Metrology.***OPPOSITION TO THE METRIC SYSTEM.**

BY DR. WILLIAM H. SEAMAN.

(Concluded from page 360.)

We agree with the paper that the two systems of measures are not both going to exist side by side forever, and also that it is inadvisable to have the expressions in technical literature different from those in common use (653). The world is going to use all B. S. or all M. S. As the M. S. has acquired its present position of greater universality than any system ever had before in the face of the B. S., which in many cases it has displaced, it seems easy to see the direction in which things are moving. But it is said the manufacturing success of the English race is going to force their measures by means of their goods on the rest of the world. Against this we have the actual practice of the English race itself in all scientific matters, and it must be remembered that the arts follow science—they do not lead. Three-fourths of all those who become acquainted with the M. S. are in favor of it and are willing to work for it. It is alleged, for example, that United States capital is taking the mile and the foot into Mexico. Well, every time-table of a Mexican railway in any of the large hotels in our cities has kilometers on one side of it. If we are taking the mile into Mexico, Mexico is bringing the kilometer into the United States. In New Orleans, it is said, some French shops sell their dry goods by the meter. If our watches and fine tools are made by the M. S., if all our scientific work is done in M. S., in which fifty years ago it was almost unknown, it is evident the B. S. is not going abroad any faster than the M. S. is coming here, and it seems a piece of folly to attempt to turn back the march of progress in this direction to our own disadvantage, as it certainly is. The inconvenience of changing our screw threads, by which a small part of the population is affected, is as nothing

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compared with the welfare of the entire community and all who are to come after us.

There is no difficulty whatever in planning and erecting buildings on the metric system at the present time. It is well known that the sizes of bricks, etc., vary somewhat in different places. The following tables are taken from actual measurements of building material made in Washington, D. C. The dimensions are in centimeters, and will be found to be actually more exact than if stated in inches.

The average brick is 22x10.5x6. Press brick are a little smaller, and soft brick a little larger, but the 6 cm. of thickness prevails with much constancy. In rough work, three joints, equal two cm, press work less; four and a half to five bricks lay a meter run, and fourteen to fifteen courses make a meter high, single thickness. A wall of two bricks wide is 22 cm., three bricks 35 cm., four bricks 45 cm., five bricks 60 cm.

It would be very advantageous if bricks were made 24x12x6 cm. Three joints rough work equal two cm; press brick lay closer. An average building block is 30x10x4.5; some are longer. It will take seventy bricks to a square meter in the wall. Loss and waste is 3 to 5 per cent. Bricks weigh three kilos apiece; building blocks less. The weight varies according as they are moist or dry; they will absorb much water. One part lime to two sand will give 2.4 volumes of mortar, one lime to three sand 3.2 volumes mortar. Cement with 1, 2 or 3 parts sand, gives respectively 1.25, 2.1 and 2.9 mortar.

To lay 1,000 bricks will require 0.75 of a cubic meter of mortar. The specific gravity of building material is as follows: By multiplying the volume by the specific gravity the weight of any volume is found.

	Spec. Grav.		Spec. Grav.
Dry sand	1.4 to 1.65	Sandstone	2.03
Moist sand . . .	1.9 to 2.05	Granite	2.51 to 3.5
Coarse sand . . .	1.4 to 1.5	Bricks	1.4 to 1.55
Stone lime	0.9 to 1.3	Hard bricks . . .	1.6 to 2.
Slaked lime . . .	1.15 to 1.25	Cork	0.24
Lime mortar . . .	1.65	Willow wood . . .	0.49 to 0.59
Fresh mortar . . .	1.78	Oak	0.69 to 1.03
Dry gravel	1.8	Iron	7.8
Wet gravel	2.	Steel	8.
Clay	1.8 to 2.6		

The web of iron beams is usually double the flange, and flanges of 8, 10 and 12 centimeters are easy to get.

As the kerf is generally taken off timber sizes, they measure with remarkable accuracy in centimeters, as they actually are found for sale. The following table shows this. The first column is in inches, the second in centimeters, the third cubic centimeters per meter run. The last column may be read as decimeters or as fractions of a meter.

ACTUAL DIMENSIONS OF TIMBER, ETC., AS SOLD IN WASHINGTON, D. C.

Inches.	Centimeters.	Solid Contents Per Meter Run. (Cubic Centimeters.)
$\frac{1}{4}$ by 12.....	0.6 by 30.....	1,800
$\frac{3}{8}$ by 12.....	1 by 30.....	3,000
$\frac{1}{2}$ by 12.....	1.2 by 30.....	3,600
$\frac{7}{8}$ by 12.....	2.2 by 30.....	6,600
1 by 2.....	2.5 by 5.....	1,250
2 by 2.....	5 by 5.....	2,500
2 by 3.....	5 by 7.5.....	3,750
2 by 4.....	5 by 10.....	5,000
2 by 6.....	5 by 15.....	7,500
2 by 8.....	5 by 20.....	10,000
2 by 10.....	5 by 25.....	12,500
2 by 12.....	5 by 30.....	15,000
3 by 3.....	7 by 7.....	4,900
3 by 4.....	7 by 10.....	7,000
3 by 6.....	7 by 15.....	10,500
3 by 8.....	7 by 20.....	14,000
3 by 10.....	7 by 25.....	17,500
3 by 12.....	7 by 30.....	21,000
4 by 4.....	10 by 10.....	10,000
4 by 6.....	10 by 15.....	15,000
4 by 8.....	10 by 20.....	20,000
4 by 10.....	10 by 25.....	25,000
4 by 12.....	10 by 30.....	30,000