
APPENDIX B

HISTORIES OF THE NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY AND NATIONAL BUREAU OF STANDARDS

This appendix lists the published histories of the National Bureau of Standards and the National Institute of Standards and Technology. The three official agency histories are listed first, followed by other published historical accounts of NBS/NIST. The three official histories include a detailed contents list, while the other histories include an abstract only. All references include a NIST Research Library call number when available. This listing was compiled from a search of the NIST Research Library catalog and a literature search conducted in February 2010. All the authors of these works were affiliated with NBS/NIST unless otherwise noted. Much has been written about NBS/NIST and its activities over the one hundred plus years of its existence. The publications listed here are those histories we had knowledge of at the time of this publication.

Official Histories

Responding to National Needs 1969-1993: The National Bureau of Standards Becomes the National Institute of Standards and Technology

James F. Schooley

NIST Special Publication 955. November 2000

1006 pp. QC100 .U57 NO.955 2000

Table of Contents

1. Unique Institution (150 pp.)
2. Bright Prospects for NBS (171 pp.)
3. A Nation in Trouble; An Agency in Change (117 pp.)
4. A Durable Direction (171 pp.)
5. The National Bureau of Standards Becomes the National Institute of Standards and Technology: Public Law 100-418, August 23, 1988 (27 pp.)
6. Metrology Makes Room for Industrial Productivity (147 pp.)

Appendices

- A. Legislation Relating to the Organization, Functions, and Activities of the National Bureau of Standards/ National Institute of Standards and Technology (78 pp.)
- B. Histories of the National Bureau of Standards (4 pp.)
- C. NBS/NIST in the Federal Administration (4 pp.)
- D. Site Information and Maps: Gaithersburg and Boulder (6 pp.)
- E. NBS/NIST Staff, 1901-1999 (2 pp.)
- F. NBS/NIST Postdoctoral Research Associates, 1968-1993 (12 pp.)
- G. Scientific Awards Given by the Department of Commerce and NBS/NIST to Staff Members, 1968-1993 (14 pp.)
- H. Members of the Visiting Committee for NBS and the Visiting Committee on Advanced Technology for NIST (6 pp.)
- I. NBS/NIST Actual Obligations, 1967-1999 (2 pp.)
- J. NBS/NIST Publications (18 pp.)
- K. Structure and Leadership of NBS/NIST (52 pp.)

Index (17 pp.)

A Unique Institution: The National Bureau of Standards 1950-1969

Elio Passaglia, with Karma A. Beal

NBS Special Publication 925. October 1999

822 pp. QC100 .U57 NO.925 1999

Table of Contents

1. NBS at Mid-Century (70 pp.)
2. Testing Can Be Troublesome (66 pp.)
3. Divestiture and Reaffirmation, 1950-1964 (166 pp.)
4. Technological Triumph: Social Turmoil, 1964-1969 (148 pp.)

Appendices

- A. Tables (2 pp.)
- B. Acronyms Dictionary (4 pp.)
- C. Legislation Relating to the Organization, Functions, and Activities of NBS (52 pp.)
- D. NBS in the Federal Administration (2 pp.)
- E. Appropriations and Expenditures Charts (4 pp.)
- F. NBS Visiting Committee Membership (4 pp.)
- G. NBS Authorized Personnel Chart (2 pp.)
- H. NBS/NIST Publications (18 pp.)
- I. NBS Organizational Levels (88 pp.)
- J. Gaithersburg and Boulder Site Maps (6 pp.)

Bibliography (4 pp.)

Index (36 pp.)

Measures for Progress: A History of the National Bureau of Standards

Rexmond C. Cochrane

NBS Miscellaneous Publication 275. 1966

703 pp. QC100 .U6 C633 1966

Table of Contents

1. At the Turn of the Century (48 pp.)
2. Founding the NBS (1901-1910) (55 pp.)
3. Electricity, Railroads, and Radio (1911-1916) (56 pp.)
4. The War Years (1917-1919) (62 pp.)
5. The Tide of Commerce and Industry (1920-1940) (78 pp.)
6. The Time of the Great Depression (1931-1940) (66 pp.)
7. World War II Research (1941-1945) (68 pp.)
8. The New World of Science (1946-1951) (68 pp.)
9. The Crucial Decade—An Envoi (20 pp.)

