

Variation of the Compass.

From the Records of H. M. Magnetic
Observatory.

The mean variation at Toronto, for
the year 1850, was 10° 30' west (nearly);
it increases at an average of about 2' every
year. The variation undergoes a daily
change, being least from 7 to 8 A. M., and
greatest from 1 to 2 P. M. The differ-
ence between the values at 8 A. M., and
9 P. M. in the several months, by the
average of eight years (1840 to 1847), is
as follows:—

January	- 5.4
February	- 8.8
March	- 9.6
April	- 10.5
May	- 11.3
June	- 12.0
July	- 12.2
August	- 13.2
September	- 9.0
October	- 7.0
November	- 6.1
December	- 4.4

The variation is least liable to fluctu-
ations in the afternoon; it is nearest its
mean value at 10 A. M., and 6 to 7 P. M.
Inclinatio of dip of the
Needle at Toronto,
1850 - - - - - 75° 20' 1 N

DATE.	TORONTO.				MONTREAL.				QUEBEC.				HALIFAX, N. S.			
	Twilight.		Twilight.		Sun.		Twilight.		Sun.		Twilight.		Sun.		Twilight.	
	Beg.	Ends.	Beg.	Ends.	Ris.	Set.	Beg.	Ends.	Ris.	Set.	Beg.	Ends.	Ris.	Set.	Beg.	Ends.
Jan. 1.	5.50	8.17	5.53	8.14	7.52	4.16	5.55	8.12	7.44	4.34	5.54	8.16	7.44	4.34	5.54	8.16
" 10.	5.50	8.15	5.52	8.14	7.50	4.30	5.55	8.12	7.42	4.31	5.55	8.16	7.42	4.31	5.55	8.16
" 20.	5.47	8.15	5.49	8.13	7.43	4.39	5.53	8.11	7.39	4.37	5.53	8.15	7.39	4.37	5.53	8.15
" 30.	5.41	8.16	5.44	8.12	7.36	4.53	5.49	8.11	7.37	4.37	5.49	8.15	7.37	4.37	5.49	8.15
Feb. 1.	5.39	8.16	5.43	8.12	7.30	4.58	5.47	8.11	7.35	4.38	5.47	8.15	7.35	4.38	5.47	8.15
" 10.	5.39	8.16	5.40	8.12	7.18	5.19	5.30	8.10	7.13	5.16	5.30	8.10	7.13	5.16	5.30	8.10
" 20.	5.14	7.14	5.16	7.12	7.01	5.37	5.16	7.13	6.58	5.39	5.16	7.13	6.58	5.39	5.16	7.13
" 30.	5.10	7.23	5.00	7.23	6.10	5.40	5.00	7.22	6.44	5.42	5.02	7.23	6.44	5.42	5.02	7.23
Mar. 1.	5.00	7.27	4.59	7.26	6.43	5.41	4.56	7.27	6.42	5.44	5.00	7.25	6.42	5.44	5.00	7.25
" 10.	4.47	7.36	4.42	7.39	6.27	5.33	4.41	7.40	6.27	5.35	4.41	7.37	6.27	5.35	4.41	7.37
" 20.	4.49	7.49	4.22	7.53	6.06	5.06	4.20	7.55	6.06	5.06	4.24	7.51	6.06	5.06	4.24	7.51
" 30.	4.07	8.02	4.01	8.07	5.48	4.22	3.58	8.11	5.46	4.21	4.04	8.05	5.46	4.21	4.04	8.05
April 1.	4.04	8.06	3.50	8.11	5.44	4.34	3.52	8.15	5.46	4.22	3.57	8.09	5.46	4.22	3.57	8.09
" 10.	3.42	8.26	3.36	8.27	5.37	4.25	3.31	8.29	5.29	4.23	3.39	8.23	5.29	4.23	3.39	8.23
" 20.	3.21	8.30	3.19	8.29	5.09	4.40	3.06	8.50	5.12	4.46	3.17	8.40	5.12	4.46	3.17	8.40
" 30.	3.00	8.54	2.56	8.58	4.51	4.70	2.42	9.12	4.56	4.35	2.55	8.50	4.56	4.35	2.55	8.50
May 1.	2.57	8.54	2.46	9.03	4.50	4.74	2.39	9.14	4.54	4.34	2.52	8.50	4.54	4.34	2.52	8.50
" 10.	2.40	9.12	2.37	9.25	4.36	4.76	2.17	9.35	4.42	4.19	2.40	9.12	4.42	4.19	2.40	9.12
" 20.	2.22	9.30	2.06	9.46	4.25	4.77	1.54	9.50	4.31	4.21	2.14	9.38	4.31	4.21	2.14	9.38
