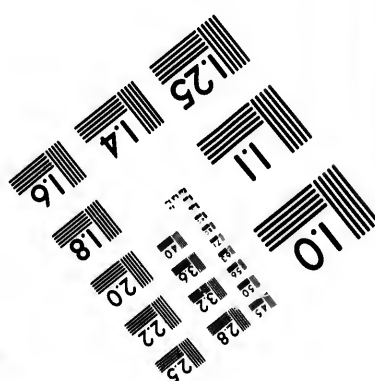
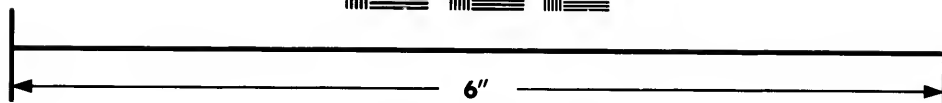
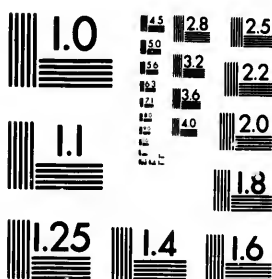


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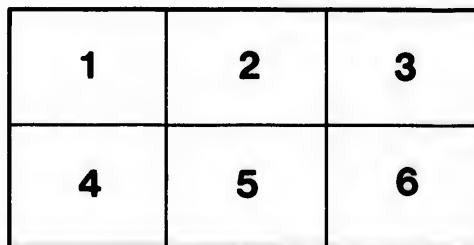
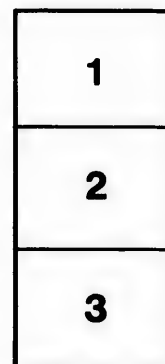
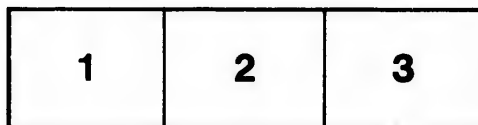
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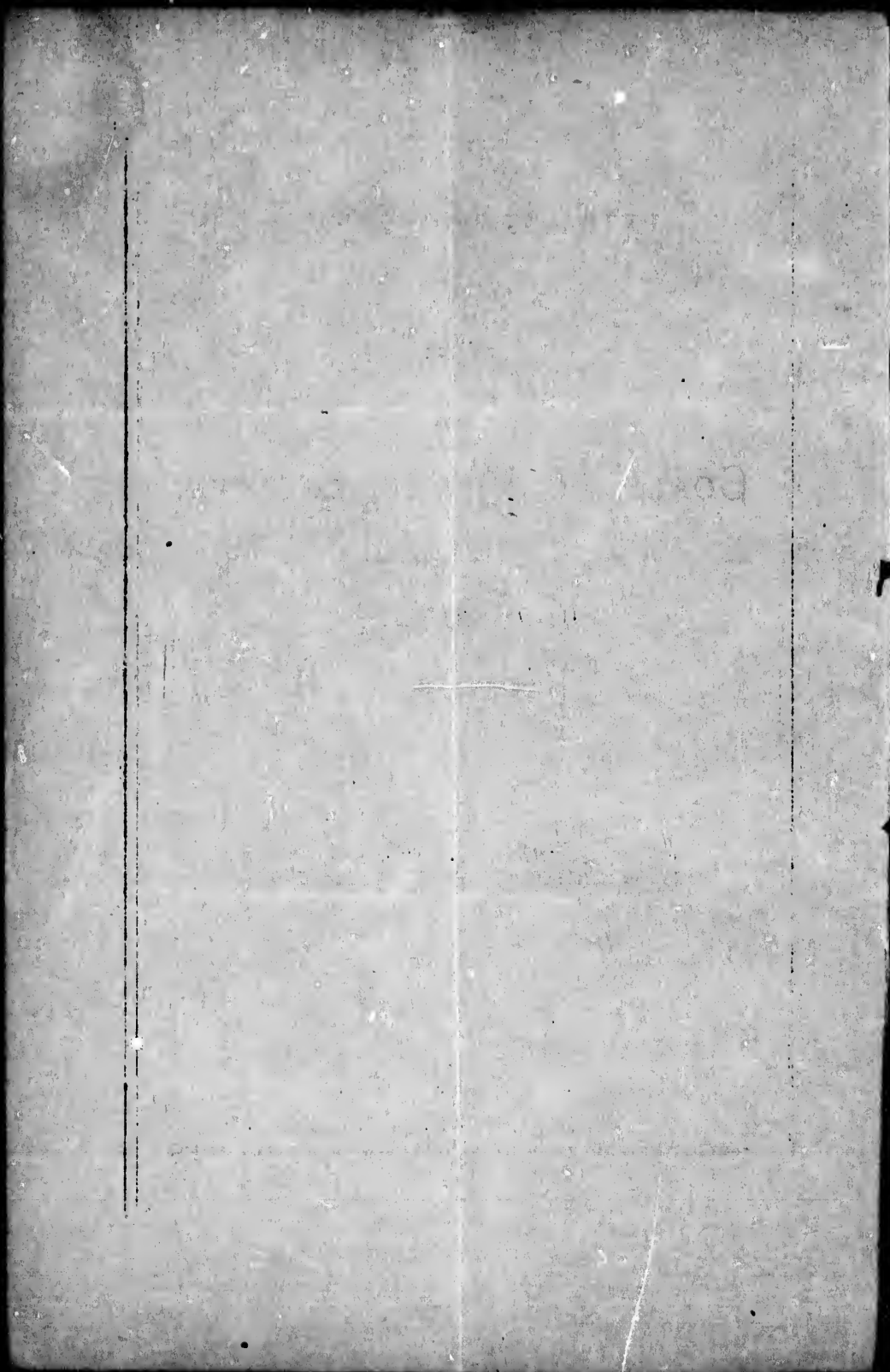
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EXTRACTS FROM REPORTS
ON THE
COALS OF PICTOU COUNTY,
NOVA SCOTIA.

