

THE PHENOLOGY OF NOVA SCOTIA, 1919.—By A. H. MACKAY, LL.D., Halifax.

These observations were made by the school children of the Province of Nova Scotia as a part of the Nature Study work prescribed. The pupils report by bringing into the school-room the flowering or other specimens when first observed, for authoritative determination by the teacher, who generally credits the first finder by placing the name and the observation on the honor roll section of the blackboard for the day. The teacher, after testing the correctness of the observation, marks it on the schedule with which every teacher is provided—a copy of which is sent in to the Inspector with the school returns at the end of June and January.

The following tables are compiled from 140 of the best schedules out of the 400 sent in. The selections were made and compiled under the direction of Mr. H. R. Shinner, B. A., and Miss Gladys MacLeod, of the Education Department.

The schedules for each year are carefully bound up in a large annual volume, which is placed in the Provincial Museum and Science Library, where they can be used by students of climate, etc. The compilers of the phenochrons of the different belts, slopes or regions, have been rural science teachers who have most distinguished themselves as instructors. They were selected for the purpose on the recommendation of the Director of rural science education. The sheets from which the provincial phenochrons are calculated are also bound in annual folio volumes for ease of consultation and preservation.

The Province is divided into its main climate slopes or regions not always coterminous with the boundaries of counties. Slopes, especially those to the coast, are subdivided into belts, such as (a) the coast belt, (b) the low inland belt, and (c) the high inland belt, as below:

No.	Regions or Slopes.	Belts.
I.	Yarmouth and Digby Counties.	(a) Coast, (b) Low Inlands, (c) High Inlands.
II.	Shelburne, Queens & Lunenburg Co's,	" " "
III.	Annapolis and Kings Counties.	(a) South Mts., (b) Annapolis Valley, (c) Cornwallis Valley, (d) North Mts.
IV.	Hants and Colchester Counties.	(a) Coast, (b) Low Inlands, (c) High Inlands.
V.	Halifax and Guysboro Counties.	" " " "
VI a.	Cobequid Slope (to the south),	" " " "
VI b.	Chignecto Slope (to the northwest),	" " " "
VII.	Northumberland Straits Slope (to the n'h),	" " " "
VIII.	Richmond & Cape Breton Co's.	" " " "
IX.	Bras d'Or Slope (to the southeast),	" " " "
X.	Inverness Slope (to Gulf, N. W.),	" " " "

The ten regions are indicated on the outline map on page 134.

THE PHENOLOGY OF NOVA SCOTIA, 1919.
(Compiled from the best out of 350 local observation schedules.)