Appendices

- A. Ferdinand Rudolph Hassler, First Superintendent of the Coast Survey and of Weights and Measures (12 pp.)
- B. The Metric System in the United States (10 pp.)
- C. Basic Legislation Relating to the NBS (18 pp.)
- D. U.S. Presidents, Department Secretaries, and NBS Directors (2 pp.)
- E. Members of the Visiting Committee (2 pp.)
- F. NBS Appropriations and Other Supporting Funds, 1902-55 (2 pp.)

- G. NBS Special Appropriations, 1910-1935 (2 pp.)
- H. NBS Authorized Personnel (2 pp.)
- I. Types of Staff Publications (4 pp.)
- J. Division and Section Chiefs as of July 1, 1905; Sept. 1, 1910; July 1, 1915; Jan. 1, 1920; Feb. 1, 1925; Apr. 1, 1930; Nov 15, 1934; May 1, 1940; July 1, 1945; March 1, 1950; Oct. 1, 1954; Dec. 1, 1960. (1st WW) Wartime projects as of Sept. 1, 1918 (62 pp.)
- K. NBS Publications Representing Research Highlights, 1901-1951 (18 pp.)
- L. Land Purchases at Van Ness Site (2 pp.)
- M. Samuel Wesley Stratton, Founder and First Director of the National Bureau of Standards (12 pp.)
- N. Books by NBS Staff, 1912-1960 (6 pp.)
- O. Buildings and Structures of the National Bureau of Standards (4 pp.)

Bibliography (10 pp.)

Index (21 pp.)

Other Histories

The National Bureau of Standards Comes of Age Under Samuel Stratton

James F. Schooley

IEEE Instrumentation & Measurement Magazine, Vol. 12, No. 6, pp. 25-29, November 2009

TK7881 .I285

This article highlights the increased expansion and complexity of the National Bureau of Standards (NBS) from 1904-1922. Samuel Stratton led a carefully chosen group of excellent scientists to produce the principal source of science-based measurement standards in the U.S. The list of services to the public, academia and to Federal agencies broadened. They instituted the Standard Reference Materials Service for industry, became part of the Department of Commerce, supported the physical development, production, and testing of materials needed during World War I, studied problems found in the new field of high altitude aeronautics, radio, and the dental industry, and worked in many more areas. After the war, Stratton successfully proposed that industry send their own scientists to work at NBS as guest researchers. These researchers helped to replace the many NBS staff members lost to higher industrial pay scales, thus maintaining the Bureau's progress on industry related projects.

Stratton Builds a Laboratory

James F. Schooley

IEEE Instrumentation & Measurement Magazine, Vol. 12, No. 5, pp. 29-33, October 2009

TK7881 .I285

This article is the third in a series of four that describes the establishment of the National Bureau of Standards. In this article, the remarkable success of Samuel Stratton in building an effective and far-reaching standards laboratory is discussed, as well as the outstanding personnel at the NBS and their work from 1901-1904, including the immediate and effective NBS response to the great Baltimore fire of 1904.

The Creation of the National Bureau of Standards

James F. Schooley

IEEE Instrumentation & Measurement Magazine, Vol. 12, No. 4, pp. 34-39, August 2009

TK7881 .I285

This article is the second in a series of four that describe the early years of the National Bureau of Standards. A brief description of the convention of the meter, a look at 19th century science and invention in America, and an account of the creation of the National Bureau of Standards appear in this article.

The Early Years of the National Bureau of Standards: Born to Measure

James F. Schooley

IEEE Instrumentation & Measurement Magazine, Vol. 12, No. 3, pp. 8-12, June 2009

TK7881 .I285

In this first of 4 articles about the early history of the National Bureau of Standards (NBS), an overview is provided of the state of standards in America during the first decades of the country's existence, some of the origins of the scientific approach to metrology, and the growth of the NBS through the contributions of some of the outstanding people who participated in metrology.

