

Miscellany

An Emerging Science Policy

Almost overnight, thanks to the enterprise and ingenuity of Soviet missile engineers, a prevailing public indifference to science and scientists in the United States has given way to a nationwide involvement in the problems of America's scientific future. That involvement was reflected in the President's second post-sputnik address to the nation. The US, he emphasized, must give higher priority to basic research and to education in the sciences. Concerning basic research, the President stated that the government is stepping up its basic research program but that "with 70 percent of research expenditure, the biggest share of the job is in the hands of industry and private organizations". Concerning education, the President recommended:

"We should, among other things, have a system of nationwide testing of high school students; a system of incentives for high aptitude students to pursue scientific or professional studies; a program to stimulate good quality teaching of mathematics and science; provision of more laboratory facilities; and measures, including fellowships, to increase the output of qualified teachers.

"The Soviet Union now has in the combined category of scientists and engineers a greater number than the United States, and it is producing graduates in these fields at a much faster rate. Recent studies of the educational standards of the Soviet Union show that this gain in quantity can no longer be considered offset by lack of quality.

"This trend is disturbing. Indeed, according to my scientific advisers, this is for the American people the most critical problem of all. My scientific advisers place this problem above all other immediate tasks of producing missiles, of developing new techniques in the armed services: We need scientists. In the ten years ahead they say we need them by thousands more than we are now presently planning to have."

Earlier in November, as demands were continuing to mount for such decisive actions as the appointment of "a Cabinet-level Secretary of Scientific Research" and the creation of "a Manhattan-District-type project" to consolidate the nation's far-flung missiles programs, President Eisenhower announced that he had appointed James R. Killian, Jr., president of the Massachusetts Institute of Technology, to the newly created office of Special Assistant to the President for Science and Technology.

"This man," the President said, "who will be aided by a staff of scientists and a strong advisory group of

outstanding experts reporting to him and to me, will have the active responsibility of helping me follow through on the program of scientific improvement of our defenses. . . . Through him I intend to be assured that the entire program is carried forward in closely integrated fashion. He will help to see that such things as alleged interservice competition or insufficient use of overtime shall not be allowed to create even the suspicion of harm to our scientific and development program."

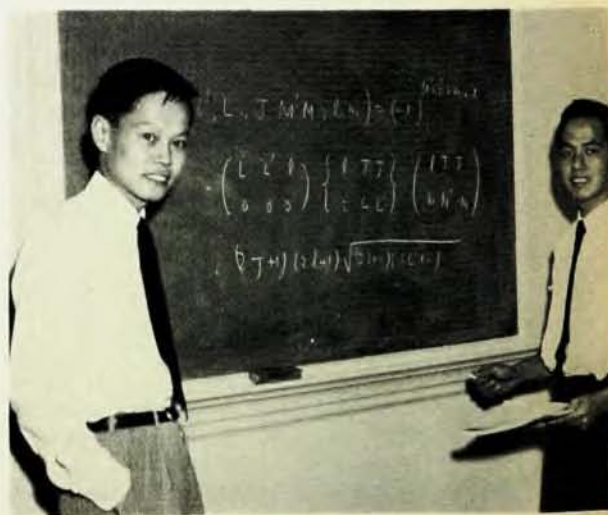
Dr. Killian has announced that during his leave of absence from MIT the Institute will be headed by Chancellor Julius A. Stratton, who has been appointed acting president by the MIT Corporation.

President Eisenhower also directed Secretary of Defense Neil H. McElroy to give the Pentagon's guided missile director, William M. Holliday, "all the authority that the secretary himself possesses in this field". He further announced that he will propose that Congress "remove legal barriers to the exchange of appropriate technological information with friendly countries" and authorize US support for "a scientific committee organized within NATO to carry out an enlarged Atlantic effort in research".

