

PHENOLOGICAL OBSERVATIONS IN NOVA SCOTIA AND CANADA,  
1904.—BY A. H. MACKAY, LL. D., F. R. S. C., Halifax.

(Read 16th May, 1905).

In Nova Scotia the public schools have been doing good work in phenology. Over three hundred accurate and full schedules of observations were sent in from as many school sections representing every county in the province. These were referred in groups to the following phenological staff for examination, selection, and compilation; and the criticisms on faulty observations were published in the *Journal of Education* for the benefit of observers in future years—from page 72 to 85 of the April issue, 1905.

- |        |      |  |
|--------|------|--|
| Region | I.   | (Yarmouth and Digby), A. W. Horner, Principal, Salem School, Yarmouth.       |
| "      | II.  | (Shelburne Co.), C. Stanley Bruce, Principal, Academy, Shelburne.            |
| "      | II.  | (Queens Co.), Miss M. C. Hewitt, Science Teacher, Academy, Lunenburg.        |
| "      | II.  | (Lunenburg Co.), B. McKittrick, B. A., Principal, Academy, Lunenburg.        |
| "      | III. | (Annapolis and Kings), E. Robinson, Principal, Academy, Kentville.           |
| "      | IV.  | (Hants Co.), Miss A. Forbes, B. A., Academy, Windsor.                        |
| "      | V.   | (Halifax Co.), G. R. Marshall, B. A., Principal, C. A. School, Halifax.      |
| "      | V.   | (Guysboro Co.), J. B. McCarthy, B. Sc., Science Master, Academy, Halifax.    |
| "      | VI.  | (Colchester and Cumberland), J. E. Barteaux, Science Master, Academy, Truro. |

- “ VII. (N. Cumberland Co.), E. J. Lay, Principal,  
Academy, Amherst.
- “ VII. (Pictou Co.), W. P. Fraser, Science Master,  
Academy, Pictou.
- “ VII. (Antigonish Co.), F. G. Morehouse, Principal,  
Schools, Antigonish.
- “ VIII. (Richmond Co.), G. W. MacKenzie, B. A.,  
Principal, Public Schools, Sydney Mines.
- “ VIII., IX., X. (Cape Breton, Victoria and Inverness  
Co.), L. A. DeWolf, M. Sc., High School,  
North Sydney.

The phenochrons of each of these compilers were again averaged into the ten columns of phenochrons for each region of the province by Miss Jean Lindsay, B. A., of the Education Department, as they are given in the first table following.

The general phenochrons for Nova Scotia, and the observations reported by the following observers from stations within the other provinces of the Dominion are given in the last table :

New Brunswick : George U. Hay, D. Sc., Saint John.

Prince Edward Island : John MacSwain, Charlottetown.

Prince Edward Island : J. M. Duncan, Kensington.

Ontario : Cephias Guillet, Ph. D., Ottawa.

Ontario : Mrs. F. E. Webster, Creemore.

Ontario : A. B. Klugh, Guelph.

Saskatchewan : Rev. Charles W. Bryden, B. A., Shellbrook.

British Columbia : J. K. Henry, B. A., Vancouver.

These tables were published in the *Proceedings of the Royal Society of Canada* ; and as two or three errors have since been detected in figures in the first table referring to Nova Scotia under Nos. 48 and 79b, they are corrected herein.

NOVA SCOTIA PHENOCHRONS, 1904.  
 FLOWERING AND OTHER PHENOCHRONS FOR EACH REGION OF THE PROVINCE OF NOVA SCOTIA, COMPILED FROM 300 PUBLIC  
 SCHOOL OBSERVATION SCHEDULES.

[The Phenochrons for each region. (which are the averages of many observations), have the fractions omitted].