The History and Resources of the National Institute of Standards and Technology

Evelyn Constance Powell (Rensselaer Polytechnic Institute. Troy, NY)

Science & Technology Libraries, Vol. 25, No. 3, pp. 5-19, April 2005

Z695 .T3 S3 V.25, NO.3 2005

This paper is a historical account of the agency of the U.S. government charged with setting the nation's physical measurement standards. Originally named the National Bureau of Standards, it is now known as the National Institute of Standards and Technology reflecting its recent additional mandate to increase U.S. competitiveness. The contributions this agency has made in improving the quality of manufacturing and measurement in the United States are described.

Significant Papers from the First 50 Years of the Boulder Labs

Edited by M. E. DeWeese, M. A. Luebs, H. L. McCullough

NISTIR 6618. August 2004

QC100 .U56 NO.6618 2004

The Department of Commerce Boulder Labs were dedicated on September 14, 1954. This volume presents a snapshot of research accomplishments in the half century since then. The papers collected in this publication represent the most significant work of all the agencies of the Boulder Labs.

Building and Fire Research at NBS/NIST: 1975-2000

Richard N. Wright

NIST Building Science Series 179. December 2003

TA435 .U58 NO.179 2003

This history summarizes the technical accomplishments of the NIST building and fire research programs and their impacts, the existential and management challenges faced by the programs, and the visions and efforts of the staff.

Responding to National Needs: 1994-2001, Supplement to Appendices

Diane Cunningham, Paula Deutsch, Julian M. Ives, Sandra Lee Kelley, Keith Martin, and John Norris

NIST Special Publication 955 Supplement. July 2002

QC100 .U57 NO.955 2002 JUL SUPP TO APPEN

Information contained in this publication updates and expands the data presented in the Appendices of NIST SP 955, Responding to National Needs, The National Bureau of Standards Becomes the National Institute of Standards and Technology 1969-1993, by James F. Schooley, November 2000.

A Brief History of Gaseous Dielectrics Research at NIST

J. K. Olthoff and L. G. Christophorou

Proceedings of the Annual Conference on Electrical Insulation and Dielectric Phenomena (Waterloo, Canada, Oct. 14-17, 2001). pp. 281-284. October 2001

Researchers at the National Institute of Standards and Technology (NIST) have investigated gaseous dielectrics for more than 20 years. Significant technical accomplishments in this area include a detailed understanding of the physics and chemistry of corona-induced decomposition of SF₆, the determination of important collisional cross sections for dielectric gases, the development of conditional detection techniques for partial discharges, and assessment of potential replacement gases for SF₆. These and other research areas will be highlighted in this brief history of gaseous dielectrics research at NIST.

NIST Centennial Sessions, August 2, 2001

NISTIR 6769. August 2001

QC100 .U56 NO.6769

Contains presentation slides from the National Conference of Standards Laboratories International Symposium to celebrate NIST's Centennial.

100 Years of Optical Science and Metrology at NIST

William R. Ott

Proceedings of the SPIE .Vol. 4450, pp. 1-14. August 2001

The National Bureau of Standards (NBS) was formed by Congress 100 years ago. Five areas of optics have been important elements of the Bureau's research for almost its entire history: atomic and molecular spectroscopy; radiometry; colorimetry; optical properties of materials; and, for the last 40 years, laser science and applications. Research and measurement services have supported national programs ranging from the manufacture of high quality optical glass during two World Wars to the calibration of spectrometers on the Hubble Space Telescope. Pioneers in optical science and metrology at NBS/NIST include many well known scientists, ranging from William Coblentz, who established the field of optical radiometry during his 40 year career from 1905-1945, to William Phillips, who received the Nobel Prize in Physics in 1997 for his research on the laser cooling and trapping of atoms.

Automating the Future: A History of the Automated Manufacturing Research Facility, 1980-1995

Joan M. Zenzen

NIST Special Publication 967. March 2001

QC100 .U57 NO.967

A history of NIST's Automated Manufacturing Research Facility (AMRF) with a focus on the people who conceived the idea for the AMRF and how they made it a reality.

