

UNDERGROUND PIPES AND FITTINGS(Cont.)

Brot Ford		6552.85
2	1 qt Oilers	1.20
5	1 qt. Detroit Lubricators	37.50
2	1 pt. " "	7.20
5	1/2 pt. Oil Cups	27.00
1	1 qt. Sm'ft Lubricators	5.40
1	1/4 pt. Oil Cup	3.60
2	1/2 pt. Lubricators	7.20
1	1/2 pt. "	3.60
1	1/2 pt. Squirt Can	.15
4	3/8 Sight Oil Feeders	3.25
		<hr/> 96.10
		\$6648.95
	Less 25%	<hr/> 1662.24
		\$ 4986.71

SURFACE PIPES & FITTINGS.

20	Ft.	10" Pipe	4.25	85.00
3		10" Elbows	13.50	40.50
2		10 x 10 x 6 Tees	19.50	39.00
1	Pr	10" Flange Unions	11.50	11.50
7		6" Nipples	2.90	20.30
2		6" Flange Unions	3.95	7.90
5		6" Angle Valves	37.50	187.50
3		6" Gate Valves	30.00	90.00
1		3" Gate Valve		19.35
2		8" Elbows	6.75	13.50
3		8" Nipples	3.65	10.95
61	Ft.	8" Pipe	2.82	172.02
1		8" Throttle Valve		22.75
1	Pr.	8" Flange Unions		7.00
47	Ft.	7" Pipes	2.35	108.45
2		7" Elbows	4.70	9.40
1		7" Gate Valve		40.00
47		6" Pipe	1.88	88.36
6		6" Elbows	2.75	16.50
1		6 x 6 x 6 Valve		27.30
66	Ft.	6" Pipe	1.88	124.08
2		6" Elbows	2.75	5.50
2		6" Flange Unions	3.95	7.90
145	Ft.	5" Pipe	1.45	210.25
5		5" Elbows	2.00	10.00
4		5" Flange Unions	3.15	12.00
1		3 x 7 Bushing		.79
3	Ft.	7" Pipe	2.35	7.05
9		5" Pipe	1.45	13.05
3		5" Elbows	2.00	6.00
1		5" Flange Union		3.15
3		5" Nipples	1.55	4.65
1		5" Gate Valve		27.00
54	Ft.	2" Pipe	.36	19.44
				<u>1468.64</u>
		Pipe \$827.70 less 65%		289.69
		Fittings \$640.94 less 70%		448.65
				<u>738.34</u>
1		7" Tees & 8-6" Tees -6.80&	4.00	38.80
3		5" Tees & 5-4" Tees -3.00&	1.75	17.75
21		3" Tees	1.10	23.10
25		2" Tees	.41	10.25
2		1-1/2" Tees	.29	.58
1		1-1/4" Tees	.23	.23
17		1" Tees	.15	2.55
1		3/4" Tees	.12	.12
1		8 x 6 x 5 Tees		11.25
10		1/4 Tees	.08	.80
32		2" Globe Valves	5.30	169.60
11		3" & 1-4" G.V.14.40&	36.00	194.40
1		6" & 2-1-1/2 G.V.\$37.50 &	3.50	44.50
8		1-1/4 Globe Valves	2.52	20.16
29		1" " "	1.80	52.20
10		3/4" " "	1.26	12.60
4		1/2" " "	1.00	4.00
3		1/4" " "	.72	2.16
4		10 Flange Unions	11.50	46.00
21		6 and 21 - 5 F.U.3.95 &	3.15	149.10
3		4 Flange Unions	2.00	16.80
7		3 " "	1.50	10.50
18		2 " "	1.00	18.00
1		1-1/2 " "	.78	.78
1		10 Elbows	13.50	13.50
37		6 " "	2.75	101.75
24		5 " "	2.00	48.00
30		4 " "	1.20	36.00
3		3 " "	.75	6.00
				<u>1051.43</u>
		Less 70%		736.04
		Forward		<u>315.44</u>
				<u>\$1053.78</u>

SURFACE PIPES AND FITTINGS(Cont.)

1053.78

53	Brot Forward	.28		14.84	
	2" Elbows		.28	1.40	
4	1-1/2" "	.35		7.75	
31	1-1/4" "	.25	.35	17.33	
79	1" "	.22	.25	.30	
2	3/4" "	.15	.22	.88	
4	1" "	.22	.25	55.50	
30	6" Nipples		1.85	10.70	
2	10" Nipples		5.35	5.80	
2	6" "		2.90	2.90	
1	6" x 24		2.90	8.50	
10	4" Nipples		.85	43.40	
28	5" "		1.55	5.76	
12	3" "		.48	7.92	
44	2" "		.18	.13	
1	1-1/2" "		.13	.77	
7	1-1/4" "		.11	1.44	
18	1" "		.08	8.00	
2	5" Reducers		2.00	8.10	
3	6" "		2.70	1.85	
1	4" x 2 "		1.85	4.00	
4	3" "		1.00	1.35	
3	2" "		.45	.48	
3	1" "		.16		
2	1-1/2" "		.28	(\$205.71) .56	70%
147	Ft. 10" Pipe		4.25	624.75	61.71
1840	6" "		1.88	2515.60	
1051	5 "		1.45	1523.95	
963	4 "		1.08	1040.04	
736	3 "		.75-1/2	555.68	
1932	2 "		.36	995.52	
23	2-1/2		.57-1/2	13.22	
76	1-1/2		.27	20.52	
603	1-1/4		.22-1/2	135.68	
741	1" Pipe		.16-1/2	10.83	
				<u>\$7435.79-65%</u>	<u>2602.43</u>
					<u>3717.92</u>
32	Ft. 3/4" Pipe		.11-1/2	3.68	
52	" 1/2" "		.08-1/2	4.42	
2	10" Gate Valves		24.50 Net		49.00
9	6" " "		30.00	270.00	
15	5" " "		25.00	375.00	
4	4" " "		20.00	80.00	
10	3" " "		15.00	150.00	
5	2" " "		10.00	50.00	
2	1-1/2" " "		5.00	10.00	
11	1" " "		2.50	27.50	
10	2" S. Check Valves		4.75	47.50	
1	1-1/4" " "		2.25	2.25	
2	5" Angle Valves		27.00	54.00	
1	1" " "		1.80	1.80	
1	1-1/2" Throttle V.		7.00-50%		3.50
10	3" Pop Valves		65.00-80%		130.00
9	Steam Gauges		8.50 Net		76.50
8	Water Gauge Columns		22.00-75%		44.00
3	12" Steam traps		23.00-65%		24.15
11	1/2" Brass Water Cocks				
1	3/4" " " "				
1	45 Elbow			3.15	
1	6" Expansion Joints			24.00	
16	1-1/4U. and 5-1" Unions-46&33			8.51	
15	3/4 & 6-2" Plugs .27 & .10			.87	
1	4" and 1-1-1/2" Plugs .42 and .07			.49	
26	2" Return Bends		.80	20.80	
45	1-1/4" " "		.40	18.00	
28	1" " "		.30	8.40	
7	3/4" " "		.26	1.82	
3	6" Caps		1.55	4.65	
				<u>1493.99-65%</u>	<u>408.39</u>
	Forward				<u>\$4453.46</u>

SURFACE PIPES AND FITTINGS(Concluded)

	Brot Forward		.85		4453.46
11	2" Cross Ties	.85	6.00	9.13	
1	5" " "	6.00		6.00	
1	8 x 6 Bushings			2.75	
1	6 x 5 "			1.25	
3	5 x 4 "		.93	2.79	
5	4 x 3 "		.50	2.50	
3	3 x 2 "		.30	.90	
8	2 x 1-1/2 "		.14	1.12	
1	2 x 1/4 "			.14	
1	2 x 1/4 "			.14	
7	1-1/2 x 1-1/4 "		.09	.63	
5	1-1/4 x 1 "		.07	.35	
3	1-1/2 x 1 "		.09	.27	
1	6 x 4 "			1.25	
1	4 x 2 "			.50	
7	2 "		.14	.98	
2	1-1/2 "		.09	.18	
3	1-1/4 "		.07	.21	
				<u>31.09</u>	
			Less 70%	<u>21.77</u>	<u>9.32</u>
			Less 10%		<u>4462.78</u>
					<u>446.27</u>
					<u>4016.51</u>

May 1st, 1901.

-OFFICE-

1	Detroit Vault	59.05	
1	Birch Desk-High-	32.45	
1	Common Desk-Taylor's-	32.45	
1	Check Protector	17.70	
1	Check Case and Table	7.08	
1	Letter Press Stand	5.90	
	Office Chairs	17.70	
1	Reclining Chair	5.90	
2	Table Desks	8.85	
1	High Stove	1.18	
1	Amberg Cabinet	5.18	
1	Bronze Desk-Railing and door	10.80	
1	Porcelain bowl and slab	4.86	
1	Typewriter and Cabinet	21.00	
1	Radiant Home Stove	24.00	
1	Garland Stove-Old-	5.67	
1	Garnet Stove-New-	35.00	
1	Radiant Home Stove-Supply-	24.00	
1	Oak Roll Top Desk	10.00	
		<u>328.77</u>	
	Less 10%-\$318.77-	<u>31.87</u>	\$296.90

-ELECTRICITY-

Electric Light Equip

20670	Ft. Wire(on surface) # 12 & 14	.01	206.70	
50	Ft. Portable Cord	.08	4.00	
4516	Ft. Wire Underground	.01	45.16	
35	Cells Complete	.35	12.25	
17	Porous Cups	.22	3.74	
289	Glass Insulators		2.89	
700	Porcelain Insulators		7.00	
3	Fuse Plates		.50	
15	Rubber Sockets	.25	3.75	
1	Soldering Iron		.50	
1	Pr. Pliers		.50	
1	Lineman's Fire Pot		1.00	
1	Small Bench Vise		1.00	
5	Bells		7.50	
144	Triumph Lamps	.16	23.04	
80	Lamp Sockets		.80	
36	Push Buttons	.50	<u>18.00</u>	\$338.33

Note,- 2 Dynamos)
 2 Westinghouse Engines) Inventoried under Stationery
 1 Station Board) Machinery

SURVEYING AND CHEMISTRY.

1	Buff and Berger Transit	'86	106.00	
2	Leveling rods		4.00	
1	100 ft. steel tape		8.00	
2	Brass Plumber's Bobs		1.50	
1	Mercury " "		1.44	
1	Map Case		5.00	
2	Draughting Tables		10.00	
1	5' Steel straight edge		10.00	
1	1' " Scale		2.25	
1	Steel Triangle		.80	
1	Celluloid triangle		.88	
6	Bottle ink	2-.40	1.20	
1	Roll Tracing paper		6.08	
1	" Plain drftg. paper	Old		
1	" Profile paper	Old		
2	Glass Bell Jars		4.00	
2	Dessicator		4.00	
2	Platinum Crucibles		40.00	
1	Anyltical Balance '89		28.50	
1	Set Weights		13.54	
1	Steel Spatula		.30	
1	Druggist Scales(Baker's)	8.00-15%	6.80	
1	Distilling Apparatus(James)'92		13.50	
6	Carboys		10.50	
20	2 Nitre bottles		5.00	
6	1 Nitre wash bottles		1.20	
9	Reogent bottles	1.75-per D.	1.32	
2	Graduate flasks		.50	
3	Graduate cylinders		3.03	
4	Burettes		8.65	
31	No.00 Beakers		2.03	
28	No. 2 "		3.75	
1	Porcelain Plate		.94	
6	Spot. plates		2.92	307.63
1	Wedgewood Mortar		1.00	
36	2" Funnels		3.60	
28	Erlinmeyer Flasks		5.25	
1	Lb. Glass tubeing		.50	
2	Doz. Small watch glasses		.37	
2	Doz. large watch glasses		2.25	
27	Drying pans		5.40	
1	3 Gal. JKT Can		.45	
1	1 Gal. J.K.T. Can		.18	
1	Plate 24 x 36			
1	Rubbing hammer		9.00	
1	Baker scale			28.00
				<hr/>
				335.63
1	Gates Laboratory Crusher			153.77
				<hr/>
				\$489.40

MACHINE SHOP.

1	38" Bickford Drill Press	.94	184.25
1	26" x 24' Blaisdall Lathe		379.50
1	2-1/2" x 6" Curtiss & Co. Pipe threader & cutter		107.25
1	20" Cushman lathe chuck		14.85
1	L. G. Chuck for drill press		2.75
1	3' x 30" x 30" Gray Planer		420.75
1	18" Chuck		28.05
6	Pulleys		26.92
40	2-1/2 shafting		78.91
12	2-1/2 "		5.70
8	Lathe Dogs		4.92
30	Machine taps		51.50
3	Tap. Wrenches		7.20
20	Twist Drills		35.00
4	Drill Sockets		7.00
1	Prentice Vise		15.86
148	Ft. Belting 2"	.21	31.08
80	" " 3"	.33	26.40
54	" " 4"	.45	24.30
15	" " 4-1/2"	.51	7.65
42	" " 6"	.69	28.98
1	Sett Compound Gear		5.50
50	Soft Steel Man drills	.05	2.50
85	Lbs. Forged drills & reamers	.10	8.50
20	Lbs. Iron Tools	.05	1.00
2	Angle Plates		4.00
2	V Blocks		2.00
3	Pcs. Blocking & tool post 8" high for lathe		23.00
1	Pipe center		8.00
1	Emery wheel and arbor		1.80
1	Chain blocks		30.00
1	Breast drills		2.25
2	Armstrong tool holders	3.23	6.46
2	Bushing frames	6.00	12.00
1	7 lb. Hammers		.42
1	12 lb. C. Wrench		.75
1	6 C. Wrench		.45
1	24 Trim wrench		2.50
1	18 " "		2.60
2	5 gal. cans	.70	1.40
2	1/2 pt. Squirt can	.15	.30
120	Lbs. Lathe and planer tools	.05	6.00
1	Bolt Cutter		185.00
44	Ft. 3-1/2" Belting	.40	17.60
20	Ft. 3" Belting	.33	6.60
1	Combination Ratchet		18.00
1	Valve reseater		
		9250.00	
45	Ft. 10" Leather belt	1.50	67.50
1	2 C. Drill pressess 40%		2004.95
	Less 40%		803.80
			\$1201.15

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CARPENTER SHOP.

1	Hand Drill Press		12.00
2	12" Pulleys 5" Face		3.20
2	Counter shafts and hangers	4.50	9.00
1	12" Pulley 1-14")		
4	8" ") all		5.40
	Benches		9.00
2	Hand Boring Machines)		
3	1-1/2 Augurs)		
2	1-1/4 ")		
1	2 ")		
1	1-1/8 ") all		10.50
1	20" Circular rip saw		4.93
1	8" " "		2.96
1	14" " X Cut		3.33
1	12" Circular rip saw		2.16
1	Steam boring Machine with shaft(94-160.00)		
1	Wood Lathe-ing & Pulleys for both)		84.53
1	Grind Stone		6.00
3	Cross Cut Saws	3.25	8.00
6	Cant Hooks	1.00	6.00
1	Scoop Shovel		.90
6	Screw Clamps	.67	3.92
12	Spanner Wrenches	.15	1.80
1	Pin Hammer		.50
1	Saw Vise -Bench and screws		5.40
28	Ft. Ladders		5.60
1	18 ft. Straight Edge		.25
2	Brood Axes		4.00
1	Nail Pulley		1.50
1	3/8 Machine Augur		.90
1	5/8 " "		1.10
1	3/4 " "		1.25
1	1/4 x 8 Emery Wheel		1.50
1	1/2 x 8 " "		1.59
1	Emery Wheel Bench and Arbor		
22	Ft. 2" Belt 21c		4.62
24	Ft. 4" " 45c		10.80
16	Ft. 3" " .33		5.28
22	Ft. 3" " .33		7.26
			<u>\$225.18</u>
	Less 10%		<u>22.51</u>
			<u>\$202.67</u>

BLACKSMITH SHOP.

4	Anvils	960#	.06	57.60	
2	Box Vises		7.10	14.20	
4	10# Sledges	40#	.10	4.00	
3	7# Hammers	21#	.06	1.26	
3	Die Stocks		4.05	12.15	
1	Man Drill			5.40	
1	Swage Blocks			5.00	
60	Prs. Tongs	544#	.03	16.32	
40	Bolt Tools & Header		.25	10.00	
65	Punches		.10	6.50	
12	prs. Swage Iron			4.50	
4	Tuyers-Iron		2.63	10.52	
4	Forges		7.20	28.80	
1	Buffalo Blower			20.35	
1	Crane and Chain			12.50	
1	Howe Platform scales			8.10	
1	Bellows			20.00	
1	Bellows			20.00	
1	2 Gal. JKT Dan			.30	
1	Squirt Can			.30	
2	Alligator Wrenches			.82	
1	Ratchet				
				<u>258.52</u>	
	Less 25%			64.63	\$193.89

FIRE APPARATUS.

1	Fire Extinguisher			2.50	
1	Fire Extinguisher			5.00	
6	Hydrant				
4	3" Tees				
2	4" Tees				
2	4" Valves				
2	3" Couplings				
24	Plug Valves				
1	5" Gate				
4	5" Flanges				
1	4 Gate Valves				
903	3" Pipe				
202	2" Pipe				
1500	4" Pipe			259.50	
2	Hose Carts				
3	Hose Nozzles			70.20	
1	Small Hose Reel			<u>7.16</u>	\$344.36

THE CLEVELAND-CLIFFS IRON CO.

Copy of Hayes Mining Company's Inventory of January 1st, 1901.

MINING EXPENSE-TOOLS IN GENERAL USE.

May 1st, 1901

2	Steel Bars	100#	.06-1/2	6.50
2	Shovels		.62	1.24
2	2 Gal. Cans		.30	.60
1	1 Qt. Oiler			.30
1	Cant Hook			1.00
1	Stove			10.00
4	Bars	200#	.06-1/2	13.00
1	Shovel			.62
1	2 Gal. Can			.30
1	3 Gal. Can		.40	.40
1	1 Gal. Can		.18	.18
2	1 Qt. Oilers		.30	.60
1	Cant Hook			1.00
1	Stove			10.00
1	Lantern			.50
6	Steel Bars	300#	.06-1/2	19.50
4	Shovels		.67	2.68
2	2 Gal. Cans		.30	.60
1	3 Gal. Can		.45	.45
1	1 Gal. Can		.18	.18
1	1 W. Oiler			.30
2	Picks		.75	1.50
2	Cant Hooks		1.00	2.00
2	Old Hammers		.40	.80
1	Pocket Scraper			1.00
3	Stoves		10.00	30.00
159	Shovels		.69	109.71
57	Hammers	399#	.06-1/2	25.94
9	Sledges		1.60	14.40
90	Scrapers		.15	13.50
155	Picks		.75	116.25
13	Probing Bars		.15	1.95
17	Powder Thawers		5.66	96.22
3	Rail Benders	7.50-21.00-	15.00	43.50
47	Mining Augurs		1.00	47.00
16	Wheelbarrows		1.50	24.00
29	Axes		.62	17.98
5	C. Wrenches		.75	3.75
6590	# -118 Hand Drills)1-1/8)			
5313	# -1-1/2 Machine Drills)	12932#	.06-1/2	840.65
150	# -1 Hand Drill			
880	# -7/8 Jumper Drills			
5	Blasting Batteries		11.50	57.50
1	Stove			3.00
2	Chairs			2.50
1	Table			2.00
1	Cannon Stove			3.00
3	Chairs			3.75
1	6 ft. Table & Cupboard			5.00
1	Table desk			6.30
				\$1553.15
	Less 75%			1164.87
				\$388.28

-GENERAL WORK-TOOLS IN GENERAL USE-

2	24" Locomotive Jack Screws	.400	8.00	
2	20" Locomotive Jack Screws	3.00	6.00	
2	Ratchets	17.50	35.00	
2	18" Locomotive Screws	2.00	4.00	
1	12" Locomotive Screws		1.50	
4	Bars	1.50	6.00	
2	10" Treble Iron Blocks	6.50	13.60	
2	14" " Wood Blocks			
1	10" Double Blocks		3.80	
2	8" Treble iron blocks	3.25	6.50	
2	8" Iron Switch Blocks-Dbl. Wood B.	1.70	3.40	
1	8" Iron Switch Blocks		2.98	
1	8" Wood " "		5.25	
2	8" Iron Double Blocks		4.40	
1	Bucket Screw		1.00	
1	Set 8" Rollers		1.00	
225	1 Manilla Rope)			
300	1-1/2 ")			
400	1-3/4 ") 1100 # at .10-1/2			
150	1 ")			
25	1/2 ")		115.50	
1	Crab Wrench		25.00	
6	M. Shovels		4.00	
7	Scrap Shovels		6.30	
5	Picks		3.75	
7	Cant Hooks	1.00	7.00	
1	Pinch Bar		1.50	
1	Spike Puller		2.10	
1	Spike Hammer		1.00	
3	Spanners 1/2", 1", 1-1/4"		.45	
2	Axes	.62	1.24	
			<u>\$270.27</u>	
	Less 75%		<u>202.70</u>	\$67.57

-SHEAVES, PULLEYS, AND WIRE ROPE-

16	10' Sheaves		1137.60	
3	6' "		12.00	
6	4' "		37.80	
2	6' "		22.05	
16	3' "		144.00	
5	30" "		31.50	
42	18" "		133.14	
1900	Ft. 1" C. C. Steel Rope		100.00	
1900	" 1-1/4" "		100.00	
1500	" 1-1/8" "		370.50	
2020	" 1-1/8" "		100.00	
500	" 1-1/4" " (Old)			
320	Lbs. 18" Sheaves		9.60	
240	" Turn Sheaves		7.20	
2000	Ft. 1-1/8 Steel Rope in use.		<u>494.00</u>	2699.39



THE CLEVELAND CLIFFS IRON COMPANY

PIONEER FURNACE DEPARTMENT

ANNUAL REPORT

-1901-

GLADSTONE -- MICHIGAN

The Cleveland-Cliffs Iron Co.

