mation Systems Division, Ramo-Wooldridge Corporation; Curtis G. Benjamin, president of McGraw-Hill Book Company, Inc.; Boyd Campbell, president of the Mississippi School Supply Company; John S. Millis, president of Western Reserve University; L. Quincy Mumford, the Librarian of Congress, Congress (ex-officio); Frank B. Rogers, director of the National Library of Medicine; Foster E. Mohrhardt, director of the library, U.S. Department of Agriculture (ex-officio); Burton W. Adkinson, head of the Science Information Service (ex-officio).

International Yard and Pound

Agreement has been reached between the national standards laboratories in British Commonwealth countries and the United States on international values for the yard and the pound, fundamental units in the British system of weights and measures. The following joint announcement was issued on 1 January.

"The directors of the following standards laboratories—Applied Physics Division, National Research Council, Ottawa, Canada; Dominion Physical Laboratory, Lower Hutt, New Zealand; National Bureau of Standards, Washington, United States; National Physical Laboratory, Teddington, United Kingdom; National Physical Research Laboratory, Pretoria, South Africa; National Standards Laboratory, Sydney, Australia—have discussed the existing differences between the values assigned to the yard and to the pound in different countries. To secure identical values for each of these units in precise measurements for science and technology, it has been agreed to adopt an international yard and an international pound having the following definition: the international yard equals 0.9144 metre; the international pound equals 0.45359237 kilogramme.

"It has also been agreed that, unless otherwise required, all nonmetric calibrations carried out by the above laboratories for science and technology on and after July 1, 1959, will be made in terms of the international units as defined above or their multiples or submultiples."

The international inch, derived from the international yard, is exactly equal to 25.4 millimeters. This value for the inch has been legally adopted by Canada. In addition, this value was approved by the American Standards Association for inch-millimeter conversion for industrial use in 1933 (ASA Standard B48.1-1933), was adopted by the National Advisory Committee for Aeronautics in 1952, and has been adopted by many standardizing organizations in other countries.

At present, for the calibration of line standards and end gages having nominal lengths expressed in inches, the National Bureau of Standards is using the inch defined by the Mendenhall order [T. C. Mendenhall, "Fundamental standards of length and mass," *U.S. Coast and Geodetic Survey Bull. No. 26* (1893)]. The values corresponding to this order are approximately

1 yd = 0.91440183 meter
1 in. = 25.4000508 millimeters

These are derived from the exact relation

1 yd = (3600/3937) meter

The inch used by the National Physical Laboratory of the United Kingdom for its calibrations is defined by the equation

1 in. = 25.399956 millimeters

It will be noted that the international inch is approximately 2 parts per million shorter than the inch presently used by the National Bureau of Standards and somewhat less than 2 parts per million longer than the inch now used by the National Physical Laboratory. To avoid possible confusion, during the transition period, National Bureau of Standards calibrations of length or mass expressed in English units will embody a statement indicating clearly the unit which has been used if the choice introduces a significant difference in the calibration values. Furthermore, if the accuracy of the calibration is such that the certified values would be the same in either international units or the older units, the qualifying adjective *International* will not be used—that is, the values will be expressed, for example, as so many inches or pounds.

The Coast and Geodetic Survey has requested the following exception, with which the National Bureau of Standards concurs.

"Any data expressed in feet, derived from and published as a result of geodetic surveys, shall tacitly bear the relationship: 1 foot equals (1200/3927) international meter. This relationship shall continue in being, for the purpose given herein, until such a time as it becomes desirable and expedient to readjust the basic geodetic survey networks in the United States, after which the ratio, as implied by the international yard, shall apply." This unit shall be referred to as the American Survey Foot. Inasmuch as there is little or no interchange of survey data, where the foot measurements are used, with industrial and scientific data, where the international units will be used, it is anticipated that no confusion will result from this dual usage. For example, base line surveys which might enter into a velocity of light determination would invariably be made in terms of meters.

The values of the pounds currently in use in the United States, United Kingdom, and Canada are as follows:

1 U.S. pound =	0.4535924277	kilogram
1 British pound =	0.453592338	kilogram
1 Canadian pound =	0.45359243	kilogram
1 International pound =	0.45359237	kilogram

The relative differences in the various pounds are substantially less than those in the yards, but since masses can be measured with greater accuracy than lengths, the differences can be significant. The present British pound is about 1 part in 10 million smaller than the international pound, whereas the U.S. and Canadian pounds are about 1.5 parts in 10 million larger.

The conversion factor for the international pound was selected so as to be exactly divisible by 7 to give the following value for the grain:

1 International grain = 0.06479891 gram

The grain is the common unit in avoirdupois, apothecary, and troy pounds. There are 7000 grains in the avoirdupois pound, and 5760 grains in both the apothecary and troy pounds.

The standard U.S. gallon and the Imperial gallon are so substantially different that a compromise international gallon was not practicable. The U.S. gallon is defined as equal to 231 cubic inches. On the other hand, the Imperial gallon is defined as the volume of 10 pounds of water under specified standard conditions. A fairly exact relationship is

1 Imperial gallon = 1.20094 U.S. gallons

Science in 1958

Year-end editorials have included a number on the significance of 1958 in the history of scientific development. The 4 January *New York Times* published the following.

The year 1958 "will go down as one of extraordinary scientific advance. The reason is that it saw the completion of the International Geophysical Year. . . . In this enterprise the U.S. and Russia sent satellites aloft with instruments to record space data. In addition, 30,000 scientists from sixty-six countries, manning more than 4,000 observation stations, amassed new knowledge of the earth, its crust, its oceans, its magnetic field, its belts of radiation, and the sun and space beyond.

"The satellite programs had military significance as part of the race for supremacy in missiles and space exploration. As 1958 began, the United States labored under the psychological burden of Russia's head start. Then came suc-