Celebrating One Hundred Years of Chemistry at the National Institute of Standards and Technology

Compiled and Edited by Hratch G. Semerjian, William F. Koch, Ellyn S. Beary, Michael S. Epstein, and Gregory B. Vasquez

NISTIR 6388. September 2000 and March 2001 eds.

QC100 .U56 NO.6388 2000

Provides an overview of historically important NIST work in chemistry as well as contemporary research performed by the Chemical Science and Engineering Laboratory.

A Century of Excellence in Measurements, Standards, and Technology: A Chronicle of Selected NBS/NIST Publications, 1901-2000

David R. Lide, Editor

NIST Special Publication 958. January 2001

QC100 .U57 NO.958 2001

This book consists of short accounts describing 102 representative publications that had a significant impact during NIST's first century.

NIST at 100: Foundations for Progress

Laura Ost, Virginia Covahey, Kelly Talbott, Christina Robinson, Linda Joy, Susan Ford, and Sharon Shaffer

NIST Special Publication 956. October 2000

QC100 .U57 NO.956 2000

Highlights of research accomplishments and their impacts from NIST's first 100 years.

History of NIST's Contributions to the Development of Standard Reference Materials and Reference and Definitive Methods for Clinical-Chemistry

R. Schaffer, G. N. Bowers, and R. S. Melville

Clinical Chemistry. Vol. 41, No. 9, pp. 1306-1312. September 1995

RB1 .C55

The issuance of cholesterol as a Standard Reference Material (SRM) in 1967, started the National Institute of Standards and Technology (NIST; then named the National Bureau of Standards) on a major effort to help clinical laboratories establish and improve the quality of measurements they make. In working with clinical laboratory scientists to establish Reference Methods (RMs) for measuring the analytes, NIST developed Definitive Methods (DMs) to use for evaluating RM accuracy and then used the DMs for assigning analyte values to its SRMs. The development of SRMs and DMs is discussed.

NBS/NIST, A Historical Perspective: A Symposium in Celebration of NIST's Ninetieth Anniversary, March 4, 1991

Edited by Karma A. Beal

NIST Special Publication 825. April 1992

QC100.U57825 1992

A collection of talks and presentations in celebration of NIST's 90th year.

Gauging the Nation: Samuel Wesley Stratton and the Invention of the National Bureau of Standards

Nelson R Kellogg (Johns Hopkins University, Baltimore, MD)

Ph. D. thesis, Johns Hopkins University, 1992.

The Bureau of Standards had become a wholly different agency from what was urged before Congress in 1900 and 1901 during the hearings to establish the NBS. One of the principal goals of this essay is to apprehend how this evolution took place, and to set out the dynamics of the interplay among the NBS administration, outside interest groups, and Congressional overseers in the growth and successive redefinitions of the nation's premier physical laboratory. The laboratory culture is also explored, as well as progressive educational initiatives. Finally, administrations and policies are briefly surveyed with an eye toward the precedent of the Stratton years.

NBS-INA—The Institute for Numerical Analysis—UCLA 1947-1954

Magnus R. Hestenes and John Todd
NIST Special Publication 730. August 1991
QC100 .U57 no.730 1991

This report is a history of the Institute for Numerical Analysis (INA) with special emphasis on its research program during the period 1947 to 1956. The Institute for Numerical Analysis was located on the campus of the University of California, Los Angeles. It was a section of the National Applied Mathematics Laboratories, which formed the Applied Mathematics Division of the National Bureau of Standards.

A Brief History of Near-Field Measurements of Antennas at the National Bureau of Standards

R. C. Baird, A. C. Newell, and C. F. Stubenrauch
IEEE Transactions on Antennas and Propagation. Vol. 36, No. 6, pp. 727-733. June 1988
TK7800 .I2

The US National Bureau of Standards (NBS) played a pioneering role in the development of practical planar near-field antenna measurement techniques. A brief history is presented of that role, which began with theoretical studies to determine corrections for diffraction in a microwave measurement of the speed of light. NBS contributions to the development of nonplanar near-field measurement theory and practice are also described.