PIONEER FURNACE.

REFINED WOOD ALCOHOL.

GRAY ACETATE OF LIME.

LAKE SUPERIOR CHARCOAL PIG IRON.

FURNACE AND CHEMICAL WORKS
GLADSTONE, MICH.

GLADSTONE, MICH., Jan. 17, 1902.

Mr. W. G. Mather, Pres.,

Cleveland,

Ohio.


ANNUAL REPORT.

Dear sir:-

My annual report had gone forward before your letter of the 14th reached me, I being under the impression that it was necessary for me to mail my report not later than the 15th.

With the exception of the condition of the employees, I think I have covered the ground referred to in your letter. Nothing has been done to better the condition of the employees during the past year with the exception of sinking an additional well on the location. They have very comfortable houses which will compare favorably with those furnished by any large manufacturing company and the only additional recommendation I would make is the building of a club house and canteen, with which you are thoroughly familiar, knowing my ideas which have been expressed to you in detail and also having had the benefit of reports furnished you by two experts in social matters- sent here by yourself.

Yours truly,


Mgr.

P. S. If this club house was started before May 1st, when they get their license, it would knock out both saloons.

Mr. W. G. Mather, Pres.,

Cleveland,

Ohio.

Dear sir:-

I beg to submit my report covering the operations of the Pioneer Furnace Department of The Cleveland-Cliffs Iron Company for the year ending Nov. 30th, 1901.

FURNACE OPERATING

The furnace was in blast during the year 1901 about 364 days, one day being lost due to the time taken up repairing air valves on stoves.

	<u>1901</u>	<u>1900</u>
Total time delayed - - - - -	178.47 H. ✓	236.08 H.
Avg. delay per day exc. of repairing air valves	25.9 H. ✓	39.2 M.
Avg. tons made per hour - - - - -	4.44 ✓	4.41
Total number of casts for year - - - - -	1444 ✓	1443
Avg. tons per cast - - - - -	26.8 ✓	26.4
Avg. tons per day - - - - -	106 ✓	106
Avg. burden for year -ORE-	2971 ✓	3030
Avg. burden for year -LIMESTONE-	151 ✓	184
Avg. burden for year -CHARCOAL-	1200 ✓	1200
Total avg. burden for year - - - - -	4322 ✓	4414
Total number of full charges for year - - - - -	55645 ✓	53559
Total number of blank charges for year e - - - - -	12 ✓	0
Total number of charges for year - - - - -	55657 ✓	53559
Avg. number of charges per day- - - - -	152.8 ✓	148.4
Avg. heat of Stove No. 1. for year - - - - -	1195	1150
Avg. heat of stove No. 2. for year - - - - -	1195	1158
Avg. steam pressure for year - - - - - ✓	88	98
Avg. blast pressure for year - - - - -	6 $\frac{1}{4}$	7.1
Avg. revolutions of engines for year - - - - - ✓	35	41

*pulling for strength
and all full marks*

COMPARATIVE DETAILED STATEMENT OF DELAYS

	<u>1901</u>		<u>1900</u>	
	<u>Hrs.</u>	<u>Min.</u>	<u>Hrs.</u>	<u>Min.</u>
Casting - - - - - ✓	137	55	114	44
Repairing engines - - - - -		35		20
Cleaning and putting in blow pipes <i>how many</i> - - - - -	8	41	7	47
Repairing Hoist- - - - -		10		37
Cleaning Gas Flues - - - - -		00		15
Replacing tuyers - - - <i>how many</i> - - - - -	8	10	1	5 ✓
Changing Gas Valves - - - - -	22	00		00
Cleaning and repairing stoves - - - - -		00	100	45
Connecting Water Purifier- - - - -		00		50
Repairing Water Pipes - - - - -	<u>1</u>	<u>16</u> ✓		<u>00</u>
Total delays - - - - -	178	47	226	23

Outside the time lost repairing air valves on stoves, the delays are purely nominal. The difference in total burden carried is due to a lower percentage of limestone, made possible by the large percentage of Bessemer iron produced. The output for the year was 34366 tons Non-Bessemer pig iron, 4373 tons of Bessemer, making the total for the year 38739 tons. The following table is a detailed statement of percentages of different grades produced:-

COMPARATIVE STATEMENT OF PIG IRON MADE

GRADES	1901		1900	
	TONS	PERCENT	TONS	PERCENT
A Scotch	497	1.3	885	2.3
B Scotch	646	1.6	948	2.4
G Scotch	900	2.4	1223	3.2
No. 1 Special	1608	4.2	2074	5.4
No. 1 Foundry	4963	12.7	4220	11.
No. 2. Low	4357	11.2	4019	10.5
No. 2 High	4262	11.	4696	12.2
No. 3. Low	5632	14.5	4938	12.9
No. 3. High	2935	7.6	3024	7.9
No. 3. Malleable	896	2.3	1023	2.7
No. 4. Low	1923	5.	1832	4.8
No. 4 High	2475	6.4	2819	7.3
No. 4 Malleable			26	.05
No. 5	1510	3.9	2391	6.3
No. 6	1841	4.7	2521	6.5
Bessemer 2 High			129	.3
Bessemer Foundry			25	.05
Bessemer 3 High	19	.0	35	.05
Bessemer 4 Low	45	.1	51	.1
Bessemer Special	4301	11.1	1384	3.5
Bessemer 2 Low			26	.05
Bessemer 3 Malleable	8	.0		
Total- - -	38818	100	38289	100

There was consumed during the year the following quantities of material:-

O R E	USED		PERCENTAGE	OVERRUN		SHORTAGE	
	Tons	Lbs.		Tons	Lbs.	Tons	Lbs.
Lake	42026	1388	57.6				
Sallsbury	13673	1530	18.8				
Cliffs Shaft	5537	312	7.6	142	1460		
Foster	3062	1316	4.2				
Section 12	1134	1358	1.5				
Lake Bessemer	3027	1800	4.1	109	1940		
Angeline #1 Hard	3666	1540	5.1	203	2130		
Tilden Silica	802	1271	1.1	42	1528		
Total- - -	72931	1554	100	499	338		
Limestone	3764	650					
Charcoal	3352044	Bushels.				543	Bus.

The average ore yield for the year was 53.1. The bushels of coal per ton of pig iron 86.5. The pounds of limestone per ton of iron 218.

Non-Bessemer yield	53.4 Ore	Bessemer yield	58.9 Ore
Non-Bessemer yield	86.4 Coal	Bessemer yield	87.2 Coal
Non-Bessemer yield	218.0 Flux	Bessemer yield	212.0 Flux

Leaving out the Bessemer yield, our ore mixture for the year 1901 was one-tenth of one percent lower than for 1900.

Our coal per ton of iron was two and one-tenth bushels higher. Our limestone per ton of iron decreased thirty-nine pounds.

The Bessemer mixture shows an increase in yield of two-tenths of one percent. Coal an increase of eight and six-tenths bushels per ton. Limestone an increase of three pounds per ton.

There are several causes which occur to me for the increase ⁱⁿ consumption of fuel per ton of pig iron. Referring to the non-Bessemer, we find the furnace twelve months older, which would undoubtedly have some effect on fuel consumption. Three-tenths of this increase is due to deducting from the pig iron produced shortages of iron at the lower lake docks. The chief cause however in my mind- is largely due to the very irregular running of the furnace, made necessary by a shortage of all grades of iron- compelling us to continually change the furnace from hard to soft irons and visa-versa. In addition to the above, we have used in the neighborhood of 700,000 bushels of retort coal obtained from our plant and Manistique. Experience has demonstrated that when running on soft iron, to keep the furnace up to our requirements, we are compelled to reduce our burden about 100 pounds. Taking up the Bessemer, we were compelled to use twenty-five percent more Angeline in our mixture than in the preceeding year. To produce the iron called for under our specifications, we could not carry as heavy a burden nor push the furnace to her most economical capacity. On the other hand, this increase in fuel was more than offset by the much lower percentage of off-grade iron produced. During the year 1900 with the production of 1384 tons, we produced 266 tons off iron, last year producing 4301 tons, the off iron only amounted to 72 tons.

I would strongly recommend that in the future the furnaces be run as uniformly as possible, avoiding the continual changing from one grade to another.

There was consumed during the year 3,352,044 bushels of charcoal at an average cost delivered at the furnace of .0697. The cost of pig iron for the year was \$14.39 as against \$12.92 for the preceding year, making an increase of \$1.46 per ton over the year 1900. The following is a statement showing comparative costs:-

	<u>1901</u>	<u>1900</u>	<u>INCREASE</u>	<u>DECREASE</u>
General Espense	.500	.500		
Maintenance	.227	.178	.049	
Operating	1.124	1.119	.005	
Stock	11.449	9.898	1.551	
Depreciation	.666	.798		.132
Loading	<u>.074</u>	<u>.083</u>		<u>.009</u>
Total- - - -	14.040	12.576	1.605	.141
Cleveland Office Exp.	<u>.350</u>	<u>.350</u>		
Total- - - -	14.390	12.926	1.464	

.....

Analyzing this statement, we note that two items have decreased, making a total saving of 14.1¢. They are Depreciation and Loading. The decrease in the first is due to the fact that there was less new construction. The saving in Loading was due largely to the fact that we were not compelled to hire as many outside teams for dock work. Taking up the items showing increase in their regular order, we find that Maintenance has gone up 4.9¢ per ton. This is entirely due to the increased age of the plant. We were compelled to put in new chimney valves which cost 3.2¢ per ton of pig iron produced. Trestles and docks cost us 1.2¢. Buildings .9¢. Pig iron trucks and buggies .8¢. Tuyers and bosh plates .3¢, making the total increases 6.3¢. This was offset by a decrease in machinery maintenance of 1.4¢, making the net increase of maintenance 4.9¢.

Operating shows an increase of a half cent per ton, showing

practically the same as last year. This increase is due to advance in wages to firemen and engineers.

The cost of stock shows a net increase of \$1.55 per ton. 74¢ of which is coal, 14.6¢ is due to the increase consumption per ton of pig iron previously mentioned, while 59.4¢ is due to the increased cost of coal, due to the higher priced retort coal consumed and bought from jobbers. It might be well to state here that the price of the Pioneer kiln coal was practically the same as last year. The remainder of the increased cost, viz. 81¢ is solely due to the increased cost of ore.

The total increases therefore amount to \$1.60½ per ton of pig iron produced, which are offset by a saving of 14.1¢, making a total net increase per ton of pig iron for the year 1901 over 1900- \$1.464. There was shipped during the year 37846 tons of pig iron. Of this amount 16223 tons was forwarded by rail, 21623 tons by vessel. The average cost of loading cars was 7.4¢, a decrease of .9¢ over the preceding year. The cost of loading vessels was 13.4¢, being an increase of .7¢ over the preceding year. This increase was entirely due to repairs on pig iron loaders. The excess of production over shipments was 1093 tons. We closed the season of navigation with 1341 tons pig iron on the dock as against 448 tons in 1900, an increase of 645 tons in stock carried at the furnace.

The following betterments were added to the furnace plant during the fiscal year:- Five new double tenement houses at a cost of \$4657.45, a supply house costing \$1387.55, a well at the new tenement houses costing \$516.65. At the close of the fiscal year the furnace had finished her 26th consecutive month on her second blast and as far as we can judge is in good condition. We have had no breakouts, slips or mishaps worth mentioning. The furnace has not been run to her full capacity for the reason that we could not obtain an adequate supply of charcoal. This question is becoming a very serious one and should be carefully considered, steps being taken in the immediate future to take care of this deficiency. The supply from the line of the Northwestern road is at this writing practically exhausted and after July, this coming year, if we do not

take steps to increase our coal production at the furnace, we will be confronted by a most serious state of affairs. Had we been able to push the furnace up to something like her normal production, we would have largely decreased such items as General Expense, Labor and Maintenance, also fuel. I would recommend that we improve our pumps and blowing engines, suggesting the installation of a compound blowing engine and triple expansion pumps, effecting a saving of steam which could be more than ever utilized to advantage at our chemical plants. Our stock house should also be enlarged as we are experiencing the same old trouble with the setting in of the severe winter weather.

CHARCOAL SUPPLY.

Our ability to obtain a sufficient supply of charcoal to cover our requirements for the coming year presents a most serious problem and should have most careful consideration. I propose to make radical and positive recommendations which I trust you will consider carefully and authorize at your earliest convenience. To be perfectly frank the successful running of the Gladstone plant will large depend upon prompt action on your part. Referring to my 1st year's estimates covering the receipts of charcoal obtained from outside sources, you will note that we received about 286000 bushels, less than our estimates called for. This year the condition will be much worse. We will be absolutely cut off from something over 115000 bushels, which we received from the Burrell Chemical Co. during the year '01. Furthermore the territory on the line of the C. & N. W. Ry. is becoming more and more precarious as a source of supply. Felch Mountain and Ford River will be wound up during the early part of the coming year. From all outside sources in this territory we received last year but 463000 bushels, a trifle over 38000 bushels monthly. A careful canvass among the different jobbers gives us but little encouragement. They will make absolutely no promises for the future but on the other hand intimate that they will not be able to furnish us with as much coal as heretofore.

While they admit that the price we are now paying them, 7¢, is a fair one, they state that the territory is becoming practically exhausted so far as the production of cord wood is concerned. In view of these facts, we can not rely on obtaining anything like a reliable or sufficient supply of coal from the lines of the North Western and Soo Rys. The average daily production of the furnace for the fiscal year just closed was 106 tons daily. Had we run her up to the economical point of production, viz. 120 tons daily, we would have required about 400000 bushels more coal than we actually received. Our total receipts of coal were 3368516 bushels. Of this amount, 2323375 bushels came from our Pioneer kilns and retorts. The remainder being received from outside sources. Deducting the known decrease in production, we can look forward the coming year to a positive shortage amounting to at least 267000 bushels, which will reduce our average daily production $8\frac{1}{2}$ tons, making the output $97\frac{1}{2}$ tons per day as against 106 for the preceding year. As previously stated we will undoubtedly receive less coal from jobbers on the lines of the Soo and North Western. The curtailment of production referred to simply applies to Felch and Ford River, Burrell Chemical Co. and the East Lake kilns. To take care of the shortage and enable us to run our furnace economically, producing say 120 tons daily, we should increase our kiln capacity at the furnace sufficiently to enable us to produce say 1100000 bushels yearly. I therefore earnestly recommend that you authorize me to arrange as soon as possible for the erection of twenty-four 80 cord kilns, with the necessary additions to the chemical plant- to take care of the alcohol and acetate of lime. If work on the additional kilns recommended- were commenced as early as possible in the spring, it is doubtful if they could be completed in time to prevent a serious coal shortage in the early fall of the present year. Even should we drag through the greater part of the present year, we would have to face this shortage in the coming fall and early winter: of the year 1903. I can conservatively state that by that time the outside territories will be practically exhausted.

FREIGHT ON CHARCOAL

	<u>1901</u> Cost Per Bu.	<u>1900</u> Cost Per Bu.
<u>FORD RIVER.</u>		
Freight on C. & N.W. from location to Larch ✓	.0064	.0061
Freight on Soo Line to Furnace	<u>.0022</u>	<u>.0022</u>
Total - - - - -	.0086	.0083
 <u>FELCH.</u>		
Freight on C. & N.W. from location to Larch ✓	.0080	.0075
Freight on Soo Line to Furnace	<u>.0024</u>	<u>.0022</u>
Total - - - - -	.0104	.0097
 <u>OUTSIDE JOBBERS.</u>		
Freight on C. & N.W. various places to Larch ✓	.0084	.0077
Freight from Larch various places to Furnace	<u>.0023</u>	<u>.0022</u>
Total freight on coal over C. & N.W.- - ✓	.0107	.0099
Total freight on coal over Soo Line only- -	.0038	.0046
Total freight on coal from outside jobbers -	.0075	.0061
Bus. coal over C. & N.W. from Ford River - -	78080	119680
Bus. coal over C. & N.W. from Felch - -	35980	161720
Bus. coal over C. & N.W. from Various Places -	462840	290500
Bus. coal over Ann Arbor Ferry- - -	81304	18180
Bus. coal over Soo Line only - - -	<u>386937</u>	<u>740240</u>
Total Bus. from outside sources. - - -	1045141	1330320

Note:-

Coal from Traverse City via. Ann Arbor Ferry is bought F. O. B. Furnace.

PIONEER FURNACE KILNS

The results of the years operations at the Pioneer furnace kilns is in some respects not quite so satisfactory as during the preceding year. There has been a decrease in the number of bushels obtained per kiln of 42. This is entirely due to an insufficient supply of wood, caused by extremely unfavorable weather conditions. On the other hand the yield in coal per cord has increased .9 of a bushel. This I think is due to the fact that we had a much larger percentage of well seasoned wood than for the two preceding years.

COMPARATIVE STATEMENT OF KILN OPERATIONS

<u>Pioneer Furnace Kilns</u>	<u>1901</u>	<u>1900</u>
No. kilns filled during year - - - -	770	796
No. kilns empties during year - - - -	774	793
Cords wood put into kilns during year - -	39803.04	42815
Cords wood in kilns Dec. 1st, 1900 - -	3214	3030
Total cords - - - - -	43017.04	45845
Cords wood carbonized during year - - -	42312	42631
Balance cords in kilns - - - - -	705.04	3214
Inventory Nov. 30th, 1901 "cords" - - -	2670	3056
Over-run "cords" - - - - -	1964.28	158
Total bus. coal made during year - - -	1816960	1894860
Average bus. coal per kiln - - - - -	2347	2389
Average bus. coal per cord - - - - -	45.3	44.2
Average time turning kilns "days" - - -	23.5	23.0
Average brands per kiln - - - - -	5.3	6.4
Average cords per kiln - - - - -	51.7	53.8
Total - - - - -	60.2	60.1
Average kilns turned per month - - - -	64.5	66
No. of kilns in battery - - - - -	50	50

Note:-

158 ^{Shortage} Over-run 1900.

FORD RIVER LOCATION

Refer to Plats "F" & "G".

This location was operated intermittently during the year '01, being used to help out the furnace when coal was most needed. It was started up July 1st and is still running, having operated during five months of the fiscal year. The location turned out a total of 78080 bushels of coal. The yield per cord was 41.9 bushels. As mentioned in my report for the previous year, the wood resources for these kilns has seemed for the last two years to have been practically exhausted but by encouraging farmers and placing a contractor on the Iron Cliffs lands to the south, as shown in plat "G", we succeeded in obtaining about 4200 cords of wood. During the year we used 1864 cords of wood, having a remainder on hand at its close amounting to 2399 cords. As shown by plat "G" the group of lands to the south were practically exhausted last year. The only remaining territory belonging to the Iron Cliffs which could possibly be made available, is what is shown on plat "F" Sec. 27

These lands are nearly four miles from the kilns but our contractor has been able to secure a few choppers and teams and by making a snow road across country will secure a certain amount of wood from this source during the coming winter. Farmers with wood lots will also bring in small quantities the aggregate of which is impossible to estimate at this writing, and the present run of the kilns will thereby be prolonged to some extent.

Taxes.

The present supervisor of Ford River Twp. taxed us to the full limit on our personal property, viz.- for 4200 cords at \$1.70 per cord. He obtained these figures from the contractor. Our personal property valuation was raised from \$1200.00 for the preceding year to \$7140.00 for the year '01. The tax being \$208.87 for '01 as against \$26.35 for '00, showing an increase of \$182.52. On reality the valuation was increased from \$1600.00 in 1900 to \$2400.00 in '01. Our taxes for '01 on reality were \$69.49 as against \$52.73 for 1900, being an increase of \$16.76. The total increase in taxes for this township on reality and personal are therefore \$199.28. The comparative statement for five months operation follows:-

COMPARATIVE STATEMENT OF KILN OPERATIONS

<u>Ford River Kilns.</u>	<u>1901</u>	<u>1900</u>
No. kilns filled during year - - - -	43	62
No. kilns emptied during year - - - -	43	62
Cords wood put into kilns during year - - - -	1978	2637
Cords wood carbonized in kilns- - - -	1864	2437
Total bushels coal made - - - -	78080	119680
✓ Average bushels coal per kiln - - - -	1812	1930
Average bushels coal per cord - - - -	41.9	45.3
Average cords per kiln - - - -	43.1	42.5
Average brands per kiln - - - -	2.9	3.4
Total cords - - - -	46	45.9
Average days turning kilns - - - -	25.7 ✓	25.4
No. kilns in battery- - - -	8	8

Note:-
Started July 1st, 1901 and still running.