WHEN FIRST SEEN.		YEAR ENDED JULY, 1904.		WHEN BECOMING COMMON.	
REGION.		NOVA SCOTIA.		REGION.	
		Day of the year corresponding to the last day of each month.			
10. Inverness Slope to Gulf.	Average for Province.	10. Inverness Slope to Gulf.	For leap year add one to each except January.	10. Inverness Slope to Gulf.	Average for Province.
9. Bras d'Or Slope (Inv. and Victoria).	102	9. Bras d'Or Slope (Inv. and Victoria).	1	9. Bras d'Or Slope (Inv. and Victoria).	113
8. Richmond and Cape Breton.	115	8. Richmond and Cape Breton.	2	8. Richmond and Cape Breton.	114
7. Pictou and Antigonish.	112	7. Pictou and Antigonish.	3	7. Pictou and Antigonish.	112
6. South Cumbria and Col. (S. Cumb. and Col.).	103	6. South Cumbria and Col. (S. Cumb. and Col.).	4	6. South Cumbria and Col. (S. Cumb. and Col.).	114
5. Halifax and Guysborough.	110	5. Halifax and Guysborough.	5	5. Halifax and Guysborough.	121
4. Hants and South Colchester.	110	4. Hants and South Colchester.	6	4. Hants and South Colchester.	115
3. Annapolis and Kings.	98	3. Annapolis and Kings.	7	3. Annapolis and Kings.	103
2. Shelburne, Queens, and Lunenburg.	101	2. Shelburne, Queens, and Lunenburg.	8	2. Shelburne, Queens, and Lunenburg.	108
1. Yarmouth and Digby.	102	1. Yarmouth and Digby.	9	1. Yarmouth and Digby.	108
	115		10		127
	112		11		118
	98		12		107
	92		13		106
	125		14		135
	127		15		131
	132		16		145
	126		17		138
	121		18		126
	120		19		127
	124		20		133
	126		21		133
	113		22		122
	127		23		128
	124		24		127
	123		25		132
	159		26		164
	157		27		168
	127		28		136
	127		29		137
	140		30		137
	139		31		137
	123		1		133
	124		2		128
	137		3		143
	137		4		141
	136		5		146
	135		6		141
	137		7		137
	136		8		135
	130		9		132
	180		10		182
			11		240
			12		210
			13		193
			14		203
			15		182
			16		240
			17		187
			18		182
			19		240
			20		182
			21		240
			22		182
			23		240
			24		182
			25		240
			26		182
			27		240
			28		182
			29		240
			30		182
			31		240
			1		182
			2		240
			3		182
			4		240
			5		182
			6		240
			7		182
			8		240
			9		182
			10		240
			11		182
			12		240
			13		182
			14		240
			15		182
			16		240
			17		182
			18		240
			19		182
			20		240
			21		182
			22		240
			23		182
			24		240
			25		182
			26		240
			27		182
			28		240
			29		182
			30		240
			31		182
			1		240
			2		182
			3		240
			4		182
			5		240
			6		182
			7		240
			8		182
			9		240
			10		182
			11		240
			12		182
			13		240
			14		182
			15		240
			16		182
			17		240
			18		182
			19		240
			20		182
			21		240
			22		182
			23		240
			24		182
			25		240
			26		182
			27		240
			28		182
			29		240
			30		182
			31		240
			1		182
			2		240
			3		182
			4		240
			5		182
			6		240
			7		182
			8		240
			9		182
			10		240
			11		182
			12		240
			13		182
			14		240
			15		182
			16		240
			17		182
			18		240
			19		182
			20		240
			21		182
			22		240
			23		182
			24		240
			25		182
			26		240
			27		182
			28		240
			29		182
			30		240
			31		182
			1		240
			2		182
			3		240
			4		182
			5		240
			6		182
			7		240
			8		182
			9		240
			10		182
			11		240
			12		182
			13		240
			14		182
			15		240
			16		182
			17		240
			18		182
			19		240
			20		182
			21		240
			22		182
			23		240
			24		182
			25		240
			26		182
			27		240
			28		182
			29		240
			30		182
			31		240
			1		182
			2		240
			3		182
			4		240
			5		182
			6		240
			7		182
			8		240
			9		182
			10		240
			11		182
			12		240
			13		182
			14		240
			15		182
			16		240
			17		182
			18		240
			19		182
			20		240
			21		182
			22		240
			23		182
			24		240
			25		182
			26		240
			27		182
			28		240
			29		182
			30		240
			31		182
			1		240
			2		182
			3		240
			4		182
			5		240
			6		182
			7		240
			8		182
			9		240
			10		182
			11		240
			12		182
			13		240
			14		182
			15		240
			16		182
			17		240
			18		182
			19		240
			20		182
			21		240
			22		182
			23		240
			24		182
			25		240
			26		182
			27		240
			28		182
			29		240
			30		182
			31		240
			1		182
			2		240
			3		182
			4		240
			5		182
			6		240
			7		182
			8		240
			9		182
			10		240
			11		182
			12		240
			13		182





PHENOLOGICAL OBSERVATIONS IN

NOVA SCOTIA PHENOCHRONS, 1904—(Continued).

