

God's Grace to Us in Weights and Measures, Part 1

Professor De Boer

Recorded 10/17/2013

How do you know that when you buy an ounce of gold you are really getting an ounce and not a smidgen less? Or, for that matter, when you buy a gallon of gasoline, that you are really getting a full gallon of gasoline? The point is, we need to know what an ounce is, what a gallon is, and likewise, we need definitions of all the units of measure that we use.

There are international committees that manage the definitions of just seven so-called "basic units." All the nations of the world—and I mean all of them—formally and legally accept the seven definitions of units made by international committees. The seven basic units are

- 1.) The kilogram (for mass),
- 2.) The second (for time),
- 3.) The kelvin (for temperature),
- 4.) The meter (for length),
- 5.) The ampere (for electric current),
- 6.) The mole (for the number of particles in a substance), and
- 7.) The candela (for luminous intensity).

So what's a mile, you might ask? A statute mile, to be precise, is 5280 feet. So what's a foot? A foot is 12 inches. So what's an inch? An inch is 0.0254 meters. So there you have it. If you do the math, a mile is essentially defined as 1609.344 meters, exactly. And meters are one of the seven basic units. Every non-basic unit you can think of is defined by the nations through a chain of unit conversions, always ultimately reverting back to the seven basic units. It's amazing. Ounces of carrots and carats of diamonds—volts of electric potential, and vars of electric power, rems of radiation and rhes of fluidity, you name it—all ultimately defined by the seven basic units. Russ Roulett, a retired professor of mathematics at The University of North Carolina at Chapel Hill keeps an on-line dictionary of units of measure. There must be thousands of units of measure listed in his dictionary—and all ultimately revert back to the seven basic unit. The few entries in his dictionary that do not are simply multipliers, not really units of measure in themselves. For example, a "dozen" just means "times twelve." A "dozen" is not really a unit by itself. So there are these seven special units upon which all other units now depend, and the seven definitions have absolutely uniform international agreement!

On olden times there was for example a designated chunk of rock or metal kept by some official as a nation's standard mass, called, say, a "shekel." Likewise there was a town clock or similar instrument that was taken as the town's definition of time. There was a standard yardstick against which all other lengths were measured, and so forth. One special artifact to define each unit of measure. In modern terms we call these special standard artifacts, "prototype units." Think of the responsibility of caring for a prototype unit. If it is a clock, it must never be allowed to stop or freeze up due to cold weather or lack of oil. And just in case, you probably need to maintain a number of back-up prototype units (or backup clocks). If it is a yardstick, it must never be scuffed or bent or cracked since these could change its length. Taking care of prototype units is very tedious and very serious business. Each prototype unit must be attended by a sort of high-priesthood to take care that prototype unit remains precisely unchanged.

Making and maintaining prototype units in Israel during Old Testament times was a duty of the temple priests. You can read more about this in Exodus 30:11-16. The Bible makes it clear that keeping weights

and measures honest is very important to the LORD. In a world corrupted by sin, it is amazing that nations are not squabbling over the definitions of units of measure. I doubt that this cooperation is happening because we are naturally so nice to each other. This cooperation is a gift from the LORD. He has created the world in such a way that orderly standard weights and measures are possible, and sin in this area of standards is restrained. Proverbs 16:11 says, quote, “Honest scales and balances are from the LORD; all the weights and measures in the bag are of his making,” unquote. Sure there are a few sinners who keep two sets of weights, one for buying and another for selling, but they routinely get routed out. No government or religion sanctions that. So the next time you fill up your car with fuel, look on the pump for that little inspection seal that assures you that the pump is giving you a fair deal. The little seal might be ugly—nowhere near as pretty as a rainbow, but it’s a visible reminder of God’s grace to us in providing fair weights and measures.

For Plumblin, I’m Professor De Boer