FELCH MOUNTAIN LOCATION

We had 1269 cords of wood on the bank at this location at the commencement of the year. It was very doubtful if this plant would be operated after using up the wood on hand. We succeeded in obtaining small quantities of wood from farmers from time to time and deferred operating the kilns until the last two months of the year. We obtained about 500 cords of wood from outside sources and hope to secure a little more, which will run the kilns into the early summer. This is the last year we can hope to operate this location and we would recommend that you sell it to some small jobber before the kilns depreciate, who might make a little coal from time to time. We produced 35980 bushels of coal. The yield was 43.1 bushels per cord. The kilns were operated six weeks.

Taxes.

The Supervisor of Spalding Twp. overlooked our wood this year and we had no personal tax. The valuation of the reality was increased from \$1000.00 for the year 1900, to \$1300.00 for the year '01. Our taxes for 1900 on reality were \$20.36, for '01 \$41.83, being an increase of \$21.47.

COMPARATIVE STATEMENT OF KILN OPERATIONS

Felch Mountain.

	<u>1901</u>	<u>1900</u>
No. kilns filled during year - - - -	19	88
Cords wood put in kilns during year-	893 ⁵ / ₈	3816.04
No. kilns emptied during year - - - -	19	88
Cords wood carbonized during year - - - -	835 ⁵ / ₈	3816.04
Total bus. coal made during year - - - -	35980	161720
Average bus. coal per kiln - - - - -	1893	1837
Average bus. coal per cord - - - - -	43.1	42.6
Average cords per kiln - - - - -	43.1	43.5
Average brands per kiln - - - - -	3.9	3.2
Total cords per kiln- - - - -	47	46.7
Average days turning kiln- - - - -	23.3	22.5
No. kilns in battery- - - - -	8	8

Note:-

Kilns started Oct. 15th. and still running.

SECTION 27.

Nothing has been done at this location during the past year owing to its inaccessibility and high prices prevailing for labor. There are 232 cords of wood cut which will be hauled to the Ford River location.

EAST LAKE AND ST. JAUQUES KILNS.

During the shortage of coal we arranged for the use of the East Lake kilns with Mr. Berry. These kilns were operated two months during the fiscal year. 655 cords of wood were carbonized producing 29600 bushels of coal, the yield being 45.2 bushels per cord. The same plan was followed with the St. Jaques kilns, where we furnished wood to the owner for about the same length of time until he could get a supply from his own territory. 690 cords were carbonized, 27285 bushels of coal obtained, the yield being 39½ bushels per cord.

These locations will not be available to us in the future, and must be cut out of our coal resources.

Gov. says in making bargain say with Berry for coal supplying the wood we should stipulate minimum bid for cord

PARSONS JOB

Refer to plat "A".

The period under consideration constitutes the seventh year in this history of this location. The balance of cords on hand was 41467 as against 28603 cords at the commencement of the preceding year. The total cut was 29839 cords, total shipments 46193 cords, leaving balance on hand at the close of the fiscal year 25113 cords, showing a decrease of wood on hand- amounting to 16354 cords. This reduction is in line with our policy to gradually increase the quantity of wood required for the furnace from our locations on the Whitefish river. The force of choppers was gradually reduced and as far as possible the men were diverted to our Whitefish and Munising Camps. The price for chopping was eighty cents per cord throughout the entire year. Referring to the following table, we note that the average number of men employed per month was 63½. The average cords cut per man per month was 46.9, being an in-

crease of 12.2 cords per man per month over the preceding year. This increase is largely due to better timber and the closer proximity of the camp to the choppings. Although it has been our experience with lower wages prevailing, we are able to get better averages out of the men.

Detailed Statement Parsons Operating.

<u>M o n t h s.</u>	<u>N o. M e n</u>		<u>C o r d s C u t</u>		<u>C o r d s S h i p p e d</u>	
	<u>1901</u>	<u>1900</u>	<u>1901</u>	<u>1900</u>	<u>1901</u>	<u>1900</u>
December	79	179	2860	6577.10	3627	3365.08
January	82	171	3449	6492.08	3186	3809.08
February	91	153	3366	4547	2567	3829.08
March	106	151	2074	5127.16	2684	3608.08
April	110	160	5680	6710	8435	2655.08
May	86	134	3210	4994.12	5150	3249
June	59	112	2667	4093	4542	3155.24
July	55	108	1762	3563.12	4215	2566
August	38	105	1702	1857.24	4114	3450.24
September	29	63	1311	1643	3996	2846
October	24	65	1069	2422	3855	2909
November	23	65	683	2797.08	4803	2507.08
Total-	-	-	29839	50825	46193	37961

On hand Dec. 1st, 1900.....41467.08 Cds.
 On hand Dec. 1st, 1901.....25113 "
 Reduction during year.....16354.08 "

Up to the first of April the preceding year, the wood shipped from the Parsons tract was handled by contractors. At that time- to help out the supply, five Company teams were brought to the location. We also thought it advisable to determine accurately what it would cost to handle wood in connection with our portable railway. Previous to the installation of the railway, our contractors had been paid 65 cents per cord for a maximum haul of about one mile. Before commencing operations under the new plan, negotiations were entered into with the contractors- looking toward a reduction of price per cord as it was proposed to reduce the maximum haul from one to about a quarter of a mile. The best figures we could obtain were fifty-five cents. Our teams were exceptionally well handled and worked in the same territory as our contractors.

At the expiration of eight months it was found that our cost per cord, including general expense and sinking fund, was 51.9¢, showing that our contractors were not making a very large profit on their investment. The original acreage of the Parsons tract was 8360. From this we have cut 6110 acres, leaving a balance remaining of 2250 acres. The lands cut over during the year just closed were very heavily timbered and bring the average yield of cords per acre from 39½ at the beginning of the year to 41.3. 73 percent of the tract has been cut over. There is still standing 27 percent. I do not anticipate that the balance of the timber will cut more than 35 cords to the acre, which would yield about 78750 cords. We have cut, up to the end of the present year, 252833 cords. Including the wood remaining to be cut and what we now have on the grounds, there will be a total of 103863 cords to come from this tract. Providing we pursue our present plan and ship in the neighborhood of 20000 cords per year from the Parsons tract, the life of these operations will be prolonged five years. We again encountered very heavy trying weather in the early spring of the present year. For the greater part of the month of September and October, we had rain every day. Even with our improved facilities and shorter hauls, our hauling operations were seriously interfered with, resulting in a shortage of wood at our furnace kilns. This reduced our output of charcoal and alcohol and added to our fixed charges in operating our railway. For more detailed information covering operations at this point, I would refer you to plat "A" accompanying the report.

Parsons Wells.

The total receipts from the Parson's wells was \$265.50 as against ^{349.85}~~\$511.15~~ for the previous year. This decrease is due to a smaller number of tenants. The net revenue from this source was \$209.07. The wells are not sold to purchasers of surrounding lands but will be retained by the Company for the use of settlers on adjacent descriptions.

Timber Sales.

No timber stumpage was disposed of during the past year.

Considerable effort was made in this direction without results. Acting under instructions from you, an estimate of the remaining timber on the tract was made by A. B. Conners, which is as follows:-

Estimate Made August 8th, 1901.

Stumpage - Parsons Tract.

cf. Howie

Birch.....	2085000 M.
Elm.....	751000 M.
Basswood.....	926000 M.
Hemlock Logs.....	1840000 M.
Hemlock Ties.....	20800 M.

The elm and basswood is good property and we will have no trouble disposing of it. The birch so far has been a perplexing problem. The best offer we have obtained so far has been \$5.50 p.M along side of the track. This will scarcely let us out of the operating. So far there has been no demand for the hemlock logs. The ties we can utilize in our portable railway system.

Parsons Land Sales.

Reference to plat "A" will show that we have sold 34 forties from this tract. 6 of them having been disposed of during the current year. The attractive appearance of these lands which have been brought under cultivation is exciting interest and we are receiving more frequent inquiries regarding them.

TAXES ON PARSONS TRACT.

Garden Township.

We have no personal property in this Township. Our valuation for '01 was the same as for 1900, viz. \$1600.00. Our taxes for '01 were \$20.24 as against \$15.51 for the preceding year, showing an increase of \$4.73. This is entirely due to increased State and County taxes. This increase applies to all our taxable property and is partially due to re-adjustments by the State Board of Review and increased expense in running

State institutions.

Inwood Township.

The valuation of our reality in Inwood Township for the year '01 was \$15187.00 as against \$15484.00 for the year 1900, being a decrease of \$297.00, due to additional lands cut over. Yet for reasons previously stated, our taxes on reality increased in this Township \$121.14, being \$526.93 for '01 against \$405.79 for 1900. Our personal tax in Inwood Township as per the valuation of '01 was \$11200.00 as against \$37000.00 for the year 1900, being a decrease of \$25800.00. Our taxes for '01 on personal property was \$388.64 as against \$969.30 for 1900, being a reducing of \$580.66. While in reality we had 43000 cords of wood at the stump, the assessor found only 14000 cords in this Township.

Harrison Township.

For some reason the assessor in Harrison Township overlooked our personal property altogether. In Harrison on reality we had a material decrease in valuations owing to additional lands cut over. In '01 the valuations on our lands in Harrison Township was \$3140.00 as against \$6680.00 for 1900, being a reduction of \$3540.00 in valuation. Our taxes in '01 were \$88.59 as against \$148.13 for the year 1900, being a decrease of \$59.54. Our taxes on the entire tract show a net decrease over the preceding year of \$514.33.

PARSONS PORTABLE RAILWAY.

Refer to plat "B".

The red lines on this plat show the course of the portable system as it leaves Russells Spur on the N-E¹/₄-Sec. 4 and extends from the end of Russells Spur into Sec. 28. The total mileage is 7.61, which cost \$3367.66. This includes grading, track laying, maintenance and track formen's salary. The average cost per mile is therefore \$442.53. This also includes 18 loading platforms which cost us \$14.00 a piece or \$33.00 per mile. Deducting this charge from the above, we find that the net cost for grading, track laying and maintenance for the portable system is

✓ \$409.53 per mile. I am well satisfied with this showing when you take into consideration that owing to the delay in receiving our steel, we were compelled to lay three miles of track in three feet of snow and commenced operating the road on the disappearance of the snow in the following spring. These facts greatly increased our construction costs and will not occur in the future. The experience of the past year has also taught us to cut our costs in the building of track and we can still further eliminate certain refinements heretofore considered absolutely essential. Referring to my report on the Cobb & Mitchell operations, they stated that the average cost per mile for their road was about \$400.00. While it is true that our road to date has averaged about \$442.00, we find that after deducting the cost of loading platforms, which Cobb & Mitchell do not require in their business, our cost only exceeds theirs by \$9.00. We have further demonstrated that our judgment as to the weight and style of equipment was correct and that it is entirely feasible to take standard flat cars into the woods to be loaded. The fact that we never derailed the engine after the first week and that we never had any breakage to cars out of the ordinary while operating on heavy grades and curves, shows that we can penetrate very rough country, which operated in any other way would be slow and expensive. Taking the cost as previously shown, we deduce the following, based on a mileage of 7.61:-

Cost Per Mile Of Portable Railway.

Labor.....	per mile..	\$203.08
Dynamite.....	" "	.. 32.93
Laying, surfacing and maintaining track.....	" "	.. 206.52

Total cost.....	" "	\$442.53

.....

The total cost per cord of operating the portable system was 19.4¢, made up as follows:- tracks 10.3¢, engine operating 7.0 and depreciation 2.1. Our estimate for this work not including depreciation, which we have no means of determining, was 15¢ per cord.

10¢ being estimated for the track system and 5¢ for operating. We have therefore overrun our estimate 2.3¢ per cord. .3¢ overrun chargeable to track construction and maintenance, 2¢ operating. Our track construction is so close to our estimate that it is hardly worth considering. It was chiefly due, I think, to the unavoidable difficulties incurred in the construction work last year and I feel sure can be brought down under our estimate during the year to come. The 2¢ overrun on operating is more formidable and while a part of it was due to the very heavy grades and curves encountered during the latter part of the year on Section 32, calling for a much heavier coal consumption than anticipated, the fact remains that the greater part of it can only be brought within the limits by handling a larger cordage daily. Owing to the extremely bad weather encountered several months last year, we were unable to work up to our maximum capacity and were also handicapped by the inefficiency of our contractors. This will be avoided next year as we propose to do our own teaming. As previously stated, in view of the shorter haul offered, our contractor's price was reduced from 65¢ to 55¢ per cord, making the total cost of wood delivered on cars 74.4¢. At the first glance, this is rather a bad showing for our new system, being an apparent increase of 9.4¢ per cord over a straight team proposition. We must however bear in mind that had we not put in our railroad system, we would have been compelled to extend the main spur of the Soo Line for a considerable distance at a much heavier expense. In fact, we are charging wood 5¢ per cord to cover this railroad extension. This reduces the apparent difference to 4.4¢ per cord. It was demonstrated after eight months work and charging off a fair depreciation, including the loss of one horse, that the Company were able to haul the wood, working side by side with the contractors, for 3.1¢ less than we were paying them. By substituting our own teams therefore, we could bring the discrepancy down to 1.3¢ over the old system and I think I can safely say that with the experience we have had the last year, we can wipe out this difference.

entirely. I feel very much encouraged, at the same time I am not prepared to give a final opinion on this matter until we have had another years experience. We have undoubtedly derived great negative benefits from the railway. While it is true we have not secured a sufficient amount of wood for our wants, yet- the question of where would we have been had we not had the railway- is a pertinent one. Had we depended on teams alone, I believe we would have had to bank the furnace in the spring and again in the autumn. To bear out this statement, I will simply say that the Manistique furnace with their splendid kiln and re-tort equipment and with fifty odd thousand cords of wood in the bush at a comparatively short distance from their apurs, with 37 teams at their command- was banked fourtimes during the year, covering periods ranging from one week to three- owing to their inability to get wood. While their territory was no worse but in fact practically identical with Parsons tract. I mention this fact to show that an operation well equipped with ordinary facilities, was at times unable to obtain sufficient quantity of wood, and that therefore we were able to do better work through our improved equipment and facilities for handling cord-wood.

MATHEWS WOODD JOB.

Refer to plat "G".

The work at this location for the current year started in under the most adverse conditions. The epidemic of typhoid fever which broke out the latter part of October, 1899, and referred to in my last years report was at its height. Our force of choppers stampeded through fear of the disease. At one time we had fifty-six cases under treatment. Six men died and many others were employed as nurses. Our cut fell off enormously as you will note by comparative statement. As soon as the men commenced to recover, they left the location and our force of choppers at that point has steadily decreased. There is a strong prejudice ex-

isting against this location which will be hard to overcome. To partially obviate this we started a camp on Section 21 on the Southerland & Innis stumpage. This has only been partially successful however. We are greatly hampered in this territory owing to the competition from jobbers in cedar and other timber products who induce our men to leave us by promise of higher wages by the day and month. This will be overcome in time as these people will eventually quit the territory. We were also handicapped in the start by the poor character of the timber and bad bottoms on the East side of the Whitefish river. The territory where the men are working at present- on the West side of the river, is much better and they are making much more satisfactory averages. We will never, however, have as good territory in this locality as at Parsons and will have greater difficulty in securing choppers. The average number of men per month chopping during the year was 69.1. The average cords cut per man per month was 43.1. Referring to plat "C", the dark yellow portions of Sec. 31 and 6 show the territory from which the cord wood has been hauled. The light yellow shows cord wood still standing at the stump. There still remains on the West side of the river 11000 cords principally on bad bottoms, which will be hauled during the coming winter as nearly as possible. On the East side of the river there are 26690 cords on the Mathews land and 4008 cords- Southerland-Innis stumpage on Section 21. The following table is a detailed statement of operations on this tract:

Detailed Statement Mathews Operating

M o n t h s.	N o. M e n		C o r d s C u t		C o r d s S h i p p e d	
	1901	1900	1901	1900	1901	1900
December	73		2661		1627	
January	89	17	2741	169.20	1642	
February	84	37	2252	676.12	1434	
March	71	44	1322	813.24	1364	
April	98	86	4940	2527.08	316	
May	84	53	3735	1882.24		266.24
June	61	51	2053	1690.		1330.24
July	45	52	1492	1472.16		1140.08
August	65	67	2638	2653.12		1438.
September	64	163	2589	4908.16		1362.16
October	54	178	2198	6989.16		1465.08
November	44	120	1193	2755.20		1271.
Total-	-	-	29819	26539.08	6385	8274.16
			46339			
						18264
						41698
						23434

The Mathews tract comprises 8640 acres. During the year 1900 we cut over 34 forties, showing an average yield of 18½ cords per acre. During the year 1901 we cut over 22 forties, obtaining a yield of 29.3 cords per acre. We have cut to date a total of 56 forties from which we have obtained 52350 cords, with an average yield of 23.3. cords per acre. This is practically 27 percent of the entire tract and emphasises the enormous territory we are compelled to cover to obtain a comparatively small cordage. In fact the yield per acre is but little over half as much as we have obtained at the Parsons tract to date. I do not think we can look for a better yield than 30 cords per acre from the remainder of the tract. These results are very disappointing, in as much as we are lead to believe by our land lookers that this tract would yield in the neighborhood of 40 cords to the acre. I wish to impress upon you the fact that you must not be disappointed at receiving increased cost sheets for chopping and handling wood from the Whitefish territory. In addition to the work done at the Mathews tract we cut over 105 acres of Southerland-

Innis stumpage, from which we obtained 4008 cords of wood, showing an average yield of 38.1 cords per acre.

Mathews Hauling.

This operation covered the months of December, January, February, March, and about one week in April. The haul was practically all on snow. Two spurs, #1 and 2, from portions of the territory colored dark yellow on plat "C". The total cost for the entire period including repairs and depreciation charges was 56.7¢ per cord. This also includes the cost of one horse- lost by death, which amounts to 2.7¢ on cordage handled. It also includes 2¢ per cord for depreciation. This is a material saving over last years operations in this territory and is a safe index of what can be done with Company teams at the present scale of wages and cost of supplies. Work at this location was suspended during the summer of 1901 as all dry wood had been hauled and what wood remained on the West side of the Whitefish was for the most part in a very swampy territory.

Taxes Mathews Tract.

The lands in this tract lie in Mathias, Limestone and Masonville townships. The valuation on reality in Mathias Township was practically the same as for the preceding year. Reductions of one-half were made for cut over lands. At assessment time we had 19000 cords of wood in the Township but our personal tax was spread on 8000 cords at .80¢ per cord. Our total taxes for the year 1900 was \$598.20, \$497.30 reality and \$90.90 personal. For 1901 our total taxes were \$1056.38, \$702.27 reality and \$354.11 personal, showing an increase of \$458.18 over the preceding year. Part of this increase is due to taxes on the Jones Lands which we purchased last year, and partly to the increase in State and County taxes heretofore mentioned.

Masonville Township.

In Masonville Township at assessment time we had 6000 cords of wood on the bank. This was not assessed on condition that we would not

claim any reduction for cut over lands. After careful consideration this compromise was agreed to as it was slightly in our favor. The valuations therefore remained the same and our total tax for the year '01 was \$570.11 as against \$358.93 for the year 1900, being an increase of \$211.18. The increase in this Township is due entirely to the higher State and County taxes, all Township taxes being exactly the same as the preceding year.

Limestone Township.

Limestone did not change valuations over the preceding year. We had no personal property in that Township. The rate was increased however 25 percent over the preceding year. Our taxes in this Township for the year 1900 were \$204.87, for 1901 \$288.58, an increase of \$83.71. This increase is entirely due to increased State and County taxes. Like all non-resident corporations and land owners, we have no representation on the town board and can not protect ourselves against bad management and useless expenditures of Township funds. All we can do is to review the rolls and assure ourselves that we are assessed pro-rata with our neighbors, and claim reductions for cut over lands. In view of our large land holdings I would recommend that the land department look carefully into the matters of taxation. Competent advice should be had and if necessary special agents should be present at the different Boards of Review, and careful inquiries instituted as to the administration and expenditures of Township funds. The question of State and County taxation should also be gone into. Your Managers have not the time at their disposal nor can they cover the vast territory necessary to investigate these matters carefully. We can only state in a general way as we have done this year for instance- that State and County taxes have been large increased, why- we do not know. I think the large increase in our taxes during the past year in the several cities and townships wherein our property is located, warrant these recommendations and it might be possible that the Company would be benefited by the formation

of the tax department under a competent head. In spite of all our efforts to keep off personal property from the rolls as much as possible and although our valuations are practically the same as last year, our total taxes have increased in round numberes \$2154.00 over the preceding year.

