staff of the G.E. Research Laboratory.

Although originally trained as a chemist, his initial investigations of the chemical problems of sodium lamps led him into electronics, where he concentrated most of his later efforts. During his long career he has worked on a variety of problems concerning vacuum tubes, including the introduction of getters and the use of alkali metal vapors. He was in charge of the groups responsible for construction of General Electric's 10-Mev, 50-Mev, and 100-Mev electron accelerators, in addition to the 70-Mev synchrotron.

Under his direction, the use of hard glass envelopes for x-ray tubes was introduced and came into general use. Methods of obtaining high-voltage x-rays by means of a multisection tube, as developed by W. D. Coolidge, were applied with Charlton's help. He became a consultant in the nucleonics and radiation section of the electron physics research department in 1954.

Recent Deaths

CHARLES C. GROVE, Baldwin, N.Y.; 80; retired professor of mathematics at City College of the City of New York; 12 Jan.

JOSEPH H. HEDGES, Chevy Chase, Md.; 73; retired mining engineer who served 29 years with the U.S. Bureau of Mines; 12 Jan.

HENRY P. MANNING, Providence, R. I.; 96; professor emeritus of mathematics at Brown University; oldest member of the American Mathematical Society; 11 Jan.

EDWARD J. REARDON, Washington, D.C.; 28; associate editor and head of the Washington bureau of *Chemical and Engineering News*; 10 Jan.

HARRY B. SHAW, Washington, D.C.; 86; former U.S. Department of Agriculture plant pathologist; expert photographer; 12 Jan.

DONALD W. TAYLOR, Worcester, Mass.; 55; associate professor of soil mechanics at Massachusetts Institute of Technology; 24 Dec.

RAY E. TORREY, Amherst, Mass.; 69; professor of botany at the University of Massachusetts; 16 Jan.

SAMUEL WEISHOFF, New York, N.Y.; 66; civil engineer and a partner in Weinberger, Weishoff, Leichtman, and Quinn, New York; 12 Jan.

Education

■ The Franklin Institute, Philadelphia, Pa., and the Remington Rand UNIVAC division of the Sperry Rand Corporation have announced the signing of a contract for the installation of a complete UNIVAC Computing Center and an integrated computation exhibit in the Franklin Institute. The center will be operated by institute personnel under the supervision of Donald Houghton, chief of the analysis section in the division of electrical engineering of the Franklin Institute Laboratories. Computations will be performed for both the laboratories and the public.

■ A plan to increase the supply of well-trained high-school teachers of science will be initiated next fall at a year-long workshop at Teachers College, Columbia University. It will be especially designed for professors at colleges that prepare science teachers. A criterion for selecting fellowship candidates will be their "ability and willingness to pass on their knowledge."

The workshop will start on 1 Oct. with a group of participants that will represent between 12 and 18 colleges. The program will be financed jointly by industry and by Teachers College. The cost for the first year is $79,000, of which $20,000 will be underwritten by the college; the remaining $59,000 will be contributed by corporations, industry, and foundations. About $35,000 already has been given or pledged by some 18 organizations.

It is hoped that four additional workshops can be carried out at Columbia, for it is expected that it will take at least 5 years for the program to make itself felt. In that time workshop members will have introduced results of their work in their own institutions and will have begun to train science teachers along the lines developed at the workshop.

■ Effects of radiation on living creatures will be studied in a special course this spring at Duke University. The new one-semester course, which will begin on 1 Feb., will be conducted by the university's zoology department in cooperation with the Oak Ridge National Laboratory.

John S. Kirby-Smith, biophysicist in the biology division at Oak Ridge, will serve as visiting professor at Duke to organize and teach the course. Other Oak Ridge scientists who will be guest lecturers are John Totter, biochemist; Richard Kimball, protozoan geneticist; and Arthur Upton, pathologist.

■ The University of Wisconsin has received a grant of $249,700 from the National Science Foundation to inaugurate an experimental program designed to train high-school teachers to teach science and mathematics more effectively. The program will begin next fall with 50 high-school science and mathematics teachers, chiefly from Illinois, Indiana, Iowa, Michigan, Minnesota, Ohio, and Wisconsin. Harvey Sorum of the University of Wisconsin's chemistry faculty will direct the program.

The program will first be tried at the University of Wisconsin and at Oklahoma A. and M. College. If successful, it will be expanded to include eight institutions in the academic year 1957–58, with the idea that advanced teacher training in science would become a continuing program in which science teachers in all parts of the United States could participate.

Each teacher will receive $3000 with an additional allowance of $300 for each dependent, plus tuition fees and travel allowances. To be eligible to participate in the program, a teacher must have a bachelor's degree; he must have taught for three or more years; he must be teaching science or mathematics; he must show scholastic and teaching ability; and he must be under 46 years of age. The deadline for submission of applications *is 1 Mar.*

Grants, Fellowships, and Awards

■ Nominations for the $1000 Eli Lilly and Company research award for 1956 are invited. The award is made annually to a young microbiologist who has performed outstanding research in bacteriology or its related fields. To be eligible the nominee must be less than 35 years of age on 30 Apr. 1956. Nominations for the award should be addressed to Dr. S. E. Luria, Chairman, Nominating Committee, and sent to John Hays Bailey, Secretary-Treasurer, Society of American Bacteriologists, Sterling-Winthrop Research Institute, Rensselaer, N.Y., to reach that office *not later than 10 Feb.* Four copies of all material should be submitted and must include the following: month, day, and year of birth; curriculum; list of publications; specific reference to the research upon which the nomination is based; and supporting letters, if possible. No reprints or manuscripts should be submitted.

■ The Williams-Waterman Fund for the Combat of Dietary Diseases has announced that during the fiscal year ended 31 Oct. 1955 grants-in-aid of research in the amount of $131,573 were made. The objective of the Williams-Waterman Fund is the advancement of scientific knowledge concerning all aspects of human nutrition and metabolism, with preference being given to proposals that may be expected to make an early contribution to the nutritional well-being of humanity.

Since the principal opportunities for direct attack on nutritional deficiencies lie abroad, the fund has continued to support nutrition research in several foreign countries. At the same time,