

BOARD OF
ASSISTANT ALDERMEN,

SEPTEMBER 5, 1831.

The following Report from the Committee on Charity and Alms-House, having been read, on motion, was laid on the table and ordered to be printed.

B. CRANE, *Clerk.*

THE Committee to whom was referred the resolution of the Board of Aldermen, on the petition of the Delaware and Hudson Canal Company, to supply the city with one thousand tons of Lackawanna Coal, at \$5 25 per ton, for the use of the poor,

RESPECTFULLY REPORT,

That the subject of supplying the poor of this city with fuel, is one full of interest, and requires great consideration, before any specific plan can be adopted. The Committee have therefore made many enquiries among those who are competent to judge, and consulted such authorities that would assist them by their practical knowledge.

The different kinds of fuel, which are used in this city; are, *Pine Wood, Nut Wood, Oak Wood, Bituminous and Anthracite Coal*, each of which, from their various character, and consequently different manner of burning, require different furnaces. The economy of fuel attracted at an early period, the notice of our countryman, Count Rumford,

and more recently, Mr. Bull, whose communications are published in the American Philosophical transactions. It is unnecessary to enter into an analysis of these experiments, but a short abstract will be sufficient to illustrate the views of the Committee. Count Rumford has given the following results:—

SPECIES OF WOOD.

Oak seasoned,	4,590
Oak dried on a stove,	5,940
Maple dried on a stove,	6,480
Seasoned,	5,466
Dried on a stove,	7,150

Professor Renwick thinks these calculations too high for any practical purposes, and does not think it safe to take at more than 4,500 lbs. the quantity of water which one pound of hard wood is capable of heating, and 5,000 for the quantity heated one degree by pine wood.

Mr. Bull's experiments are perhaps the most accurate on record, but the following objections stated by Professor Renwick, are unquestionably well founded.

“Thus, in the very careful and accurate experiments made by Marcus Bull, and published in the transactions of the American Philosophical Society, the values of the different kinds of fuel appear to be almost exactly in the ratio of the quantity of carbon they contain. But, upon examination, it will be found that all the different substances were experimented upon in the same apparatus; and that one exactly suited to the most advantageous combustion of charcoal and anthracite. His experiments are therefore no more than a comparison, and no doubt a valuable one of the effects produced by the direct radiation of that part of the fuel which remains solid, and furnish no criterion of the absolute heating powers of the substances when each is burnt in a furnace of the construction best suited to its own mode of combustion. Charcoal and anthracite lose little or nothing in the form of smoke, and the carbonic oxide that is generated, is generally completely burnt: this is not the case with any

other species of fuel, unless burnt in apparatus expressly constructed for consuming the smoke." We have given the results of several kinds of fuel which are now most used in the city.

Common Names of Wood and Coals.	Averdupois pounds of dry Wood in a Cord.	Time 10 ² of heat were main- tained in a room by the combus- tion of lb. of each article.	Value of specified quantities of each article compared with Shell-bark Hickory as the standard.
Shell-bark Hickory,	4469	6.40	100
Pig Nut Hickory,	4241	6.40	95
White Oak, - - -	3821	6.20	81
Shell-bark White Oak,	3464	6.20	74
Red Oak, - - -	3254	6.20	71
Black Oak, - - -	3254	6.30	71
Yellow Pine, - - -	2463	6.30	54
Jersey Pine, - - -	2137	6.40	48
Pitch Pine, - - -	1904	6.40	43
White Pine, - - -	1868	6.40	42
			TON.
Lehigh Coal, - - -		13.10	99
Lackawaxen do. - -		13.10	
Schuylkill do. - - -		13.40	
			100 BUSHELS.
Liverpool do. - - -		9.10	230
Richmond do. - - -		9.20	215

If we take 100 as the standard value of Shell-bark Hickory, say \$10 per cord, or \$2 50 per load, the value of the other woods would be as follows.

Shell Bark Hickory,	- - -	\$ 2 50
Pig Nut Hickory,	- - -	2 37 $\frac{1}{2}$
White Oak,	- - -	2 2 $\frac{1}{2}$
Shell Bark White Oak,	- - -	1 85
Red Oak,	- - -	1 77 $\frac{1}{2}$
Scrub Black Oak,	- - -	1 77 $\frac{1}{2}$
Yellow Pine,	- - -	1 55
Pitch Pine,	- - -	1 12 $\frac{1}{2}$
White Pine,	- - -	1 5

The present prices of Wood are, Nut \$ 2 50
 Oak 1 75
 Pine 1 25

So that the market prices would be about equal to the general average of the woods stated above.