WHEN FIRST SEEN.										YEAR 1919.	WHEN BECOMING COMMON.									
OBSERVATION STATIONS										Day of the year corresponding to the last day of each month. Jan. 31 July 212 Feb. 59 August 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.	OBSERVATION REGIONS.									
1. Yarmouth and Digby	2. Shelburne, Lunenburg and Queens	3. Annapolis and Kings	4. Hants and Colchester	5. Halifax and Guysboro	6a. Cobequid Slope 6b. Chignecto Slope	7. Northumb. Sts Slope	8. Richmond and Cape Breton	9 & 10. Inverness and Bras d'Or Slope	Average Dates		Average dates.	1. Yarmouth and Digby	2. Shelburne Lunenburg and Queens	3. Annapolis and Kings	4. Hants and Colchester	5. Halifax and Guysboro	6a. Cobequid Slope 6b. Chignecto Slope	7. Northumb. Sts Slope	8. Richmond and Cape Breton	9 & 10. Inverness and Bras d'Or Slope
90	90	98	100	101	107	102	109	117	101	1. <i>Alnus incana</i> , Wild.	110	104	102	109	106	107	115	108	114	127
101	124	108	110	106	115	111	118	115	111	2. <i>Populus tremuloides</i>	117	119	132	114	115	113	119	117	123	119
85	93	96	101	109	103	115	113	114	103	3. <i>Epigea repens</i> , L.....	115	99	104	108	109	115	138	119	120	122
119	119	120	122	118	121	121	144	134	127	4. <i>Equisetum arvense</i>	128	121	128	126	130	126	122	130	135	135
.....	.....	.....	127	128	130	118	130	.....	127	5. <i>Sanguinaria Canadensis</i>	133	.....	.....	.....	132	136	135	129	135	.....
116	117	122	120	127	121	126	128	125	122	6. <i>Viola Blanda</i>	134	129	125	128	127	134	129	132	133	173
121	125	125	125	133	124	130	133	126	127	7. <i>Viola palmata</i> , cucullata.....	133	130	131	133	131	139	131	136	138	134
124	123	124	134	126	.....	.....	123	125	.....	8. <i>Hepatica triloba</i> , etc.....	138	.....	154	128	137	134	138	.....	.....	.....
113	125	127	127	123	126	129	132	133	126	9. <i>Acer rubrum</i>	133	126	131	133	132	127	134	133	144	130
120	123	121	123	128	127	127	128	129	125	10. <i>Fragaria Virginiana</i>	132	130	130	131	131	134	132	135	135	137
154	162	162	161	165	160	162	167	166	162	11. fruit ripe.....	168	168	170	170	171	172	176	172	177	141
122	124	126	125	131	130	131	134	131	128	12. <i>Taraxacum officinale</i>	133	125	130	134	131	137	137	137	139	125
118	130	138	126	127	129	126	134	137	129	13. <i>Erythronium Americanum</i>	137	.....	133	143	136	135	135	136	138	140
129	130	135	133	136	133	137	135	137	134	14. <i>Coptis trifolia</i>	139	136	136	142	135	141	135	141	140	141
.....	.....	156	123	131	122	122	136	166	136	15. <i>Claytonia Caroliniana</i>	140	.....	146	160	129	138	132	128	142	152
142	137	138	132	137	133	145	141	131	137	16. <i>Nepeta Glechoma</i>	145	153	145	143	139	144	138	147	151	143
139	136	136	135	138	142	139	146	143	139	17. <i>Amelanchier Canadensis</i>	144	144	140	141	141	143	143	143	150	149
.....	.....	.....	210	.....	.....	.....	.....	210	.....	18. fruit ripe.....	215	.....	.....	.....	215	.....	.....	.....	.....	.....

203	205	200	203	43.	"	fruit ripe.	212	211	216	210		
158	167	164	170	170	160	174	171	162	167	168	167	167
159	162	166	165	171	168	162	169	164	170	171	174	170
		210	233	245	241	247	240			211	246	245
163	163	160	163	166	155	171	162	168	168	163	167	173
164	169	165	157	171	139	178	170	166	164	160	177	178
175	172	172	170	174	169	170	171	49.	Rosa lucida	173	176	179
163	164	165	171	167	166	168	171	166	50.	Leontodon autumnale	170	177
122	169	175	155	175	173	167	168	170	51.	Linaria vulgaris	169	179
136	134	133	132	133	140	135	139	138	52.	Trees appear green	147	144
135	140	143	137	150	152	148	140	144	53.	Ribes rubrum (cultivated)	150	142
		199	199	199	201	196	201	198	54.	" (fruit ripe)	206	207
137	146	138	143	145	148	147	149	144	55.	R. nigrum (cultivated)	150	147
		207	207	207	200	205	204	205	56.	" fruit ripe.	209	210
137	148	143	146	156	152	146	154	151	57.	Prunus Cerasus	153	143
									58.	" fruit ripe	213	152
143	149	145	146	150	155	150	156	157	59.	Prunus domestica	156	149
144	149	145	147	151	151	149	157	158	60.	Pyrus Malus	156	152
154	158	155	156	158	160	158	165	159	61.	Syringa vulgaris	163	161
157	161	160	159	162	162	161	166	164	62.	Trifolium repens	167	164
150	153	156	156	156	159	161	162	160	63.	Trifolium pratense	166	162
178	152	153	169	163	167	168	164	164	64.	Phleum pratense	167	167
	177	174							65.	Solanum tuberosum	179	179
109	110	117	119	123	120	126	118	116	66.	Ploughing first of season	128	114
133	120	133	138	132	132	135	137	134	67.	Sowing	139	139
123	127	135	137	141	137	138	129	131	68.	Potato-planting	142	130
129	125	131	135	135	128	136	122	134	69.	Sheep-shearing	137	139
									70.	Hay-cutting	219	219
									71.	Grain-cutting	253	253
									72.	Potato-digging	271	271
									73a	Opening of rivers		
									73b	Opening of lakes		
									74a	Last snow to whiten ground		
									74b	" to fly in air		
									75a	Last Spring frost—hard		
									75b	"—hoar		
									76a	Water in streams—high		
									76b	"—low		
									77a	First autumn frost, hoar		
									77b	" hard		
									78a	First snow to fly in air		
									78b	" white ground		
									79a	Closing of lakes		
									79b	" rivers		
									81a	Wild ducks migrating, N		
									81b	" S		
									82a	" geese, N		
									82b	" S		

THE PHENOLOGY OF NOVA SCOTIA, 1919.—Continued.