" 30.	1.08	9.48	1.40	10.06	4.16	4.76	1.33	10.22	4.23	4.31	1.58	9.56	4.23	4.31	1.58	9.56
June 1.	1.05	9.50	1.45	10.09	4.10	4.70	1.29	10.26	4.23	4.33	1.53	10.60	4.23	4.33	1.53	10.60
" 10.	1.37	10.01	1.35	10.17	4.11	4.71	1.19	10.39	4.15	4.40	1.46	10.12	4.15	4.40	1.46	10.12
" 20.	1.55	10.07	1.33	10.31	4.11	4.71	1.16	10.46	4.19	4.44	1.43	10.19	4.19	4.44	1.43	10.19
" 30.	2.00	10.06	1.38	10.29	4.14	4.72	1.24	10.43	4.23	4.43	1.50	10.17	4.23	4.43	1.50	10.17
July 1.	2.01	10.06	1.39	10.28	4.16	4.72	1.20	10.47	4.24	4.44	1.50	10.17	4.24	4.44	1.50	10.17
" 10.	2.14	9.56	1.52	10.14	4.28	4.48	1.36	10.34	4.30	4.40	2.02	10.08	4.30	4.40	2.02	10.08
" 20.	2.29	9.44	1.19	10.01	4.32	4.40	1.58	10.14	4.39	4.34	2.20	9.54	4.39	4.34	2.20	9.54
" 30.	2.46	9.30	2.33	9.39	4.44	4.30	2.23	9.59	4.50	4.24	2.41	9.31	4.50	4.24	2.41	9.31
Aug. 1.	2.49	9.33	2.36	9.36	4.43	4.27	2.20	9.43	4.51	4.21	2.43	9.29	4.51	4.21	2.43	9.29
" 10.	3.06	9.42	2.55	9.15	4.57	4.13	2.47	9.23	5.01	4.09	3.00	9.10	5.01	4.09	3.00	9.10
" 20.	3.22	8.43	3.14	8.52	5.09	4.37	2.07	8.50	5.12	4.53	3.18	8.45	5.12	4.53	3.18	8.45
" 30.	3.42	8.19	3.32	8.29	5.22	4.38	2.26	8.54	5.25	4.58	3.38	8.23	5.25	4.58	3.38	8.23
Sept. 1.	3.44	8.19	3.35	8.24	5.26	4.14	2.30	8.29	5.26	4.58	3.38	8.23	5.26	4.58	3.38	8.23
" 10.	3.55	7.56	3.50	8.03	5.37	4.17	3.40	8.05	5.36	4.16	3.42	8.01	5.36	4.16	3.42	8.01
" 20.	4.09	7.53	4.03	7.44	5.49	4.37	4.00	7.46	5.40	4.37	4.07	7.39	5.40	4.37	4.07	7.39
" 30.	4.31	7.16	4.16	7.31	6.03	4.37	4.17	7.23	6.00	4.40	4.50	7.20	6.00	4.40	4.50	7.20
Oct. 1.	4.32	7.16	4.20	7.18	6.10	4.35	4.12	7.21	6.03	4.50	4.41	7.18	6.03	4.50	4.41	7.18
" 10.	4.34	7.00	4.30	7.02	6.19	4.33	4.31	7.03	6.19	4.57	4.53	7.01	6.19	4.57	4.53	7.01
" 20.	4.45	6.44	4.43	6.43	6.31	4.59	4.44	6.45	6.29	5.02	4.45	6.44	6.29	5.02	4.45	6.44
" 30.	4.56	6.27	5.00	6.23	6.54	4.41	4.57	6.30	6.40	4.45	4.56	6.20	6.40	4.45	4.56	6.20
Nov. 1.	5.00	6.36	5.00	6.27	6.40	4.39	5.00	6.27	6.44	4.43	5.00	6.22	6.44	4.43	5.00	6.22
" 10.	5.10	6.15	5.07	6.22	6.02	4.36	5.12	6.16	6.56	4.32	5.10	6.12	6.56	4.32	5.10	6.12
" 20.	5.21	6.11	5.23	6.07	6.16	4.10	5.26	6.08	7.10	4.22	5.22	6.04	7.10	4.22	5.22	6.04
" 30.	5.31	6.07	5.34	6.07	6.34	4.06	5.31	6.03	7.23	4.15	5.34	6.04	7.23	4.15	5.34	6.04
Dec. 1.	5.32	6.07	5.34	6.07	6.31	4.07	5.38	6.03	7.24	4.15	5.29	6.05	7.24	4.15	5.29	6.05
" 10.	5.40	6.07	5.42	6.07	6.41	4.06	5.45	6.02	7.33	4.13	5.41	6.10	7.33	4.13	5.41	6.10
" 20.	5.46	6.10	5.48	6.07	6.48	4.08	5.51	6.05	7.40	4.10	5.47	6.09	7.40	4.10	5.47	6.09
" 30.	5.50	6.16	5.53	6.10	6.52	4.15	5.55	6.11	7.44	4.23	5.51	6.15	7.44	4.23	5.51	6.15

Table of Semi-Diurnal Arcs, calculated for the principal places in British North America.

