Measures for measures

Cooks who like to measure their ingredients accurately will be interested by news that scientists are meeting at the Royal Society to discuss how best to measure a kilogram.

At present, this unit is defined by a lump of platinum cast in 1879 and located in a safe at the office of the International Committee for Weights and Measures in Paris. But this block of metal has lost 50 micrograms - equal to a grain of sand - since it was cast and scientists are seeking a way of expressing a kilogram in terms of the fundamental constants of nature, rather than a man-made object.

The kilogram is not the only unit of measurement that has witnessed calls for greater accuracy. Since 1983, the metre has been the "length of the path travelled by light in vacuum during a time interval of 1/299,792,458 of a second". But before this it was calibrated as the distance between two "Xs" on a metal bar (90% platinum, 10% iridium) kept in Paris at a temperature of 0C. Before 1889, the metre was judged to be one ten-millionth of the distance from the equator to the north pole.

Since 1967, a second has been classified as the "duration of 9,192,631,770 periods of the radiation corresponding to the transition between the two hyperfine levels of the ground state of the caesium 133 atom". You can see why they judged "second" to be snappier. Before atomic clocks, the second was the length of a mean solar day divided by 86,400 - or, rather, 24 (hours) divided by 60 (minutes) divided by 60 (seconds).

The problem was, our days are lengthening ever so slightly.

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