National Bureau of Standards: A Semicentennial

ESTABLISHED fifty years ago in response to the wishes of scientists, engineers, industrialists, and educators, the National Bureau of Standards has served the nation in many fields and in many ways. Most of its work has been in physics, mathematics, chemistry, and engineering, and has ranged from pure research to engineering.

To the scientist, NBS probably appears as the scientists' laboratory, because he is familiar with its work on constants of nature, physical properties of basic materials, fundamental standards of measurement, and methods and instruments of measurement. The engineer is familiar with developmental aspects of its work, calibration services, and such activities as structural engineering. The public sees NBS as custodian of the national standards of weights and measures. The military see NBS as a successful discoverer and developer of weapons. In World War II it played a key role in the atomic bomb project and developed the only successfully used, completely automatic guided missile, as well as the proximity fuze for nonrotating projectiles.

During these fifty years the work has grown, in keeping with the growth of science and technology. Three factors, above all others, account for the growth.

First, progress in science and technology has depended on greater precision in fundamental standards, measurement, and the values of physical constants. Advances of this kind are suggested by NBS work on Mercury 198, which affords an atomic standard of length, the "atomic" clock for time measurement, and the measurement of the absolute moment of the proton.

Second, as new fields have opened up, NBS has had to assume new responsibilities. The large expansion of the useful radio frequency spectrum during the past fifteen years required the establishment of a division devoted to problems of radio propagation, measurement standards and methods, and prediction services. Work proceeds in atomic and nuclear physics, mathematics, electronics, high polymers, and cryogenics.

Third, NBS has undertaken major programs sponsored by the Department of Defense and the Atomic Energy Commission, and these responsibilities have been increased by the national emergency.

The nature of the program is indicated by the names of the 15 scientific and technical divisions: electricity, optics and metrology, heat and power, atomic and radiation physics, chemistry, mechanics, organic and fibrous materials, metallurgy, mineral products, building technology, applied mathematics, electronics, ordnance development, radio propagation, and missile development. A sixteenth division—cryogenic engineering—is about to be activated. The staff totals some 4,000 people, of whom approximately 1,800 are professionally trained scientists and engineers. Most of the bureau's laboratories are located in Washington, but 21 field stations are maintained: the Institute of Numerical Analysis in Los Angeles, 12 radio propagation field stations, six test and inspection stations, and two proving grounds.

Major facilities have recently been acquired at Corona, California, and Boulder, Colorado. At Corona 100 acres of land and buildings having 300,000 square feet of space were transferred to NBS by the Navy, to accommodate the missile development division, as well as other activities intended to make the laboratory a well-integrated research center in electronics and related fields. The Boulder Laboratories will house the cryogenic engineering division and a radio laboratory.

An anniversary of an institution is an appropriate time to focus attention on its people. Whatever the reputation and achievements of the bureau, they belong to the members of the staff, who have contributed much to science and to the nation. Their record is to be found in the thousands of research papers and reports of the past fifty years. It is that record which ultimately describes the institution, reveals its character, and establishes its value.

E. U. CONDON

National Bureau of Standards
Washington, D. C.

SCIENCE, founded in 1880, is published each Friday by the American Association for the Advancement of Science at the Business Press, 10 McGovern Ave., Lancaster, Pa. Entered as second-class matter at the Post Office at Lancaster, Pa., January 13, 1948, under the Act of March 3, 1879. Acceptance for mailing at the special rate postage provided for in the Act of February 28, 1925, embodied in Paragraph (d-2) Section 34.40 P. L. & R. of 1948.

All correspondence should be sent to SCIENCE, 1515 Massachusetts Ave., N.W., Washington 5, D. C. The AAAS assumes no responsibility for the safety of manuscripts or for the opinions expressed by contributors. Four weeks' notice is required for change of address, and an address stencil label from a recent issue must be furnished. Claims for a missing number will be allowed only if received within 60 days from date of issue.

Annual subscriptions, $7.50; single copies, $.25; foreign postage, outside the Pan-American Union, $1.00; Canadian postage, $.50. Special rates to members of the AAAS.

The AAAS also publishes THE SCIENTIFIC MONTHLY. Subscription and advertising rates on request.