The difference between various coals is still more remarkable. The Coals which are used in this city are Anthracite and Bituminous.

The Anthracites all come from Pennsylvania, viz. Lehigh, Lackawanna and Schuylkill. These coals contain about 95 per cent of carbon. Their different values may be determined by their combustion. Mr. Leonard at Matewan made an experiment between the Lehigh and Lackawanna, which gives the result that 15 per cent less of Lackawanna melted 2 per cent more iron in 11 per cent less time, making more than one fourth in favor of the latter. No trials have been instituted between the three Anthracites.

The Bituminous Coals are Virginia and English, without entering into detailed analysis, it is sufficient to state that from best authorities, the relative values are as 9,200 to 7,800. The comparative value may be stated in the following ratio, as 9 to 7, that is, that Liverpool Coal is as cheap at \$9, as Anthracite at \$7.

If we take the market prices, the following would be the value of these articles.

Liverpool being the standard, say	\$10 50
Anthracite,	8 17

One ton of Liverpool Coal, say 2,240 lbs. would at the above price, cost \$9 75 and 1 ton of Lackawanna, \$6 50, and if there value be as 9 to 7, the difference would be in favor of the Anthracite, but when we take into consideration the difference of expense in kindling, and the greater light of the Liverpool, the values at present prices would be nearly the same.

But if the experiments of Mr. Bull be correct, that one lb. of Anthracite Coal will heat a room ten degrees thirteen

hours and ten minutes, and one pound of Liverpool only nine hours and ten minutes, the Anthracite is decidedly the cheapest. The objection which Professor Renwick states to his experiments, is sound and we shall therefore take his opinion.

The Virginia Coal, which now sells at seven dollars for lbs. 2,628, would be cheaper than either, for one ton would cost \$5 96, and if the bituminous is to the anthracite, as 9 to 7, the value would be per ton, \$4 63, so that the coals per ton, at present prices, would stand thus :—

Liverpool,	\$7 58
Anthracite,	6 50
Virginia,	4 63

The following table will place the whole subject in a very condensed form.

One dollar of Nut Wood, \$2 50 per load, would heat
lbs. 2,007,000 of water.

Oak Wood, 1 75	2,552,500
Pine Wood, 1 25	2,460,000
Liverpool Coal, \$10 50 per chaldron,	2,024,000
Anthracite, 6 50 per ton,	2,683,200
Virginia, 7 00 per chaldron,	3,450,000

If this be correct, Virginia is the cheapest Coal, and Oak the cheapest Wood. The relative values of Anthracite Coal and Oak Wood are nearly equal. It must not be inferred that the weight of the coals is an index of the combustible power, in adverting to the following table, it will be seen that it depends upon a different principle.

	Price per ton.
One bushel of Lehigh weighs, lb. 80	\$6 50
Schuykill, 74	6 50
Lackawana, 73	6 50
Liverpool, 67	8 34
Virginia, 73	4 50

Sidney,	72	unknown, as
Pictou,	68	prices not ascer- tained.

It will appear from the above table that the difference in favor of Anthracite, is not so great as is generally believed to be, and that the heating powers are not in proportion to their weight.

Such are the results of examinations upon this important subject, which, in the opinion of the Committee, are not altogether satisfactory, but sufficient as shewn that it possesses great interest, which must increase every year. It is said upon authority that merit great respect and confidence, that seven cents of Anthracite is sufficient to warm a moderate sized room. Stoves of various kinds have been presented to the Committee appointed by the citizens, and a premium has been offered by the Common Council for stoves in which this article can be consumed. Twelve thousand families were supplied with fuel last winter, and it is believed that not less than that number will require aid the ensuing season. The Committee do not hesitate to dissent from the report of the Board of Aldermen, in the purchase of this coal for the following reasons.

First, because it is at least doubtful if it be cheaper than wood.

Second, the heavy expense, not less than twenty-five thousand dollars for stoves to burn it in. If stoves are purchased at four dollars, the expense would be fifty thousand dollars, which is the maximum now set by the Commissioners of the Alms-House. The Committee do not conceive themselves authorized to advise the expenditure, and therefore beg leave to ask further time, in order that they may avail themselves of the aid and experience of the Committee of citizens appointed to investigate this subject.

SIGNED,

JOHN R. RHINELANDER,
WILLIAM W. HOLLY,
SAMUEL DUNSHEE.