

Department of Commerce and Labor

BUREAU OF STANDARDS

Washington

1903
BUREAU CIRCULAR NO. 1*December 1, 1903.*

ORGANIZATION OF THE BUREAU.

By an act of Congress approved March 3, 1901, the Office of Standard Weights and Measures of the Treasury Department was, on July 1, 1901, superseded by the Bureau of Standards. The Bureau was transferred to the Department of Commerce and Labor July 1, 1903, by the act establishing that Department.

The functions of the Bureau of Standards are as follows: The custody of the standards; the comparison of the standards used in scientific investigations, engineering, manufacturing, commerce, and educational institutions, with the standards adopted or recognized by the Government; the construction, when necessary, of standards, their multiples and subdivisions; the testing and calibration of standard measuring apparatus; the solution of problems which arise in connection with standards; the determination of physical constants and the properties of materials. The Bureau will also furnish such information concerning standards, methods of measurement, physical constants, and the properties of materials as may be at its disposal, and is authorized to exercise its functions for the Government of the United States, for State or municipal governments within the United States, for scientific societies, educational institutions, firms, corporations, or individuals engaged in manufacturing or other pursuits requiring the use of standards or standard measuring instruments.

For all comparisons, calibrations, tests, or investigations, except those performed for the Government of the United States or State governments, reasonable fees will be charged.

SITE.

The act of Congress establishing the Bureau of Standards provided for the purchase of a site and the erection of suitable laboratories. The site selected consists of about $7\frac{1}{2}$ acres in the most desirable section of the suburbs of Washington, in a neighborhood particularly free from mechanical and electrical disturbances, but sufficiently easy of access.

PERMANENT LABORATORIES.

The construction of the permanent buildings has been begun and will be pushed as rapidly as possible. Two buildings are being erected. The Physical Laboratory will be constructed and equipped with special reference to the work of investigation and testing of standards and measuring instruments of all kinds. The Mechanical Laboratory will contain the power and general electrical machinery, instrument shop, refrigerating plant, storage batteries, dynamos for experimental purposes, and laboratories for electrical measurements requiring heavy currents.

TEMPORARY LABORATORIES.

During the present year the quarters occupied by the Bureau consist of eight rooms on the third floors of the middle and south Butler buildings and eight rooms, formerly used by the office of Standard Weights and Measures, in the Coast and Geodetic Survey building. A four-story residence building at 235 New Jersey avenue SE. was also secured, which provided space for the organization of several new lines of work.

PRESENT SCHEDULE OF TESTING.

For the present the work of the Bureau will be limited to the comparison of the following standards and measuring instruments, either for commercial or scientific purposes:

LENGTH MEASURES.

Standard bars from 1 to 10 feet, or from 1 decimeter to 5 meters; geodetic base bars; bench standards; leveling rods; finely graduated scales; stage micrometers; engineers' and surveyors' metal tapes, from 1 to 400 feet or from 1 to 100 meters; standard gauges; manufacturers' standard measuring bars and machines.

WEIGHTS.

Weights from 0.01 grain to 50 pounds, or from 0.1 milligram to 20 kilograms.

CAPACITY MEASURES.

Capacity measures from 1 fluid ounce to 5 gallons, or from 1 milliliter to 10 liters; cubic foot bottles; chemical measuring apparatus.

POLARISCOPIC APPARATUS.

Scales of polariscopes, quartz-control plates and other accessory apparatus.

HYDROMETERS.

Alcoholometers, salinometers, and saccharometers and other hydrometers, whose scales correspond to densities between 0.60 and 2.00.

THERMOMETERS.

The determination of the corrections of mercurial thermometers in the interval from -35° centigrade (about -30° Fahrenheit) to $+550^{\circ}$ centigrade (about $1,000^{\circ}$ Fahrenheit), including the verification of clinical thermometers.

The standardization of thermo-couples, electrical resistance pyrometers, optical pyrometers, and other high temperature measuring instruments.

The determination of melting points of metals, oils, and minerals.

PHOTOMETRIC STANDARDS.

Incandescent photometric standards.

ELECTRICAL INSTRUMENTS.

Verification of resistance standards of the following values: 1, 10, 100, 1,000, 10,000, 100,000 ohms, and the decimal subdivisions 0.1, 0.01, 0.001, 0.0001, 0.00001.

Determination of temperature coefficients for the same.

Resistance boxes, potentiometers, ratio coils, and other resistance apparatus.

Resistance standards for current measurement; resistances above 0.00001 ohm; current carrying capacity below 1,000 amperes.

Determination of electrical properties of materials, conductivity, temperature coefficients, thermo-electric power.

Standards of electromotive force—Clark, Weston, and other standard cells.

Direct and alternating current measuring apparatus—millivoltmeters, voltmeters up to 2,000 volts; ammeters up to 1,000 amperes; wattmeters and watthour meters up to 1,000 volts and 1,000 amperes.

Condensers—measuring capacities and testing for absorption and insulation.

Inductances—determining the values of standards of inductance, and of the inductances of instruments.

SPECIAL DIRECTIONS.

IDENTIFICATION MARKS.—Instruments and the packages in which they are shipped should both be plainly marked to facilitate identification, preferably with the *name of the manufacturer or shipper*, and a *special reference number* given to each article, and this number should be referred to in the correspondence concerning the test.

SHIPPING DIRECTIONS.—Instruments should be securely packed in cases or packages which may be used in returning them to the owner. In all cases transportation charges are payable by the party desiring the test, and should be prepaid.

ADDRESS.—Articles should be addressed simply “Bureau of Standards, Department of Commerce and Labor, Washington, D. C.,” and not to members of the Bureau staff. Delays incident to other forms of address will thus be avoided.

Articles delivered in person or by messenger should be left at the office of the Bureau and should be accompanied by a written request for the verification.

FORM OF CERTIFICATE.

The certificate furnished by the Bureau of Standards will contain the following data:

- (a) Description of article or instrument.
- (b) Bureau of Standards test number, where allowed.
- (c) Name of party for whom instrument is compared.
- (d) Temperature at which the comparison is made.
- (e) Other conditions of the test.
- (f) Corrected value of each space compared at indicated temperature.
- (g) Date of certification.
- (h) Seal of the Bureau and the signature of the Director.
- (i) Special remarks when necessary.

It is the desire of the Bureau to cooperate with manufacturers, scientists, and others in bringing about more satisfactory conditions relative to weights and measures in the broader meaning of the term, and to place at the disposal of those interested such information relative to these subjects as may be in its possession.

All communications should be addressed “Bureau of Standards, Department of Commerce and Labor, Washington, D. C.”

S. W. STRATTON,
Director.

Approved:

GEO. B. CORTELYOU,
Secretary.

