weight. This report was never favorably acted upon, as the proposition of France to establish an intermediate system then was growing in favor.

In any efficient system, precision of terms must be secured; that is, each term should possess a definite significance. This desirable condition is not realized in our present nomenclature. Thus the term "quart" conveys no explicit meaning, for a beer measure quart consists of 70.5 cubic inches; while a quart in dry measure is 67.2 cubic inches, and a United States liquid quart holds but 57.75 cubic inches. So in regard to the gallon; a wine measure gallon consists of 231 cubic inches, dry measure gallon 268.8 + cubic inches; and a beer gallon 272 cubic inches.

The complicated nature of our usual tables of measurements may be seen in the great number of different factors to be used in reducing measurement of one denomination to those of another.

Thus we see from our long measure:

An inch contains 12 lines.

A link=$95\frac{1}{25}$ inches.

A foot=144 lines, or 12 inches, or 1.51+ links.

A yard=432 lines, 36 inches, $4\frac{8}{11}$ links, or 3 feet.

A fathom=864 lines, 72 inches, 6 feet, or 2 yards.

A rod, pole or perch=193 inches, or $16\frac{1}{2}$ feet, or $5\frac{1}{2}$ yards or $2\frac{3}{4}$ fathoms.

A chain=792 inches, 100 links, 66 feet, 22 yards, 11 fathoms, or 4 rods.

A furlong 7,928 inches, 1,000 links, 660 feet, 220 yards, 110 fathoms, or 4 rods.

A mile=63,360 inches, 8,000 links, 5,220 feet, 1,760 yards, 880 fathoms, 320 rods, 80 chains or 8 furlongs.

[The multiplicity of factors necessary in ordinary computations in compound numbers were shown in the case of measures of weight, (avoidupois, troy and apothecary's) capacity, etc., by elaborate tables exhibited before the audience.]

In the common units of weight we have to deal with three separate tables, each complicated in itself, and bearing no simple relation to the other systems: I refer to the avordupois, the troy, and the apothecaries weights. These have but one unit in common—the grain. Thus an avordupois drachm contains $27\frac{11}{32}$ grains, and an apothecaries' drachm 60 grains. The troy pound contains 5,760 grains, while an avordupound consists of 7,000 grains.

Such complications are rendered the more annoying by the provincial significations given to terms of measurement in trade. Thus in Great Britain, large cod, if hooked, are sold by the score; trawled cod, so much apiece, and pickled cod by the barrel. I have do desire to exaggerate the eccentric basis of barter common among our Trans-Atlantic friends, so cull the following facts of British trade from a comparatively recent article by an English writer—Mr. Cousins, of Leeds. At Grimsby, an important fish market, a style of weights and measures, very different from that in use at Billingsgate is adopted. Thus, while the latter place of unsavory repute, fish may be disposed of by "the pound," "the stone," "the pair," "the basket" and "the hundred," the Grimsby dealings in fish are conducted largely by "the box," and "the last." It is said that at Grimsby a customer recently called for a stone of oysters and was informed that there oysters were not sold by weight, but by measure. "Ah," replied the intended purchaser, "let me have a yard." In Ireland, butter is sold by the cask, and the firkin; in England by the pound (16 ounces), or the roll (24 ounces), by the stone, and the hundredweight, which last is not a hundred pounds, but 112. The writer just quoted asks, "What is a load?" and answers—A load of straw is 1,296 pounds, a load of old hay is 2,016 pounds, and a load of new hay 2,160 pounds, but my tables do not tell me at what age hay becomes old." So, a firkin of butter is 56 pounds, a firkin of soap 64 pounds, and a firkin of raisins 112 pounds. A hogshead of beer is 54 gallons, of wine 63 gallons. A pipe of wine may be 93 gallons, or 92, or 117, or 103, or 100 gallons, depending upon the locality of the vintage. A stone weight of a man is 14 pounds. of a dead ox 8, pounds; "a stone of cheese is 16 pounds, of glass 5 pounds, of hemp 32 pounds; a stone of flax at Belfast is $16\frac{3}{4}$ pounds, but at Downpatrick, 24 pounds; while a hundred weight of pork is 8 pounds heavier at Belfast than it is at Cork." Mr. Cousins adds: "A barrel of beef is 200 pounds; butter 224 pounds, flour 196 pounds, soft soap 256 pounds, beer 36 gallons, tar $26\frac{1}{4}$ gallons; whilst a barrel of herrings is 500 herrings."

