the grate, the distance down is too great to make it effective. A new fire must be made, a bucket of coal used, and an hour's time required, which could be saved if the grate with its fire could be raised and lowered at pleasure. The invention should be made applicable to any and all ranges already in use. One-half the coal now used in my range could be saved by the use of such a device. Who will produce it?" The suggestion is a good one—cannot some one of our Canadian inventors take it up, and at once realize it? It is equally applicable to wood as to coal grates.

Practical Memoranda.

TABLE

Of the Weight of a Superficial Foot of Plate or Sheet Iron, Copper, and Brass, in pounds.

Thickness in parts of an inch.	Iron.	Thickness by the wire guage.	No.	Iron.	Copper.	Brass.
1/32	1·25		1	12·5	14·5	13·75
1/16	2·5		2	12	13·9	13·2
1/8	5		3	11	12·75	12·1
3/16	7·5		4	10	11·6	11
1/4	10		5	8·74	10·1	9·61
5/16	12·5		6	8·12	9·4	8·93
3/8	15		7	7·5	8·7	8·25
7/16	17·5		8	6·86	7·9	7·54
1/2	20		9	6·24	7·2	6·86
9/16	22·5		10	5·62	6·5	6·18
5/8	25		11	5	5·8	5·5
11/16	27·5		12	4·38	5·08	4·81
3/4	30		13	3·75	4·34	4·12
7/8	35		14	3·12	3·6	3·43
1	40		15	2·82	3·27	3·1

Note.—No. 1 wire gauge equal 5/16ths of an inch.
" 4 " 1/4 "
" 7 " 3/16 "
" 11 " 1/8 "
" 16 " 1/16 "
" 22 " 1/32 "

The great variety of thicknesses into which copper is manufactured cause in trade the weight to be named whereby to determine the thickness required, the unit being that of a common sheet, so designated, viz. 4 feet by 2 feet, in lbs., thus:

A 70 lb. plate is 3/16ths of an inch in thickness.
" 46½ " 1/8 " "
" 23 " 1/16 " "
" 11½ " 1/32 " "
" 6 " 1/64 " "

The thickness of lead is also in common determined or understood by the weight, the unit being that of a square or superficial foot; thus:

4 lbs. lead is 1/16th of an inch in thickness.
6 " 1/16 " "
7½ " 1/8 " "
11 " 3/16 " "
15 " 1/4 " "

Pipes for Conveyance of Water.

In laying pipes, the following directions are not unimportant; the mouth, both for ingress and egress, should be trumpet shaped; bends should be as far as possible avoided, and especially sharp angular bends; at junctions the smaller pipe should be brought round in a curve to agree in direction with the main. And, lastly, where a pipe rises and falls much, air is apt to collect in the upper parts of the bends, and thus reduce the section at that part, and it is advisable to make provision by a cock or otherwise, for draining it off at intervals.—*Fairbairn.*

Comparative Weights of Different Bodies.

Bar iron being 1,		Cast iron being 1,	
Cast iron	= ·95	Bar iron	= 1·0
Steel	= 1·02	Steel	= 1·08
Copper	= 1·16	Brass	= 1·16
Brass	= 1·09	Copper	= 1·21
Lead	= 1·48	Lead	= 1·56

Ebullition of Water and Boiler Explosions.

"Water, when deprived of air," says M. Dufour, "as Mr. Grove has shown, does not boil steadily, and hence he thinks boiler explosion results. Let it be kept well supplied with air, then, by carrying into the boiler two platinum wires connected with a voltaic pile."

Statistical Information.

Statistics relating to Canada.

Square miles of territory in Upper Canada	121,260
" " " Lower Canada	210,020
Total square miles	331,280
Acres disposed of in U C. by sales and free grants	20,853,971
Acres disposed of in L. C. by sales and free grants	18,477,820
Total acres	39,331,791
Population of U. C. in January, 1861	1,396,091
" L. C. " "	1,111,566
Total population	2,507,657
Population to the square mile	8·40
Estimated population in U. C., Jan. 1864.	1,586,130
" " L. C., "	1,196,949
Total	2,783,079
Revenue of 1863, exclusive of loans	$9,760,316
Expenditure of 1863, exclusive of redemption of debt	10,742,807
Funded debt in 1863, less sinking fund	60,355,472
Imports of 1863	45,964,493
Exports of 1863	41,831,532
Difference in imports and exports	4,132,961
Revenue per head of population	$3 51
Expenditure " "	3 86
Debt " "	21 69
Imports " "	16 51
Duties on " "	1 85
Exports " "	15 03