Awards and Grants

Reproduced on this month's cover is a page from a nuclear theorist's scratch-pad representing the germ of an idea that challenged a basic principle of physics and, after being confirmed last January, has received swift recognition in the form of the earliest available Nobel Prize award. The notes are those of T. D. Lee of Columbia University and were made in the summer of 1956 when he and C. N. Yang of the Institute for Advanced Study shared an office at Brookhaven National Laboratory.

While considering the strange case of the unstable K mesons (τ^+ and θ^+), which appear identical in mass



Nobel Laureates Yang and Lee (photo by Alan W. Richards)

and lifetime but different in that one decays into π mesons of odd parity and the other into π mesons of even parity. Lee and Yang chose to assume that in the realm of weak interactions the principle of parity conservation might be violated and that τ^+ and θ^+ might indeed be two different decay modes of the same particle. On the basis of existing experimental information, they concluded, there was no evidence either to confirm or refute parity conservation in weak interactions. They promptly suggested some ways of testing the question, and within a few months two difficult but elegantly constructed experiments demonstrated conclusively that the parity law does not hold in the beta decay of oriented cobalt-60 nuclei or in the electron decay of μ mesons. The first of these experiments was carried out by C. S. Wu of Columbia in collaboration with E. Ambler, R. Hayward, D. D. Hoppes, and R. P. Hudson of the National Bureau of Standards at the NBS Low-Temperature Laboratory, and the other by R. L. Garwin, L. M. Lederman, and M. Weinrich of Columbia at the Nevis Cyclotron Laboratories.

On October 31st of this year the Swedish Academy of Sciences named Lee and Yang to share the 1957 Nobel Prize in Physics for their work in demolishing the notion that parity conservation can never be violated. The first Chinese-born scholars ever to win Nobel awards, they will receive the prize at ceremonies to be held December 10th in Stockholm. Dr. Lee, who was born 31 years ago in Shanghai, received his PhD at the University of Chicago in 1950 and has been at Columbia University since 1953. He is now on leave from Columbia to spend the current academic year at the Institute for Advanced Study in Princeton. Dr. Yang, who is 35, was born in Hofei, Anhwei Province, and received his PhD at Chicago in 1948. He has been a member of the Institute for Advanced Study since 1949.

The Atomic Energy Commission's Enrico Fermi Award for 1957 has been conferred on Ernest O. Lawrence, director of the University of California Radiation Laboratory. The award, consisting of a medal, a citation, and \$50 000, was made to Dr. Lawrence "for his invention and development of the cyclotron and for his many other contributions in nuclear physics and atomic energy". As authorized by the Atomic Energy Act of 1954, the award was made on the recommendation of the General Advisory Committee of the AEC upon approval by President Eisenhower. Dr. Lawrence is the second recipient of the Enrico Fermi Award. The first was bestowed on the late John von Neumann in April 1956. A previous award under the 1954 Act was made in November 1954 when Dr. Fermi was honored by the Commission. While choosing Dr. von Neumann to receive the honor in 1956, the Commission decided that the Award should henceforth be named after Dr. Fermi. December 2, the fifteenth anniversary of the day when Dr. Fermi and his associates proved that nuclear fission could be self-sustained and controlled, was chosen as the date for presentation of this year's award. Dr. Lawrence, who is a Nobel laureate in physics (1939) and the recipient of numerous other awards,

joined the University of California at Berkeley in 1928 and has been director of the Radiation Laboratory since 1936.

Two major awards of the Optical Society of America were presented on October 18 during the Society's 1957 annual meeting, which was held this year at the Deshler Hilton Hotel in Columbus, Ohio. The Frederic Ives Medal for 1957 was presented to the Society's former secretary, Arthur C. Hardy of the Massachusetts Institute of Technology, and the Edgar D. Tillyer Medal for 1957 was awarded to Charles Sheard of the Mayo Foundation. The Ives Medal for distinguished work in optics, awarded biennially until 1951 and annually since then, was endowed in 1928 in honor of Frederic Ives, distinguished for his pioneer contributions to color photography, photoengraving, three-color process printing, and other branches of applied optics. The Tillyer Medal, endowed by the American Optical Co. in 1953, is awarded by the Optical Society "not oftener than once in two years to a person who shall have performed distinguished work in the field of vision".

