

in expanding the work in weights and measures into a national standards bureau, the work in the field of weights and measures had more opportunities for growth. Mr. Louis A. Fischer, Chief of the Division of Weights and Measures from the organization of the National Bureau of Standards in 1901 until his death in 1921, probably was the first man in the United States to undertake the promotion of weights and measures supervision on a national basis. In 1902, Mr. Fischer directed scattered inspections of weighing and measuring devices and transactions involving quantities in several of the larger cities in the State of New York. The purpose of these visits was to determine what amount of protection the buying public was receiving against short weight and short measure in purchases. As a result of this investigation, as well as the increasing number of complaints being received in Washington, staff members of the National Bureau of Standards decided in 1904 to call a meeting of weights and measures officials and other officers of the State governments to discuss ways and means of affording to the public adequate supervision over weights and measures in everyday transactions.

This meeting was held in Washington in 1905, and, although invitations went to all States, the meeting was attended by only eleven persons, representing eight States, the District of Columbia, and the National Bureau of Standards. As it turned out, this was the first National Conference on Weights and Measures, and was the inauguration of meetings that have been held annually with exceptions due to war or other national emergency. Interest, attendance, and participation in the Conferences, as well as the influence of the Conference, have increased steadily. The registered attendance at the 47th meeting, held in

Washington during June 1962, was 420. Out of the National Conference on Weights and Measures has come the basis for uniformity of weights and measures law and enforcement activities.

The delegates to the first Conference and to all subsequent meetings have had as their principal aim the application of uniform and satisfactory standards of measurement to everyday commercial transactions.

The need for uniformity of State weights and measures legislation was one of the principal reasons for the first national meeting of weights and measures officials and was considered at that time. As the result of a resolution of the second meeting, a Model State Law on Weights and Measures was composed. In the year 1911, after detailed and extensive discussions, the Sixth National Conference adopted, with a few minor changes and additions, a Model Law that had been drafted at the National Bureau of Standards. Since that time this document has been subject to continued study and revisions, additions, and deletions have been made as needed. Thus was made available to the States a model upon which individual State legislation could be patterned.

Supplemental to the Model Law are codes of specifications, tolerances, and regulations for commercial weighing and measuring devices which receive especially critical attention, because many of the States officially adopt these requirements by reference or citation with cumulative provision, resulting in their being given legal status upon adoption by the Conference and publication by the National Bureau of Standards. Manufacturers of equipment are guided in their engineering designs, and essentially all weights and measures inspectors align their procedures, according to the Conference codes.

8. Refinement of Values for the Yard and Pound

When the National Bureau of Standards began its work in 1901 the principal units of weights and measures in the U.S. customary system were defined as follows:

$$1 \text{ yard} = \frac{3600}{3937} \text{ meter}$$

$$1 \text{ pound} = 0.453\,592\,427\,7 \text{ kg}$$

$$1 \text{ gallon} = 231 \text{ cubic inches}$$

$$1 \text{ bushel} = 2\,150.42 \text{ cubic inches}$$

These definitions remained unchanged for 58 years, and the last two are still the official values.

The precision requirements in length measurements increased greatly during these years, and the differences between the U.S. inch and the British inch became especially important in gage-block standard-

ization. The difference between the U.S. pound and the British pound was also rather annoying. As a result of many years of preliminary discussion, the directors of the national standards laboratories of Australia, Canada, New Zealand, South Africa, the United Kingdom, and the United States entered into agreement, effective July 1, 1959, whereby uniformity was established for use in the scientific and technical fields. The equivalents 1 yard = 0.9144 meter (whence 1 inch = 25.4 millimeters) and 1 avoirdupois pound = 0.453 592 37 kilogram (whence 1 grain = 0.064 798 91 gram and 1 avoirdupois ounce = 28.349 523 125 grams) were adopted for each of these national laboratories. It will be noted from the U.S. announcement (see appendix 5, p. 28) that these same equivalents will also be used in this country in trade.