WHEN FIRST SEEN.		NOVA SCOTIA.										WHEN BECOMING COMMON.									
REGIONS.		REGIONS.										REGIONS.									
1 Yarmouth and Digby.		2 Shelburne, Queens and Lunenburg.		3 Annapolis and Kings.		4 Hants and South Colchester.		5 Halifax and Guysboro.		6 South Cobequid Slope (S. Cumb. and Col.).		7 North Cumb. Col., Pictou and Antlg. Breton.		8 Richmond and Cape Breton.		9 Bras d'Or Slope (Inv. and Victoria).		10 Inverness Slope to Gulf.			
Average for Province.		Average for Province.		Average for Province.		Average for Province.		Average for Province.		Average for Province.		Average for Province.		Average for Province.		Average for Province.		Average for Province.			
84	85	84	85	84	85	84	85	84	85	84	85	84	85	84	85	84	85	84	85		
317	283	336	324	287	315	283	303	287	312	270	350	306	285	312	287	312	270	350	306		
85	83	88	87	88	87	88	87	88	87	88	87	88	87	88	87	88	87	88	87		
82	84	83	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85		
70	108	132	124	121	130	134	138	131	125	127	123	125	126	125	124	125	124	125	124		
129	122	126	125	117	127	123	125	126	125	124	125	124	125	124	125	124	125	124	125		
90	141	136	130	140	135	142	135	136	136	137	134	134	134	134	134	134	134	134	134		
137	126	130	140	115	142	135	140	136	130	130	130	130	130	130	130	130	130	130	130		
124	147	143	141	130	133	120	110	119	116	107	119	119	119	119	119	119	119	119	119		
138	138	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136	136		
138	143	137	133	115	121	138	141	141	144	140	141	141	141	141	141	141	141	141	141		
148	144	143	139	142	150	146	146	146	146	146	146	146	146	146	146	146	146	146	146		
147	133	148	141	134	142	140	133	139	140	134	150	137	133	142	142	142	142	142	142		
102	132	128	125	124	139	129	117	105	122	5	98	98	98	98	98	98	98	98	98		
95	97	99	107	115	110	108	115	118	117	108	115	118	117	108	115	118	117	108	115		
104	107	108	116	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120		
81b	82a	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100		
Wild Ducks migrating, S	Wild Geese migrating, S	Melospiza fasciata, North	Turdus migratorius	Junco hiemalis	Acritis macularia	Starnella magna	Ceryle Alcyon	Dendroica coronata	D. aestiva	Zonotrichia alba	Trochilus colubris	Tyrannus Carolinensis, North	Dolichonyx oryzivorus	Spizis tristis	Setophaga ruticilla	Ampelis cedrorum	Chordeiles Virginianus	First piping of frogs	First appearance, snakes		
295.7	83.9	312.5	91.2	87.3	127.4	121.7	124.9	134.5	134.6	119.4	145.6	140.1	143.8	143.7	142.3	142.5	108.7	116.2			

YEAR ENDED JULY, 1904.

NOVA SCOTIA.

Day of the year corresponding to the last day of each month.  
 Jan ..... 31 July ..... 212  
 Feb ..... 39 Aug ..... 243  
 March ..... 90 Sept ..... 273  
 April ..... 120 Oct ..... 304  
 May ..... 151 Nov ..... 334  
 June ..... 181 Dec ..... 365  
 For leap year add one to each except January.

WHEN BECOMING COMMON.

REGIONS.

Average for Province.

1 Yarmouth and Digby.  
 2 Shelburne, Queens and Lunenburg.  
 3 Annapolis and Kings.  
 4 Hants and South Colchester.  
 5 Halifax and Guysboro.  
 6 South Cobequid Slope (S. Cumb. and Col.).  
 7 North Cumb. Col., Pictou and Antlg. Breton.  
 8 Richmond and Cape Breton.  
 9 Bras d'Or Slope (Inv. and Victoria).  
 10 Inverness Slope to Gulf.

