

NBS hired 36 physicists both last year and this year. Of the technical staff of about 1600, 16% are physicists.

Work on the major task of the Bureau's mission—establishment, dissemination and improvement of standards—still continues. Roberts showed us his model of the new standard of the US volt—a small ac Josephson junction—that replaced a bank of cells as the legal standard last year (PHYSICS TODAY, October 1972, page 20). Roberts and Ambler also spoke of the need to develop standards of illumination relevant to the new types of lighting, such as lasers and light-emitting diodes. But the recurring theme of research at the Bureau, as reviewed for us by David T. Goldman, acting director of IBS, appears to be that work on measurement standards invariably leads to unexpected applications.

For example, the search for a standard of length more accurate than the wavelength of krypton has centered on the use of highly stabilized lasers. NBS now favors as a working standard the wavelength of a helium-neon laser stabilized by saturated molecular absorption in methane. Last year work with this laser led to a more precise determination of the speed of light. Further development effort has resulted in stabilized lasers, tunable over a wide frequency range, that have potential applications to pollution detection and laser chemistry. Much of the work in time and frequency standards is devoted to ways to disseminate the standards more accurately and less expensively, by satellite or commercial television. The Bureau developed technology to use the blanking interval of a television set (the black strip above and below the picture) to transmit time to an accuracy of one microsecond or better. They have since shown that the same technology could be used to caption television programs for the hard-of-hearing or non-English-speaking viewers without interfering with normal television reception. The black box necessary to receive information is estimated to cost around \$25.

The standard of mass remains the most awkward one but hope continues that research now going on will yield a more accurate measurement of Avogadro's number. This number, together with a nearly completed, accurate determination of the density of a well characterized sample of silicon, would enable the kilogram to be defined in terms of the mass of a single silicon atom. For practical applications, effort is directed to measuring the rate of mass flow in fluids. Goldman pointed out the need for a flow meter for cryogenic fluids and for more accurate meters for fluids of all types.

Goldman believes some of the most

sophisticated physics is done in the area of temperature standards and measurements. To maintain the temperature scale, the Bureau measures very accurately the fixed points of several pure metals and gases over a wide range, from 1337.58 K (the freezing point of gold) to temperatures as low as a few millikelvins. Research in practical temperature measurement is of great interest to the medical community, which needs to determine the accuracy and reliability of digital thermometers. Hospitals also rely on the Bureau's work on radiation standards and measurement of dose rate. Recently the Bureau has coordinated a program with selected hospitals to ascertain the combined effect of inadequate instrumentation and improper measuring techniques on potential exposure of patients to unnecessarily large radiation doses.

Measurement of atomic spectra now appears essential to characterization of plasmas. To assist further in the fusion program, NBS has developed hydrogen and deuterium arcs as far-ultraviolet radiation sources, is using synchrotron radiation as a source of vacuum ultraviolet (see page 17) and is developing detectors for this range of radiation. The hydrogen arc was of interest to NASA as well: It was used as a calibration standard for the measurement of the sun's corona during the recent Skylab flight. —Barbara G. Levi

Teem appointed to new post in AEC shuffle

The Atomic Energy Commission has undergone many organizational changes including the establishment of the position of Assistant General Manager for Physical Research and Laboratory Coordination. John M. Teem has been appointed to this position and is responsible for the Division of Controlled Thermonuclear Research, the Division of Physical Research and the newly created Office of Laboratory Coordination. This office will be involved with development and policy with respect to Commission laboratories. Teem will continue to serve as director of the Division of Physical Research.

Other important organizational changes show the AEC's increasing emphasis on reactor safety. A new position, the Assistant General Manager for Biomedical and Environmental Research and Safety Programs, will help to achieve greater coordination among these related areas. A new Division of Reactor Safety Research has been established at a high level in the AEC—answerable directly to the general manager. Herbert J. C. Kouts, formerly at Brookhaven National Labora-

tory, will head this new division. The Division of Reactor Development and Technology, which formerly included all reactor safety research, will retain control over safety research and development for the liquid-metal fast breeder reactor.

A new position created in the general manager's office will coordinate a broad range of activities including the coordination of relations with Congress, industry, and foreign countries with regard to energy development. John J. Flaherty of the Energy and Development Programs Division will fill the new position.

in brief

Physics in Perspective, Vol. II, Part A:

The Core Subfields of Physics can be obtained from the National Academy of Sciences, 2101 Constitution Ave, Washington, D. C. 20418, for \$13.50 per copy. Part A and the companion parts of Vol. II complete the report of the Physics Survey Committee of NAS, headed by D. Allan Bromley of Yale University.

The AEC is seeking nominations for the 1974 Ernest Orlando Lawrence Memorial Award. Inquiries and nominations, which are due by 1 October, should be directed to the Chairman, General Advisory Committee, US Atomic Energy Commission, Washington, D. C. 20545.

John S. Laughlin has been appointed to represent the American Association of Physicists in Medicine on the governing board of the American Institute of Physics. Laughlin is currently chief of the division of biophysics at the Sloan-Kettering Institute for Cancer Research in New York.

Applied Physics, a journal that reports on experimental and theoretical work in applied physics, has begun publication. Annual subscriptions are available from Springer-Verlag Inc, 175 Fifth Ave, New York, N. Y. 10010, for \$109.00.

The Atomic Energy Commission has named its Los Alamos Meson Physics Facility for New Mexico's Senator Clinton P. Anderson.

Avco Everett Research Laboratory, Inc, a new wholly-owned subsidiary of Avco Corp, has been created to continue the research work of the laboratory previously operated as a division of Avco. The chairman and chief executive officer of the new corporation is Arthur Kantrowitz, a director of Avco and of the laboratory since its founding in 1955. Harry Petschek, associate director of the laboratory since 1968, has been named president.