BY THE LATE EDWARD HARTLEY, Esq., F. G. S.

MONTREAL:
THE GAZETTE PRINTING HOUSE, COR. ST. FRANÇOIS XAVIER AND CRAIG STREETS.
1871.



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c/n

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TN806
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EXTRACTS FROM REPORTS
ON THE
COALS OF PICTOU COUNTY,
NOVA SCOTIA.

BY THE LATE EDWARD HARTLEY, Esq., F. G. S.

INTERCOLONIAL COMPANY'S COAL—DRUMMOND COLLIERY.

"I beg to present the following description of this fine seam of coal, as worked at the above-named colliery. With my description of the benches, analysis will be given, which have lately been made in the laboratory of the Geological Survey, by Mr. Gordon Broome, F.G.S., Associate of the Royal School of Mines :

1st.—TOP COAL, not taken out in workings. Coal good principal partings show mineral charcoal, and have rather a dull lustre. Thickness, 2 feet 6 inches.

Volatile at 120.c.....	72	Volatile matter.....	29.928
" at 220.c.....	7.83	Fixed Carbon.....	60.350
Total volatile, 1, by slow coking.....	27.56	Ash (grey).....	9.460
" 2, by fast ".....	30.19	Sulphur.....	262
Coke, 1, by slow coking.....	72.44		100.000
" 2, by fast ".....	69.81		
		Specific gravity	1.309

2nd.—FALL COAL, immediately above the fire clay parting—or holing—this being the first bench taken down. Coal good; surfaces of deposition show dead black patches of mineral charcoal, with bright points and patches of bright bituminous matter. Thickness, 3 feet 3 inches.

Volatile matter at 100.c.....	1.56	Volatile matter.....	31.694
" " 200.c.....	13.61	Fixed carbon.....	60.320
Total volatile, 1, slow coking ...	29.78	Ash (grey).....	7.560
" 2, fast "	31.92	Sulphur.....	426
Coke, 1, slow coking.....	70.22		<hr/>
" 2, fast "	68.08		100.000
			<hr/>
		Specific gravity.....	1.328

3rd.—First bench (below the holing). Coal good; all the surfaces brilliant; a remarkably clear, bright coal. Thickness, 1st bench, 4 feet.