The Society has also elected the following officers: past president, Ralph A. Sawyer; president, Irvine C. Gardner; president elect, John Strong; vice president for meetings, Stanley S. Ballard; treasurer, E. D. McAlister; secretary, Kasson S. Gibson (National Bureau of Standards, Washington 25, D. C.); editor, Wallace R. Brode; secretary for local sections, W. Lewis Hyde; new members of the board, R. Bowling Barnes, Seibert Q. Duntley, F. A. Jenkins, and Richard C. Lord.

Eastman Kodak Co. has announced the award of 58 direct grants and 39 fellowships, having a combined value of over \$400 000, to colleges and universities in the US. The company also announced a contribution of \$175 000 in special grants to colleges and universities in areas where Kodak has special manufacturing interests and an award of \$32 000 to associated college groups and other organizations established for educational purposes. Kodak grants for fellowships toward the PhD degree in physics are being made to Columbia, Johns Hopkins, Princeton, and Stanford Universities, the University of Rochester, and the State University of Iowa. The various awards are part of a continuing Kodak program of financial aid to higher education.

Programs of postdoctoral resident research associateships tenable at Argonne and Oak Ridge National Laboratories, the Naval Research Laboratory, and the Washington, D. C. and Denver, Colo., laboratories of the National Bureau of Standards are again being offered for 1958-59. Applicants must be US citizens and must produce evidence of training in one of the physical, mathematical, or biological sciences equivalent to that represented by the PhD or ScD degree, as well as having demonstrated superior ability for creative research. Applications and further information may be obtained from the Fellowship Office, National Academy of Sciences—Research Council, 2101 Constitution Ave.,

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N.W., Washington 25, D.C. Applications for 1958-59 must be received in the Fellowship Office before January 13.

Established

Lockheed Missile Systems division has opened a new "space communication" laboratory in Sunnyvale, Calif., where a technical staff of more than 50 will study such matters as the effect of cosmic rays on radar and radio signals, ionospheric effects, the radar patterns presented by missiles and other objects of various shapes, and the characteristics of antennas installed in missiles. The laboratory, which is equipped with four instrumented antenna and reflectivity ranges and an anechoic chamber free of stray electronic signals, will be mainly concerned with research in connection with the Navy's Polaris ballistic missile. The facility will be made available for use by other scientific groups on a commercial basis.

United States Rubber Co., in dedicating its new research center in Wayne, N. J., on September 18th, announced plans to spend a minimum of \$120 million on research and development in the fields of rubber, plastics, chemicals, and textiles as part of a five-year program of expanded effort at the research center and at the company's laboratories at 22 locations in the United States and abroad. The center, consisting of four main buildings, houses some fifty unit and special laboratories, including a physical testing laboratory and a radiation laboratory equipped with a 2-Mev Van de Graaff electron accelerator.

The US Atomic Energy Commission has announced the appointment of a new Advisory Committee on Reactor Safeguards established as a statutory committee by a recent amendment to the Atomic Energy Act of 1954 enacted by the 85th Congress. The committee replaces an advisory group having the same name which was formed by the Commission in 1953. The Act, as amended, provides that the Committee shall review and report on safety studies and facility license applications referred to it; shall advise the Commission on the hazards of proposed or existing reactor facilities and the adequacy of proposed reactor safety standards, and shall perform such other duties as the Commission requests. Included among applications which are to be referred to the group for safety evaluation are those for power and testing reactors. The Act provides that the Committee's reports on these shall be made available to the public.

Publications

English-language editions of two Russian metallurgical journals, *The Physics of Metals and Metallurgy* and *The Journal of Abstracts—Metallurgy*, will be published for the first time next year, according to an announcement by the board of governors of Acta Metallurgica. To help defray the cost of preparing the trans-