WHEN FIRST SEEN.

REGIONS.

Average for Province.

1 Yarmouth and Digby.  
 2 Shelburne, Queens and Lunenburg.  
 3 Annapolis and Kings.  
 4 Hants and South Colchester.  
 5 Halifax and Guysboro.  
 6 South Cobequid Slope (S. Cumb. and Col.).  
 7 North Cumb. Col., Pictou and Antlg. Breton.  
 8 Richmond and Cape Breton.  
 9 Bras d'Or Slope (Inv. and Victoria).  
 10 Inverness Slope to Gulf.

## THUNDERSTORMS—PHENOLOGICAL OBSERVATIONS, NOVA SCOTIA, 1903.

The indices indicate the number of stations from which the Thunderstorms were reported on the day of the year specified.

## OBSERVATION STATIONS.

1. Yarmouth and Digby.	2. Shelburne, Queens and Lunenburg.	3. Annapolis and Kings.	4. Hants and South Colchester.	5. Halifax and Guysboro.	6. S. Cobequid Slope (S. Cum & Col)	7. North Cum., Col., Pictou & Antig.	8. Richmond and Cape Breton.	9. Bras d'Or Slope (Inv. & Victoria).	10. Inversnes Slope to Gulf.	Province of Nova Scotia. YEAR 1903.
184	183 <sup>8</sup>		184	183	183	183 <sup>13</sup>			184	183 <sup>18</sup>
	188			184 <sup>2</sup>		184 <sup>10</sup>				184 <sup>15</sup>
						189 <sup>2</sup>	188	189		188 <sup>2</sup>
	191					190		191		189 <sup>3</sup>
						192 <sup>2</sup>		193		190
						194				191 <sup>2</sup>
				197		197				192 <sup>2</sup>
				199		199 <sup>2</sup>				193
						200		200		194
203				204		204				197 <sup>2</sup>
						208				199 <sup>3</sup>
						215				202 <sup>2</sup>
	223					227 <sup>2</sup>				203
	227 <sup>4</sup>			227		228 <sup>15</sup>		228		204 <sup>2</sup>
	228 <sup>3</sup>			228		229 <sup>27</sup>		229	229	208
	229 <sup>10</sup>			229 <sup>2</sup>	229	230 <sup>11</sup>			230	215
	230	230 <sup>4</sup>	230 <sup>4</sup>	230 <sup>6</sup>	230 <sup>6</sup>	231 <sup>3</sup>				223
		231	231			232				227 <sup>7</sup>
	232 <sup>8</sup>					233 <sup>2</sup>				228 <sup>20</sup>
	233					233 <sup>2</sup>				229 <sup>42</sup>
		234 <sup>4</sup>	234 <sup>4</sup>	234	233 <sup>12</sup>	234 <sup>10</sup>	234 <sup>2</sup>			230 <sup>27</sup>
		235 <sup>3</sup>	235 <sup>3</sup>		234 <sup>2</sup>	235 <sup>7</sup>				231 <sup>4</sup>
					235 <sup>3</sup>					232 <sup>4</sup>
					236 <sup>3</sup>		237			233 <sup>15</sup>
			238			238				235 <sup>21</sup>
				239 <sup>2</sup>		239 <sup>10</sup>				235 <sup>16</sup>
	240		240 <sup>3</sup>			240 <sup>4</sup>	240			236 <sup>3</sup>
242 <sup>2</sup>	242		243 <sup>4</sup>	243 <sup>10</sup>	240	243 <sup>3</sup>	243	243		237
	243 <sup>2</sup>			244		244 <sup>3</sup>	244			238 <sup>3</sup>
	244					245				239 <sup>12</sup>
						246				240 <sup>9</sup>
248 <sup>2</sup>	248 <sup>12</sup>	248 <sup>7</sup>	248 <sup>7</sup>	248 <sup>15</sup>		248 <sup>23</sup>	248	248		242 <sup>23</sup>
249	249 <sup>12</sup>	249 <sup>7</sup>	249 <sup>6</sup>		249 <sup>3</sup>	249 <sup>21</sup>	249			243 <sup>21</sup>
										244 <sup>6</sup>
										245
									246	246 <sup>2</sup>
									247	247
									248	248 <sup>69</sup>
										249 <sup>61</sup>







THUNDERSTORMS—PHENOLOGICAL OBSERVATIONS, N. S., 1904.—*Continued.*

The indices indicate the number of stations from which the Thunderstorms were reported on the day of the year specified.