GENERAL PLAN OF WOOD OPERATIONS

We closed the fiscal year with a total of 67269 cords of wood at our various locations, located as follows:

Parsons.....	25113 Cds.
Mathews.....	41698 "
Wood along Whitefish Ry.....	<u>458</u> "
Total.....	67269 "

This is more than one years supply. A portion of that on the West side of the Whitefish on the Mathews tract will age if not handled at the right time. We are now shipping about equal amounts from Parsons and Mathews, partly for the sake of reducing the 11000 cords of wood on the West side of the Whitefish Ry., which is mostly on soft bottoms and also to appease the Soo Ry. who are crowding us to fulfill our promises to them as to business for their Rapid River Branch. Our general plan is therefore to reduce the stock at Parsosn to green wood, while we accumulate enough on the Whitefish to warrant us conducting a large railroad job for a considerable period. You will remember that the Whitefish river runs through a deep gourge, making it an expensive operation to bridge the stream. For this reason we can not project any spurs from the Soo track to extend into the eastern country until we go north of a point where the Soo crosses the river. The general topography of the eastern portion of the tract is a table land at a considerable height above the Soo Ry. This upper level can be approached by a route similar to that indicated by the red line on plat "C" In as much as it is desirable to facilitate our work in exchanging loaded trains for empty cars with the Soo engine- as near our operations as possible, we are inclined to

** not all at one time* 35.

recommend the construction of about one and a half miles of track, ironed with Soo rail, to where the road crosses the South boundary of Section 29, making this road bed good enough for the Soo people to operate. From this point on we will construct our portable system, hauling from the dry ground in summer and the swampy territory in winter. I need not remind you that this country presents greater physical difficulties than have yet been met in the history of our operations. It will doubtless mean increased costs but has been anticipated and we meet the conditions with an equipment which I believe to be the best that can be devised. A year's experience directly in this line enables us to estimate about what the costs will be. *Note Soo contract covering tracks re*

MUNISING JOB EAST

Refer to plat "D".

Following the meeting at Cleveland January of last year, we established a camp on the East branch of the Munising Ry. at a point where it crosses the North and South line between Sections 32 and 33. The location has been successful from the start, being in favor with choppers on account of a clean dry bottom and the uniform character of the timber. We erected two boarding houses, a store building and an office. With the exception of the office the other buildings were sold to tenants. From time to time others houses were built by choppers to the number of twenty-five. A well was sunk by the Company at a cost of \$228.11 and during the year paid a revenue of \$50.75. A schoolhouse was built by the Township and the town numbers about 250 people. Every possible precaution has been taken to protect the wood from fire. The right of way along the East branch has been cleared and burned and with the coming of dry weather a cabin will be established on the remote side of the block of wood, where a man will be kept on watch during the dangerous season. The average number of men employed per month was 62.6. The average cords per man per month was 53.6. We have cut during the year 17 forties or 688 acres, from which we have obtained 30166 cords of wood or a yield of 44.4 cords per acre. This is a fine showing and is encouraging to us after our

experience on the Whitefish. Owing to deep snow we could not measure the wood in March, therefore this month and April are taken together in the detailed statement of operations following:-

Detailed Operating Statement Munising Job East.

1901.

<u>Month.</u>	<u>No. Men.</u>	<u>Cords Cut.</u>
February	11	186
March & April	40	2442
May	42	2263
June	53	2442
July	67	2776
August	62	3854
September	85	4596
October	94	6155
November	110	<u>5449</u>
Total- - - - -	- - - - -	30166
On hand Dec. 1st, 1901	- - - - -	30166

Referring to the above table, you will note that the average monthly cut was 3016 cords. From now on it is our intentions to decrease as much as possible the number of choppers at the East Munising location. Our aim being to divert the men to the West Camp of the Munising and the Whitefish location.

MUNISING JOB WEST.

Refer to plat "E".

A camp was established at Runly, five miles west of Chatam, in October. In the month of November we had 17 men at work and had cut 257 cords of wood. At this location we built two boarding houses, a store and office. The store and boarding houses have been sold to tenants in persuance of our usual plan. This location is so young that there is little to be said about it this year. We will endeavor however to increase the choppers as early as possible to 50, reducing the number of men at the East Camp by this amount. This will give us two points of shipment for the new furnace and materially reduce our fire risk on the East Branch.

LOT AND LAND SALES.

There were no lots sold by the Company in the City of Gladstone during the past year.

Our revenue from lease holders on Government Lot No. 3. increased \$43.00 over the preceding year, amounting to \$343.00. This revenue pays practically two-thirds of our taxes in the City of Gladstone. We have issued options on the Parsons tract amounting to 240 acres to the following persons:-

Joseph Morcure.....	80 Acres @ \$5.00.....	\$400.00
Sol Speilmaker.....	80 Acres @ 2.50.....	200.00 (Stoney)
N. Pourpour.....	80 Acres @ 5.00.....	<u>400.00</u>
Total.....		\$1000.00

.....
T A X E S

City of Gladstone.

The valuation of our reality and personal property in the City of Gladstone was raised \$1455.00 over the preceding year. Of this increase \$150.00 was the value placed on the two lots sold Ely, which the Company took back. The remaining amount was spread over different pieces of real estate, such as the Manager's, Local Auditor's and Chief Engineer's houses. As other property owners were treated in the same manner, we have no great cause for complaint. Our total tax for 1901 was \$597.15 as against \$550.91 for the year 1900, being an increase of \$46.24.

Masonville Township.

In Masonville Township our furnace, reality and personal, was assessed at the same valuation as in the year preceding. Our taxes for 1901 were \$5029.52 as against \$3202.71 for the year 1900, being an increase of \$1826.81 over the preceding year. This is entirely due to increase State and County taxes.

CHEMICAL PLANT NO. 1.

Chemical plant No. 1 was operated 365 days during the preceding year. For a detailed report of operations, please refer to the laboratory report accompanying, which is too large to incorporate with this. We have decreased the cost of alcohol over the preceding year 4.8¢ per gallon. The total gallons of alcohol produced during the year 1901 was 143213 as against 146165 for the year 1900, being a decrease of 2952 gallons over the preceding year. This is entirely due to an inadequate wood supply at our furnace kilns, the reasons for which have been fully explained under the Charcoal and Wood headings. It was a source of great disappointment to me for I had hoped to exceed the record of 1900. Our average yield of alcohol per cord of wood carbonized was 3.54 gallons for the year 1901, as against 3.44 gallons for the year 1900, being an increase over the preceding year of .10 gallons per cord. The average gallons per day were 392.4 for the year 1901 as against 400.4 gallons for the year 1900, being a decrease of 8 gallons per day over the preceding year. The only improvement added to the plant during the year was the covering of the iron intermediate and copper refining stills with asbestos- at a cost of \$760.00. This was done to save fuel. It will be necessary to make considerable renewals at the plant during the coming year. Our boilers are in very bad shape, likewise our primary stills. These stills are getting very soft and rotten and it is almost impossible to keep them tight. In fact our losses from leakage are gradually becoming greater. I recommend that in the near future that we replace the old wooden primaries referred to with continuous copper stills of larger capacity, similar to those installed at the new plant. If this is not done, I am afraid that our yield in alcohol per cord of wood will show a falling off for the coming year. Our primary capacity has always been too small at the No. 1 plant. By referring to the supplementary report, you will note that whenever our cordage increases and likewise our green liquor, we immediately develop an increased loss of alcohol. Leaving out

Copper is cheap

the shortage of wood referred to, for which the plant was not to blame, its operation has been uniformly successful. I do not see where we can introduce any further economies in the production of alcohol unless it may be in fuel consumption, which could be obtained by introducing improved machinery at the blast furnace. We could also increase our yields by introducing as rapidly as possible- the improved primary stills referred to. I still think we are short condensation capacity and would recommend four additional condensers, and two intermediate stills- equipped with improved Burcey pans. If these improvements are made I believe that we can closely approach a yield of four gallons per cord. While we would also largely increase our yield of acetate of lime.

ACETATE PLANT NO. 1.

Acetate plant No. 1 operated during the year 363 days, two days being lost repairing dry floor. There was produced 1718670 pounds as against 1769908 pounds for the preceding year, being a decrease of 51238 pounds. Of this decrease 9172 pounds was due to time lost for repairs and 42066 pounds due to the shortage of wood previously mentioned. The average per day for the year 1901 was 4586 pounds as against 4875 for the year 1900, showing a decrease of 289 pounds per working day. The average cost for the year 1901 was 38.4¢ per 100 pounds as against 36.8¢ for the year 1900, being an increase of 1.6¢ per 100 pounds over the preceding year. The yield of acetate per cord of wood for the year 1901 was 42.6 pounds as against 41.7 pounds for the year 1900, being an increase of .9 of a pound per cord of wood.

An acetate storage house was built at a cost of \$1457.59, which was charged against No. 1 plant. The increase cost of production was due to the decreased output. Taken as a whole the operation of the plant for the past year has been very satisfactory.

CHEMICAL PLANT NO. 2 .

This plant was completed and started up Jan. 12th, 1901. The total cost was \$127605.02, showing an overrun over the original estimate of \$15640.22. The details making up the totals of this overrun are as follows:-

Tracks.....	\$4401.07
Pyrometers.....	732.82
Changing firing furnaces.....	3534.05
Extra sides on cars.....	1409.36
Herring Bone grates.....	376.29
Acetate liquor pump.....	465.10
Refining still.....	1523.27
Covering Tanks and Stills.....	475.00
Moving car shop.....	462.98
Drying out and testing.....	522.53
Hydrolic Lift, Pump, Poppet & Hopper.....	1737.75
Total.....	\$15640.22

The chief item is tracks. In the original estimate it was proposed to obtain the necessary filling for tracks from the furnace cinder. Owing to the delay in starting the construction we could not utilize cinder but were compelled to call in a dredge and throw up material from the Lake. The next largest item is the change in the furnaces. This was done last summer, being made necessary to save the retorts and will be treated more in detail later. The refining still was found necessary to improve the quality of our alcohol. We were also compelled to put sides on our cars to keep the coal from falling off in the retorts and being lost along the track. The hydraulic lift and hopper was constructed to admit a more economical handling of the coal and has amply paid for itself in the saving of labor and wastage in coal. The pyrometers were put on to enable us to determine us what we weredoing and have a check on the firemen. The tanks and stills were covered with asbestos to save fuel. The acetate liquor pump was put in to improve the quality of our acetate. Previous to its installation the same pump was used to pump acetate liquor and tar and the results were not good. To avoid a danger-our fire risk, we deemed it best to tear down and move our car shop, which accounts for that item. The item of drying out and testing was chiefly made up of fuel used in drying out the retort and boiler settings-

testing pumps, stills, steam pipes etc. The item of grates was made necessary owing to the fact that we could not burn the Anthracite screenings on the grates furnished. We will gradually receive credit for this item as we are using the old grates in other places.

The results obtained from the past years operations of this plant- have been anything but satisfactory. In fact they have been most disappointing to your Local Management. As stated in my last years report the chief difficulty we expected to encounter was that of firing the retorts with coal. Its practicability on large ovens has never been demonstrated. The retorts were set under the supervision of Mr. D. J. Bussman, who had built practically all the large plants- fired by gas, and who designed our original settings. In a comparatively short time practical working demonstrated conclusively that our settings were faulty and that to save the retorts from complete destruction, a change must be speedily made in the settings. The fire was evidently too close to the bottom of the retorts, which had begun to buckle badly. The fire places were lowered at a total cost of \$3534.00. Deflecting plates of cast iron were placed between the fire arches and the bottom of the retort. While these changes will undoubtedly prolong the life of the retorts, they have not entirely done away with our trouble and furthermore have added to our fuel consumption per cord of wood carbonized nearly two hundred pounds. We were informed before installing the retort plant that the process of carbonization could be completed in 24 hours without entailing serious damage to the retort. We had no reason to disbelieve these statements but later developements show this is not done with natural gas, that the average period is from 30 to 33 hours. Working on the lines indicated, we endeavored to turn our retorts once every 24 hours. We encountered difficulties immediately. It was found necessary to resplit all our cordwood and carefully select same. This entailed additional expense of 20¢ per cord. A careful record of temperatures was kept by means of our recording pyrometers and it was demonstrated that toget

off a charge in 24 hours at the latter stage of the process, a maximum temperature of 700 degrees had to be carried at the neck of the retort. This necessarily means a much higher temperature along the bottom plain of the retort and is more than wrought iron will stand. As a result our retorts were badly buckled and were soon leaking at all the horizontal seams, necessitating our going over the entire battery and re-riveting. This was done at a cost of \$1882.77. No. 2 retort was fitted with a new bottom to determine exactly the results of lowering our fire places and the benefits to be derived by the use of deflecting plates. The other retorts being so badly buckled that it was practically impossible to obtain accurate measurement. For a time we were much encouraged as the retort seemed to maintain its shape but after some months run it gradually began to sag, although not so noticeably as before the change in settings was introduced. We have therefore determined to run the retorts practically 36 hours at a lower temperature. This is the only thing we can do to prevent their absolute destruction. Lengthening the period of carbonization will reduce the output one-third, which in view of our enormous outlay in this plant is most serious. The years work has also demonstrated that under the most favorable conditions the maintenance of a retort plant will be extremely heavy. The retorts at the Manistique plant are buckling. During a visit of Mr. Peuchen's Superintendent last week, he stated that their retorts had buckled and that they were so dissatisfied with their present settings that they had held two retorts for several months until they could determine what it will be best to do. His visit to our plant was to find out if possible our experience and whether we could make any recommendations which would help them out of their trouble. He seemed relieved to learn that our experience was similar to theirs. He stated that the Cadillac people had been compelled to re-rivet their retorts on account of their buckling, but that they claimed to have developed a setting which did away with this trouble. Their experience may be like ours as they have not run their new setting for any great length of time. He stated that they told him in a general

use refuse burner

way that the improvement consisted in running a heavy fire brick arch along the entire bottom of the retort- two feet below it and firing from the end. This is in line with our deflecting plates but must necessarily entail a large increase in fuel per cord of wood carbonized. Mr Oliver laid particular stress on this point and said that fuel was no object to the Cadillac people as they use refuse from their saw mills which would otherwise be consumed in a burner. He was unable to get any plans from these people but was going back there and if he succeeded in getting drawings of the settings, would send us a copy. I mention these facts to show you that the difficulties we have encountered have been experienced to fully as great an extent by others. Manufacturers who are primarily producing alcohol and acetate of lime and sell their coal as a bye-product, are, not so seriously effected as ourselves. Where primarily we are after coal, and alcohol and acetate are bye-products. In my preliminary estimates I stated that presupposing that we could turn our retorts in 24 hours, the difference in the cost of coal made in kilns would be about 1.5¢ per bushel cheaper than that obtained from retorts. If we are compelled to increase the time of carbonization one-third and use nearly two hundred pounds of coal more per cord of wood carbonized, this difference will be increased to nearly 3¢ per bushel. Going over the detailed statement showing the operations of the retorts during the past year, you must bear in mind that the plant ran very irregularly and that much time was lost reactivating the bottoms and changing the fire place settings. The plant was very closely watched and Dr. Hudson devoted nearly his entire time to it. Both Mr. Slining and myself gave it a great deal of personal attention and every effort was made to make it a success. In spite of everything we could do it has been practically a failure. I do not wish to appear too pessimistic and admit that we will obtain better results during the coming year and produce cheaper coal. At the same time the fact can not be disguised that the outlay from a coal standpoint is enormous when you consider that it requires an expenditure of

\$127000.00 in plant to carbonize 32 cords of wood in 24 hours and produce but a trifle over 1500 bushels of coal. While I admit that we produce more than double the amount of alcohol than in the old process, still in my judgment this does not offset the large increase in the cost of coal and the money locked up in the plant. To form some idea of the enormous amount of money required to equip a furnace plant with a retort system, I might state that to supply our Marquette furnace with coal based on our Gladstone experience, would require 80 retorts, which would cost a trifle over \$1,000,000.00 with their equipment for taking care of alcohol and acetate. The average cost of coal produced at the retort plant during the past year was .0897. As previously stated, it is hardly fair to take this as a standard of comparison. The \$1800.00 odd dollars for reriviting bottoms was charged against coal under the head of maintenance and owing to the irregular running of the plant and decreased out-put, labor was higher than it should have been. Analyzing our best months run, where we produced the maximum output- shortly after the plant had been put in operation, we find the cost was .077 per bushel or 1.9¢ more than it costs us to produce kiln coal. During this month the retorts were turned every 24 hours. Compelled as we are to run the retorts 36 hours, we will have to add .004 for increased labor and about .006 for the 200 pounds of coal required through the lowering of the fire places and the increased time of carbonization. This will make the coal cost us .087 providing we have no bad luck or extraordinary maintenance charges. The average cost of our kiln coal for last year was .058, showing a difference in favor of kiln coal of .029 or practically 3¢ per bushel. Applying these figures to requirements of 11000 bushels daily; we find that the increased cost of retort over kiln coal would be \$330.00 or a grand total of \$120450.00 for the year, which is anything but a satisfactory showing for the retorts. In addition to this we have yet to demonstrate the life of our deflecting plates and determine what figure they will cut in the line of maintenance charges.

The following table shows the detailed working of the retorts during the year:-

STATEMENT OF RETORT OPERATIONS

Pioneer Furnace.

No. retorts filled.....	2366
No. retorts emptied.....	2366
Cords wood put in retorts during year.....	11356
Less brands not put back.....	440
Less overrun.....	203
Cords, less overrun, carbonized during year..	10713
Total bushels coal made during year.....	503955
Avg. bushels coal per retort.....	213
Avg. bushels coal per cord.....	47
Avg. time turning retorts, "....."	27 hrs. 4 mins.
Avg. cords per retort.....	4.8 cords
Avg. retorts turned per month.....	197
No. retorts in battery.....	10
Lbs. fuel per cord of wood.....	426

No. 2 Chemical Plant.

The results of operating the chemical plant in connection with the retorts has also been disappointing. We have experienced great difficulty in producing a product that will pass inspection. Previous to the installation of an additional rectifying still, we shipped several carloadsto Berry Bros. which was not properly refined, With the understanding that they would complete the process and charge us up with the actual cost of same. This charge amounts between \$2300.00 and \$2400.00 and to my notion should be added to our annual cost sheet for the year. If this were done, it would increase the cost almost 3¢ per gallon. It cost us just 13¢ per gallon more to produce alcohol at the retort plant than at the kilns. Of this 13¢- 11¢ was the charge for firing, no gas being available at the retort boilers. 1.5¢ was the increased cost for chemicals, due to the veryrefractory green liquor we obtained from the retorts. The remaining difference is made up under the itmes of still men and hose. It is hardly fair to consider the .6¢ per gallon for hose as the plant had to be equipped for fire protection and washing purposes.

We never can reduce the item of fuel and I am very much afraid that our labor will be increased, due to the decreased monthly production following the increased time of carbonization. I do not think our chemicals will cost any more per gallon for the coming year. On the other hand they may be slightly reduced. We have improved our process through the introduction of an additional rectifying still and oil separating tanks and I can state positively that we have practically overcome our difficulties of refining and that the quality of the alcohol for the coming year will meet all reasonable requirements. For more detailed information covering operations, would refer you to supplementary laboratory report accompanying this. Owing to the fact that our primary stills are run continuously, we had no reliable method for determining the number of gallons of green liquor obtained daily. Careful experiments with individual retorts demonstrated that the average gallons per cord was 230 and on this data our results are based. Owing to the tremendous loss from leakage and the irregular running of the plant, the data is very incomplete and practically worthless.. If we could keep our retortstight we can give you more reliable data for the coming year. The very high yield for the first four months was undoubtedly due to insufficient refining. While the abnormally low yields were due to leaks in the retorts. From all the reliable data I can gather, the yield of refined alcohol by the retort process- runs from seven to seven and one-half gallons. There was produced at No. 2 plant last year 85872 gallons of alcohol. The average yield per day was 266 gallons. The alcohol per cord of wood was 7.56 gallons. The cost for the year including sinking fund, depreciation etc. was 37.5¢.

Acetate Plant No. 2.

