the art of politics and most of the men and women who practice it, for they are usually as good as we let them be. It is their duty to hammer out and execute policy. This difficult task ought not be made worse by obliging them to work in the dark. . . ."

Warning that "the certain road to defeat is to waste time in needless conflict among ourselves," Sears urged his fellow-conservationists "to get the cards on the table so that each of us knows the problems of the other fellow." He maintained that "it is surely unjust to brand a man a criminal for polluting a stream while forgetting that the public, always anxious for new industries, has been inviting this practice for a century or more. And because an enterprise wishes to expand, it is wrong to assume offhand that its owners do not care whether they ruin an area or not."

He pointed out that "the industrialist, unless he is an utter fool, knows the value of attractive living conditions for his employees." Sears also commented that there are "tremendous possibilities" for good will and collaboration in each community "once the facts are clear."

Thermal Cross Sections of Fissionable Isotopes

Recently declassified information was presented on the cross sections of the fissionable isotopes uranium-233, uranium-235, and plutonium-239 at the technical session, "Cross sections of fissionable elements," of the International Conference on the Peaceful Uses of Atomic Energy. Excellent agreement was obtained among participants from France, the United States, the United Kingdom, and the Soviet Union on values for these isotopes in the low-energy region. At the suggestion of the chairman, D. J. Hughes of Brookhaven National Laboratory, participants from the four countries met after the formal session to consider the thermal absorption and fission cross sections of these isotopes. It was decided to prepare a set of world average values for these cross sections, which could be used as a means for coordinating reactor calculations based on these cross sections. The average values are shown in Table 1. The quoted errors of the world average values given are based primarily on the spread in reported results and are sometimes larger than the errors of specific quoted results.

Table 1. International values for thermal cross sections of fissionable isotopes

Isotope	σ_{abs} (barns)	σ_F (barns)
Uranium-233	593 ± 8	524 ± 8
Uranium-235	698 ± 10	590 ± 15
Plutonium-239	1032 ± 15	729 ± 15

News Briefs

■ Ownership of outer space in connection with the proposed earth satellites has been brought up by John Cobb Cooper, authority on international air law. Cooper said recently in Montreal that agreement on how far the rights of all countries extend above the earth's surface should be reached before vehicles are sent 250 miles into outer space.

■ Discovery of a true radio star is described in the 13 Aug. issue of *Nature* by John D. Kraus, H. C. Ko, and D. V. Stoutenburg of Ohio State University.

This radio star, which is of stellar size, is located at the north boundary of the constellation Hydra, at a right ascension of 8 hours 19 minutes, and a declination of 7 degrees north. So far the astronomers have not been able to identify the radio star with any visible star, although there are several faint stars near the radio position.

■ The synthesis for the first time of cytisine, an extremely poisonous alkaloid, has been announced by E. E. Van Tamelen and John Baran of the University of Wisconsin chemistry department. Cytisine is so poisonous that it is of little practical value, but its synthesis will aid work on related substances that are useful to man.

Cytisine is one of the lupinanes. There exists in most lupinane molecules a unique, unsymmetrical, bridged structural system that various chemists have been attempting to reproduce for some years. Other alkaloids have been synthesized before, but never one of this type. In their synthesis, the investigators began with a simple coal-tar product, alpha-picoline; they built cytisine in 11 steps.

Cytisine is found naturally in certain leguminous plants, gorse, broom, and laburnum. Ancient peoples knew that these plants are extremely poisonous, and this quality very early aroused the curiosity of chemists, who isolated cytisine as early as 1865.

In the early 1930's two research groups, one led by H. R. Ing in England, the other by Ernst Spath in Austria, simultaneously worked out the chemical structure of cytisine, showing that it is one of the complex lupinanes. Van Tamelen and Baran began their work less than 2 years ago.

■ The American Institute of Physics, 57 E. 55 St., New York, will shortly commence publication of *Soviet Physics—JETP*, a periodical translation of research reports appearing in the Russian-language *Journal of Experimental and Theoretical Physics*. The National Science Foundation has granted funds to help finance the first year's operations. The editor will be Robert T. Beyer of the department of physics, Brown University, where the editorial office will be located.

The American Institute of Physics is the publisher of many of the American physics journals, for the institute is the cooperative agency of the American Physical Society, the Optical Society of America, the Acoustical Society of America, the American Association of Physics Teachers, and the Society of Rheology. The new journal will appear every 2 months, the first issue being scheduled for publication in October.

Beyer will be responsible for the assignment of each original article to a translator-physicist. Beyer himself reads Russian and is actively interested in the fields of acoustics, ultrasonics, and low-temperature physics. A survey that has been made indicates that enough Russian-reading physicists are available in the United States to translate all the contents of the Soviet journal.

