decca Navigator System, Inc. RTCA, a cooperative association of government and industrial aeronautical agencies, has as its primary objective the resolution of aeronautical telecommunications problems in a manner acceptable to all phases of aviation. Its recommendations have had wide acceptance. Membership in RTCA is open to any U.S. organization actively identified with some phase of aeronautical telecommunications.

Reasons for the acceptance of scientific theories is the central theme of the following four papers in the September issue of *The Scientific Monthly*: "The variety of reasons for the acceptance of scientific theories," by Phillip G. Frank; "Influence of political creeds on the acceptance of theories," by Barrington Moore, Jr.; "Notes on a pragmatic theory of induction," by C. West Churchman; and "Remarks on value judgments in scientific validation," by Richard Rudner. These papers comprised the first of five sessions held in Boston, 27–30 Dec., on the general subject *Validation of scientific theories.* The remaining papers of the series will appear in subsequent issues.

Other articles featured in *The Scientific Monthly* for September are: "International cooperation to improve world agriculture," Ralph W. Phillips; "The trouble with science courses," Bruce Stewart; "Signals through space," William L. Roberts; "Agriculture versus chemistry in the nutrition of man," D. M. Hegsted and Frederick J. Stare; "Bibliographies of eminent scientists," Wayne Dennis; "Stripping the sea of her secrets," a pictorial account of Britain's Hydrographic Department of the Royal Navy. The paper by Hegsted and Stare was presented at the Boston meeting of the AAAS as a part of the symposium *Species that feed mankind.* Other papers from this symposium will appear in issues to follow.

A supplement to the **S.L.A. List of Translations, October 1953,** that lists nearly 700 additional titles, may be obtained for $1 per copy from the Special Libraries Association Translation Pool, John Crerar Library, 86 E. Randolph St., Chicago 1. Under contract with the Special Libraries Association, The John Crerar Library now maintains and services the Translation Pool. At the present time approximately 2000 translations from all languages except Russian are on file.

The Biology Division of the Oak Ridge National Laboratory, Oak Ridge, Tenn., has announced that copies of its monograph, **"Symposium on effects of radiation and other deleterious agents on embryonic development,"** are available gratis to scientific investigators who can establish a need for this publication.

This month the **Worcester Foundation for Experimental Biology** conducts its annual "Heroes of Science" stamp campaign to raise funds in support of its nonprofit research. The foundation operates without endowment and makes its findings available to the public. It is a local institute which, thanks entirely to research and philanthropic grants and the generosity of the public, has grown from a humble beginning in the basement and later a barn at Clark University to a staff of 120 with its own permanent laboratories at Shrewsbury, Mass. Research grants come from such sources as the American Cancer Society, the U.S. Army, Navy, and Air Force, the U.S. Public Health Service, the Atomic Energy Commission, and the Rockefeller Foundation.

Necrology

Hugo Eckener, 86, dirigible pioneer, Friedrichshafen, Germany, 14 Aug.; **Joseph W. Gartland,** 53, research chemist for the National Carbon Company, Cleveland, Ohio, 15 Aug.; **Laurence P. Geer,** 62, head of the chemistry department at the University of Tampa, Tampa, Fla., 11 Aug.; **Isaac H. Godlove,** 62, leader in the field of color, author, editor, and senior physicist for the General Aniline and Film Corp., Easton, Pa., 14 Aug.; **Ernest E. Hadley,** 60, author, editor, director of the Washington Psychoanalytic Institute, and former director of the Washington School of Psychiatry, Washington, D.C., 10 Aug..; **Bryn J. Hovde,** 58, former president of the New School of Social Research in New York and executive director of the Pittsburgh Housing Association, Pittsburgh, Pa., 10 Aug.; **Einar Key,** 81, former president of the Swedish Academy of Science, editor, and retired professor of surgery at the Caroline Institute, Stockholm, Sweden, 11 Aug.; **Floyd L. Nutting,** 68, professor of physics at the Drexel Institute of Technology, Philadelphia, Pa., 7 Aug.; **Arthur Sowerby,** 69, naturalist, author, and authority on the Far East, Washington, D.C., 16 Aug.; **Lansing S. Wells,** 62, chemist with the National Bureau of Standards, Washington, D. C., 8 Aug.