Achievement in Radio: Seventy Years of Radio Science, Technology, Standards, and Measurement at the National Bureau of Standards

Wilbert F. Snyder and Charles L. Bragaw
NBS Special Publication 555. October 1986
QC100 .U57 NO.555 1986 V1986

This historical account of NBS' achievements in radio is a semi-popular presentation, yet gives an extensive treatment of the technical features of 70 years of radio science in both Washington and Boulder.

The National Academy of Sciences—National Research Council's Postdoctoral Research Associateship Program: An Account of its Origin and Early History at the National Bureau of Standards

Joseph Hilsenrath
NBS Grant Contactor Report 85-500. September 1985
QC100 .U6N25 no.85-500 1985

This report reviews the origins and early history of the National Academy of Sciences-National Research Council's Postdoctoral Research Associateship Program at the National Bureau of Standards. It describes in detail the intra- and interagency discussions and negotiations that led to the program's creation.

The National Bureau of Standards Office of Recycled Materials, 1976-1982

Edited by Harvey Yakowitz
NBS Special Publication 662. September 1983
QC100 .U57 no.662 1983

A report of the activities and accomplishments of the NBS Office of Recycled Materials.

X-Ray Measurements and Protection, 1913-1964: The Role of the National Bureau of Standards and the National Radiological Organizations

Lauriston S. Taylor and W. Reeves Tilley
NBS Special Publication 625. December 1981
QC100 .U57 no.625 1981

An account of the initial U.S. concerns with, and subsequent efforts to cope with, the safe use of ionizing radiation is given. National interest was focused in the National Bureau of Standards, where radiation programs were established.

A History of Walkway Slip-Resistance Research at the National Bureau of Standards

Sanford C. Adler and Brian C. Pierman
NBS Special Publication 565. December 1979
QC100 .U57 no.565 1979

This report summarizes NBS research in the area of walkway and shoe slip-resistance measurement from 1924-1979.

NBS Interagency Transducer Project, 1951-1979: An Overview

Paul S. Lederer
NBS Technical Note 1110. August 1979
QC100 .U5753 no.1110 1979

Between 1951 and 1979, the National Bureau of Standards was engaged in a continuing project to study the performance of sensory transducers, primarily those used in telemetry. This report provides a brief description of the background and history of the project, its objectives, some of the techniques and specialized facilities developed and used, and of some of the publications that have been issued from the project.

A Ten Year History of National Bureau of Standards Activities Under the Brooks Act (Public Law 89-306)

Edited by Grace Burns and Shirley Radack
NBSIR 76-1113. February 1977
QC100 .U56 no.76-1113 1977

This report presents the principal findings of a National Bureau of Standards task force which reviewed the activities and accomplishments of NBS from 1965 to 1975 under Public Law 89-306, the Brooks Act. The Brooks Act is concerned with the effective use of computers by the Federal Government and assigns the National Bureau of Standards responsibility for providing scientific and technological advisory services for automatic data processing, developing uniform Federal ADP standards and undertaking necessary research in computer science and technology. Program activities and a history of funding for each of these three major responsibilities are covered. Also included are case studies of individual program initiatives.

75 Years of Physics at NBS

Ernest Ambler
Physics Today, Vol. 29, No. 8, pp. 33-38, August 1976
QC1 .P658

This historical survey describes the contributions made to the field of physics by the National Bureau of Standards since its inception in 1901. Four broad areas are emphasized: nuclear physics, thermal physics (including cryogenics), spectroscopy and fundamental constants.

Hydrocarbons for Fuel: 75 Years of Materials Research at NBS

George T. Armstrong
NBS Special Publication 434. May 1976
QC100 .U57 no.434 1976

In this historical review, the NBS work on hydrocarbons is discussed in terms of the three major classes of natural hydrocarbonaceous fuels: natural gas, petroleum, and coal. The work done on the measurement of properties of the pure components has included measurement of the values of the properties themselves and development of practical and accurate measurement procedures and instruments. In addition, combustion energies, densities, viscosities, vapor pressures, refractive indices, elemental compositions and other parameters have been determined for complex fuel mixtures and correlated to find methods of estimating properties. Extensive standard reference data tables have been compiled and a number of standard reference materials have been developed.