## OBSERVATION STATIONS.

1. Yarmouth and Digby.	2. Shelburne, Queens and Lunenburg.	3. Annapolis and Kings.	4. Hants and South Colchester.	5. Halifax and Guysboro.	6. S. Cobequid Slope (S. Cum. & Col.)	7. North Cum., Col., Pictou & Antigonish.	8. Richmond and Cape Breton.	9. Bras d'Or Slope (Inv. & Victoria).	10. Inverness Slope to Gulf.	Province of Nova Scotia.	YEAR 1904.
.....	.....	.....	.....	.....	.....	.....	.....	.....	117	.....	117
.....	.....	.....	120	120	.....	119	.....	.....	.....	.....	119
.....	.....	121 <sup>7</sup>	121 <sup>12</sup>	.....	121 <sup>12</sup>	120 <sup>9</sup>	120	120 <sup>8</sup>	120 <sup>8</sup>	.....	120 <sup>18</sup>
.....	.....	.....	.....	122	.....	121 <sup>48</sup>	.....	.....	.....	.....	121 <sup>79</sup>
.....	.....	.....	.....	.....	.....	122 <sup>8</sup>	.....	.....	.....	.....	122 <sup>4</sup>
.....	.....	.....	.....	.....	.....	123	.....	.....	.....	.....	123
.....	.....	.....	.....	.....	124	124 <sup>12</sup>	.....	.....	.....	.....	124 <sup>18</sup>
.....	.....	.....	126	.....	.....	125	.....	.....	.....	.....	125
.....	.....	.....	.....	.....	.....	126	.....	.....	.....	.....	126 <sup>2</sup>
.....	.....	.....	.....	.....	.....	128 <sup>2</sup>	.....	128	.....	.....	128 <sup>3</sup>
.....	.....	.....	.....	130	.....	130	.....	.....	129	.....	129
.....	.....	.....	137	138	.....	137 <sup>2</sup>	137	.....	.....	.....	130 <sup>2</sup>
.....	.....	.....	138	.....	.....	.....	.....	.....	.....	.....	137 <sup>4</sup>
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	138 <sup>2</sup>
.....	.....	.....	141	.....	.....	140	.....	.....	.....	.....	140
.....	.....	.....	.....	.....	.....	141 <sup>15</sup>	.....	.....	.....	.....	141 <sup>16</sup>
.....	.....	.....	.....	.....	.....	.....	.....	144 <sup>3</sup>	144 <sup>4</sup>	.....	144 <sup>7</sup>
145 <sup>6</sup>	145 <sup>3</sup>	.....	145 <sup>4</sup>	145	.....	145	.....	.....	145	.....	145 <sup>16</sup>
146	146	.....	.....	146 <sup>7</sup>	.....	146	146	.....	.....	.....	146 <sup>11</sup>
.....	147 <sup>2</sup>	147 <sup>2</sup>	.....	147 <sup>7</sup>	.....	147 <sup>4</sup>	147 <sup>8</sup>	147 <sup>6</sup>	.....	.....	147 <sup>26</sup>
.....	148 <sup>5</sup>	.....	.....	.....	148 <sup>2</sup>	148 <sup>5</sup>	148 <sup>12</sup>	.....	148 <sup>5</sup>	.....	148 <sup>29</sup>
.....	.....	.....	.....	.....	.....	.....	149 <sup>8</sup>	149	.....	.....	149 <sup>4</sup>
.....	150	.....	.....	.....	.....	.....	.....	.....	.....	.....	150
.....	.....	.....	.....	154	154	151 <sup>2</sup>	.....	151	151	.....	151 <sup>4</sup>
.....	.....	.....	155	.....	.....	.....	.....	.....	.....	.....	152
156	156	.....	156	.....	.....	155	155 <sup>2</sup>	.....	.....	.....	155 <sup>4</sup>
157	157 <sup>4</sup>	.....	.....	.....	.....	.....	.....	.....	.....	.....	156 <sup>3</sup>
158	.....	.....	.....	.....	.....	.....	157	.....	.....	.....	157 <sup>6</sup>
161	.....	.....	.....	.....	.....	158	.....	.....	.....	.....	158 <sup>2</sup>
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	161
.....	.....	.....	.....	.....	.....	162	.....	.....	.....	.....	162
.....	.....	.....	.....	163	.....	163 <sup>2</sup>	.....	.....	.....	.....	163 <sup>3</sup>
.....	.....	.....	.....	.....	164	.....	.....	.....	.....	.....	164
.....	.....	.....	165	.....	.....	.....	.....	.....	165 <sup>2</sup>	.....	165 <sup>3</sup>
.....	166	.....	.....	.....	.....	.....	.....	.....	.....	.....	166
.....	167 <sup>3</sup>	.....	167 <sup>2</sup>	167 <sup>4</sup>	.....	.....	.....	.....	.....	.....	167 <sup>11</sup>
168	168 <sup>3</sup>	.....	168 <sup>9</sup>	168 <sup>4</sup>	168 <sup>4</sup>	167	.....	.....	167	.....	168 <sup>62</sup>
169	169	169 <sup>8</sup>	169 <sup>2</sup>	.....	.....	168 <sup>89</sup>	.....	168	168	.....	169 <sup>14</sup>
.....	.....	.....	.....	.....	.....	169	.....	.....	169	.....	.....



