

State Assayer Office
31 Somerset St Boston March 4 1852

Wm S Cunard
Dear Sir,

I send you the results of my analyses of the two samples of Coals which you sent to me for Chemical examination.

I have preserved portions of each sample and will continue my experiments upon them if you wish me to do more.

I thought that the information already obtained might answer your purpose, but if you should desire me to go on farther I can take the specific gravities determine how much moisture each sample will give and make an elementary analysis of each sample if desirable - This of course will add considerably to the expense and will require a month of labour.

The analysis I now send are such as we usually make for Commercial purposes in order to determine the value of a Coal for fuel and for gas making. The work so far as done is very exact and will stand by itself in statement of results if I should continue my researches as to the elementary constitution of the Coals viz, the determination of Carbon, Hydrogen, Oxygen, and Nitrogen in them - These elementary analyses are mostly required for scientific Books, and I do not know that they are of much practical value; for the determination of the proportion of gas making volatile or bituminous matter and the proportion and quality of the Coke and the proportion and nature of the ashes seems all that is wanted for commercial purposes.

These Coals with the exception of some streaks in No 1
are very free from bi-sulphuret of Iron and the ashes of all of
them is nearly white and does not contain Carbonate of Lime
silicate of Iron or other fusible matter that will readily form
Clumbers of the ashes -

I have the honor to be

Your obed^t Serv^t

(signed)

Charles J Jackson M. D.

Assembly to the State of
Massachusetts and to the
City of Boston -

Chemical Analysis of Coals from the Dup seam *Atkins Mines*
 Nova Scotia for *Houbt. S. Leonard* 100 grains each

| Mark on Sample | Bituminous Vol. Matter | Coke obtained | Ashes of Coke | Carbon in Coke | Remarks |
|--------------------|------------------------|---------------|--|----------------|---|
| N ^o 1 | 317 | 683 | 68 | 615 | Some films of Iron Pyrites in cross seams. Coke compact, good. Ashes greyish white, does not clinker. |
| N ^o 2 A | 279 | 721 | 134 | 587 | No Sulphuret of Iron, good Coke ash as above |
| N ^o 2 B | 274 | 726 | 163 | 563 | Like N ^o 2 A. |
| N ^o 3 | 285 | 715 | 153 | 562 | Coke good, white ash |
| N ^o 4 | 280 | 720 | 133 | 587 | Coke good, white ash |
| N ^o 5 | 255 | 745 | 228 | 517 | Coke good, white ash. Coal looks slate like, compact, good. |
| N ^o 6 | 285 | 715 | 89 | 626 | Coke good, white ash, does not clinker |
| Main Coal seam | | | 9.3 ft. in under shale, Dalhousie pits | | |
| Top | 32.2 | 678 | 89 | 589 | Spongy Coke. Caking coal |
| Middle | 311 | 689 | 107 | 582 | Very spongy |
| Bottom | 306 | 694 | 91 | 603 | Very spongy and a caking coal. |
| Av: | 313 | 687 | 96 | 591 | |

This tabular mine shows at once the value of these Coals. I regard them as closely resembling the celebrated Coals of Newcastle Eng^d. but they are a little more bituminous on the general average and hence more valuable for gas making - The Coal from the "Main" Seam is evidently best for Smith's use as it is a readily caking Coal and is free from Sulphur or contains rarely traces of pyrites -

The ashes of these Coals are free from Carbonate of lime and contain but very minute proportions of oxide of Iron so that they are not liable to form Slags or Clinkers at the ordinary heat of a stove or grate.

They all give a rich yellow gas flame when heated red hot on a curved platinum crucible and are good gas Coals.

Respectfully
Yours etc. &c.

Boston March 4 1852
31 Somerset Street
State Assayers Office

(signed) Charles J. Jackson M.D.
Assayer to the State of
Massachusetts Assay master
to the City of Boston &c &c