H. L. Anderson, E. Konopinski, F. Seitz, E. Segrè, and W. H. Zinn, and of the words by which H. A. Bethe as Chairman (and organizer of the session) introduced the session as a whole and the speakers severally. These addresses and Bethe's remarks were recorded on tape by R. E. Wolford and J. B. Wise, whose avocation is the making of records, and who made these gratuitously as a service to the Society. Through their courtesy also, reproductions of the records on tape or disc will be made available in any quantity, and may be purchased at no more than cost. The six records, either in form of tape (7-inch reel, ¼-inch tape, 1200 or 1800 feet in length) or 12-inch microgroove LP disc, will be sold separately or all together. The price for the whole set, tape or disc, will be $30.00. The price for any disc is $5.00; the price for the tapes of Anderson, Bethe, Konopinski, and Seitz is $5.00 for each; the price for the (longer) tapes of Segrè and Zinn is $7.50 each. These figures include postage in the United States, Canada, and Mexico.

Checks or money orders (no cash please) should be made payable to the American Physical Society and mailed to Dr. R. D. Huntoon, National Bureau of Standards, Washington 25, D. C. Anyone who places an order from other countries should ascertain the postage required, deduct 50 cents, and remit the difference with his order. The shipping weight is one pound for each disc or tape.

The 1955 Christmas Lecture sponsored by the Philosophical Society of Washington for young people in the Washington, D. C. area is to be given by Eric Rogers, associate professor of physics at Princeton University. Professor Rogers is in charge of the demonstration lecture course at Princeton and has published numerous articles on the teaching of physics. His first experience in this field was in Cambridge, England, where he was a demonstrator at the Cavendish Laboratory. He has also taught at Mount Holyoke and Harvard. The lectures are patterned after the annual Christmas lectures given by the Royal Institution of London. This is the fifth year they have been sponsored by the Philosophical Society of Washington. Previous lecturers in the series have been: E. H. Land of the Polaroid Corporation, R. M. Sutton of Haverford College and George Gamow of George Washington.

Anti-Proton

The anti-proton, a negatively-charged particle having the same mass as the proton, has been discovered experimentally by a group of physicists at the University of California Radiation Laboratory in Berkeley, thus supporting the generally-accepted atomic theory that for more than a quarter of a century has assumed the necessary existence of a negative proton. First observations of the particle were made on September 21st by physicists Owen Chamberlain, Emelio Segrè, Clyde Wiegand, and Thomas Ypsilantis, with the help of Herbert Steiner and the cooperation of Edward J. Lofgren, physicist in charge of the bevatron. The experiment was fully confirmed on October 17th and was announced two days later by the Atomic Energy Commission and the University of California. Initial observations of the anti-proton have been made only with radiation counters, but it is indicated that efforts are being made to find its tracks in photo emulsions. The particles are expected to be found in cosmic rays, but in low abundance. The experiment involved bombardment of a copper target in the bevatron chamber with 6.2 Bev protons. The ensuing proton-neutron collision caused the emission of an additional proton and an anti-proton, resulting from the conversion into mass of a part of the bombarding energy.

Grants and Awards

The National Science Foundation will extend its fellowship awards program in 1956 to include some 40 senior postdoctoral fellows (with at least 5 years experience beyond the science doctorate or its equivalent) in physical, mathematical, or other sciences. Stipends from $4000 to $10 000, adjusted to match as closely as feasible the regular salaries of the recipients, may be applied toward study or research in accredited nonprofit institutions of higher learning in the United States or abroad. Further information and application forms may be obtained from the Division of Scientific Personnel and Education, National Science Foundation, Washington 25, D. C. Completed material must be received not later than January 16, 1956.

An annual $250 award for an original essay on the history of science and its cultural influences has been established by Henry and Ida Schuman of New York City. The competition is open to United States or Canadian college graduate or undergraduate students. Papers should be about 5000 words long, exclusive of footnotes, and thoroughly documented. It is hoped that the prize-winning essay will be suitable for publication in *Isis*, the journal of the History of Science Society. Papers submitted for competition must be received on or before June 1, 1956, by the chairman of the prize committee, Professor Charles C. Gillispie, Department of History, Princeton University, Princeton, N. J. Inquiries may be addressed to Professor Gillispie.

Shell Companies Foundation, Inc., in an effort to "help offset the dangerous cutback in science teaching at the secondary level", announced on October 20th the creation of a new program of recognition fellowships for high school science and mathematics teachers. Under the program, which is to be known as the Shell Merit Fellowships for High School Science and Mathematics Teachers, Shell will underwrite summer seminars at Stanford and Cornell Universities for sixty teachers yearly. Recipients will receive travel allowances, all tuition and fees, campus living expenses, and $500 in cash to make up for the loss of potential summer earnings. Physics, mathematics, or chemistry teachers with five years' experience and known leadership ability will be eligible for the fellowships, as will former teachers

who are now heads of departments or supervisors with good background in physics, mathematics, or chemistry. Thirty teachers from west of the Mississippi River will attend the eight-week Stanford program and another thirty from east of the Mississippi will take part in a six-week program at Cornell. The seminar programs will include graduate-level classes, lectures by outstanding scientists, and visits to industrial installations and research laboratories. The fellowships are in addition to the Shell Companies Foundation's present $350 000 aid-to-education program which includes fifty graduate fellowships and twenty grants in fundamental research in science and engineering at forty-one institutions.