## PHENOLOGICAL OBSERVATIONS, CANADA, 1904.

"WHEN FIRST SEEN."

OBSERVATION STATIONS.

Number.	Day of the year corresponding to the last day of each month. Jan . . . . . 31 July . . . . . 212 Feb. . . . . 59 Aug. . . . . 242 March . . . . . 90 Sept. . . . . 273 April . . . . . 120 Oct. . . . . 304 May . . . . . 151 Nov. . . . . 334 June . . . . . 181 Dec. . . . . 365 For leap year add one to each except January.	Average dates for Nova Scotia	*St. John, N B.	Charlottetown, P. E. I.	Kensington, P. E. I.	Ottawa, Ont.	†Creemore, Ont.	Guelph, Ont.	Shellbrook, Sask.	Vancouver, B. C.
*1	<i>Alnus incana</i> , Wild . . . . .	106.9	118	120	114	117	117	75a		
2	<i>Populus tremuloides</i> . . . . .	118.	125	132	118	126	123			
3	<i>Epigæa repens</i> , L. . . . .	109.1	125	120	116	118				
4	<i>Equisetum arvense</i> . . . . .	128.8			131	+124	127	102		
5	<i>Sanguinaria Canadensis</i> . . . . .	127.5				124	117			
6	<i>Viola blanda</i> . . . . .	126.3	131		127	+127	142	129		
7	<i>Viola palmata</i> , <i>cucullata</i> , etc. . . . .	130.	130		134	130	134	132		
8	<i>Hepatica triloba</i> , etc . . . . .	122.3	125			107	126	123		
9	<i>Acer rubrum</i> . . . . .	128.8	125	132	136		125	100b		
*10	<i>Fragaria Virginiana</i> . . . . .	127.7	131	146	136	127	132			
11	" (fruit ripe). . . . .	161.9	162							
12	<i>Taraxacum officinale</i> . . . . .	131.6	139	135	139	127	130	112		
13	<i>Erythronium Americanum</i> . . . . .	137.7	125			122	126	117		
14	<i>Coptis trifolia</i> . . . . .	133.2			137	+133	144			
15	<i>Claytonia Caroliniana</i> . . . . .	128.1				115	117			
16	<i>Nepeta Glechoma</i> . . . . .	138.4				+133		108		
17	<i>Amelanchier Canadensis</i> . . . . .	137.1	139		139	133	132			
18	" (fruit ripe) . . . . .	200.1								
19	<i>Prunus Pennsylvanica</i> . . . . .	144.5	149		139	122	142	114c		
20	" (fruit ripe) . . . . .	215.9								
21	<i>Vaccinium Can. and Penn.</i> . . . . .	141.7	146		148	135	135	80		
22	" (fruit ripe) . . . . .	207.6								
23	<i>Ranunculus acris</i> . . . . .	147.5			156		151	134		
24	<i>R. repens</i> . . . . .	156.9			170			128		
25	<i>Trillium erythrocarpum</i> . . . . .	145.9	139		141	127				
26	<i>Rhododendron Rhodora</i> . . . . .	145.1	139		151					
27	<i>Cornus Canadensis</i> . . . . .	147.2			147	152	163	133		
28	" (fruit ripe) . . . . .	212.6								
29	<i>Trientalis Americana</i> . . . . .	148.5	146		159	138		148		
30	<i>Clintonia borealis</i> . . . . .	151.5	149		160	138	148			
31	<i>Calla palustris</i> . . . . .	158.5			131		163			
32	<i>Cypripedium acaule</i> . . . . .	157.1	162		162		156			
33	<i>Sisyrinchium angustifolium</i> . . . . .	158.			172	145				
34	<i>Linnæa borealis</i> . . . . .	162.9			168		163			
35	<i>Kalmia glauca</i> . . . . .	151.1					143			
36	<i>Kalmia angustifolia</i> . . . . .	170.1			172					