Volatile 100c.....	1.89	Volatile matter.....	33.526
" 220c.....	16.45	Fixed Carbon.....	55.390
Total volatile, slow coking.....	26.49	Ash (grey).....	10.500
" fast "	34.11	Sulphur.....	584
Coke, slow coking.....	73.51		<hr/>
" fast "	65.89		100.000
			<hr/>
		Specific gravity	1.327

4th.—Second Bench. Good coal; laminated and cubical. On the surfaces of the deposition planes, there is some mineral charcoal, and all the other surfaces are of a brilliant black. Thickness, 4 feet.

Volatile at 100.c.....	1.31	Volatile matter.....	29.973
" 220.c.....	14.61	Fixed carbon.....	60.310
Total volatile, slow coking.....	28.73	Ash (grey).....	8.670
" fast "	31.02	Sulphur.....	1.047
Coke, slow coking.....	71.27		<hr/>
" fast "	68.98		100.000
			<hr/>
		Specific gravity.....	1.343

5th.—Third bench. Good coal; laminated. It is not so bright as first and second benches. Thickness, 2 feet.

Volatile at 100.c.....	1.43	Volatile matter.....	30.756
" 220.c.....	13.12	Fixed carbon.....	59.890
Total volatile, slow coking.....	29.14	Ash (grey).....	8.790
" fast "	31.32	Sulphur.....	564
Coke, slow coking.....	70.86		<hr/>
" fast "	68.68		100.000
			<hr/>
		Specific gravity.....	1.335

6th.—Coarse coal bench; bottom of seam not worked. Thickness, 2 feet 9 inches.

Total thickness.....	† 1.	2 feet 6 inches.
	† 2.	3 " 3 "
	fire clay.	0 " 3 "
	† 3.	4 " 0 "
19 feet 9 inches.	† 4.	4 " 0 "
	† 5.	2 " 0 "
	† 6.	2 " 9 "

The Cokes of 1, 2, 3, 4, 5, obtained by the carbonization of the coal in a small way (in a crucible), were all strong and light. All these benches should, if properly managed, furnish an excellent coke in the large way.

TRIAL OF INTERCOLONIAL COAL IN A RAILWAY LOCOMOTIVE.

Description of line.—Length from Colliery to wharf, $6\frac{1}{2}$ miles. The down trip to Granton is comparatively easy, including only about one and a half miles of up grade, ranging from 44 to $53\frac{1}{2}$ feet per mile. The return trip comprising up grades of from $23\frac{1}{2}$ to 98 feet per mile, averaging perhaps 65 feet per mile. Some of the curves are very sharp, one of 600 feet radius, and one more than one quarter of a mile long, of 655 feet radius, besides a number ranging from 72 feet to 1433 feet radius.

DETAIL OF TRAIN.

Locomotive.—By Dubs & Co., Glasgow, Scotland. Coal Burner. Tank engine, six drivers, 5. diameter, (coupled). Cylinders (2) 14 in. diameter by 22 stroke, with 75 per cent of steam on piston when in full gear. Fire grate area, 12. 12. square feet, full set of fire bars, spaced $\frac{3}{4}$ of an inch apart. 152 brass tubes $1\frac{3}{4}$ in. outside diameter, superficial area of which is 680. 48. square feet, wheel base of engine 11 feet.

WEIGHT OF TRAIN.

	Tons.	C.
Weight of Engine, empty.....	20.	0
Equipment.....	5.	0
12 Coal Cars, loaded (75 Tons coal).....	116.	17
Officers and Passengers.....	0.	7
Total weight.....	142.	4

The length of this train was 196 feet. The coal consumed was carefully weighed on a Fairbank's scale. Four trips, (or two round trips) were made ; total distance, 26 $\frac{1}{2}$ miles ; actual returning time 1h. 45m. 7s.

STATEMENT OF COAL BURNT AND WATER EVAPORATED.