An Advisory Board on Russian Translations has been appointed by the American Institute of Physics. The chairman is Elmer Hutchisson of Case Institute of Technology, who is also vice president of the abstracting board of the International Council of Scientific Unions, and other board members are Dwight E. Gray, chief of the Technical Information Division of the Library of Congress; Morton Hamermesh of Argonne National Laboratory; Vladimir Rojansky of Union College; and Victor F. Weisskopf of Massachusetts Institute of Technology.

Scientists in the News

CHARLES W. SHILLING, former captain in the Medical Corps of the U.S. Navy, has been appointed special assistant to John C. Bugher, director of the Atomic Energy Commission's Division of Biology and Medicine. Shilling recently retired from the Navy after 28 years of service. He holds a B.S. degree from Taylor University, Upland, Ind., and a B.A. degree from the University of Michigan; he received an M.D. degree from the University of Michigan Medical School in 1927. He attended the Harvard School of Public Health in 1932–33, and in 1954 was awarded an honorary doctor of science degree from Taylor University.

After internship in the U.S. Naval Hospital, Chelsea, Mass., in 1927–28, Shilling was assigned to submarine training duty and to various submarine bases. He conducted research and development work in safety, salvage, and escape equipment for submarines as well as experimental work in physiology and biochemistry related to air and oxygen under high pressure. He became a qualified deep-sea diver and served aboard the U.S.S. *Cam-*

den and the U.S.S. *S-4*. In 1939 he was senior medical officer in the rescue of personnel from the submarine U.S.S. *Squalus*.

In 1947 Shilling joined the staff of the Office of Naval Research, where he served for 6 years, successively as director of the medical sciences division, deputy for bio-sciences, and special assistant for bio-sciences. During his last 2 years at ONR, he was also director of the research division of the Navy's Bureau of Medicine and Surgery.

In 1953 he was transferred to the U.S. Naval Academy, where he filled concurrent assignments as senior medical officer, U.S. Naval Academy; command medical officer, Severn River Naval Command, and head of the department of hygiene. Shilling is the author or coauthor of 61 scientific articles and one book.

The International Council of Scientific Unions held its 7th general assembly at Oslo, Norway, 8–13 Aug. The United States was represented by the following delegation: LLOYD V. BERKNER, *chairman*, president, Associated Universities, Inc.; WALLACE W. ATWOOD, Office of International Relations, National Academy of Sciences–National Research Council; ROBERT B. BRODE, department of physics, University of California, Berkeley; DETLEV W. BRONK, president, National Academy of Sciences; WALTER H. BUCHER, department of geology, Columbia University; JASON J. NASSAU, director of the Warner and Swasey Observatory, Case Institute of Technology; WALTER M. RUDOLPH, assistant to the science adviser, Department of State; CHARLES E. SUNDERLIN, deputy director, National Science Foundation; and PAUL A. WEISS, Rockefeller Institute for Medical Research, New York.

HARRY J. DEUEL, JR., biochemist and dean of the graduate school at the University of Southern California, left on 19 July for an 8-month visit in Europe. With the support of a Fulbright grant, starting 1 Sept. he will be at the Dunn Nutritional Laboratory in Cambridge, England, for 7 months. He plans to visit many British universities, where he will lecture on such subjects, as vitamins A and E, nutritive value of fats, essential fatty acids, cholesterol metabolism, chemical food additives, and protection against x-rays offered by fats in the diet.

G. WESLEY DUNLAP, manager of the instrument and nuclear radiation engineering services department of the General Electric Co., Schenectady, N.Y., will serve for a year as a visiting professor at Massachusetts Institute of Technology. Dunlap will be the third engineer to hold the Edwin Sibley Webster professorship of electrical engineering, established by a $400,000 grant in memory of Webster, who, with his M.I.T. classmate, Charles Stone, founded the consulting firm of Stone and Webster, Inc.

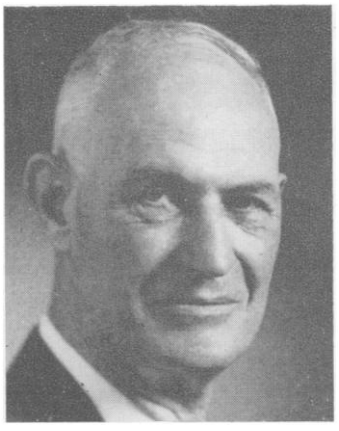
ADOLPH HECHT will become chairman of the botany department at the State College of Washington, Pullman, on 15 Sept. His appointment follows the resignation of N. HIGINBOTHAM, who will continue as a professor in the department.

PAUL E. HOWE, authority on animal and human nutrition, retired on 1 Aug. from the U.S. Department of Agriculture. During a career of 31 years in the USDA, Howe has been a contributor to nutrition research and has served various Government agencies — including the Army, Department of Justice, and National Research Council—as a nutrition consultant.