WHEN FIRST SEEN.											WHEN BECOMING COMMON.													
OBSERVATION REGIONS.											OBSERVATION REGIONS.													
1. Yarmouth and Digby	2. Shelburne, Lunenburg and Queens	3. Annapolis and Kings	4. Haunts and Colchester	5. Halifax and Guysboro	6a. Cobequid Slope	6b. Chignecto Slope	7. Northum. Sts Slope	8. Richmond and Cape Breton	9 & 10. Inverness and Bras d'Or Slope	Average Dates	YEAR 1919.													
											Day of the year corresponding to the last day of each month.													
											Jan.	31	July	212										
											Feb.	59	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.													
Average Dates											Average dates.													
1. Yarmouth and Digby	2. Shelburne, Lunenburg and Queens	3. Annapolis and Kings	4. Haunts and Colchester	5. Halifax and Guysboro	6a. Cobequid Slope	6b. Chignecto Slope	7. Northum. Sts. Slope	8. Richmond and Cape Breton	9. & 10. Inverness and Bras d'Or Slope	Average Dates	1. Yarmouth and Digby	2. Shelburne, Lunenburg and Queens	3. Annapolis and Kings	4. Haunts and Colchester	Halifax and Guysboro	6a. Cobequid Slope	6b. Chignecto Slope	7. Northum. Sts. Slope	8. Richmond and Cape Breton	9. & 10. Inverness and Bras d'Or Slope				
139	142	142	141	142	143	142	149	148	143	19. Prunus Pennsylvanica	146	145	136	148	146	148	147	137	152	154				
136	140	141	141	152	143	143	147	155	144	20. " " fruit ripe	223	209	209	223	209	223	237	203	155	149				
142	144	149	148	154	151	150	153	144	148	21. Vaccinium Can. and Penn.	149	146	151	146	147	156	147	147	155	149				
150	144	153	156	163	150	157	164	164	155	22. " " fruit ripe	221	211	211	211	211	240	203	161	157	171				
142	145	141	144	145	143	147	152	152	143	23. Ranunculus acris	156	152	149	154	157	162	149	158	161	157				
142	144	146	145	149	144	148	156	156	147	24. R. repens	161	161	153	158	162	168	159	160	167	157				
143	147	145	149	157	146	149	150	151	148	25. Trill. erythrocarpum	150	142	150	146	150	150	151	153	167	157				
142	140	161	159	159	159	240	150	150	158	26. Rhododendron Rhodora	151	147	147	151	152	155	151	152	159	159				
143	145	148	146	141	145	151	153	147	146	27. Cornus Canadensis	154	150	156	142	155	162	150	156	156	156				
145	161	148	153	158	152	155	156	156	153	28. " " fruit ripe	158	160	151	165	165	240	161	156	156	157				
148	147	153	158	156	161	161	157	161	157	29. Trientalis Americana	153	153	155	164	152	147	151	156	162	161				
153	149	154	154	159	154	159	164	162	157	30. Clintonia borealis	158	151	155	153	159	161	156	162	162	161				
153	163	168	163	158	161	166	171	152	161	31. Calla palustris	162	161	159	166	166	158	169	165	156	156				
149	161	162	155	166	149	158	154	155	156	32. Cypripedium acaule	161	153	157	159	165	162	163	165	162	163				
153	162	169	158	178	153	159	159	151	160	33. Sisyrrinchium angustifol.	161	157	159	155	169	164	160	164	169	167				
159	159	156	155	158	158	159	160	158	158	34. Linnaea borealis	167	163	163	171	168	164	167	170	175	163				
156	158	154	157	159	161	159	163	164	159	35. Kalmia glauca	161	148	167	166	160	171	162	163	156	160				
158	159	159	163	164	163	164	169	162	162	36. Kalmia augustifolia	164	163	167	171	167	158	164	161	161	161				
156	158	160	160	167	160	160	168	163	161	37. Crataegus oxyacantha	162	167	162	159	156	163	162	162	169	167				
157	163	167	157	167	165	162	165	168	163	38. Crataegus coccinea, etc.	163	158	163	158	162	165	170	162	168	167				
156	158	162	157	167	165	162	165	168	163	39. Iris versicolor	167	165	162	164	169	169	169	166	173	164				
157	163	167	157	167	165	162	165	168	163	40. Chrysanthemum Leucanth.	168	164	167	165	167	172	168	169	173	170				
156	158	162	155	166	149	158	154	155	156	41. Nuphar advena	169	168	167	171	165	173	171	163	169	171				
156	158	162	155	166	149	158	154	155	156	42. Rubus strigosus	164	165	167	167	158	171	163	160	169	167				