Dec.	TORONTO. N. 43° 39' 4				KINGSTON. N. 44° 30' 0				HALIFAX, N. S. N. 44° 39' 3				MONTREAL. N. 45° 31'				FREDERICTON. N. 46° 3'				QUEBEC. N. 46° 49' 2			
	North.		South.		North.		South.		North.		South.		North.		South.		North.		South.		North.		South.	
	A. m.	P. m.	A. m.	P. m.	A. m.	P. m.	A. m.	P. m.	A. m.	P. m.	A. m.	P. m.	A. m.	P. m.	A. m.	P. m.	A. m.	P. m.	A. m.	P. m.	A. m.	P. m.		
0	6 3.9	5 56.2	6 3.9	5 56.1	6 4.0	5 56.0	6 4.1	5 55.9	6 4.1	5 55.9	6 4.3	5 55.7	6 4.1	5 55.9	6 4.3	5 55.7	6 4.1	5 55.9	6 4.3	5 55.7	6 4.1	5 55.9	6 4.3	5 55.7
10	6 7.6	5 52.4	6 7.7	5 52.3	6 7.9	5 52.1	6 8.3	5 51.7	6 8.3	5 51.7	6 8.5	5 51.5	6 8.3	5 51.7	6 8.5	5 51.5	6 8.3	5 51.7	6 8.5	5 51.5	6 8.3	5 51.7	6 8.5	5 51.5
20	6 11.5	5 48.5	6 11.7	5 48.3	6 11.9	5 48.1	6 12.3	5 47.8	6 12.3	5 47.8	6 12.5	5 47.6	6 12.3	5 47.8	6 12.5	5 47.6	6 12.3	5 47.8	6 12.5	5 47.6	6 12.3	5 47.8	6 12.5	5 47.6
30	6 15.2	5 44.7	6 15.5	5 44.5	6 15.9	5 44.1	6 16.3	5 43.7	6 16.3	5 43.7	6 16.5	5 43.5	6 16.3	5 43.7	6 16.5	5 43.5	6 16.3	5 43.7	6 16.5	5 43.5	6 16.3	5 43.7	6 16.5	5 43.5
40	6 19.1	5 40.9	6 19.4	5 40.6	6 19.9	5 40.1	6 20.3	5 39.7	6 20.3	5 39.7	6 20.5	5 39.5	6 20.3	5 39.7	6 20.5	5 39.5	6 20.3	5 39.7	6 20.5	5 39.5	6 20.3	5 39.7	6 20.5	5 39.5
50	6 22.9	5 37.1	6 23.3	5 36.7	6 23.8	5 36.2	6 24.4	5 35.6	6 24.4	5 35.6	6 24.6	5 35.4	6 24.4	5 35.6	6 24.6	5 35.4	6 24.4	5 35.6	6 24.6	5 35.4	6 24.4	5 35.6	6 24.6	5 35.4
60	6 26.7	5 33.2	6 27.2	5 32.8	6 27.8	5 32.2	6 28.5	5 31.5	6 28.5	5 31.5	6 28.7	5 31.3	6 28.5	5 31.5	6 28.7	5 31.3	6 28.5	5 31.5	6 28.7	5 31.3	6 28.5	5 31.5	6 28.7	5 31.3
70	6 30.5	5 29.3	6 31.1	5 28.9	6 31.9	5 28.3	6 32.6	5 27.4	6 32.6	5 27.4	6 32.8	5 27.2	6 32.6	5 27.4	6 32.8	5 27.2	6 32.6	5 27.4	6 32.8	5 27.2	6 32.6	5 27.4	6 32.8	5 27.2
80	6 34.8	5 25.3	6 35.3	5 24.7	6 36.2	5 23.8	6 37.1	5 22.9	6 37.1	5 22.9	6 37.3	5 22.7	6 37.1	5 22.9	6 37.3	5 22.7	6 37.1	5 22.9	6 37.3	5 22.7	6 37.1	5 22.9	6 37.3	5 22.7
90	6 38.7	5 21.3	6 39.4	5 20.6	6 40.3	5 19.7	6 41.4	5 18.6	6 41.4	5 18.6	6 42.2	5 17.8	6 42.2	5 17.8	6 43.3	5 16.7	6 43.3	5 17.8	6 43.3	5 16.7	6 43.3	5 17.8	6 43.3	5 16.7
100	6 42.7	5 17.3	6 43.5	5 16.5	6 44.5	5 15.5	6 45.7	5 14.3	6 45.7	5 14.3	6 46.5	5 13.5	6 46.5	5 13.5	6 47.8	5 12.2	6 47.8	5 13.5	6 47.8	5 12.2	6 47.8	5 13.5	6 47.8	5 12.2