Although he has been concerned chiefly with animal nutrition, Howe has also made many professional contributions to the study of human nutrition. As an expert on institutional and mass feeding, he has played a key role in the development, since World War I, of United States policies and programs concerned with the nutrition of our Armed Forces and of civilian populations in Europe and the Far East.

A native of Chicago, Ill., Howe attended the University of Illinois, where he was awarded the Ph.D. degree in 1910. He joined USDA in 1924, after 14 years of teaching and research at the University of Illinois, Columbia University, the Army Medical School, and the Rockefeller Institute. He served during World War I as a captain in the Army Sanitary Corps.

From 1924 to 1936 he was in charge of nutrition investigations for USDA's former Bureau of Animal Industry, and from 1936 to 1948 he served as assistant chief of the bureau and chief of the animal nutrition division. Howe has taught in the USDA Graduate School and has been nutrition adviser to the Bureau of Prisons, Department of Justice, since 1929, when he developed the present prison ration and method of nutritional accounting.



During World War II, as a colonel in the Sanitary Corps, he organized and directed the nutrition division, Office of the Surgeon General (1940–44), and later served as nutrition consultant to the Supreme Commander, Allied Forces, both in Europe (1944–45) and in Japan (1946–47), where he was concerned particularly with the nutritional adequacy of diets of the civilian populations.

From 1949 to 1950 he was chief of the Nutrition Mission for the Office of the Surgeon General in Germany and Western Europe. He was awarded the Legion of Honor, officer class, by the French Government for his work in France during the war.

Howe was a nutrition adviser to the National Defense Council in 1940 and a member or liaison member of the Committee on Food and Nutrition of the National Research Council from 1941 to 1944. He had served previously, from 1927 to 1941, as chairman of the NRC's Committee on Animal Nutrition. In 1951 he was a special consultant on institutional feeding to the State of California.

For 36 years (1912–48), Howe was an assistant editor (biological chemistry) of *Chemical Abstracts*, and he served as special editor for biochemistry on the staff of *Webster's New International Dictionary* (2nd Edition). He is coauthor of *Nutrition and Clinical Dietetics*, a basic reference work in this field. His many technical publications include articles on the chemistry of blood, muscle proteins, and animal products; on animal nutrition; nutrition accounting; and institutional and mass feeding of men.

Since 1948 Howe has been nutrition adviser to the USDA's former Bureau of Animal Industry and to the present Animal and Poultry Husbandry Research Branch of the Agricultural Research Service. Howe plans to continue his work in nutrition as a private consultant.

LEONARD H. SCHUYLER, who has been a research fellow in medicine at the Vascular Research Laboratory of the New York Hospital–Cornell University Medical School in New York, has been named assistant medical director of the American Heart Association. He will aid in administration of the research support and professional education programs.

WALDO SHUMWAY, dean of Stevens Institute of Technology, became the institute's provost on 1 Sept.

J. E. WALLACE WALLIN, founder and one-time director of numerous psychoeducational clinics and special education departments in New Jersey, Pennsylvania, Missouri, Ohio, Maryland, and Delaware, has received the 1955 Alumni

Meritorious Service award from Augustana College. He was honored for "his outstanding contributions to society" and also in recognition of the fact that, as a near-octogenarian, he published two major books within a few weeks of each other. One was the *Education of Mentally Handicapped Children,* a volume in Harper's "Education for Living Series," edited by H. H. Rammera, and the other was *The Odyssey of a Psychologist,* a personal record of "pioneering experiences in special education, clinical psychology, and mental hygiene," that was published under his own imprimatur.

The following members of the Columbia University faculty retired on 30 June: HARRY STOLL MUSTARD, professor of public health practice and director of the De Lamar Institute of Public Health; JAMES BURNS ANDERSON, professor of medicine; GEORGE FRANCIS CAHILL, who joined the Columbia faculty in 1917 as an instructor in urology; MAURICE LENZ, professor of clinical radiology; FRANK LAMONT MELENY, who began teaching surgical techniques in 1919 and who was a codiscoverer of bacitracin; and WILLIAM BELL DINSMOR, professor of archeology.

A. G. LOCHHEAD, since 1923 chief of the bacteriology division of the Canadian Department of Agriculture, Ottawa, retired last month. Before joining the department he lectured at the University of Alberta. Through his leadership, the division has become known throughout the world as a center of fundamental research in soil microbiology. Lochhead is a member of many scientific societies. In 1940 he became a fellow of the Royal Society of Canada, and last year he was president of the Canadian Society of Microbiologists.

HARRY KATZNELSON, head of the general agricultural microbiology unit, has been appointed successor to Lochhead. His interest in bacterial viruses led to the development of a widely used diagnostic procedure for detecting bacterial plant pathogens in seed. He is also known for his research on diseases of the honeybee.