THE PHENOLOGY OF NOVA SCOTIA, 1919.—Continued.

WHEN FIRST SEEN.											YEAR 1919.	WHEN BECOMING COMMON																
OBSERVATION STATIONS												OBSERVATION REGIONS																
1. Yarmouth and Digby	2. Shelburne, Lunenburg and Queens	1. Annapolis and Kings	4. Hants and Colchester	5. Halifax and Guysboro	6a. Cobequid Slope 6b. Chignecto Slope	7. Northumb. Sts. Slap	8. Richmond and Cape Breton	9 & 10. Inverness and Bras d'Or Slope	Average dates			Day of the year corresponding to the last day of each month.	Average dates	1. Yarmouth and Digby	2. Shelburne, Lunenburg and Queens	3. Annapolis and Kings	4. Hants and Colchester	5. Halifax and Guysboro	6a. Cobequid Slope 6b. Chignecto Slope	7. Northumb. Sts Slope	8. Richmond and Cape Breton	9 & 10. Inverness and Bras d'Or Slope						
79	104	96	88	85	92	91	93	98	92	83	Jan. 31	July 212	83	Melospiza fascata,														
86	79	75	76	100	76	85	95	82	84	Feb. 59	Aug. 243	84	Turdus migratorius															
83	83	92	90	...	106	90	92	...	90	March 90	Sept. 273	85	Junco hiemalis															
127	128	118	121	125	122	134	137	74	120	April 120	Oct. 304	86	Actitis macularia															
...	104	132	125	...	...	135	...	...	119	May 151	Nov. 334	87	Sturnella magna															
131	128	118	121	125	125	134	137	74	122	June 181	Dec. 365	88	Ceryle Alcyon															
123	...	124	126	123	132	131	132	...	127	For Leap Year add one to each except January.			89	Dendroeca coronata														
126	131	138	135	138	142	141	143	...	138	83	Melospiza fascata,																	
119	...	108	120	130	145	118	135	147	128	84	Turdus migratorius																	
141	145	147	147	144	144	147	142	155	145	85	Junco hiemalis																	
129	150	134	136	138	152	138	151	158	143	86	Actitis macularia																	
139	...	139	123	143	136	139	147	...	135	87	Sturnella magna																	
143	...	144	139	147	...	141	143	...	142	88	Ceryle Alcyon																	
102	...	155	149	145	...	152	145	...	141	89	Dendroeca coronata																	
127	100	...	150	149	166	153	134	103	135	90	D. aestiva																	
91	129	136	141	129	139	134	136	130	129	91	Zonotrichia alba																	
86	89	100	98	101	101	101	109	104	98	92	Trochilus colubris																	
90	102	110	112	114	122	121	116	108	110	93	Tyrannus Carolinensis																	
										94	Dolychonyx oryzivorus																	
										95	Spizus tristis																	
										96	Setophaga ruticilla																	
										97	Ampelis cedrorum																	
										98	Chordeiles Virginianus																	
										99	First piping of frogs.																	
										100	First appearance, snakes.																	