110	6 46.8	5 13.3	6 47.6	5 12.4	6 48.3	5 11.8	6 50.0	5 10.0	6 50.0	5 10.0	6 50.9	5 9.1	6 50.9	5 9.1	6 52.4	5 7.6	6 52.4	5 9.1	6 52.4	5 7.6	6 52.4	5 9.1	6 52.4	5 7.6
120	6 50.8	6 9.0	6 51.9	8 3	6 53.0	5 7.0	6 54.4	5 5.8	6 54.4	5 5.8	6 55.4	5 4.6	6 55.4	5 4.6	6 56.3	5 3.7	6 56.3	5 4.6	6 56.3	5 3.7	6 56.3	5 4.6	6 56.3	5 3.7
130	6 55.1	5 4.9	6 56.0	5 4.0	6 57.4	5 2.6	6 58.8	5 1.2	6 58.8	5 1.2	6 59.9	5 0.1	6 59.9	5 0.1	7 1.6	4 59.4	7 1.6	5 0.1	7 1.6	4 59.4	7 1.6	5 0.1	7 1.6	4 59.4
140	6 59.3	5 0.9	7 0.2	6 59.8	7 1.7	6 58.3	7 3.2	6 56.8	7 0.4	6 55.3	7 0.3	6 53.7	7 0.3	6 53.7	7 0.3	6 53.7	7 0.3	6 53.7	7 0.3	6 53.7	7 0.3	6 53.7	7 0.3	6 53.7
150	7 3.6	6 56.4	7 4.7	6 55.3	7 6.2	6 53.8	7 9.4	6 52.1	7 3.1	6 50.6	7 1.4	6 48.6	7 1.4	6 48.6	7 1.4	6 48.6	7 1.4	6 48.6	7 1.4	6 48.6	7 1.4	6 48.6	7 1.4	6 48.6
160	7 7.0	6 53.0	7 9.4	6 51.7	7 9.4	6 50.3	7 12.9	6 48.4	7 6.3	6 46.8	7 4.1	6 44.1	7 4.1	6 44.1	7 4.1	6 44.1	7 4.1	6 44.1	7 4.1	6 44.1	7 4.1	6 44.1	7 4.1	6 44.1
170	7 12.3	6 47.7	7 13.5	6 46.5	7 15.4	6 44.4	7 19.3	6 42.7	7 11.3	6 40.7	7 18.7	6 41.3	7 19.0	6 41.3	7 21.0	6 38.0	7 21.0	6 41.3	7 21.0	6 38.0	7 21.0	6 41.3	7 21.0	6 38.0
180	7 16.7	6 43.3	7 18.1	6 41.9	7 20.1	6 38.9	7 22.0	6 38.0	7 20.7	6 38.0	7 23.7	6 36.3	7 23.1	6 36.3	7 23.1	6 33.9	7 23.1	6 36.3	7 23.1	6 33.9	7 23.1	6 36.3	7 23.1	6 33.9
190	7 21.3	6 38.8	7 22.6	6 37.4	7 24.8	6 35.2	7 26.9	6 33.1	7 28.5	6 31.5	7 28.5	6 31.5	7 31.3	6 28.7	7 28.5	6 28.7	7 31.3	6 28.7	7 28.5	6 28.7	7 31.3	6 28.7	7 28.5	6 28.7
200	7 26.0	6 34.6	7 27.5	6 32.5	7 26.7	6 30.3	7 32.1	6 27.9	7 34.0	6 26.0	7 34.0	6 26.0	7 36.6	6 23.4	7 34.0	6 23.4	7 36.6	6 23.4	7 34.0	6 23.4	7 36.6	6 23.4	7 34.0	6 23.4
210	7 30.7	6 30.3	7 32.3	6 27.7	7 34.7	6 25.3	7 37.2	6 22.8	7 39.1	6 20.9	7 39.1	6 20.9	7 41.7	6 18.3	7 39.1	6 18.3	7 41.7	6 18.3	7 39.1	6 18.3	7 41.7	6 18.3	7 39.1	6 18.3
220	7 35.6	6 24.4	7 37.3	6 22.7	7 36.8	6 20.2	7 42.4	6 17.6	7 44.5	6 15.5	7 44.5	6 15.5	7 47.6	6 12.4	7 44.5	6 12.4	7 47.6	6 12.4	7 44.5	6 12.4	7 47.6	6 12.4	7 44.5	6 12.4
230	7 40.4	6 19.6	7 42.3	6 17.7	7 44.9	6 15.1	7 47.8	6 12.2	7 50.0	6 10.0	7 50.0	6 10.0	7 53.4	6 6.6	7 50.0	6 6.6	7 53.4	6 6.6	7 50.0	6 6.6	7 53.4	6 6.6	7 50.0	6 6.6