

TESTING FOR FAST COLORS.

An old lady from the country went into a draper's establishment the other day and began examining some pieces of cheap calico. She pulled at one piece first this way, then that, wetted it, and rubbed it with her fingers to try if the colors were fast. Then she paused awhile, as if not yet satisfied. At last she cut off a piece with a pair of scissors, and, handing it to a gawky-looking girl of about 16, standing by her side, said:—"Here, 'Liza Jane, you chew that and see if it fades."

USEFUL TABLES.

(From the Handbook of the American Society of Dyers).

Rules for converting degrees of Fahrenheit, Centigrade and Reaumur thermometers.

To reduce °C to °R, multiply by 4, divide by 5.

To reduce °C to °F, multiply by 9, divide by 5, add 32.

To reduce °R to °C, multiply by 5, divide by 4.

To reduce °R to °F, multiply by 9, divide by 4, add 32.

To reduce °F to °R, subtract 32, multiply by 4, divide by 9.

To reduce °F to °C, subtract 32, multiply by 5, divide by 9.

The Dimensions of a Rectangular Vat Necessary to Hold a Given Number of Gallons.—Multiply the length in inches by the width in inches, and divide this into 231 times the number of gallon contents required. The result is the height of the vat in inches.

The Contents of a Cylindrical Vat.—Multiply the diameter in inches by itself, this by .7854, and then by the height in inches. Divide this amount by 231, and the result is the contents in gallons.

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The Contents of a Rectangular Vat.—Multiply the length in inches by the breadth in inches; multiply this by the depth in inches, and divide by 231. The result is the volume in gallons.

TENSILE STRAIN OF BOLTS.

Diameter of Bolt in inches.	Area at bottom of Thread.	At 7,000 lbs per square inch.	At 10,000 lbs per square inch.	At 12,000 lbs per square inch.	At 15,000 lbs per square inch.	At 20,000 lbs per square inch.
½	.125	875	1,250	1,500	1,875	2,500
⅝	.196	1,372	1,960	2,350	2,940	3,920
¾	.3	2,100	3,000	3,600	4,500	6,000
7/8	.42	2,940	4,200	5,040	6,300	8,400
1	.55	3,850	5,500	6,600	8,250	11,000
1¼	.69	4,830	6,900	8,280	10,350	13,800
1½	.78	5,460	7,800	9,300	11,700	15,600
1¾	1.06	7,420	10,600	12,720	15,900	21,200
1½	1.28	8,960	12,800	15,360	19,200	25,600
1¾	1.53	10,710	15,300	18,360	22,950	30,600
1¾	1.76	12,320	17,600	21,120	26,400	35,200
1¾	2.03	14,210	20,300	24,360	30,450	40,600
2	2.3	16,100	23,000	27,600	34,500	46,000
2½	3.12	21,840	31,200	37,440	46,800	62,400
2½	3.7	25,900	37,000	44,400	55,500	74,000

The breaking strength of good bolt iron is usually taken at 50,000 pounds per square inch, with an elongation of 15 per cent. before breaking. It should not set under a strain of less than 25,000 pounds. The proof strain is 20,000 pounds per square inch, and beyond this amount iron should never be strained in practice.

FLOW OF WATER.

VELOCITY IN FEET PER MINUTE THROUGH PIPES, OF VARIOUS SIZES, FOR VARYING QUANTITIES OF FLOW.

Gals. per Min.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.	2½ in.	3 in.	4 in.
5	218	122½	78½	54½	30½	19½	13½	7¾
10	436	245	157	109	61	38	27	15½
15	653	367½	235½	163½	91½	58½	40½	23
20	872	490	314	218	122	78	54	30¾
25	1090	612½	392½	272½	152½	97½	67½	38½
30		735	451	327	183	117	81	46
35		857½	549½	381½	213½	136½	94½	53½
40		980	628	436	244	156	108	61½
45		1102½	706½	490½	274½	175½	121½	69
50			785	545	305	195	135	76¾
75			1177½	817½	457½	292½	202½	115
100				1090	610	380	270	153½
125					762½	487½	337½	191¾
150					915	585	405	230
175					1067½	682½	472½	268½
200					1220	780	540	306¾

LOSS IN PRESSURE DUE TO FRICTION, IN POUNDS, PER SQUARE INCH, FOR PIPE 100 FEET LONG.

BY G. A. ELLIS, C.E.

Gals. Disch'd per Min.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.	2½ in.	3 in.	4 in.
5	3.3	0.84	0.31	0.12				
10	13.1	3.16	1.05	0.47	0.12			
15	28.7	6.98	2.38	0.97				
20	50.4	12.3	4.07	1.66	0.42			
25	78.0	19.0	6.40	2.62		0.21	0.10	
30		27.5	9.15	3.75	0.91			
35		37.0	12.4	5.05				
40		48.0	16.1	6.52	1.60			
45			20.2	8.15				
50			24.9	10.0	2.44	0.81	0.35	0.09
75			56.1	22.4	5.32	1.80	0.74	
100				39.0	9.46	3.20	1.31	0.33
125					14.9	4.89	1.99	
150					21.2	7.0	2.85	0.69
175					28.1	9.46	3.85	
200					37.5	12.47	5.02	1.22

New Lubricant.—An excellent lubricant, retaining at 1,800° C. all its lubricating properties, and keeping for an indefinite period, if kept out of contact of air, is obtained by mixing a fatty body, an alkali and water with a glycerine salt of potassium or soda. Any vegetable or animal oil, or fat, grease, olein or soap thus treated serves the same purpose.

Irish Carpets for the Royal Yacht.—It is stated that the carpet for the King's yacht, and also one for the private apartments of the Queen, are both of Donegal make. The King's is a fine effect in Wedgwood blue, with an Adam design in white. This was originally a ceiling pattern, but the result is very pleasing when thrown on a self-colored carpet. The Queen's carpet is pale green, with figures in a darker shade. It has a border in which bright prawn-pink roses are introduced.