The plant was operated the same length of time during the year as the retorts and still house. The items of labor and depreciation are a trifle higher than they will be in the future, due to the irregular

running of the retorts. In spite of this fact we make a better showing for labor as applied to raking, skimming and loading than at the old plant. This is solely due to a more economical arrangement of the plant. I estimated that the cost of acetate at the new plant would be about 75¢ per 100 pounds under favorable conditions. The cost for the year was 82¢ or 7¢ per 100 in excess of the estimate. Had the plant been operated regularly we would have come within these figures. Reducing the output from the retorts one-third, due to the longer time required for carbonization, will change the condition somewhat but I am under the impression that even the decreased output will not effect our cost to a great extent and that it will remain in the neighborhood of .80¢ per 100 pounds. You will note that the great difference in cost between the two plants is solely due to the fuel required for evaporation, which amounts to practically 44¢ and the .6¢ addition being the plants pro rata for firemen's wages. This difference can not be overcome. There was produced last year at this plant 1301630 pounds of acetate. The average per day was 4190 pounds. The cost per 100 pounds F. O. B. cars was 82.3¢. The yield of acetate per cord of wood carbonized was 115 pounds. This low yield per cord was due to leaking retorts.

GENERAL REMARKS.

The operation of the plant as a whole for the preceding year has been satisfactory, with the exception of the No. 2 Chemical Plants and Retorts. I have endeavored to state plainly under the various headings the causes giving rise to the disappointments referred to, and why in my judgment I can not recommend further additions to our retort equipment. If I regard matters correctly we can not overcome the difference of practically 3¢ per bushel in the cost of retort over kiln coal. There will undoubtedly come a time when pig iron will have to be sold at \$10.00 at the furnace, as has been the case in the past. It will be impossible to do this if we are compelled to pay in the neighborhood of \$2.50 per ton of iron more for coal than if we produced it in kilns. Owing to the large

increase of production of wood alcohol, we can safely assume that the price for this commodity will go down, which will reduce the margin of profit on alcohol to a comparatively small amount and which will practically wipe out any benefits we might derive from the increased yield. The one item of 11¢ per gallon for firing in the retort plant- is a fair profit in itself on alcohol produced. We can not get around this item unless the price of steam coal should be largely reduced, which does not seem probable. The increased cost of acetate of lime, due to the heavy charge for steam used in evaporation, can not be avoided. If we succeed in holding our cost at 80¢ per 100 pounds, at the present freight rate acetate of lime costs us laid down in New York- \$1.15 per 100. Our apparent profits therefore are but 10¢ per 100 pounds and from this we must deduct commissions. Another drawback is the quality of the retort coal. It is not as good as that produced in kilns and our experience has shown that if we are running the furnace on soft iron, and put on any large amount of retort coal- it becomes necessary to reduce the burden about 100 pounds. Furthermore it has also been demonstrated that the maintenance charges on a retort plant will be very heavy. When you analyze carefully the conditions under which a 26 foot wrought iron retort is worked, requiring under the best conditions at the points of highest temperature- at least 600 degrees Fahrenheit, you can readily see why this should be true. We have carried on a great many experiments covering the operation of the retorts, for different periods of time and at different temperatures. In a general way we find that the lowest temperature possible and the longer the time consumed for the period of carbonization, the higher are the results obtained in coal and alcohol. We are also experimenting with the improved Burcey kiln and the Daube process. The Daube process has been proved impracticable in its present stages. The results of the Burcey kiln so far have not been what they should be, although I believe that if we must go into refinements with out process, something in this line will be better than the retorts, for the reason that the maintenance charges will be less. On the completion of these

experiments, I will send you a tabulated report covering all data obtained. Another drawback to the retort process is the difficulty in refining the alcohol. The cost of chemicals and lime is much higher per gallon than it is in the kiln plant and while our data is incomplete, owing to the continuous running of the primary stills, making it hard to accurately measure the gallons of green liquor produced, yet I feel warranted in stating that our refining loss will be almost double the loss at the kiln plant. This is due to the great number of rehandling and distillations required to produce a merchantable product. I do not want you to think I am apposed to improvements and object to taking up modern processes. This is not the case. I think you will admit that I am progressive in my ideas but after careful investigation, I must frankly state that I do not think the retort process in its present stage of development is what we want. In this opinion I am borne out by Messrs. Hudson, Noble and Slining, who have been untiring in their assistance rendered me in handling this important problem. Another improvement in our retort settings has occurred to me, which meets with the approval of the gentlemen mentioned. The change will not cost much and will be applied to one of our retorts. While I believe it will prolong its life, I am afraid that it will add to our fuel consumption per cord of wood carbonized. We have used every endeavor to hurry forward our experiments and arrive at a definite conclusion, in view of the importance of commencing construction on our charcoal plant for the Marquette furnace as early as possible in the spring. Owing to the magnitude of the work it can not be hurried and we will have to do the best we can. If the Marquette plant is delayed, it will be through no fault of ours.

MARQUETTE FURNACE.

Ground was broken for the construction of the Marquette furnace the 31st of May, 1901. We experienced great difficulty from the start, due to the swampy character of the ground and the great quantity of water encountered. In addition to this we were hampered by a very wet summer and

autum, necessitating the running of two large steam pumps night and day during the entire time consumed in constructing our foundations. This added greatly to our cost. The foundations are completed with the exception of a little work yet to be done on those required for the economizers. The engine and pump houses are finished. Three fire brick stoves are practically completed and ready for the fire brick. The furnace shell is erected, also the draft chimney and part of the stand pipe. Four of the Stirling boilers are erected and ready for the brick work. The remainder of the boilers are on the ground. The framing for the lean-to of the stock house is up. At the present time we are erecting the pumps and blowing engines. About 45 per cent of the work on the furnace proper is completed. Owing to the delays on the part of contractors, it was impossible to do any brick laying during the past year. The chief delinquent is the American Bridge Co. Their contract should have been completed about Nov. 1st. As a matter of fact they have no material on the ground. The feed and waste water pipes from the stand pipe to the furnace are in position. The work is in such shape that it can be rapidly pushed forward after commencement of good weather in the spring, and unless something unforeseen should occur, I think the furnace proper can be completed by the commencement of the year 1903.

FINAL REMARKS.

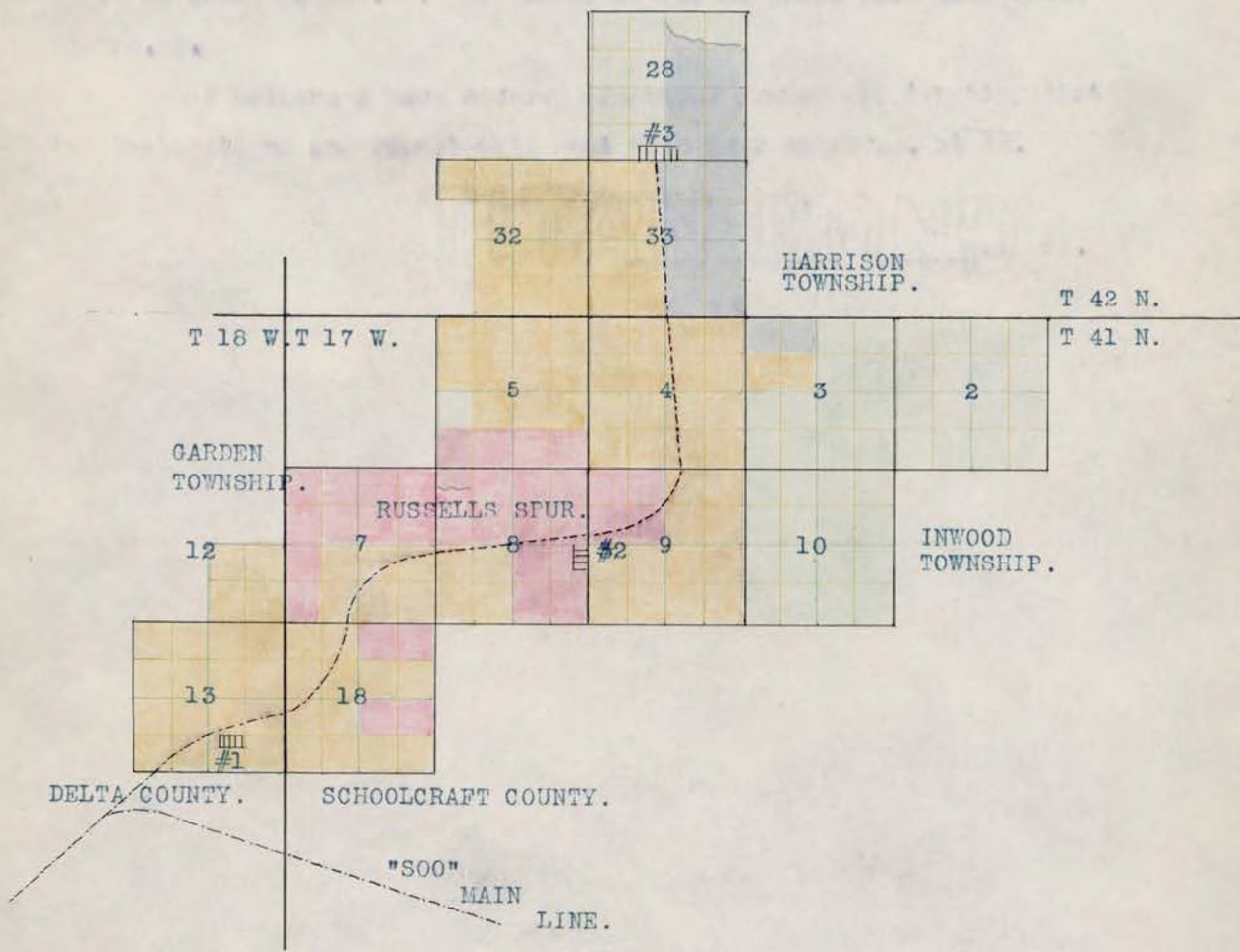
waiting for report experiments
I would recommend that we decide at the earliest possible moment on our coal producing plant at Marquette. We can do nothing toward getting out plans for our chemical plant until we determine what system we will adopt for the production of charcoal. If we are in shape to begin work at the earliest possible moment in the spring, it will keep us very busy to finish the plant before bad weather sets in in the fall. No matter what plan is adopted, we will have an immense amount of brick work to do, which is of such a character that will not admit of hurrying or slighting in any way. We should also come to some conclusion regarding the location of a pig iron dock, viz. whether the present railroad docks will be increased or a dock constructed at the furnace.

I am informed by Mr. Harris that to enlarge the railroad docks would entail an expense of about \$62394.00 and that these estimates have been submitted to you. If a dock were constructed at the furnace similar to the one we have at Gladstone- with concrete retaining walls, the cost would be about \$14297.00. If timber retaining walls were used about \$12520.00.

I believe I have covered the usual ground and trusting that the explanations and report will meet with your approval, it is,

Respectfully submitted,

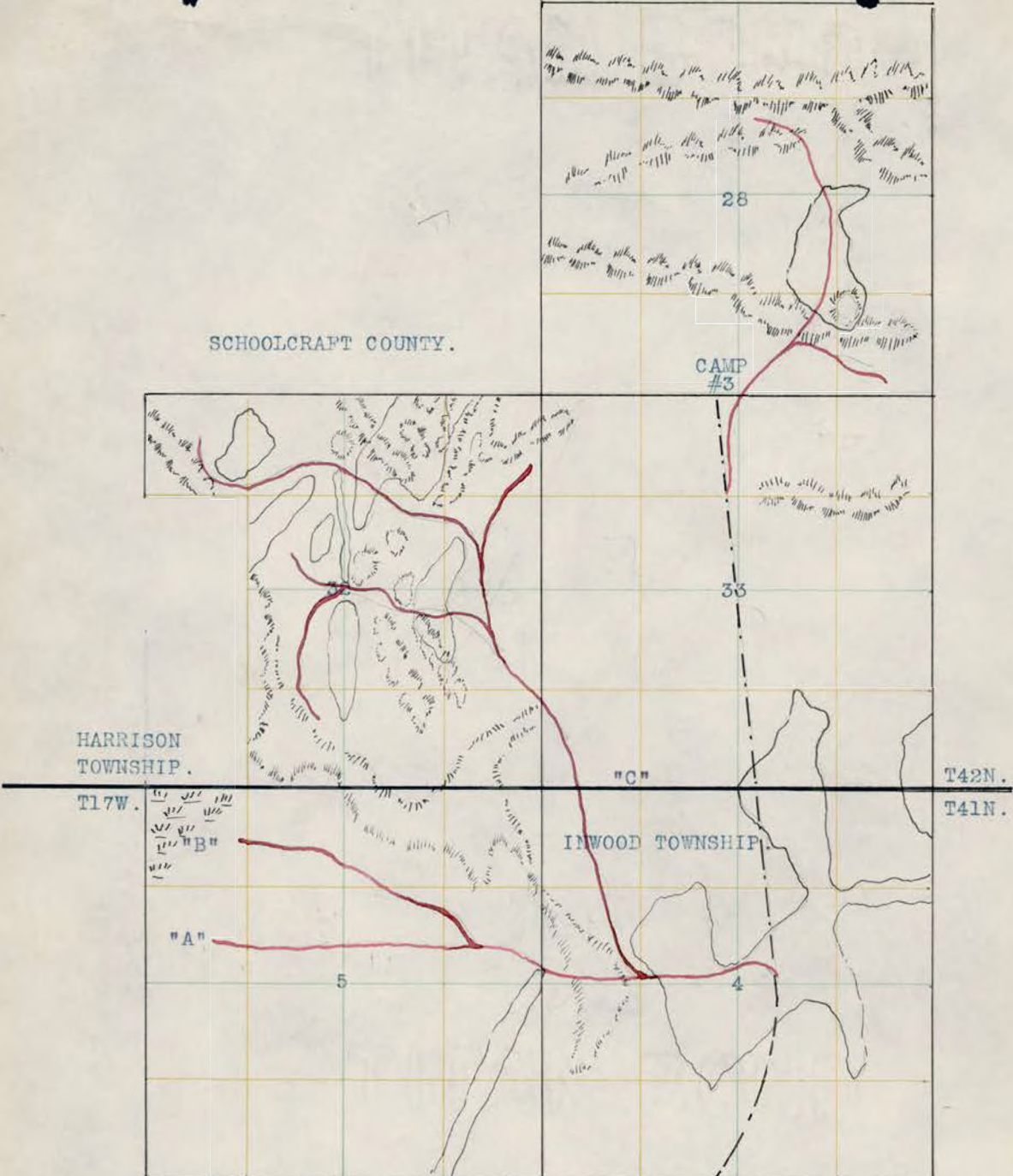
Arthur J. [Signature] Manager.



LEGEND.

- GREEN shows Standing Timber.
- YELLOW shows Lands cut and hauled.
- RED shows Lands cut, hauled and sold.
- BLUE shows Lands cut but not yet hauled.

PLAT "A"
PARSONS TRACT.1901



LEGEND.

BLACK LINE shows "Russells Spur".
 RED LINE shows "Parsons Portable Ry".

how much red at once

PLAT "B"
 PARSONS PORTABLE RAILWAY.
 1901.

T22 W. T 21 W.

WINTERS P.O. [] [] [] []

[] SALOON.

Sutherland-Innis
Stumpage.

[] TOWN
[] HALL.

CAMP #2 []

19
TRENARY.

20

21

Jones Lands.

30

31

28

MATHEWS
CAMP #1 []

Spur #1

32

33

31

Spur #2

T 44 N

MATHIAS TOWNSHIP.

ALGER
COUNTY

T 43 N.

MASONVILLE TOWNSHIP.

DELTA
COUNTY.

6

Spur #3

8

4

[] SALOON.

WHITEFISH
RIVER.

LEGEND.

GREEN shows Standing Timber.

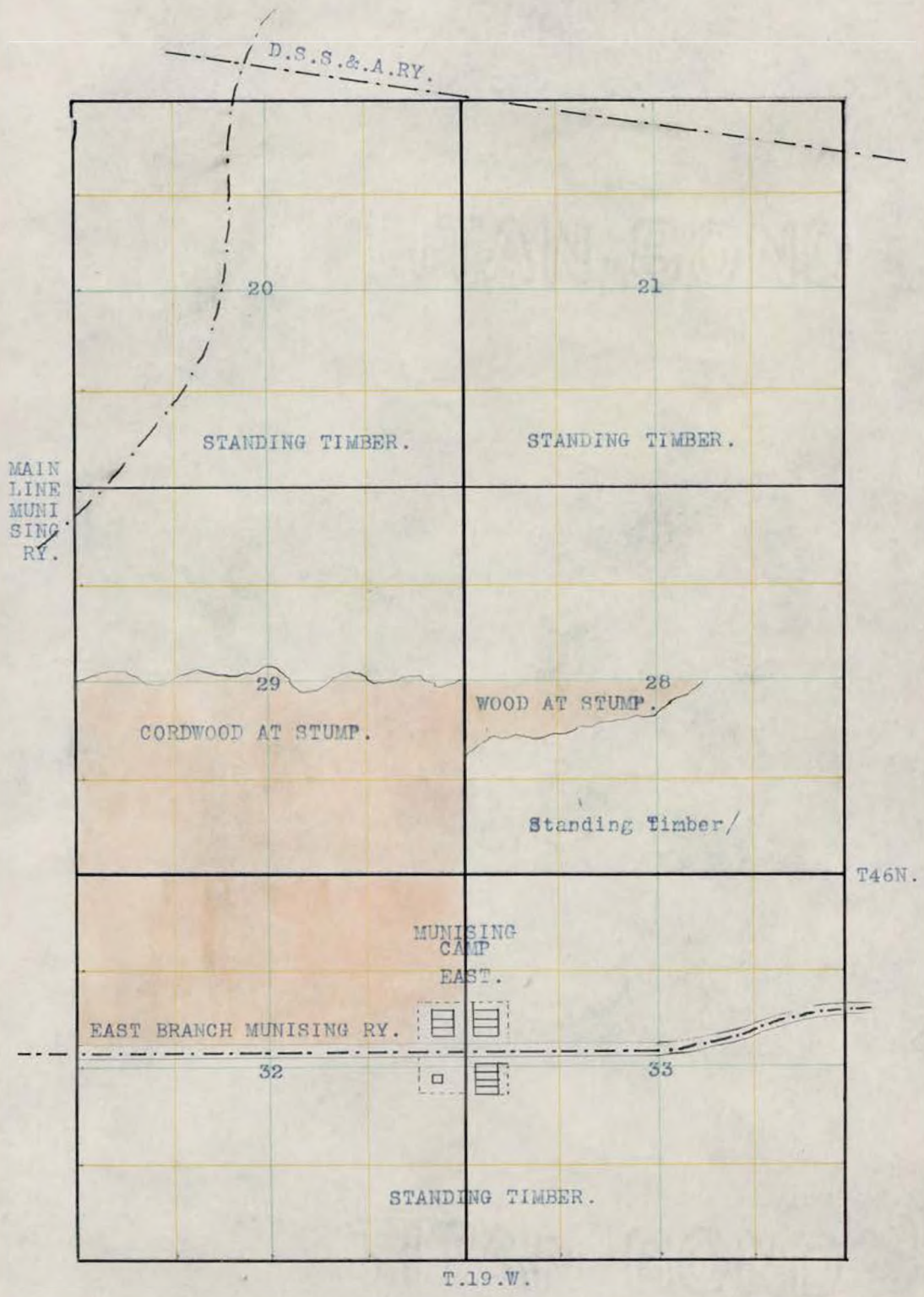
Light Yellow shows Cordwood at the stump.

DARK YELLOW shows lands cut and hauled.

BLACK LINE shows Rapid River Branch of "Soo" Ry.

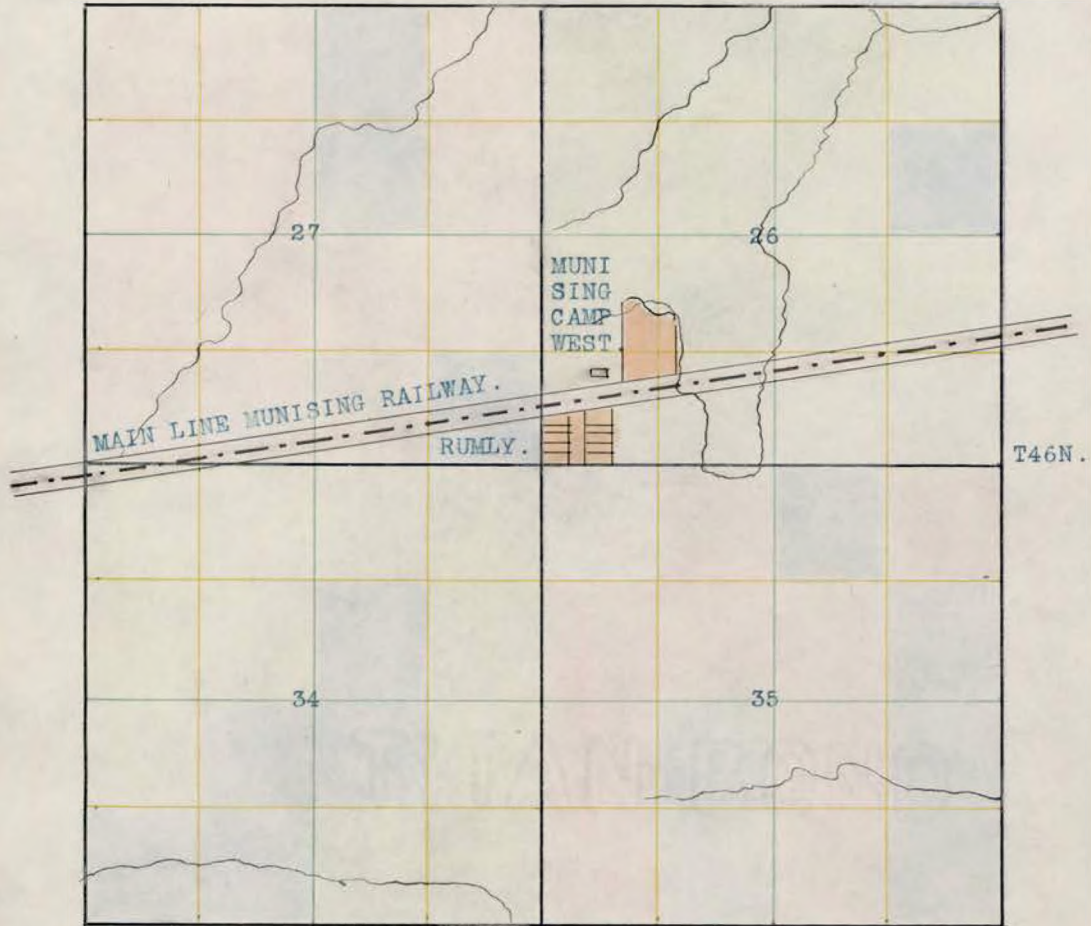
RED LINE shows proposed course of Mathews Railroad.