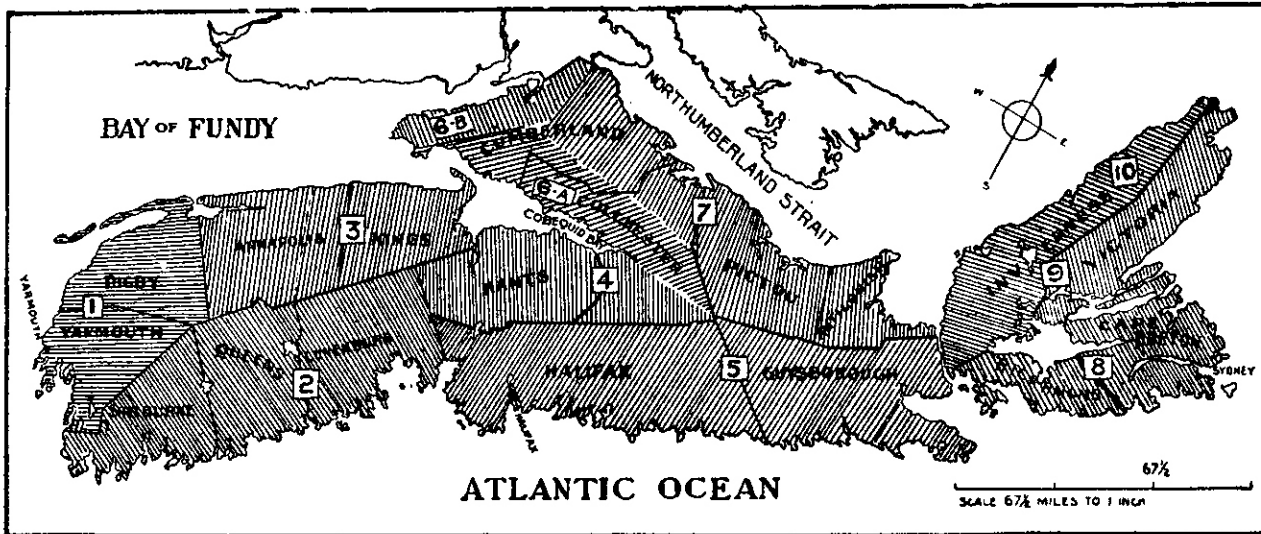
THE LOCAL COMPILERS FOR EACH REGION, 1919.

Region No.

- I. Miss Jennie C. Allan
- II. Miss C.A. Zinck
- III. Miss Zaidee Horsfall
- IV. Miss Gertrude M. Chase
- V. Miss J. D. Stoddard

Region No.

- VIa. Miss Vera M. Allen
- VIb. " " " "
- VII. Miss Fannie M. Layton
- VIII. Mr. Wilbert Spencer
- IX & X. Miss Gladys MacLeod



THE TEN PHENOLOGICAL REGIONS OF NOVA SCOTIA.

THUNDERSTORMS—PHENOLOGICAL OBSERVATIONS, NOVA SCOTIA, 1919.

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

OBSERVATION REGIONS.

1. Yarmouth and Digby.	2. Shelburne, Queens and Lunenburg.	3. Annapolis and Kings.	4. Hants and Colchester	5. Halifax and Guysboro.	6a. Cobequid Slope (to the South)	6b. Chignecto Slope (to the north)	7. Northumb. Sts. Slope (to the north)	8. Richmond and Cape Breton	9. Bras d'Or Slope	10. Inverness Slope	Total 1918
.....	.....	.....	174	.....	.....	.....	.....	.....	.....	.....	174
.....	198 ³	.....	.....	.....	.....	.....	.....	.....	.....	.....	198 ³
.....	201 ³	.....	.....	.....	.....	.....	.....	.....	.....	.....	201 ³
.....	202 ²	.....	.....	.....	.....	.....	.....	.....	.....	.....	202 ²
.....	203	.....	.....	.....	.....	.....	.....	.....	.....	.....	203
.....	.....	.....	.....	.....	.....	.....	.....	215	.....	.....	215
.....	.....	.....	.....	.....	.....	.....	.....	.....	220	.....	220
.....	.....	.....	.....	.....	.....	.....	.....	226	.....	.....	226
.....	.....	.....	.....	.....	.....	.....	.....	227	.....	.....	227
.....	.....	238	.....	.....	.....	.....	.....	238	.....	.....	238 ³
.....	.....	251	.....	.....	.....	.....	.....	.....	.....	.....	251
.....	.....	.....	.....	.....	.....	.....	261	.....	.....	.....	261
.....	.....	.....	.....	.....	.....	.....	.....	268	.....	.....	268
.....	.....	.....	.....	.....	.....	.....	275	.....	.....	.....	275
.....	.....	278	.....	.....	.....	.....	.....	.....	.....	.....	278
.....	.....	279 ³	.....	.....	.....	.....	.....	.....	.....	.....	279 ³
.....	.....	.....	.....	.....	.....	.....	280	.....	.....	.....	280
.....	.....	.....	.....	.....	.....	.....	302 ²	302	.....	.....	302 ³