A bronze bust of the late ALEXANDER FLEMING, discoverer of penicillin, which is to be erected in the city park in Gijon, Spain, was completed recently by Manuel Laviada.

A travel award fund honoring the memory of ERWIN BRAND for his many years of service to the division of biological chemistry of the American Chemical Society was established by the division through donations from its members and from certain industrial firms. Travel expenses paid from this memorial fund enabled two biochemists, Sidney Schulman of the University of Buffalo and T. R. Riggs of Tufts College of Medicine, to attend the International Congress of Biochemistry in Brussels, Belgium, 1–6 Aug. Industrial firms that contributed were A. E. Staley Manufacturing Co., Decatur, Ill.; Burroughs Wellcome and Co., Inc., Tuckahoe, N.Y.; and Merck and Co., Inc., Rahway, N.J.

Necrology

EGON BRUNSWIK, Berkeley, Calif., 52, professor of psychology at University of California, 7 July.

DAVID CHEEVER, Boston, Mass., 79, associate professor of surgery emeritus at Harvard Medical School, former president of American Surgical Association, 13 Aug.

ALAN DEVOE, Hillsdale, N.Y., 45, author and naturalist, 17 Aug.

HERBERT J. FRENCH, New York, 62, metallurgist, vice president of International Nickel Company, formerly on research staff, 17 Aug.

GEORGE F. PADDOCK, Providence, R.I., 76, professor emeritus of astronomy at Lick Observatory in Mount Hamilton, California, 16 Aug.

THOMAS A. WAINWRIGHT, Dhahran, Saudi Arabia, 50, executive and engineer for Arabian Oil Co., 12 Aug.

ROBERT W. WOOD, Baltimore, Md., 87, research physicist at Johns Hopkins, authority on spectrum research, 11 Aug.

JOSEPH C. YASKIN, Philadelphia, Pa., 64, head of neurology department at Graduate School of Medicine, University of Pennsylvania, 10 Aug.

Education

■ The University of California and the Atomic Energy Commission have entered into a research contract under which the university will construct a nuclear reactor specifically designed for medical treatment and research. The AEC will contribute $75,000 toward the accomplishment of the project and will support an extensive program of research utilizing the reactor. The commission will also make available enriched uranium as fuel for the reactor, which will be constructed at the new medical center in Los Angeles. The university will erect a building to house the reactor at an estimated cost of $400,000.

The North American Aviation Corp. will design and build the reactor, which will be of the low-power water-boiler type. It will operate at a heat power level of about 5 kilowatts, with a maximum power of 50 kilowatts, and it will provide neutron flux up to 10^9 neutrons per square centimeter, per second.

The reactor, which will provide both gamma rays and thermal neutrons, will be used for the treatment of human patients and the training of students in radiation therapy and in reactor techniques and theory relative to the field of medicine. This installation will provide the West Coast with its first source of slow and fast neutrons sufficient for experimental work with animals and for treatment of human beings. The unit also will produce short-lived isotopes for experimental biology and medicine.

The reactor core will be located inside a 5- by 5- by 8-foot stack of graphite bars, shielded by a 5-foot thickness of high-density concrete. Radiation ports will lead from the core to a patient treatment room, laboratory, and another room where research on animals can be performed. An access port will permit materials to be irradiated in a channel leading inside the core itself, where radiation will be the strongest. The underground reactor wing housing the complete installation will be about 45 feet wide, 60 feet long, and 27 feet high. Welton Becket and Associates have been named architects. Rate of fission will be controlled by boron control rods.

■ Under the Oak Ridge Traveling Lecture Program, a joint activity of Oak Ridge National Laboratory and the Oak Ridge Institute of Nuclear Studies, 109 Oak Ridge scientists will make available their services as lecturers to colleges and universities, particularly those in the southern region, during the coming academic year. The lecture series is part of the Atomic Energy Commission's program for disseminating scientific and technical information to institutions of higher education.

According to a brochure that has just been issued, the participants have supplied a total of 188 possible topics, touching virtually every field of scientific endeavor. Copies of the brochure and additional information concerning the lecture program may be obtained by writing to the Chairman, University Relations Division, Oak Ridge Institute of Nuclear Studies, Box 117, Oak Ridge, Tenn.

■ In Indonesian and Jordanian elementary schools, where pupils once learned science only by repeating passages from textbooks, lessons are now being taught with laboratory equipment assembled from odds and ends—burned-out light bulbs, ink bottles, rubber tubing, and bits of string. The man who is chiefly responsible for introducing this practical apparatus, which costs from $10 to $11 per school, is a Canadian educator, Herbert H. Grantham of Vancouver, B.C.

In 1953, Grantham completed a 2-year mission in Indonesia for the United Nations Educational, Scientific and Cultural Organization under the technical