NBS: An Overview

NBS Special Publication 367. 1966 and 1972 eds.
QC100 .U57 no.367

The publication presents an overview of the Bureau's history, programs, and major contributions, along with individual chapters detailing the programs of each of the four NBS Institutes: Institute for Basic Standards; Institute for Materials Research; Institute for Applied Technology; and Institute for Computer Sciences and Technology.

Activities of the National Bureau of Standards, 1945-1970

Compiled by Churchill Eisenhart
National Bureau of Standards. March 1971
QC100.U6E35 1971

A chronology of principal administrative and legislative actions affecting the National Bureau of Standards, including some notable operational activities and highlights of the Bureau's activities affecting science and technology.

Building Research at the National Bureau of Standards

Paul R. Achenbach
NBS Building Science Series 0. October 1970
TA435 .U58 no. 0

The history of building research and technology at the National Bureau of Standards is presented in this volume. The participation of the Bureau in the application of science and engineering to building materials and components played an early and important role in the development of steel and reinforced concrete as structural materials; in the understanding of the physics and chemistry of cement, lime and gypsum; in the evaluation of the fire properties of building components; in safe plumbing practices; in laboratory evaluation of the effects of weather on deterioration of building materials; and in measurement of the heat and sound transmission properties of building materials and constructions.

U. S. Statutes Relating to the National Bureau of Standards, 1901-1966

Compiled by Walter W. Weinstein and Margaret Brandenbourger
National Bureau of Standards. 1968
QC100 .U528 1968

A legislative history of the National Bureau of Standards to 1966.

Early History of Optics at National Bureau of Standards

Irvine C. Gardner

Applied Optics, Vol. 6. No. 1, pp.1-8. January 1967

QC350 .O62

The early history of the establishment of the National Bureau of Standards and of its work in optics is surveyed, as evidenced by its publications appearing in the period 1901-1925.

A History of Vertical-Incidence Ionosphere Sounding at the National Bureau of Standards

Sanford C. Gladden

National Bureau of Standards Technical Note 28. September 1959

QC100 .U5753 no.28 1959

A chronological history of the development of vertical incidence ionosphere sounding at the National Bureau of Standards through 1957.

The Story of Standards

John Perry (Management Consultant, Freelance Writer)

Funk & Wagnalls, New York, 1955

QC100 .P42 1955

A popular narrative on the Bureau of Standards and the history of standardization.

National Bureau of Standards: A Semicentennial

Lyman J. Briggs and Edward U. Condon

The Scientific Monthly, Vol. 73, No.3, pp. 166-182. September 1951

QC100 .U6 N31 1951

This paper discusses the early work and contemporary programs of the National Bureau of Standards.

Visitors' Manual of the National Bureau of Standards: A Brief Synopsis of its History, Functions, and Laboratory Facilities

Hugh G. Boutell

NBS Miscellaneous Publication 160. 1929, 1932, 1935, and 1937 eds.

QC100 .U57 no.160

A brief guide to the history, functions, and facilities of the Bureau.

The Bureau of Standards: Its History, Activities, and Organization

Gustavus A. Weber (Institute for Government Research. Washington D.C.)

Johns Hopkins Press, 1925

QC100 .U58 W4 1925

An Institute for Government Research monograph on the history, activities, and organization of the National Bureau of Standards.

War Work of the Bureau of Standards

NBS Miscellaneous Publication 46. April 1921
QC100 .U57 NO.46 1921

An account of the Bureau's work during World War I.

The Story of the Establishment of the National Bureau of Standards

Henry S. Pritchett (President, Massachusetts Institute of Technology. Cambridge, MA)
Science, Vol. 15, No. 373, pp. 281-284. February 21, 1902
Q1 .S35

The passage of a bill in Congress providing for the establishment of a National Bureau of Standards came as a surprise to many. As the work of this bureau ought in the future to have a large bearing upon science and industry it may not be without interest to record the circumstances under which this legislation was effected, and to bring to the attention of those who in the future may be interested in the matter the names of a few men who, though not men of science, gave their time and labor heartily in the interest of this work.

Source: NIST Research Library Online Catalog and literature search performed in February 2010.