

By way of comparison between this table and that of the ordinary English linear measure, let us work a simple sum under each.

Reduce two miles to terms of lower denominations: 2 miles $\times 8 = 16$ furlongs; $\times 40 = 640$ rods; $\times 5\frac{1}{2} = 3520$ yards; $\times 3 = 10560$ feet; $\times 12 = 126720$ inches. Here we have five distinct multiplications, each with a different factor. Now reduce two myriameters to centimeters: Here we have to descend through six stages of reduction, and we accomplish each stage by multiplying by 10, or simply by adding ciphers $= 200000$ centimeters. In ascending reduction we divide with similar ease—thus, to reduce 57259 millimeters to meters we divide by 1000 and the answer is 57.259 meters, or 57 meters, 2 decimeters, 8 centimeters and 9 millimeters.

Having thus obtained our units of length, the square and the cubic units are easily derived; thus we speak of square meters, decimeters, centimeters, millimeters, dekameters, hectometers, etc. As we consider in square measure, extension in two directions we increase or decrease by the factor 100, thus: 100 sq. cm. make 1 sq. dm. 100 sq. dm. make 1 sq. meter and so on.

In cubic measure: 1000 c. mm. make 1 cu. cm. 1000 c. cm. make 1 cu. dm. 1000 c. dm. make 1 cu. m.

The unit of weight is thus derived: The weight of one cubic centimetre of pure water at its temperature of greatest density constitutes the gram, equal to 15.432 grains; of this unit fractions and multiples are obtained as before, thus milligrams, centigrams, decigrams, dekagrams, hectograms, kilograms, and myriagrams.

Many people express fear that should the metric system be adopted, the work of transforming readings from one system to the other would prove most burdensome. Should the metric system be used, we ought to strive to render such transformations unnecessary as soon as possible, by making the new system universal; but during the transition period, the use of factors showing the relation between the two denominations will effect the purpose. As examples: To transform grams into grains $\times 15.432$; centimetres into inches $\times 9.993$; litres into United States quarts $\times 1.057$; litres into imperial quarts $\times 0.880$. (The litre is the common designation of 1000 cubic centimetre measure.)

A number of rules calling for the simplest of arithmetical operations have been formulated for the rapid changing of any expression from one system to the other.

Such facts of these, proving the great simplicity of the metric system, must appeal to all true educators. In a report on the metric system made by the House committee on coinage, weights and measures to the Forty-sixth Congress, the remark of an experienced writer is quoted, with approval, "that the adoption of the metric system in solving mathematical problems in our public and private schools would save one full year's hard study in a boy's or girl's collegiate course. If this be true, and there is no reason to doubt, it is an unanswerable argument in favor of the adoption of this system in our public schools, and that at once."

The metric system is used almost

exclusively for all scientific work; in the laboratories in our own University the system has long been in service. It has been legalized in the United States since 1866; but the enactment being only a permissive instead of an obligatory measure, the adoption has not become general. In view of the many advantages promised by its use, one may well ask why this delay continues? It is due to the same cause that has operated in all ages to keep men in ruts, confined to a narrow, muddy, stony road, when the great grass-covered plain stretches without bound on either hand. It is the cause that holds the old-fashioned fire grate in favor in spite of the demonstrated fact that 90 per cent of the heat is wasted; it is the cause that operates to turn a healthful reverence toward the past into a species of idolatrous worship; the cause that makes a man afraid to drive rats from his house lest they be hereditary rats.

During recent years British consuls have repeatedly reported to their home government that owing to the British tenacity in holding to the old methods, England is losing a vast amount of trade. Foreign dealers will have little to do with a people publishing circulars and price lists in a style which to them is unintelligible and for which they have too much disgust to wish enlightenment. Are the people of the United States more favorably situated? To demonstrate the extent to which the new system has been adopted, let us consider the following list of countries using the metric system exclusively:—Algeria, Argentine Confederation, Austria-Hungary, Belgium, Brazil, Canary Islands, Chili, Colombia, Cuba, Denmark, Ecuador, Egypt, France and colonies, Greece, Guatemala, Honduras, Iceland, Italy, Malaga, Manila, Mexico, Mozambique, Netherlands, Norway, Paraguay, Peru, Portugal, Russia, Turkey, Spain and colonies, Sweden, Switzerland, Venezuela. The system has been legalized in many other countries.

There is perhaps no one thing which could accomplish more than would the universal adoption of the metric or some other simple system of weights and measures toward uniting the nations by ties of brotherhood. This fact has long been recognized. In 1819 Hon. John Quincy Adams, then secretary of state, wrote as follows:

"The system approaches to the ideal perfection of uniformity applied to weights and measures, and whether destined to succeed, or doomed to fail, will shed unfading glory upon the age in which it was conceived, and upon the nation by which its execution was attempted, and has been in part achieved. In the progress of its establishment there, it has often been brought in conflict with the laws of physical and moral nature, with the impenetrability of matter, and with the habits, passions, prejudices and necessities of man. It has undergone various important modifications. It must undoubtedly submit to others before it can look for universal adoption. But if man upon the earth be an improvable being, if that universal peace which was the object of a Savior's mission, which is the desire of the philosopher, the longing of the philanthropist, the trembling hope of the Christian, is a blessing to which the futurity of mortal man has a claim of more than mortal promise, if the spirit of evil is, before the final consumma-

tion of things, to be cast down from his dominion over men and bound in the chains of a thousand years, the foretaste here of man's felicity, then this system of instruments, to accomplish all the changes of social and friendly commerce, will furnish the links of sympathy between the inhabitants of the most distant regions; the meter will surround the globe in use as well as in multiplied extension, and one language of weights and measures will be spoken from the equator to the poles."

Again in 1821, Mr. Adams said:

"Uniformity of weights and measures, permanent, universal uniformity, adapted to the nature of things, to the physical organization and moral improvement of man, would be a blessing of such transcendent magnitude that if there existed upon earth a combination of power and will adequate to accomplish the result by the energy of a single act, the being who should exercise it would be among the greatest benefactors to the human race."

I heartily commend to your study the METRIC SYSTEM.

SHE WAS A HEROINE.

"There," said a Lewiston official, "is a woman passing up Pine street, who I personally know is a heroine. I was in the city of Sherbrook, province of Quebec, Canada, the day that Abraham Lincoln was shot and this woman was the wife of a dealer in ship timbers," quotes the *Lewiston Journal*. "They lived in Gordon street in that city and on the top of their house was a flagstaff. When she heard that Lincoln was dead, her husband being away, she put up the United States flag at halfstaff. After breakfast a soldier came up the street and, seeing the flag, went up to the door and requested it taken down. She explained why it was up and refused politely, but decidedly, to take it down. He smiled warningly and went away saying:

"Well, I have done my duty."

"A short time after a lieutenant with six soldiers came up the street, and opening the gate, entered the yard.

"What do you want?" inquired the woman.

"I want you to take down that flag," responded the officer.

"Again she explained that Lincoln was dead and she was an American.

"I can't help it. I have orders to take down that flag and I shall do it," the officer responded.

"He started to go around the house to enter it when he was encountered by a man named Charles Goodrich from Clinton, Maine, who said: 'If you take another step toward that flag, I'll dye the ground here the color of your coats.' The officer stepped back to the line and ordered his men to advance. But they looked at the upraised ax and stood still. Seeing his advantage, Charles Goodrich ordered them out of the yard and they went. The next day, when the horrible murder of Lincoln was more fully realized, the mayor sent an apology to the lady, and at the indignation meeting which was shortly held she was applauded for her action. She lives in Lewiston now and one of her daughters married a Lisbon street merchant."