evaporating at this low temperature is, that none of the saccharine matter is converted into molasses, nor is there the least perceptible increase of colour. Hence, not only is the quantity increased in this single process 40 per cent., but the superior quality of it would command 7s. or 8s. per cwt. in the market over the ordinary colonial produce. In the usual mode of manufacturing sugar, after the crystallization has taken place, the "mother liquor," in which the crystals are formed, is separated by a very slow process of drainage through holes made in the bottom of the hogsheads; but as the whole of the dark viscid syrup will not drain out by the mere action of gravity, a coating is left upon the crystals, which render them brown and of less value. By another more important invention of Mr. Bessemer, this drainage is effected with extraordinary rapidity and perfection, by continuously passing a very thin stratum of sugar over a fine wire gauze surface, beneath which a partial vacuum is formed, and on which a number of fine jets of water (like a syringe) are allowed to flow; the passage of the water through the interstices between the crystals of sugar entirely removes the syrup from their surface, and renders them at once sufficiently dry for shipment. The time which the sugar is exposed to the action of the water is one-seventh of a second only, during which minute interval the water is drawn into the vacuum chamber, without being allowed sufficient time to dissolve any portion of the crystals. This instantaneous conversion of brown sugar into white must however be witnessed to be appreciated. These are the most striking as they are the most useful inventions applied by Mr. Bessemer to the manufacturing of sugar, though there are a variety of other important details, a description of which seems less called for. We understand the improvements have received the approbation of numerous scientific and practical men, several of whom have expressed their opinion that their adoption will be one of the first steps towards the restoration of that prosperity which has been so long withheld from our sugar-growing colonies.

Monthly Meteorological Register, at Her Majesty's Magnetical Observatory, Toronto, Canada West.—November, 1852.

Latitude 43 deg. 39.4 min. North. Longitude, 79 deg. 21 min. West. Elevation above Lake Ontario: 108 *feet*