PLAT "C"
MATHEWS JOB.
1901.



PLAT "D"
 MUNISING CAMP ---EAST.
 1901.

T 22 W.



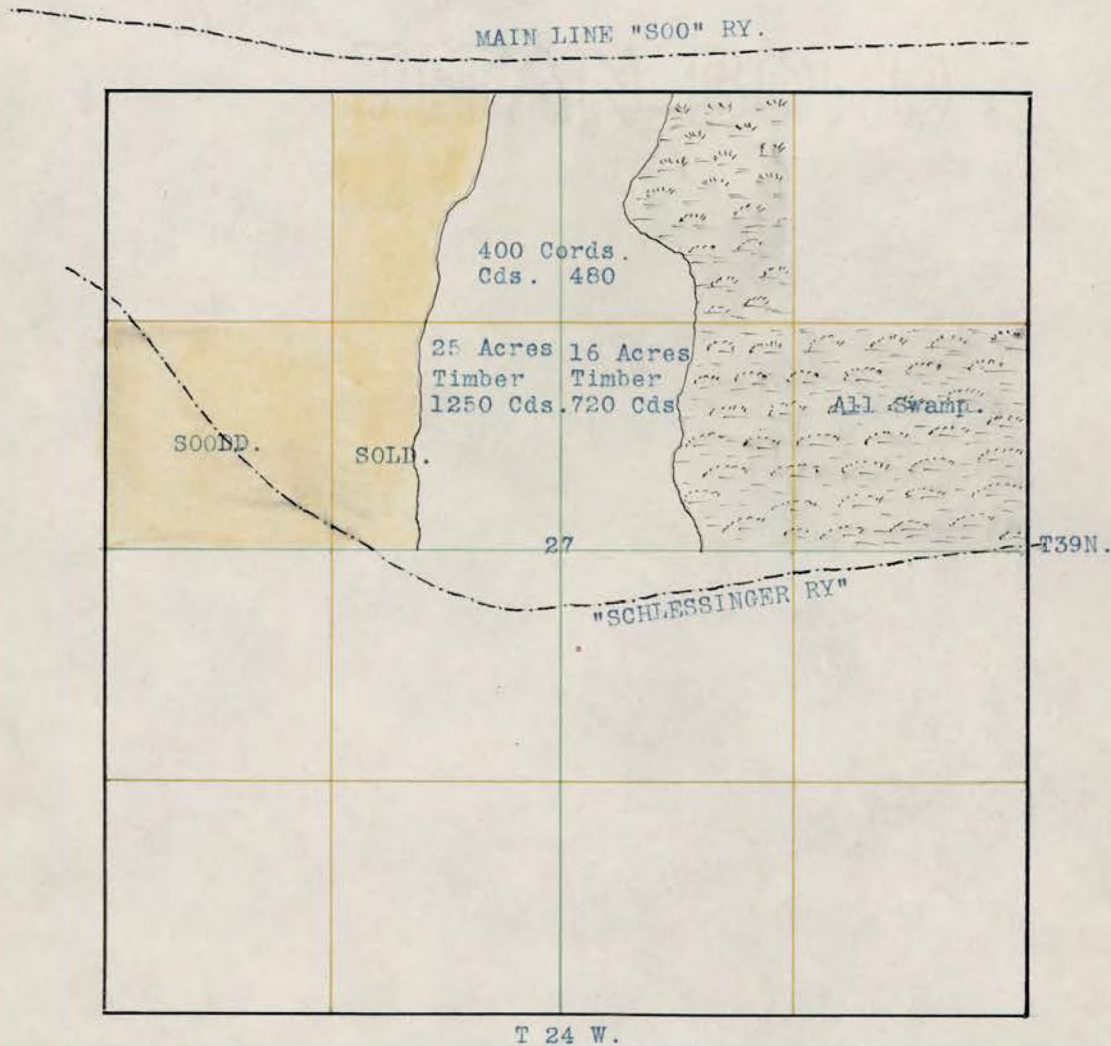
LEGEND.

- GREEN - Standing Timber - Munising Lands.
- RED - Standing Timber - C.&N.W. Lands.
- BLUE - Standing Timber - D.M.&M. Lands.
- YELLOW - Cordwood at the Stump.

PLAT "E"

MUNISING CAMP - WEST.

1901.

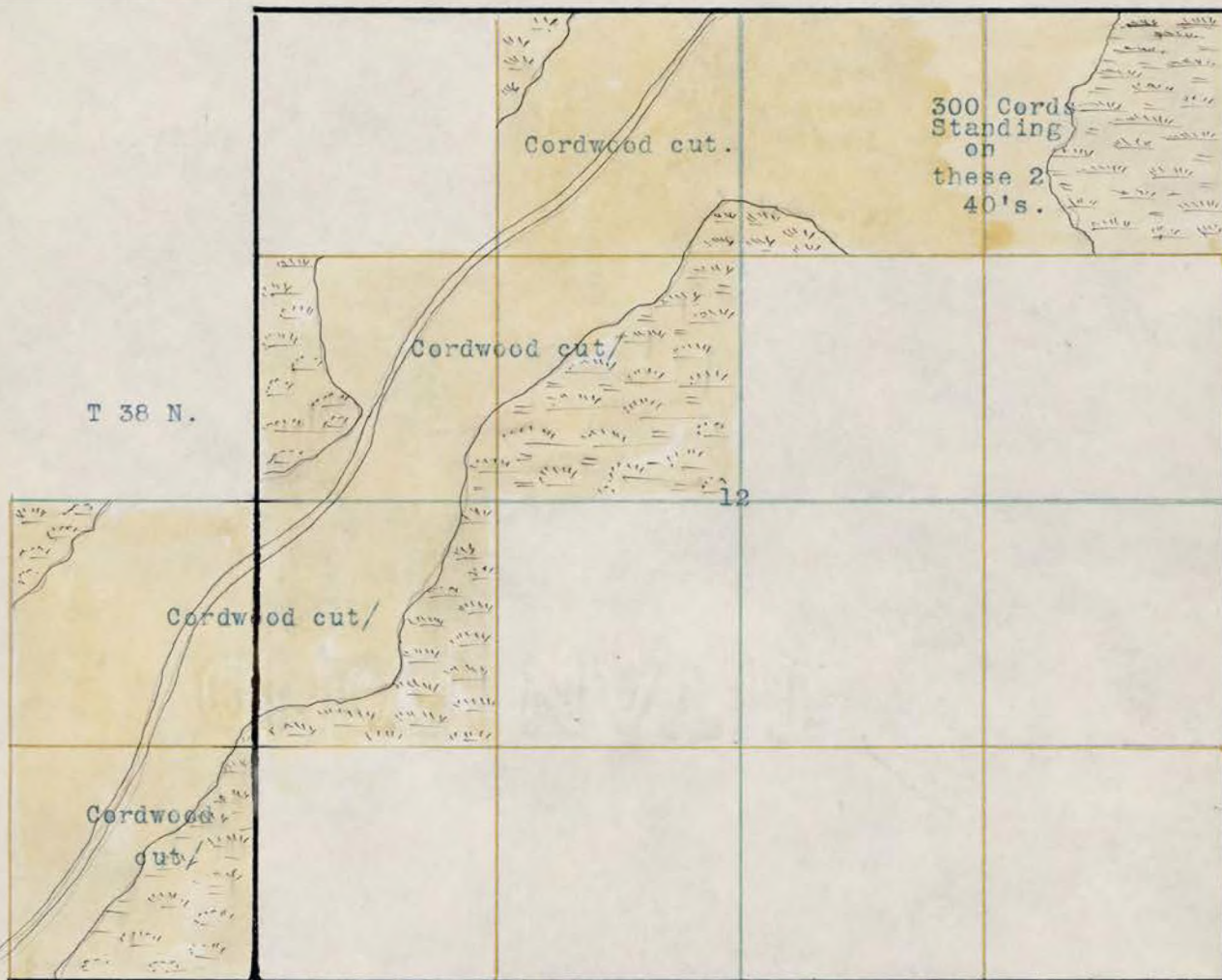


LEGEND.

GREEN - Standing Timber - Iron Cliffs Lands.
 YELLOW - Cut over- Iron Cliffs Lands.

PLAT "F" - "Sec 27 Job".
 1901.

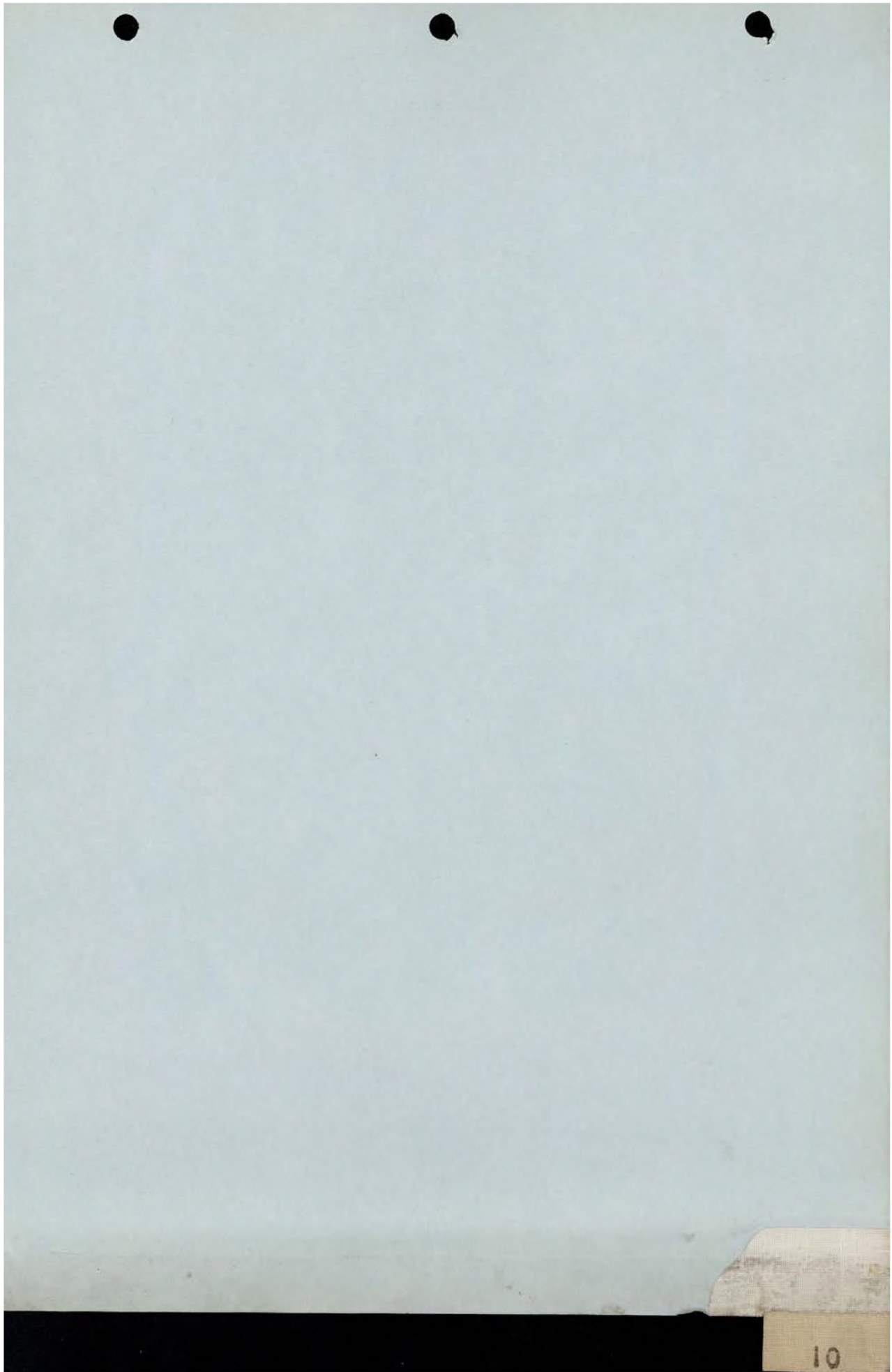
T 24 W.



T 38 N.

FORD RIVER JOB.
WINTER
1900 & 1901.

PLAT "G"
IRON-CLIFFS LANDS.
1901.



PIONEER IRON COMPANY.

Detail statement of General Expense Account for year ending Nov. 30, 1901.

ACCOUNT	AMOUNT
Stationery and printing	10.00
Telephones	19.00
Travelling	22.00
Engineering	54.23
Analysis	101.00
Relief Fund	16.80
Revenue Tax	4.00
Freight and express	.46
Miscellaneous	<u>7.45</u>
	\$234.99

No legal expenses for 1901.

PIONEER IRON COMPANY.

Statement of Diamond Drilling year ending Nov. 30, 1901.

DRILLING	DAYS	AMOUNT	COST PER FOOT
Labor	854 $\frac{1}{4}$	1857.75	1.350
<u>SUPPLIES</u>			
Fuel, waste, oil, etc.		2537.69	1.844
Carbon 46-48/64 carats		1901.25	1.382
Total Supplies		4438.94	3.226
Total Drilling Cost	854 $\frac{1}{4}$	6296.69	4.576
<u>MOVING, SETTING UP, ETC.</u>			
Moving and setting labor	25	53.06	.038
Rent on drills		248.50	.181
Total per foot drilled	25	301.56	.219
Grand Total cost	879 $\frac{1}{4}$	6598.25	4.795
		1901	1900
Total number of feet drilled		1376	4210
Aver. feet per day of 10 hrs.	385	3.57	3.12
Aver. feet per man per day	854 $\frac{1}{4}$	1.61	1.56
Feet per carat carbon		29.4	19.4
Aver. cost for carbon per carat		40.67	41.10
Feet per man per day includes time of foreman and setter			

PIONEER IRON COMPANY

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Pioneer Iron Co.

Surplus Account; Nov 30th 1901

P + D	2621012	Delivery of P.D.	✓ 25738194
Rent of Exploration Fee	✓ 10000	Royalty Paid	✓ 143750
General Expenses	✓ 10363	Sold proportion of Loss on P.D.	✓ 12419
Legal "	✓ 787647		
General Interest	✓ 1533829		
Operating Fee	✓ 15431626		
Rail Frt on P.D.	✓ 1356222		
Large Ins "	✓ 22135		
Lake Frt "	✓ 930661		
Workings & Holdg "	✓ 182446		
Commissions "	✓ 334515		
Explorations - Dept W + W	✓ 674242		
General Exp " "	✓ 54540		
Smelters & Furnaces	✓ 28506		
Cost of Laying up Exploration Fee	✓ 3112		
Taxes on Lands at Nagames	✓ 54829		
Losses on P.D.	✓ 7356895		25894363
	31403580		
	25894363		
	5509217		

W. G. MATHER
FEB 1 - 1902
ANSWERED.

REPORT OF
PIONEER IRON COMPANY,
CARP RIVER FURNACE DEPARTMENT,
FOR TWELVE MONTHS ENDING NOVEMBER 30, 1901.

NOAH-W. GRAY, MANAGER.

Feb. 1st, 1902

Mr. Nean W. Gray, Manager,
Marquette, M i c h.

Dear Sir:-

In looking your Annual Report over, to Mr. Mather, I notice that you charged to your Operating Account under the sub-heading "General Labor", the Turkeys you gave the men for Christmas presents, amounting to about \$50.00. Of course the amount is small and cuts very little figure, but in order to keep your distribution in line with our other Departments, I would suggest that hereafter ~~any~~ such items be charged to your General Expense Account, under the sub-heading of "Donations".

Yours truly,

A u d i t o r

Feb. 1st, 1902

*** ANNUAL REPORT ***

Mr. Noah W. Gray, Manager
Marquette, Mich.

Dear Sir:-

I have received your Annual Report covering Carp River
Furnace Department for the twelve months ending November 30th, 1901.

The report is nicely gotten up and is clear. I notice that
the expenditures for improvement are larger than we expected. I trust,
however, that they will be thoroughly justified by the results obtained
during the current year.

Let me impress upon you and Mr. Schaffer, that this will probably
be our "Banner year" and we should have no delays on account of acci-
dents at furnace or from insufficient supply of wood or coal.

Yours truly,

Vice President

I N D E X.

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Marquette, Mich., Jan. 28, 1902.

Mr. William G. Mather,
Vice-President, Pioneer Iron Co.,
Cleveland, Ohio.

Dear Sir:-

I beg to submit statement showing the operations and conditions at the Carp River Furnace, with detailed cost of producing iron for the fiscal year ending Nov. 30, 1901.

There was manufactured from Nov. 30, 1900, to July 18, 1901, (when furnace was blown out) 10454 gross tons of iron, at a cost of \$13.834 per ton on yard at furnace. Adding to this Depreciation for "Furnace Inventory" and "Improvement" accounts of .397¢, makes total cost on yard of \$14.231 per ton.

There was shipped from furnace 11575 tons, at a cost for loading, switching and loading vessels of .53¢ per ton for the production of 10454 tons, making the total cost of production, delivered on board cars at boat, \$14.761.

The furnace was in blast from Nov. 30, 1900, to July 18, 1901, 230 days, and during this time was stopped 15 days, making the actual time 215 days, with an average of 48-61/100 tons for each day running.

I attach hereto a statement of cost, having separated and analyzed the general accounts, and showing the cost of various items per ton.

While I expected I should run the furnace a month longer, or till about Sept. 1st, I found that the supply of charcoal would give out in July, as Mr. Schaffer was obliged to change his railroad to a new supply of wood, and he expected to secure a supply of wood for the kilns at the furnace from the line of the Marquette & South-eastern Railroad.

On blowing out the furnace I found that I should have to make

considerable more changes and repairs than I originally intended, the engine being found in worse condition than was anticipated, the water supply insufficient, and that the stack and buildings would require more repairs than estimated.

Contracts were let to the Lake Shore Engine Works for repairs to engine and for new hearth jackets, and sundry other contracts, as found necessary.

A contract was made with the Stirling Boiler Company for two 125-horse-power water tube boilers, which they agreed to have erected and tested by the 15th of September, but, in fact, the boilers were not shipped from the factory till after the first of November. About the first of December their erector announced the boilers ready for examination, and on being examined by Mr. Pollard, F. C. Roberts & Co.'s agent here, 16 tubes were condemned by him, this causing a further delay of more than one month.

The new tubes arrived Dec. 24th, and were placed in position ready for examination and testing, so that the boilers were finally examined and accepted on Jan. 7th, 1902, four months later than the contract called for.

The brick work of the boilers was completed Jan. 13, 1902, by Messrs. T. A. McCall & Co., of Chicago, under contract with them.

After raising steam on the boilers the machinery was tested, and I filled furnace on the 21st, putting on blast same day, getting first cast at 11:30 a.m. on the 22nd.

I also submit statement of amount expended and charged to "Improvement" and "Relining and Renewal" accounts to Nov. 30, 1901, with the various items for which the expenditures were made; (See pages 10 and 11.)

Yours truly,

Frank W. Gray
Manager.

SUMMARY OF COST OF MAKING 10454 TONS OF "EXCELSIOR" PIG IRON FOR TWELVE
MONTHS ENDING NOV. 30, 1901.