Final selection of recipients of the Shell Merit Fellowships will be the full responsibilities of the two universities, and requests for application forms should be sent directly to Cornell or Stanford University. The completed forms must be accompanied by personal recommendations from the instructor's high school principal, a faculty member from his most recent college, and someone who can attest to the applicant's leadership talents with young people.

A graduate program in biophysics leading either to the MS or PhD degree has been established by the Sloan-Kettering Division of the Cornell University Medical College. The MS program is devoted specifically to radiation physics and includes training in clinical radiological physics, medical and research applications of radioisotopes, and health physics. Facilities in the Sloan-Kettering Institute and Memorial Hospital are available for thesis problems in various physical, chemical, or biological effects of different qualities of radiation. Related courses can also be scheduled at neighboring universities. A limited number of fellowships is available. Additional information on entrance requirements, courses and program details, and fellowship specifications may be obtained by writing to Dr. J. S. Laughlin, Department of Biophysics, 410 East 68 Street, New York 21, New York.

The National Science Foundation has announced 161 grants totalling over $1.8 million for basic research. This is the fourth group of awards made in fiscal year 1955. Awards made in physics and related sciences are: State University of Iowa (J. M. Jauch), the scattering matrix; Massachusetts Institute of Technology (H. Mueller), optics of partially polarized light; Midwestern Universities Research Association (D. W. Kerst), high-energy accelerator problems; University of Minnesota (W. B. Cheston), medium energy nucleon-nucleus scattering; The Ohio State University (J. Korringa), energy levels and relaxation mechanisms of paramagnetic ions; University of Oklahoma (R. G. Fowler), conductivity coefficients in highly ionized media; The Pennsylvania State University (E. R. Fitzgerald), dynamic properties of polymers; Rensselaer Polytechnic Institute (J. M. Greenberg), approximations in the theory of scattering; Smith College (I. L. Kofsky), structure and development of air showers; Syracuse University (P. Fong), theory of nuclear fission; The University of Wyoming (F. J. Bueche), mechanical properties

of high polymers; The Pennsylvania State University (J. G. Aston, J. Eisenstein, and J. J. Fritz), paramagnetism in crystalline salts and in free radicals, and (P. Mange), physical structure of the high atmosphere; The Ohio State University (J. D. Kraus), radio mapping and design of a prototype telescope; and University of California, Berkeley (B. P. Boden), diurnal vertical migration of sonic scattering layers in the sea.

In addition NSF funds have been made available for other projects, as for example, support for scientific conferences such as the International Optical Congress (American Academy of Arts and Sciences), the World Symposium on Applied Solar Energy (University of Arizona), Conference on Low-Temperature Research (Louisiana State University and Agricultural and Mechanical College), Problems of Nuclear Structure (University of Michigan), Conference on Spectroscopy (The Ohio State University), Sixth Annual Conference on High-Energy Nuclear Physics (The University of Rochester), and support of a Conference on Biophysics (Tulane University). Funds have also been made available for traveling science libraries for small high schools (American Association for the Advancement of Science), for the study to estimate supply of professional and technical manpower as of 1965 (Columbia University), and an English edition of the Russian *Journal for Experimental and Theoretical Physics* to be published by the American Institute of Physics.

Temperature Symposium Proceedings

The Third Symposium on Temperature, an international meeting held in Washington in October, 1954, under the joint auspices of the American Institute of Physics, the National Bureau of Standards, and the Army's Office of Ordnance Research, was reviewed in some detail by Arnold M. Bass in the March, 1955 issue of this journal. The full proceedings, containing the papers and discussions presented at the symposium, are to be published this month by the Reinhold Publishing Corporation under the title, *Temperature, Its Measurement and Control in Science and Industry, Volume II.* The first such symposium took place in 1919, and the second, sponsored by the AIP, was held in 1939. Proceedings of the latter meeting were published for the Institute in 1941 by Reinhold under the title *Temperature, Its Concept and Measurement in Science and Industry, Volume I.* This book is still a fundamental work in the field.

Volume II, dealing with the most recent temperature symposium reviews in 480 pages the developments that took place in the period between 1939 and 1954, with emphasis on the fundamental physical concepts of temperature and its measurement. Included are discussions of the subject of temperature-scale definition and of temperatures ranging from astrophysical levels to the vicinity of absolute zero. The book was edited by Hugh C. Wolfe, head of the department of physics at Cooper Union.