Magnet.	Day.	Barom. at tem. of 32 deg. 6 A.M.	2 P.M.	10 P.M.	MEAN.	Temperature of the air. 6 A.M.	2 P.M.	10 P.M.	M'N.	Tension of Vapour. 6 A.M.	2 P.M.	10 P.M.	M'N	Humidity of Air. 6 A.M.	2 P.M.	10 P.M.	M'N	Wind. 6 A. M.	2 P. M.	10 P. M	Rain in Inch.	S'now in Inch.
						°	°	°														
cd	1	29.410	29.375	29.250	29.345	34.8	50.4	40.4	43.97	0.185	0.289	0.277	0.257	92	81	92	89	Calm.	S S E	NE	0.145	- -
b	2	.059	28.986	.203	.086	43.4	46.7	45.9	43.40	.219	.271	.226	.219	90	86	89	89	N E	N	W N W	0.090	- -
c	3	.429	29.572	.698	.585	37.3	45.4	39.8	40.45	.193	.175	.187	.183	87	58	80	74	W b S	W b S	W	0.040	- -
c	4	.742	.697	.726	.727	38.1	45.6	41.2	41.02	.199	.210	.195	.212	87	80	79	83	Calm.	S S W	Calm	- -	- -
c	5	.691	.662	.683	.674	38.1	43.0	37.1	39.23	.182	.177	.161	.172	79	65	71	72	N N E	E	NE	Inap	- -
bd	6	.514	.222	.015	.225	37.8	40.4	43.4	41.02	.177	.232	.251	.229	79	91	91	89	E N E	E	N E b E	0.545	- -
ad	7	.083	.188			40.1	43.0			.162	.177			66	65			S W b W	W S W	W S W	Inap	- -
a	8	.573	.653	.687	.663	31.9	41.5	37.0	37.80	.192	.192	.190	.191	95	74	87	85	W b S	W b S	N N W	Inap	- -
b	9	.659	.620	.675	.651	35.2	39.3	31.2	35.37	.197	.193	.160	.183	96	81	92	90	Calm	W b S	W b S	Inap	- -
ac	10	.731	.819	.870	.816	28.4	40.6	33.0	31.52	.141	.181	.155	.161	90	72	82	82	W	N N W	N b E	Inap	- -
c	11	.882	.715	.420	.656	32.3	40.7	43.8	38.93	.176	.163	.213	.193	96	65	86	81	N E	E S E	S E b E	0.050	Inap
c	12	.179	.251	.477	.321	41.7	40.1	35.2	37.90	.212	.163	.151	.170	93	66	74	74	W b S	S W b W	W b N	- -	Insp
cd	13	.425	.516	.458	.478	32.7	35.9	31.3	32.93	.174	.139	.151	.151	94	67	88	83	W	N W	N W	- -	0.4
c	14	.321	.395			29.2	31.5			.148	.158			93	89			N W b N	N W b N	N W b W	- -	Inap
b	15	.460	.478	.491	.477	31.3	34.3	30.9	32.33	.164	.136	.157	.151	91	69	91	85	N W	N W b W	W b N	- -	- -
c	16	.470	.433	.483	.467	30.7	36.0	29.6	31.70	.157	.142	.157	.158	92	67	96	89	W S W	W S W	S W b W	- -	- -
c	17	.509	.511	.551	.524	27.1	37.9	29.7	31.32	.138	.134	.136	.136	93	59	82	78	W S W	W b S	W N W	- -	- -
b	18	.551	.591	.681	.623	25.5	39.5	31.2	31.30	.129	.142	.149	.151	92	59	75	77	N	N W b N	N N E	- -	- -
a	19	.731	.735	.802	.760	32.5	39.6	29.1	33.48	.170	.175	.155	.163	93	73	96	86	N b E	S b E	N b W	- -	- -
a	20	.868	.950	30.018	.963	32.5	40.2	32.7	35.05	.159	.123	.139	.145	87	50	75	73	N b W	N N W	N W b N	- -	- -
a	21	30.120	30.081			32.1	33.7			.169	.166			91	86			N N W	N E b E	E N E	- -	- -
b	22	29.857	29.666	29.545	.678	33.9	32.7	33.4	33.37	.165	.168	.171	.168	84	91	92	88	E b S	E	E b S	- -	0.8
b	23	.613	.763	.920	.792	29.8	32.1	23.6	27.85	.141	.143	.109	.121	85	79	76	79	N N E	N N E	N E b N	- -	- -
b	24	.963	.816	.700	.835	19.0	27.0	31.3	25.65	.087	.131	.151	.123	81	83	88	85	N E b N	N E b E	E b S	- -	Inap
bc	25	.473	.313	.285	.352	33.7	37.5	38.4	36.43	.166	.197	.211	.191	86	88	92	91	E b S	E b S	N E b E	0.570	- -
c	26	.075	28.913	.061	.021	39.1	42.4	38.4	39.93	.222	.255	.215	.230	93	96	95	91	E b S	E S E	W S W	0.335	- -
bc	27	.112	29.218	.539	.332	34.8	38.1	33.0	34.87	.185	.151	.133	.151	92	68	72	75	W S W	W b S	W S W	- -	- -
b	28	.765	.800			32.8	38.3			.145	.152			78	66			S W b W	S W b W	S W	- -	0.8
a	29	.831	.857	30.003	.908	33.0	38.1	29.9	32.90	.161	.177	.131	.153	86	78	78	82	W b N	W b S	W b N	- -	- -
bd	30	30.016	.907	29.913	.911	27.1	42.9	36.3	35.00	.123	.198	.168	.160	82	72	79	78	W	W S W	W S W	- -	- -
	M	29.572	29.553	29.585	29.573	33.23	39.53	31.95	35.80	0.172	0.180	0.175	0.176	89	74	85	83	MPs 6.10	MPs 7.96	MPs 5.62	1.775	2.0

Sum of the Atmospheric Current, in miles, resolved into the four Cardinal directions.