GENERAL EXPENSE:

Taxes--		.0349	\$ 365.04
Insurance--		.0388	405.45
Fire, Liability and Boiler.			
Analysis--		.0577	603.52
Salary of Chemist,	\$520.00	.0497	
Supplies and De-			
preciation,	83.52	.008	
Office--		.3775	3945.82
Salaries,	3446.00	.3297	
Telephone,	81.40	.0078	
Stationery, &c.,	46.04	.0044	
Postage,	32.04	.0030	
Telegrams,	35.34	.0034	
Use of Horse,	305.00	.0292	
Total General Expense,		.5089	\$5319.83

MAINTENANCE:

Tracks and Yard--		.0017	\$ 17.70
Repairs to Tracks, etc.,			
Trestles and Dock--		.0258	270.20
General Repairs;			
Pay Roll,	46.40	.0044	
Lumber,	221.00	.0212	
Nails,	2.80	.0002	
Buildings--		.0618	645.58
Repairs to No. 1			
Hotblast,			
Materials,	261.31		
Pay Roll,	52.65		
	<u>313.96</u>		
Less amount received			
for scrap,	98.45		
	<u>215.51</u>	.0206	
General Repairs,			
Materials,	93.71	.0090	
Pay Roll,	336.36	.0322	
Machinery--		.0213	222.70
Materials for general repairs.			
Tuyeres--		.0071	73.33
For new tuyeres.			
Relinings and Renewals--		.0998	1043.50
10 cents per ton on product.			
Water Supply--		.0041	44.00
100 feet 2" hose.			
Total Maintenance,		.2216	\$2317.01

OPERATING:

Machinery--			.1188	\$1241.85
Pay Roll,	1067.00	.1020		
Oils,	105.87	.0102		
Boiler Compound	13.40	.0013		
Materials for repairs, etc.,	55.58	.0053		
Electric and Other Light,			.0217	227.87
Bottom Fillers,	Pay Roll,		.2908	3039.40
Top Fillers,	" "		.0893	933.38
Handling Iron,	" "		.1500	1568.34
Handling Cinder,	" "		.0714	746.50
Weighing and Grading Iron,	" "		.0506	529.00
Blacksmith, coal bought,			.0014	14.97
Founders, Keepers and Hlprs, Pay Roll,			.3630	3795.84
Coal Forkers,	" "		.0761	795.60
General Labor--			.1246	1302.04
Pay Roll,	1245.90	.1192		
Dynamite for break- ing ore,	4.40	.0004		
Turkeys for Christmas presents,	49.44	.0048		
Freight, etc.,	2.30	.0002		
Casting Tools, tools and materials bought,			.0174	181.04
Sand and Clay, clay bought,			.0073	75.53
Barn Expense,			.0133	138.78
Fuel, used under boilers, etc.,			.0381	398.31
Total Operating,			1.4338	\$14988.45

STOCK USED:

Ores--

		Price	Per Ton	
Lake,	6882- 584	\$2.64	1.738	\$18175.06
Salisbury,	6881-1212	2.62	1.724	18009.57
Section 12,	788- 414	1.65	.124	1304.80
South Jackson,	148-1040	1.50	.021	222.64
Bedford,	5181-1350	2.74	1.358	14192.47
	<u>19882-1120</u>	<u>2.61</u>	<u>4.965</u>	<u>51904.54</u>

Yield of Ore, 52.58%.

Charcoal--

939825 Bus.	@7 $\frac{1}{4}$ ¢,	\$68137.38		
2000 " in stack,		<u>175.00</u>	6.535	68312.38

89-52/100 Bus. per ton of iron.

Limestone--

778-915 Gross Tons,	@\$2.28	.170	1777.95
---------------------	---------	------	---------

167 Lbs. per ton of iron.

Total Stock Used, 11.670 \$121994.87

DEPRECIATION.

Improvement--	.014	\$4000.00
Amount charged to cost of making iron for 1901,		
Furnace Inventory--	.383	150.52
18% of Furnace Inventory Account.		
Total Depreciation,	.397	\$4150.52

LOADING AND SWITCHING.

Loading Iron on Cars,	.097	\$1024.47
Paint for Marking Iron,	.006	64.90
Switching to Dock,	.279	2911.20
Loading Vessels,	.148	1545.01
Total Loading and Switching,	.530	\$5545.58

Total Iron Shipped by Rail, 1909 tons

" " " " Vessel 9666 "

11575 "

7

RECAPITULATION.

General Expense,	.509	\$ 5319.83
Maintenance,	.221	2317.01
Operating,	1.434	14988.45
Stock Used,	11.670	121994.87
Depreciation,	.397	4150.52
Loading and Switching,	.530	5545.58
<hr/>		
Total cost of 10454 tons iron,	14.761	154316.26
<hr/>		

SUMMARY OF FURNACE REPORT:

19882-1120 tons of ore used.

52.58% yield of ore.

939825 bushels charcoal used.

89-52/100 Bus. charcoal to ton of iron

778-915 gross tons limestone used

167 lbs. limestone to ton of iron

Total number of days in blast, 230

Stoppages, 15

Actually in blast, 215 days

48-61/100 tons made each day running

Maintenance

EXPENDITURES FOR RELINING AND RENEWALS ACCOUNT.

Tracks and Docks, Pay Roll, Materials,	93.15 <u>229.73</u>	\$ 322.88
Machinery, Pay Roll, Materials,	630.75 <u>858.31</u>	1489.06
Stone Stack, Pay Roll, Materials,	466.20 <u>183.80</u>	650.00
General, Pay Roll, Materials,	895.25 <u>30.42</u>	925.67
Tracks and Yard, Pay Roll, Materials,	50.40 <u>7.78</u>	58.18
Buildings, Pay Roll, Materials, xxxx Less scrap sold,	701.40 <u>2112.62</u> <u>2814.02</u> <u>190.75</u>	2623.27
Blacksmith, Casting Tools, Barn Expense, Electric and Other Light, Water Supply,		6.60 17.44 24.20 3.45 <u>22.36</u>
Total,		\$6143.11

EXPENDITURES FOR IMPROVEMENT ACCOUNT.

Water Supply,		\$1059.89
Pay Roll,	174.46	
Materials,	<u>885.43</u>	

Boilers and Connections,		5366.94
Pay Roll,	278.96	
Materials,	<u>5087.98</u>	

Water Jackets,		<u>1692.68</u>
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T o t a l,		\$8119.51
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PIONEER IRON COMPANY.

CARP RIVER FURNACE DEPARTMENT.

Corrected copy.
Pig Iron Cost Sheet.

Month of *Dec 1900 to Dec 1901.*

Number of Blast <i>1</i> Tons made this Blast <i>25658</i>	Tons Produced 1 month..... Tons Produced <i>12</i> months <i>10454</i>		COST PER TON		
	LABOR	SUPPLIES	TOTAL	1 month	12 months
GENERAL EXPENSE					
Insurance			16575		0388
Taxes			36564		0349
Analysis			60354		0577
Salaries and other Expenses			394584		3775
Total			531983		5089
MAINTENANCE					
Tracks and Yard			1770		0017
Trestles and Dock			27070		0158
Buildings			21558		0618
Machinery			72270		0113
Tuyeres			7353		0071
Relinings and Renewals			104350		0498
Water Supply			11400		0041
Total			731701		7762
OPERATING					
Machinery			121185		1158
Electric and other Light			22787		0117
Bottom Fillers			303940		2908
Top Fillers			93538		0593
Handling Iron			156831		1500
Handling Cinder			71650		0114
Weighting and Grading Iron			57900		0506
Blacksmith			11971		0014
Founders, Keepers and Helpers			374584		3630
Carpenter					
Coal Forkers			77560		0761
General Labor			130704		1246
Casting Tools			18104		0178
Sand and Clay			7553		0073
Barn Expense			13878		0133
Fuel			39831		0381
Total			1198845		11338
STOCK USED					
Ore	<i>19887 1/2 tons</i>		5190454		4765
Charcoal	<i>939875 Bus.</i>		6831738		6535
Limestone	<i>778-915 tons</i>		177795		170
Total			17199187		11670
Cost of Production.					
DEPRECIATION					
Construction Account	<i>See Memorandum</i>		15054		0114
Improvement Account			400000		3876
Total			415054		3970
Total Cost on Yard.					
			11871068		11731
LOADING AND SWITCHING					
Loading Cars		Tons			
Switching					
Total Loading Cars.					
Loading Vessels		Tons			
<i>Total Loading & Switching</i>			557558		5304
Grand Total 1 month					
" " 12 months			15431676		11761
Construction Acc't not sunk off					
Improvement Acc't not sunk off					

Summary of Cost per Ton.

	On Yard			On Cars		On Vessel	
		Tons	Price	Tons	Price	Tons	Price
Cost on yard, as above			11,731		11,731		11,731
Cost to load, as above				.096		.530	
Total			11,141	11,325	11,761		
Commissions and Expenses, Cleveland Office							
Total Cost							

Stock Used.

Date	Tons		Price	Amount	Cost per Ton	Percent of Ore used	Yield.		
	Tons	Price					1 month	12 months	
<i>Salisbury</i>	6887	584	764	187506	174	.34	Average yield of Ore	57.58	
<i>Section 17</i>	788	414	165	130480	17	.06	Bush. Coal per Ton	89.57	
<i>J. Jackson</i>	148	1040	150	74764	01	.01	Lbs. Flux per Ton	166	
<i>Bedford</i>	5181	1350	274	1119217	136	.27			
Total	19887	1170	761	5190454	146	.100			
Limestone	788	915	728	177795	17				
Charcoal	939875	Bus.	730	6831738	653				
							Cost per Ton for Labor, 1 month		
							" " " " 12 months		1.87

PIONEER IRON CO. IRON CLIFFS COMPANY

Cost of Production for the Month of November, 1901.

PIONEER IRON CO. MINE.	MONTH OF <u>November 1901</u>		MONTH OF <u>Nov</u> 1900		MONTH OF <u>Nov</u> 1901		MONTH OF <u>Nov</u> 1900	
	TONS.		TONS.		TONS.		TONS.	
	LABOR	SUPPLIES	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
	Amount	Cost Per Ton	Amount	Cost Per Ton	Amount	Cost Per Ton	Amount	Cost Per Ton
GENERAL EXPENSE.								
Insurance,								
Taxes,								
Engineering,						54.28		287.25
Analysis,						101.00		178.25
Relief Fund,						16.80		109.20
Mine Office,						62.91		1016.37
General Office,								
Total,						234.99		1591.07
MAINTENANCE—Repairs of								
Tracks and Yards,								
Docks, Trestles and Pockets,								
Buildings,								
Shop Machinery,								
Boilers,								
Hoisting Machinery,								
Compressors and Air Pipes,								
Pumps,								
Top Tram Engines and Cars,								
Portable Machinery,								
Skips and Skip Roads,								
Underground Tracks and Cars,								
Total,								
MINING EXPENSE.								
Air Pipes,								
Compressors,								
Hoisting,								
Wire Rope, Skips and Pulley Stands,								
Pumps,								
Sinking,								
Drifting,								
Breaking Ore,								
Tramming,								
Filling,								
Timbering,								
Mining Captain and Bosses,								
Dry House,								
Top Landing and Tramming,								
Stocking and Sorting,								
Cost to Crush,								
Explosives	75.40		12.00		87.40		177.163	
Diamond Drilling			10.13		10.13		4735.50	
Total,	75.40		22.13		97.53		6507.43	
Cost of Production,	75.40		22.13		97.53		6742.42	
Per cent.,								38448.33
EXPLORATORY.								
Exploring in Mines,								
Exploring Outside,								
Total,								
DEPRECIATION.								
Inventory,								
Improvement,								
New Construction,								
Total,								
Total Cost on Stock Pile,					97.53		6742.42	38448.33
LOADING AND SHIPPING.								
Loaded by Steam Shovel								
Loaded by Hand,								
Bosses and Sorters,								
Total Loading Stock Pile,								
Loaded at Pocket,								
Total,								
Cost,					97.53		6742.42	38448.33
Comm'n and Expense, Cleveland Office,								
Total Cost,								

ACCOUNTSMos.....	Mos.....		SINKING.		DRIFTING.		COMPARATIVE COST.		
	not Sunk Off.	Amount	Per ton	Amount	Per ton	Feet	Cost.	Per ft.	Feet.	Cost.	Per ft.
New Construction,											
Improvement,											
Total,											
REMARKS.											
<i>Diamond Drilling</i>											
No. Drift. Drilled		1376		4210							
Assess Carbon used		46.58		216.50							
Price per Asses		46.67		410							
Cost per foot for Carbon		1.38		211							
Labor		1910.81		6763.74							
Supplies		2876.49		11770.70							
Supplies charged Equipment		248.50		1280.03							
Total		4732.50		19819.47							
Total Cost per foot		326		480							

PIONEER IRON COMPANY

SUMMARY OF PROFIT OPERATING CARP FURNACE, FOR YEAR ENDING NOV. 30TH, 1901.

Delivery of Excelsior pig iron, as per statement:			
14,593 ¹³⁸⁸ tons @ \$15,357 at Furnace,		\$224,108.14	
Value of pig iron on hand Nov. 30th, 1900,			
3,197 tons due on sales @ \$16.66,	\$53,267.71		
3,068 " unsold @ 15,143	46,458.72		
6,265 tons, Total on hand,	99,726.43		
Value of iron on hand Nov. 30th, 1901,			
2,074 tons due on sales at \$15.26,	31,649.24		
Decrease,		68,077.19	
			\$156,030.95
Operating Expenses, as per Cost Sheet,			
10,454 tons produced @ \$14,761,		154,316.26	
Add Cargo Insurance paid at Cleveland,		221.35	
			154,537.61
Net Profit for year,			1,493.34
Division of Profits for the year, according to contract:			
Pioneer Iron Co. 1/2			746.67
Schaffer & Gray 1/2			746.67
Schaffer & Gray's proportion as above,		\$746.67	
Deduct interest, as per statement,		870.36	
Due us from Schaffer & Gray, to adjust loss		\$134.19	
for year,			

P I O N E E R I R O N C O M P A N Y

INTEREST ACCOUNT WITH SCHAFFER AND GRAY FOR THE YEAR ENGING NOVEMBER 30,1901

MONTH	RECEIPTS	DISBURSEMENTS			BALANCE		INTEREST	
		DRAFTS	VOUCHERS	TOTAL	DR.	CR	DR	CR
1900								
December,	\$13,415.83	\$11,000.00	\$7,333.20	\$18,333.20	\$5,417.37		\$301.57	
1901								
January,	16,151.18	12,500.00	9,928.55	22,428.55	6,277.37		317.00	
February,	16,260.77	12,000.00	6,770.13	18,770.13	2,509.36		115.01	
March,	19,950.74	9,000.00	6,628.25	15,628.25		4,322.49		175.78
April,	18,313.22	13,000.00	6,702.33	18,702.33	389.11		13.88	
May,	16,720.53	13,000.00	5,052.38	18,052.38	1,331.85		40.62	
June,	2,281.09	15,000.00	5,858.31	20,858.31	18,577.22		473.71	
July	9,578.95	13,000.00	2,172.41	15,172.41	5,593.46		113.73	
August,	25,943.77	7,000.00	300.73	7,300.73		18,643.04		282.75
September,	25,470.11	2,000.00	1,319.02	3,319.02		22,151.09		225.20
October,	35,143.55	2,500.00	2,630.78	5,130.78		30,012.77		150.06
November,	23,013.99	1,500.00	2,633.61	4,133.61				
Debit balance, interest for year ending November 30th, 1901,							541.73	
Schaffer & Gray's proportion, 1/2,							270.86	
Add, 1 year's interest @ 6% on \$10,000,							600.00	
Total interest due from Schaffer & Gray for year,							\$870.86	

PIONEER IRON COMPANY

INVENTORY OF PIG IRON ON HAND NOVEMBER 30TH, 1901.

On hand November 30th, 1900,	6,265 tons	
Produced during the year ending November 30th, 1901,	10,435 "	
Overruns, " " " " " " "	70 "	
TOTAL,	16,770 "	
Shipments during the year,	14,594 "	
Shortages during the year,	102 "	
Balance on hand November 30th, 1901,	2,074 "	
TOTAL,	16,770 "	
This iron is stored on the following docks:		
C.H.&D.Dock, Toledo,	370 tons	
N.Y.P.&O. " Cleveland,	171 "	
B.&O. " Sandusky,	802 "	
Minnesota " Buffalo,	731 "	
Total tons on hand,	2,074 "	

On November 30th, 1901, there were unfilled orders on hand as follows:

Purchaser	Tons	Price	Less Lake and Rail Frt.	Commission	Net at Furnace	Amount
Stockham Mfg.Co.	75	\$18.00	\$2.25	\$.394	\$15.356	\$ 1,151.70
Standard Car Wheel Co.	50	17.50	1.60	.397	15.503	775.15
American Car & Foundry Co.	799	15.50		.387	15.113	12,075.28
Penna Car Wheel Co.	503	18.25	2.90	.384	14.966	7,527.90
Sterlingworth Ry. Supply Co	200	19.75	3.65	.405	15.705	3,141.00
Dayton Malleable Iron Co.	59	18.50	2.10	.402	15.998	943.88
Malleable Iron Works,	80	17.00	1.44	.414	15.146	1,211.68
Canton Saw Co.	7	18.50	.90	.44	16.16	113.12
Laconia Car Co.	122	20.10	4.20	.397	15.503	1,891.36
Marion Malleable Iron Co.	171	18.00	2.10	.397	15.503	2,651.00
York Mfg.Co.	25	19.75	3.75	.400	15.60	390.00
Buffalo Car Wheel Fdy.Co.	46	17.30	1.60	.392	15.308	704.16
Barney & Smith Car Co.	275	17.50	2.10	.385	15.015	4,129.12
Lake Shore Engine Works,	161	16.50	.20	.407	15.893	2,553.77
	2573					\$39,264.12

Average Price, \$15.26 per ton. 2074 tons on hand Nov.30, 1901,
all due on sales at aver.price at Fee of \$15.26 per ton = \$31,649.24

PIONEER IRON CO.