Steam being up, at the commencement of this experiment, the amount of coal consumed was 1,236 lbs. during the four trips. The amount of water evaporated was 8,253 lbs. thus the result was, 6.67 lbs. of water evaporated from 35° F. by one pound of coal, equal to 7.69 lbs. evaporated from 212°, without taking steam pressures into consideration. This result proves not only that the coal is an excellent steam coal for Locomotive purposes, but also indicate that the coal was very economically burnt by the Locomotive. During the four trips the number of firings was 17 the fire door was open for draught above the grate 62 minutes, and the engine was on up-grade, or using steam, during 81 minutes. The ash from the Coal was gray, with a slight reddish tinge. The coal clinkered somewhat, but no inconvenience was felt from that cause, as the clinkers did not adhere to the bars. The coal used was believed to be a fair average of the 16 feet of the seam worked

The Nova Scotia Railways are now using Pictou Coal in their Locomotives. Mr. G. Taylor, Superintendant, reports that the change from wood to coal has proved most satisfactory. He estimates the saving, taking wood at a cost of \$3 per cord, to be 30 p.c. besides the time lost in loading the tender with wood. He has introduced an improved principle in the arrangement of the furnace bars, which obviates any difficulty arising from excess of ash. This consists in having the bars arranged in several sections, connected with a lever whereby the whole surface of the grate may be shaken. He has never experienced any trouble from the ash.

Steamship "Secret."—Thomas D. Finegan, Engineer, 622 tons register. Oscillating engines, cylinders 50 in. diameter. 54 inch stroke. Two boilers, close bottoms return tubes, working

pressure of steam 17 to 20 lbs. This Steamer used Intercolonial Coal five months (Nov. 1869.) About 27 tons were used per day. I have found in practice 20 tons best Welsh Coal in evaporative power equal to 27 tons Intercolonial, and 27 tons Intercolonial, to 30 tons Scotch. All things considered I would rather have Intercolonial. If the openings of the grate bars are only $\frac{3}{4}$ to 1 inch apart no slack is wasted by falling through the grate unconsumed. The coal cakes but little on the grate, but little clinkers is formed but that what there is, is in sheets of some thickness, and that when compared with English or Scotch Coals; this coal gives considerably more ash. Intercolonial coal has given me good satisfaction, all things considered. Leaving so large an amount of ash occasions extra work, but this is more than compensated by the saving in grate bars which last much longer with this coal, than when Welsh (or any other) coals are used.

GAS MAKING.

The majority of the coals of the Pictou region furnish an excellent coke, in the gas retorts, if properly carbonized, as is abundantly proved by the statements and experiments of some of the first Gas Chemists of this continent.

REPORTS.

Mr. Alex. Thompson, Manager Pictou Gas Works.

INTERCOLONIAL CO.'S COAL.

<i>Cubic feet per ton, 2,240 lbs.</i>		<i>Candle power.</i>		<i>Bushels of Coke.</i>
7,700.		15.		34.

Qualily of Coke, good.

LETTER FROM MR. GEORGE BUIST.

(COPY.)

"GAS OFFICE, *Halifax*, 24 Feb'y., 1870.

"EDWARD HARTLEY, ESQ.,

"DEAR SIR,—I beg to acknowledge yours of 8th inst., making enquiries regarding Pictou coals.

"I think the followihg statement may be taken as giving

the correct quantities of the gas, coke, and tar produced from one ton, 2,240 lbs. :

- " The quantity of gas will average..... 7,300 cubic ft.
- " Illuminating power, about..... $15\frac{1}{2}$ to 16 candles.
- " Weight of coke, about..... 1,450 lbs.
- " Quantity of coal tar, about..... $9\frac{1}{2}$ to 10 gals.

" The sulphur in the Pictou coal is very much less than in any of the other Nova Scotia coals. The quality of the coke is very good indeed.

" Yours, truly,

"GEORGE BUIST."

LETTER OF MR. W. W. GREENOUGH.

" OFFICE OF BOSTON GAS LIGHT CO.,

7th Feby., 1870.

" EDWARD HARTLEY, ESQ.,

" Your letter of enquiry, of the 4th inst., is to hand. * * *

We use the coking coals of Pictou, in combination with richer coals. The proportion of these combinations is based upon experimental trials of each coal separately. The best results in gas making are obtained by working the retorts at a cherry-red heat. One then gets from each ton of 2,240 lbs., 7,280 feet of gas, of strong 15-candle illuminating power, with a yield of 1325 lbs of coke of fair quality, higher heats, will give more gas of an inferior grade and with a diminished value of coke. This coal contains but a small proportion of sulphurous compounds, is easily purified, and may be safely stored without danger from spontaneous combustion.

" Yours, truly,

"W. W. GREENOUGH."

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