a. *Alnus rubrum*; b. *Acer macrophyllum*; c. *Prunus emarginata*.

\*When becoming common, except 1 and 11.

†When becoming common.

## PHENOLOGICAL OBSERVATIONS, CANADA, 1904.

"WHEN FIRST SEEN."

OBSERVATION STATIONS.

Number.	Day of the year corresponding to the last day of each month.		Average dates for Nova Scotia.	*St. John, N. B.	Charlottetown, P. E. I.	Kensington, P. E. I.	Ottawa, Ont.	†Creemore, Ont.	Guelph, Ont.	Shellbrooke, Sask.	Vancouver, B. C.
	Jan . . . . 31	July . . . . 212									
	Feb . . . . 59	Aug. . . . . 242									
	March . . . 90	Sept . . . . 273									
	April . . . 120	Oct. . . . . 304									
	May . . . . 151	Nov. . . . . 334									
	June . . . . 181	Dec. . . . . 365									
	For leap year add one to each except January.										
37	Cratægus Oxyacantha . . . . .	162.	149	142	148	148	148	148	148	148	148
38	Cratægus coccinea, etc . . . . .	157.7	161	161	161	161	161	161	161	161	161
39	Iris versicolor . . . . .	164.6	162	175	175	175	175	175	175	175	175
40	Chrysanthemum Leucan. . . . .	164.8	167	167	167	167	167	167	167	167	167
41	Nuphar advena . . . . .	164.9	151	151	151	151	151	151	151	151	151
42	Rubus strigosus . . . . .	160.6	170	170	170	170	170	170	170	170	170
43	" " (fruit ripe) . . . . .	217.5	170	170	170	170	170	170	170	170	170
44	Rhinanthus Crista-galli . . . . .	172.7	170	170	170	170	170	170	170	170	170
45	Rubus villosus . . . . .	166.	160	160	160	160	160	160	160	160	160
46	" " (fruit ripe) . . . . .	239.7	160	160	160	160	160	160	160	160	160
47	Sarracenia purpurea . . . . .	168.1	158	158	158	158	158	158	158	158	158
48	Brunella vulgaris . . . . .	173.3	179	179	179	179	179	179	179	179	179
49	Rosa lucida . . . . .	179.9	179	179	179	179	179	179	179	179	179
50	Leontodon autumnale . . . . .	167.6	161	161	161	161	161	161	161	161	161
51	Linaria vulgaris . . . . .	176.	176	176	176	176	176	176	176	176	176
52	Trees appear green . . . . .	136.8	127b	127b	127b	127b	127b	127b	127b	127b	127b
53	Ribes rubrum (cultivated) . . . . .	141.8	146	146	146	146	146	146	146	146	146
54	" " (fruit ripe) . . . . .	203.4	146	146	146	146	146	146	146	146	146
55	R. nigrum (cultivated) . . . . .	142.9	148	148	148	148	148	148	148	148	148
56	" " (fruit ripe) . . . . .	209.4	148	148	148	148	148	148	148	148	148
57	Prunus Cerasus . . . . .	147.4	149	150	150	150	150	150	150	150	150
58	" " (fruit ripe) . . . . .	210.	149	149	149	149	149	149	149	149	149
59	Prunus domestica . . . . .	151.1	146	129	129	129	129	129	129	129	129
60	Pyrus malus . . . . .	150.5	149	146	146	146	146	146	146	146	146
61	Syringa vulgaris . . . . .	157.6	161	158	158	158	158	158	158	158	158
62	Trifolium repens . . . . .	157.3	158	158	158	158	158	158	158	158	158
63	Trifolium pratense . . . . .	155.7	159	128	128	128	128	128	128	128	128
64	Phleum pratense . . . . .	157.2	159	128	128	128	128	128	128	128	128
65	Solanum tuberosum . . . . .	176.8	188	188	188	188	188	188	188	188	188
66	Ploughing (first of season) . . . . .	119.3	124	124	124	124	124	124	124	124	124
67	Sowing " . . . . .	128.4	127	127	127	127	127	127	127	127	127
68	Potato-planting " . . . . .	126.6	145	145	145	145	145	145	145	145	145
69	Sheep-shearing " . . . . .	129.6	144	144	144	144	144	144	144	144	144
70	Hay-cutting " . . . . .	205.7	194	194	194	194	194	194	194	194	194
71	Grain-cutting " . . . . .	248.3	202	202	202	202	202	202	202	202	202
72	Potato-digging " . . . . .	266.2	276	276	276	276	276	276	276	276	276