DELIVERIES OF EXCELSIOR PIG IRON DURING THE YEAR ENDING NOV. 30TH, 1901

DATE SHIPPED	SHIPPED TO,	TONS	PRICE	AMOUNT	DEDUCTIONS			NET AMOUNT AT FURNACE	REMARKS
					FR.T. & HANDLING CHARGES	COMMISSIONS	OTHER DEDUCTIONS		
1900									
Dec. 3rd	Lake Shore Engine Works,	27	\$18.00	\$ 486.00		\$ 13.15			
18th	" " " "	25	18.00	450.00		11.35			
8th	Sterlingworth Ry. Supply Co.	73 1180	18.00	1,328.56	\$124.98	29.06			Lake Frt. @ 1.35; Dockage @ 25¢; Loading @ 10¢
15th	" " " "	25 80	18.00	450.48	42.25	10.20			" " " 1.35 " " 25¢ " " 10¢
7th	Carrroll Foundry Co.,	25	18.25	456.25	31.25	10.62			
8th	Gates Iron Works,	24 1780	18.25	477.33	56.25	10.52			
8th	Carrroll Foundry Co.,	75	18.25	1,368.75	93.75	31.22			
14th	Stover Mfg. Co.	25	19.50	487.50	62.50	10.22			
15th	Keystone Car Wheel Co.	105 2150	17.50	1,836.03	296.77	37.43			Rail Frt. \$296.37; Lake Frt. & Handling @ \$1.40.
29th	Penna Car Wheel Co.	29 1040	18.00	530.25	95.74	10.36			" " 66.25; " " " " " " 1.00
1st	Standard Car Wheel Co.	50	25.25	1,262.50	80.00	29.69			" " 10.00; " " " " " " 1.40
3rd	" " " "	47 910	25.25	1,201.74	80.75	29.03			" " 9.48; " " " " " " 1.71
13th	Keystone Car Wheel Co.	27 830	17.83	487.11	24.71	9.81			" " 48.31; " " @ \$1.35; Dockage @ 25¢; Loading @ 10¢
19th	Ganton Saw Co.	2	18.00	36.00	3.00	.82			Lake Frt. @ 1.35; Dockage @ 25¢
8th	Sterlingworth Ry. Supply Co.	50 1300	18.00	909.84	82.43	20.53			" " 1.40; " " 25¢; Loading @ 10¢
8th	Wilkesbarre Iron Mfg. Co.	28 80	20.00	560.54	107.02	10.21			Rail " 63.46; Lake Frt. @ \$1.40
20th	Sterlingworth Ry. Supply Co.	49 1940	18.00	897.59	87.25	20.26			Lake Frt. " 1.40; Dockage @ 25¢; Loading @ 10¢
23rd	" " " "	50 1600	18.00	912.05	82.62	20.58			" " 1.40; " " 25¢; " " 10¢
23rd	Wilkesbarre Iron Mfg. Co.	24 1340	20.00	491.98	102.05	9.75			" " 1.40; " " 25¢; " " 10¢; Rail Frt \$59.00.
23rd	Pilling & Crane	26 1160	20.40	540.96	110.00	10.77			" " 1.40; " " 25¢; " " 10¢; " " 63.23
1901 Jan.									
16th	Lake Superior Engine Works,	25	18.00	450.00	---	11.25			
1st	Lackawanna Iron & Steel Co.	74 40	19.20	1,420.80	307.13	29.15			" " 1.40; " " 25¢; " " 10¢; " " 177.63
9th	" " " "	29 540	19.20	561.89	121.35	11.51			" " 1.40; " " 25¢; " " 10¢; " " 70.18
14th	Sterlingworth Ry. Supply Co.	51 360	18.00	920.89	87.99	20.22			" " 1.35; " " 25¢; " " 10¢; " " 12¢
16th	" " " "	22 720	18.00	401.78	22.27	9.02			" " 1.35; " " 25¢; " " 10¢; " " 12¢
30th	Ame Steel & M.I. Co.	40 1600	16.75	681.06	79.22	15.07			" " 1.35; " " 25¢; " " 10¢; Rail Frt. \$9.20
31st	" " " "	15 1900	16.75	265.45	31.84	5.84			" " 1.35; " " 25¢; " " 10¢; " " 4.60
8th	Standard Car Wheel Co.	25 220	25.25	636.61	42.70	14.25			" " 1.35; " " 25¢; " " 10¢; " " 5.03 Dkg. Refd @ 25¢
19th	Penna Car Wheel Co.	47 1870	18.50	884.93	146.85	17.25	\$23.91		Rail " 66.97; Lake Frt " \$1.35; Dockage @ 25¢; Load. 7¢; Rebate in Frt. 50¢
21st	" " " "	104 410	18.50	1,927.27	142.42	43.47	52.09		" " 145.86; " " 1.35; " " 25¢; " " 7¢ " " 50¢ (Dkg. Refd @ 25¢)
7th	Filer & Stowell Co.	25	16.50	412.50	50.00	9.06			
8th	" " " "	25	16.50	412.50	50.00	9.06			
12th	" " " "	25	16.50	412.50	50.00	9.06			
15th	Cramer & Burt,	25	16.50	387.50	---	9.29			
16th	F.A. Goodrich & Co.	25	16.00	400.00	---	10.00			
16th	Cramer & Burt,	25	16.50	387.50	---	9.29			
15th	Dover Iron Co.	50	19.00	950.00	217.50	13.44			Lake Frt @ \$1.35; Dockage @ 25¢; Rail Frt. \$137.50.
3rd	Keystone Car Wheel Co.	76 1170	18.00	1,377.40	248.64	28.22			Rail " 172.14; Lake Frt & Hdng @ \$1.00.
4th	Dayton Malleable Iron Co.	24 1940	19.25	478.67	57.12	10.54			" " 22.31; " " " " " " 1.00
7th	Brom & Co., Inc.	100 1750	17.25	1,728.04	227.53	26.78			" " 226.75; " " " " " " 1.00.
7th	" " " "	28 1280	17.25	510.00	23.30	10.42			" " 64.72; " " " " " " 1.00.
8th	" " " "	109 1340	17.25	1,866.22	256.20	40.00			" " 246.60; " " " " " " 1.00.
8th	" " " "	16 380	17.25	288.47	52.61	5.90			" " 36.26; " " " " " " 1.00.
9th	Dayton Malleable Iron Co.	49 1340	19.25	953.00	113.06	21.00			" " 84.41; " " " " " " 1.00.
9th	Brom & Co., Inc.	27 580	17.25	466.67	38.58	9.95			" " 61.22; " " " " " " 1.00.
11th	" " " "	50 1320	17.25	863.01	163.28	18.48			" " 112.26; " " " " " " 1.00.
22nd	Penna Car Wheel Co.	76 1210	18.50	1,397.49	245.43	27.92	27.75		" " 169.92; " " " " " " 1.00; Rebate in price 50¢.
23rd	" " " "	23 420	19.50	448.50	299.58	33.99	46.10		" " 207.25; " " " " " " 1.00; " " 50¢
24th	" " " "	21 1430	18.50	395.25	295.30	39.10	40.61		" " 163.07; " " " " " " 1.00; " " 50¢
26th	" " " "	76 80	18.50	1,405.49	247.06	25.02	38.00		" " 171.02; " " " " " " 1.00; " " 50¢
30th	" " " "	50 400	18.50	925.26	163.05	15.50	25.00		" " 112.87; " " " " " " 1.00; " " 50¢
31st	" " " "	58 1200	18.50	1,082.61	190.19	21.59	29.25		" " 131.69; " " " " " " 1.00; " " 50¢
Feb. 6th	Lake Shore Engine Works,	26	18.00	450.00	---	11.25			
1st	F.A. Goodrich & Co.	25	16.00	400.00	---	10.00			
4th	Filer & Stowell Co.	25	16.50	412.50	50.00	9.06			
8th	" " " "	25	16.50	412.50	50.00	9.06			
15th	F.A. Goodrich & Co.	25	16.50	412.50	---	10.21			
16th	Belle City Malleable Iron Co.,	25	16.50	412.50	50.22	9.06			
1st	Ame Steel & Malleable Iron Co.,	44 2040	16.75	752.25	86.00	16.24			Rail Frt. 9.20; Lake Frt. \$1.35; Dockage 25¢; Loading 12¢
5th	Keystone Car Wheel Co.	18 1580	18.00	336.72	59.01	6.22			" " 27.75; " " 1.35; " " 25¢; " " 12¢
7th	" " " "	54 740	18.00	972.04	173.04	20.10			" " 30.49; " " 1.35; " " 25¢; " " 12¢
8th	" " " "	16 1360	18.00	300.64	52.42	6.12			" " 24.74; " " 1.35; " " 25¢; " " 12¢
11th	" " " "	15	18.00	270.00	48.20	5.64			" " 22.50; " " 1.35; " " 25¢; " " 12¢
14th	York Mfg. Co.	35 900	18.50	648.03	128.62	12.91			" " 77.20; " " 1.35; " " 25¢; " " 12¢
15th	Leroy Plow Co.	15 600	17.50	262.12	41.49	5.64			" " 15.12; " " 1.35; " " 25¢; " " 12¢
15th	York Mfg. Co.	15 1700	18.50	291.54	61.82	5.74			" " 24.67; " " 1.35; " " 25¢; " " 12¢
16th	Brom & Co.	16 1440	17.25	260.62	63.27	2.12			" " 29.47; " " 1.35; " " 25¢; " " 12¢
16th	Brom & Co.	29 1940	17.25	532.10	96.10	10.22			" " 44.77; " " 1.35; " " 25¢; " " 12¢
20th	York Mfg. Co.	25 1200	18.50	473.25	100.21	9.22			" " 56.22; " " 1.35; " " 25¢; " " 12¢
2nd	N.S. Bartlett Co.	100	19.50	1,950.00	422.00	27.25			" " 200.00; " " 1.35; " " 25¢; " " 12¢
8th	North & Judd Mfg. Co.	25	19.75	493.75	111.25	9.50			" " 71.25; " " 1.35; " " 25¢; " " 12¢
1st	American Shipbuilding Co.	27 320	17.25	465.71	75.00	14.14			" " 20.42; " " 1.35; " " 25¢; " " 7¢ Dkg. Refd @ 25¢
16th	Brom & Co., Inc.	61 1060	17.25	1,054.46	169.49	22.27			" " 77.24; " " 1.35; " " 25¢; " " 9¢ " " 25¢
16th	" " " "	72 720	17.25	1,250.04	198.15	27.20			" " 90.23; " " 1.35; " " 25¢; " " 9¢ " " 25¢
28th	Standard Car Wheel Co.	24 1900	25.25	606.00	41.02	14.70			" " 4.07; " " 1.35; " " 25¢; " " 9¢ " " 25¢
6th	Dayton Malleable Iron Co.	75 150	19.25	1,443.03	165.12	22.00			" " 90.12; " " & Handling @ \$1.00.
19th	Brom & Co., Inc.	56 1260	17.25	974.22	173.22	21.02			" " 116.50; " " " " " " 1.00.
26th	Brom & Co., Inc.	98 480	17.25	1,753.12	299.52	36.24			" " 201.22; " " " " " " 1.00.
27th	Brom & Co., Inc.	19 1090	17.25	347.22	62.42	7.22			" " 22.62; " " " " " " 1.00
Mar. 6th	Lake Shore Engine Works,	2	18.00	36.00	---	.00			
16th	" " " "	2	18.00	36.00	---	.00			
16th	" " " "	25	18.00	450.00	---	11.25			
22nd	" " " "	2	18.00	36.00	---	.00			
Feb. 4th	Stockham Mfg. Co.	25	25.00	625.00	50.25	14.22			
9th	" " " "	25	25.00	625.00	50.25	14.22			
11th	" " " "	25	25.00	625.00	50.25	14.22			
Mar. 1st	Sterlingworth Ry. Supply Co.	49 540	18.00	882.24	100.94	19.62			Rail Frt. 51.70; Lake Frt & Handling @ \$1.00.
1st	Brom & Co., Inc.	28 1260	17.25	478.22	61.22	9.22			" " 55.00; " " " " " " 1.00
1st	Dayton Malleable Iron Co.	76 280	19.25	1,470.22	222.50	21.10			" " 109.62; " " 1.35; Dockage @ 25¢; Loading 9¢ Dkg. Refd @ 25¢
12th	Sterlingworth Ry. Supply Co.	54 1240	18.00	972.00	161.70	22.00			" " 67.22; " " " " " " 1.00
19th	" " " "	20 1500	18.00	372.00	49.22	6.24			" " 21.71; " " " " " " 1.00
25th	Penna Car Wheel Co.	104 440	18.50	1,927.62	317.72	22.24			" " 213.52; " " " " " " 1.00; Rebate in price 50¢
1st	Dayton Malleable Iron Co.	49	19.25	943.25	115.15	20.70	52.12		" " 86.15; " " " " " " 1.00
2nd	" " " "	22 530	19.25	423.50	105.00	12.22			" " 43.54; " " 1.35; Dockage 25¢
26th	Standard Car Wheel Co.	61 20	25.25	1,542.25	164.64	50.25			" " 19.59; " " 1.35; Dockage @ 25¢; Loading 8¢; Dkg. Refd @ 25¢

PIONEER IRON COMPANY

DELIVERIES OF EXCELSIOR PIG IRON DURING THE YEAR ENDING NOVEMBER 30TH, 1901

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DATE SHIPPED	SHIPPED TO	TONS	PRICE	AMOUNT	DEDUCTIONS			NET AMOUNT AT FURNACE	REMARKS
					FRT. & HANDLING CHARGES	COMMISSIONS	OTHER DEDUCTIONS		
Aug. 16th	Rochester Car Wheel Works,	50	\$16.75	\$ 847.25	\$140.07	\$ 17.67			Rail Frt. \$90.99; Lake Frt. @ 75¢; Unloading @ 25¢
3rd	Lackawanna Iron & Steel Co.	15	19.75	296.25	53.75	6.15			" " 33.35; " " 1.09; Dockage 25¢
14th	Rochester Car Wheel Co.	75	16.75	1,256.25	113.00	30.04			Lake Frt. @ 1.09; Dockage @ 25¢; Loading 10¢
15th	Lackawanna Iron & Steel Co.	50	500	25,000.00	152.50	30.33			Rail " 110.54; Lake Frt. \$1.09; Dockage 25¢; Loading 10¢
16th	" " "	15	19.75	296.25	54.00	6.04			" " 33.00; " " 1.09; " 25¢; Loading 10¢
22nd	Rochester Car Wheel Co.	43	14.90	640.70	62.87	16.71			Lake " " 1.09; Dockage @ 25¢; Loading 10¢
22nd	N.S. Bartlett Co.	35	19.00	665.00	145.93	14.59			Rail " 93.30; Lake Frt. 1.09; Dockage 25¢; Loading 10¢
26th	Lackawanna Iron & Steel Co.	15	21.00	315.00	58.00	6.42			" " 25.06; " " 1.09; " 25¢; " 10¢
16th	American Car & Foundry Co.	125	16.50	2,062.50	112.50	50.00			Lake " @ 90¢
29th	Carson Saw Co.	2	15.00	30.00	1.80	.28			" " 90¢
31th	Filer & Stowell Co.	25	18.50	462.50	50.00	0.08			Rail " \$50.00
24th	" " "	25	16.50	412.50	50.00	0.06			" " 50.00
30th	Haskell & Barker Car Co.	1000	18.00	18,000.00	1,050.00	373.75			Lake " 1.05
July 23rd	Lake Shore Engine Works,	25	18.00	450.00		11.25			
Aug. 27th	" " "	25	18.00	450.00		11.25			
Sept. 6th	" " "	2	18.00	36.00		.90			
19th	" " "	25	18.00	450.00		11.25			
7th	Stover Mfg. Co.	25	19.25	481.25	62.50	10.47			
17th	Railroad Supply Co.	25	17.75	443.75	56.25	9.28			
4th	Penna Car Wheel Co.	149	11.40	1,698.60	370.86	58.71			Rail Frt. \$56.25
5th	" " "	27	570	15,390.00	497.39	01.16			Lake " @ 55¢; Unloading @ 25¢; Rail Frt. \$290.00 Frt. Rebate \$34.25
5th	Keystone Car Wheel Co.	19	340	6,460.00	344.73	55.55			" " 70¢; " " 30¢; " " 54.46 " " 17.92
6th	" " "	88	1180	103,840.00	1,593.42	256.25			" " 70¢; " " 30¢; " " 38.31
7th	Pittsburg Mall Iron Co.	28	560	15,680.00	479.05	59.03			" " 70¢; " " 30¢; " " 177.00
12th	" " "	19	2040	38,760.00	383.27	44.00			" " 70¢; " " 30¢; " " 35.45
14th	Penna Car Wheel Co.	102	1160	118,320.00	1,943.93	238.57			" " 70¢; " " 30¢; " " 27.00
16th	" " "	47	630	29,700.00	802.80	105.89			" " 70¢; " " 30¢; " " 213.01 " " 70.29
23rd	Wilkesbarre Iron Mfg. Co.	40	2000	80,000.00	787.12	155.32			" " 70¢; " " 30¢; " " 94.56 " " 31.21
25th	Penna Car Wheel Co.	53	380	20,140.00	970.34	119.30			" " 70¢; " " 30¢; " " 118.57
30th	" " "	63	1480	93,240.00	1,101.80	791.00			" " 70¢; " " 30¢; " " 106.33 " " 34.08
29th	York Mfg. Co.	24	1990	47,760.00	491.54	86.90			" " 70¢; " " 30¢; " " 165.62 " " 41.27
7th	American Car & Fdy. Co.	249	1940	48,306.00	4,321.69	284.85			" " 70¢; Dockage @ 25¢; Unloading @ 10¢
23rd	Focs Mfg. Co.	20	18.00	360.00	37.20	8.05			" " 70¢; " " 25¢; " " 19¢; Rail Frt. \$15.00
30th	Dayton Malleable Iron Co.	118	1780	210,040.00	2,197.70	150.43			" " 70¢; " " 25¢; " " 19¢; " " 29.10
Oct. 1st	" " "	19	1540	29,260.00	364.23	32.30			" " 70¢; Unloading @ 10¢; Rail Frt. \$14.77
2nd	" " "	116	460	53,560.00	2,149.30	190.55			" " 70¢; " " 19¢; " " 87.15
10th	" " "	136	1160	156,480.00	2,525.58	222.26			" " 70¢; " " 19¢; " " 102.37
14th	" " "	25	18.50	462.50	41.00	10.54			" " 70¢; " " 19¢; " " 18.75
16th	American Car & Foundry Co.	62	820	50,840.00	1,024.05	57.37			" " 92¢
16th	" " "	73	16.42	1,199.06	67.12	28.23			" " 70¢; " " 19¢; " " 18.75
16th	Barney & Smith Car Co.	25	17.50	437.50	41.00	9.21			" " 70¢; " " 19¢; " " 8.35
16th	Dayton Malleable Iron Co.	10	2200	22,000.00	203.17	18.00			" " 70¢; " " 19¢; " " 10.00
17th	American Car & Foundry Co.	38	2120	80,560.00	839.94	35.25			" " 92¢; " " 19¢; " " 286.65
28th	" " "	28	1200	33,600.00	436.12	24.43			" " 70¢; " " 19¢; " " 37.53
28th	Dayton Malleable Iron Co.	13	1080	14,040.00	349.41	23.00			" " 70¢; " " 19¢; " " 27.62
31st	Penna Car Wheel Co.	45	1500	67,500.00	833.46	120.00			" " 135¢; Dockage @ 25¢; Unloading @ 10¢; Rail Freight \$3.10
4th	" " "	196	1030	201,080.00	3,596.20	597.25			" " 70¢; Unloading @ 19¢; " " 92.43
16th	Wilkesbarre Iron Mfg. Co.	33	580	19,140.00	640.23	125.97			" " 70¢; " " 19¢; " " 38.32
9th	Buckeye Mall. Iron & Coupler Co.	29	1040	30,160.00	511.30	54.55			" " 70¢; " " 19¢; " " 286.65
29th	Penna Car Wheel Co.	143	780	111,540.00	2,022.07	434.12			" " 70¢; " " 19¢; " " 27.53
30th	Pittsburg Malleable Iron Co.	27	1780	48,060.00	506.76	65.05			" " 80¢; " " 19¢; " " 33.13
9th	Buffalo Car Wheel Fdy Co.	22	1680	37,080.00	497.37	34.38			" " 80¢; " " 19¢; Loading 10¢; Rail Freight \$3.10
14th	Deposit Iron Co.	13	2200	28,600.00	303.50	44.00			" " 80¢; " " 19¢; " " 28.87
22nd	W.W. Woodruff & Sons Co.	20	1900	38,000.00	530.77	59.67			" " 80¢; " " 19¢; " " 60.46
28th	Sterlingworth Ky. Supply Co.	51	1360	69,416.00	928.92	51.06			" " 80¢; " " 19¢; " " 23.13
31st	The Elbel Co.	25	1550	39,125.00	475.05	46.00			" " 70¢; " " 19¢; " " 23.13
19th	Lake Shore Engine Works,	14	18.00	252.00	353.00	6.30			
19th	" " "	12	17.00	204.00	2.40	5.04			
23rd	" " "	27	17.00	459.00	2.40	11.22			Switching @ 20¢
15th	North Marquette Furnace (Cost)	2	420	840.00	25.00	.27			" " 20¢
1st	Penna Car Wheel Co.	56	1530	85,440.00	1,024.65	150.22			Lake Frt. \$ 1.35; Dockage @ 25¢; Rail Frt. \$70.27; Dockage Rebate 20¢
4th	" " "	58	850	49,450.00	1,025.62	154.72			" " 1.25; " " 25¢; " " 73.00 " " 20¢
4th	" " "	25	1570	39,250.00	470.50	68.23			" " 1.25; " " 25¢; " " 32.25 " " 20¢
2nd	" " "	41	410	16,810.00	761.55	109.01			" " 1.25; " " 25¢; " " 51.50 " " 20¢
7th	" " "	26	900	23,400.00	422.32	69.25			" " 1.25; " " 25¢; " " 33.00 " " 20¢
2nd	" " "	56	210	11,820.00	1,023.70	125.65			" " 70; Unloading @ 19¢; " " 75.72
12th	" " "	28	580	16,240.00	515.72	63.12			" " 70; " " 19¢; " " 38.07
31st	Sterlingworth Ky. Supply Co.	23	580	13,340.00	413.62	23.92			" " 80; " " 19¢; " " 9.89
21st	York Mfg. Co.	50	400	20,000.00	991.04	150.13			" " 80; " " 19¢; " " 110.44
22nd	N.S. Bartlett & Co.	19	1440	27,360.00	399.73	63.50			" " 80; " " 19¢; " " 44.10
23rd	Malleable Iron Works,	119	1740	206,580.00	2,026.22	173.61			" " 1.00; " " 19¢; Dockage @ 25¢
21st	J.J. Mohr	18	2020	36,360.00	321.72	12.70			" " 80; " " 19¢; " " 7.67
30th	N.S. Bartlett & Co.	22	1220	26,840.00	465.14	73.87			" " 80; " " 19¢; Rail Frt. \$1.30
25th	Marion Mall Iron Co.	27	1120	30,240.00	495.00	45.10			" " 70; " " 19¢; " " 20.62
12th	D.S.S.A.A.R.R. (Cost)	46	840	38,640.00	622.27	17.31			
28th	Penna Car Wheel Co.	98	1380	135,240.00	1,720.72	224.05			" " 70; " " 19¢; " " 197.20
20th	" " "	72	1020	73,440.00	1,322.22	27.22			" " 70; " " 19¢; " " 144.80
Claims for overcharge on frt paid.		14,593	1388	20,040.00	267,822.55	28,545.28	\$5,710.21	\$500.81	\$222,725.75
					1,427.22		35.44		1,382.39
		14,593	1388		\$267,822.55	\$7,527.45	\$5,746.35	500.81	\$224,108.14