North.	West.	South.	East.
1391.26	2327.69	827.59	1378.61

Mean velocity of the wind - - 6.50 miles per hour.
Maximum velocity - - - - - 19.5 mi's per h'r, from 2 to 3 p.m. on 27th.
Most windy day - - - - - 12th: Mean velocity, 13.91 miles per hour.
Least windy day - - - - - 4th: Mean velocity, 2.11 ditto.
Most windy hour - - - - - noon: Mean velocity, 8.59 ditto.
Least windy hour - - - - - 9 p.m. Mean velocity, 5.34 ditto.
Mean diurnal variation - - - 3.25 miles.

The column headed "Magnet" is an attempt to distinguish the character of each day, as regards the frequency or extent of the fluctuations of the Magnetic declination, indicated by the self-registering instruments at Toronto. The classification is, to some extent, arbitrary, and may require future modification, but has been found tolerably definite as far as applied. It is as follows:—

(*a*) A marked absence of Magnetical disturbance.
(*b*) Unimportant movements, not to be called disturbance.
(*c*) Marked disturbance—whether shewn by frequency or amount of deviation from the normal curve—but of no great importance.
(*d*) A greater degree of disturbance—but not of long continuance.
(*e*) Considerable disturbance—lasting more or less the whole day.
(*f*) A Magnetical disturbance of the first class.

The day is reckoned from noon to noon. If two letters are placed, the first applies to the earlier, the latter to the later part of the trace. Although the Declination is particularly referred to, it rarely happens that the same terms are not applicable to the changes of the Horizontal Force also.

(First snow storm of the season, from 6 to 9 A. M., on the 11th.)

Highest Barometer - - 30.184, at 8 A. M., on 21st } Monthly range:
Lowest Barometer - - 28.943, at 2 P.M., on 26th } 1.241 inches.

Highest observed Temp. - 50.4, at 2 P. M., on 1st } Monthly range:
Lowest regist'd Temp. - 18.2, at A.M., on 24th } 32.2
Mean Highest observed Temperature - - 39.66 } Mean daily range:
Mean Registered Minimum - - - - - 30.05 } 9.61
Greatest daily range - - - - - 20.4 from A.M., to 2 P.M., on 30th.
Warmest day - - 1st - - - Mean Temperature - 43.97 } Difference:
Coldest day - - - 24th - - - Mean Temperature - 25.65 } 18.32

The "Means" are derived from six observations daily, viz., at 6 and 8, A. M., and 2, 4, 10 and 12, P. M.

Comparative Table for November.

Ye'r	Temperature. Mean.	Max.	Min.	Range.	Rain. D'ys	Inches.	Snow. D's	Inch's	Wind. Mean Velocity.
	°	°	°	°					Miles.
1840	35.90	54.4	20.5	33.9	5	1.220	8	not regist'd	--
1841	35.35	63.2	7.6	55.6	8	2.450	5		--
1842	33.12	59.6	7.6	43.0	9	5.310	10		--
1843	33.14	51.2	14.4	36.8	10	4.765	7	1.2	--
1844	34.82	49.8	12.0	37.8	8	imperfect	4	8.0	--
1845	36.67	58.8	7.6	51.2	7	1.105	4	5.0	--
1846	40.85	55.5	18.2	37.3	12	5.805	2	0.4	--
1847	38.72	58.2	7.8	50.4	14	3.155	3	Inapp	4.77
1848	34.31	49.3	16.5	32.8	9	2.020	3	1.4	4.81
1849	42.33	56.7	28.4	28.3	10	2.815	2	1.0	4.78
1850	38.65	62.3	18.1	44.2	7	2.955	1	Inapp	5.27
1851	32.72	50.1	16.5	33.6	5	3.385	6	6.7	4.70
1852	35.80	50.4	18.7	31.7	7	1.775	3	2.0	6.50
M'n	36.34	54.65	14.92	39.74	8.5	3.105	4.5	2.6	5.14