d. *Rubus spectabilis*.

\*When becoming common.

†When becoming common.

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		Jan . . . . . 31	July . . . . . 212								
	For leap year add one to each except January.										
73a	Opening of rivers (1st of season)	88.5	103								
73b	Opening of lakes “	107.1									
74a	Last snow to whiten ground .	112.2									82
74b	“ to fly in air . . . . .	118.4	117								82
75a	Last spring frost—hard . . . . .	138.9	97								
75b	“ “ hoar . . . . .	159.8	163 126 124								
76a	Water in streams—high . . . . .	102.5					107				
76b	“ “ low . . . . .	186.8									
77a	First autumn frost—hoar . . . . .	271.9	252 252				227				
77b	“ “ hard . . . . .	296.3	281 280								
78a	First snow to fly in air . . . . .	299.6	262 301								
78b	“ “ whiten ground . . . . .	308.3	306								
79a	Closing of Lakes . . . . .	342.5									
79b	“ Rivers . . . . .	340.9	344								
81a	Wild ducks migrating, N . . . . .	88.3					124	123			
81b	“ “ S . . . . .	295.7									
82a	Wild geese “ N . . . . .	83.9	69							94	
82b	“ “ S . . . . .	312.5	260								
83	Melospiza fasciata, North . . . . .	91.2	88 92	85	86	83					
84	Turdus migratorius, “ . . . . .	88.1	90 92	84	85	83	111				
85	Junco hiemalis, “ . . . . .	87.3	90 92	93	Res						
86	Actitis macularia, “ . . . . .	127.4			120						
87	Sturnella magna, “ . . . . .	121.7		93	83	112					
88	Ceryle Alcyon, “ . . . . .	124.9		114	97						
89	Dendroeca coronata, “ . . . . .	134.5			120						
90	D. aestiva, “ . . . . .	134.6		128	126						
91	Zonotrichia alba, “ . . . . .	119.4			146						
92	Trochilus colubris, “ . . . . .	145.6			141						
93	Tyrannus Carolinensis “ . . . . .	140.1			126						
94	Dolychonyx oryzivorus “ . . . . .	133.8			124						
95	Spinis tristis, “ . . . . .	143.7			151	Res.					
96	Setophaga ruticilla. “ . . . . .	137.3		128	140						
97	Ampelis cedrorum. “ . . . . .	142			147						
98	Chordeiles Virginianus ‘ . . . . .	122.5	149		155						
99	First piping of frogs . . . . .	108.7	114 123	108	112	113					
100	First appearance of snakes . . . . .	116.2	168	93	111						

80 No Thunderstorms :  
 Charlottetown, P. E. I. :—63, 121, 141, 148, 202, 210, 231, 262.  
 Kensington, P. E. I. :—63, 121, 148, 170, 182, 202, 230, 242, 262.  
 Creemore, Ontario :—129, 194, 202, 246, 255, 273.