Perhaps we console ourselves that we are far less eccentric in these matters than are our British relatives, but there is much reason to believe that by the time our civilization is as old as England's, should our present tendency undergo no change, we will be fully as blameworthy as are they whom we now laugh at. There is a woeful lack of uniformity among the states of our Union; thus, in most of the states, a bushel of rye=56 pounds avordupois, while in California it is 54 pounds, and in Louisiana 32 pounds. A bushel of oats is 26 pounds in Maryland; 30 pounds in Pennsylvania, Maine, New Hampshire and some other states; 32 pounds in Vermont, New York, Michigan and many others, 34 pounds in Nebraska, 35 in Montana and 36 in Washington. So potatoes, though designated by the bushel are usually sold by weight, 50 pounds to the bushel in Washington, 58 pounds in Ohio, and 60 pounds in most other states. Similar variations are found in the case of other commodities. With such irregularities, such vexing inconsistencies as these, is it strange that the world feels the need of a common and a common-sense system?

It was in 1790 that the French people asked and were refused British cooperation in determining the length of a second's pendulum as a basis of measurement. In 1791 France introduced a provisional system, which was revised in 1799. In 1840, however, a strictly decimal system was enforced in France, and in this undertaking many nations have joined. This is the basis of the metric system now so very generally employed.

In this system but one unit is determined as a basis for all tables; this is the unit of length, and is known as the *metre* (from Greek *metron* — a measure). The metre professes to be a certain fraction — the $\frac{1}{10000000}$, one ten-millionth, part of the quadrant of the earth's meridian passing through Paris. In English units, the metre is equal to 39.37 inches. It has been claimed that the metric system is as purely arbitrary as any methods of measurements preceeding its introduction; and no one can deny this with respect to the choice of a starting unit; there is no law of nature or of man indicating any part of a meridian of the globe as a basis for selling cloth or buying hay; but the difficulties connected with the other systems lie in the facts that the unit standard cannot be replaced if injured, lost, or destroyed, and that the fractional and multiple parts of the unit are diverse and confusing. Both these objections are entirely overcome in the metric system, for the measurement of the chosen meridian could be again effected were the the prototype of the standard lost; and all fractional and multiple secondary units are based on decimal grades. It has been announced that the metre as now accepted, is not in reality an exact $\frac{1}{10000000}$ of the Paris meridian quadrant, that errors in measurement and calculations have been discovered and that consequently the proposed unit is in accurate. It is true that of the meridian quadrant but about 10° were actually measured, the calculations were then made on the supposition—at that time generally accepted—that the earth is in form an oblate spheroid with an ellipticity of $\frac{1}{305}$. It is now believed that the form of our globe is slighly different from that described, and it is calculated that the prototype of the metre is in reality about $\frac{1}{200}$ of an inch shorter than the actual $\frac{1}{10000000}$ of the Paris meridian quadrant. Such a variation is inappreciable; and interferes in no way with the possibility of reproducing the present metre, for the error if there be such is due to incorrect premises for the calculation and not to mistakes in measurement. Furthermore on the supposition that the revised ideas regarding the figure of the earth is correct, the accepted metre, while not the true fraction claimed for the Paris meridian, is practically the exact $\frac{1}{10000000}$ of the meridian of New York city. These dissensions resulted in 1870 in the formation of an International Commission which met in Paris to enquire into the correctness or incorrectness of the metrical standard; the scope of this organization was enlarged, and in 1875 a permanent International Bureau of weights and measures was constituted, with headquarters at Paris.

Now, concerning the simplicity of the system, the single unit, the metre, is multiplied and divided to represent the secondary unites of length. The fractions are designated by the Latin prefixes *deci*, *centi* and *milli*, signifying one-tenth, one hundredth, and one thousandth; and the multiplies are expressed by the Greek prefixes *deka*, *hecto*, *kilo*, and *myria*, expressing 10, 100, 1000 and 10,000. Thus the table of linear measure can be memorized in a few minutes as follows:

10 millimetres make 1 centimetre.
10 centimetres make 1 decimetre.
10 decimetres make 1 metre.
10 metres make 1 dekametre.
10 dekametres make 1 hectometre.
10 hectometres make 1 kilometre.
10 kilometres make 1 myriametre.