

THE PHENOLOGY OF NOVA SCOTIA, 1923.—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 149 of the best schedules out of the 275 sent in. The selections were made and compiled under the direction of Miss M. G. McLeod and Miss Annimae Bill, of the Education Department.

The schedules for each year are carefully bound up in large annual volumes which are 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 follows:

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 north),	“ “
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

COMPILATION INSTRUCTIONS—AVERAGING LOCAL PHENOCHRONS FOR “REGION” OR “BELT” PHENOCHRONS.

If ten or fewer good phenological observations schedules can be selected from those belonging to any given belt, they may be averaged as indicated in the columns within. If there are not ten from each belt, then it may be better to combine two belts, or if necessary, three belts on the form within. In the latter case the average will be the “region” phenochron. When a full sheet can be made out for each belt, the average of the phenochrons for the three “belts” will give the phenochrons for the “region.” Finally, the phenochrons of each of the ten regions will be averaged to find the provincial phenochron for each phenomenon on the list. This will be done by the compiler-in-chief.

There is a convenience in averaging the dates of ten stations, which accounts for the ten columns for stations in the form within. When a few dates are not given it may be fair to enter in the blanks the dates from a similar and neighboring station which is not otherwise utilized for the sheet. Great care should

be taken that such observations taken from a schedule not summarized, should be what might have been observed at the station indicated in the heading, and to indicate such a transference the date should be surrounded by a circle with the pen, which would always mean that the observation was not made in the station heading the column, but in a neighboring one, and was taken from a supernumerary schedule.

THUNDER-STORMS.—These dates will be entered in their respective columns and opposite the month indicated. They will not be averaged, of course. The number of observation schedules represented in any "region" or general sheet under this head should be noted somewhere on the top margin of the page.

ACCURACY.—Care must be exercised in selecting schedules, the observations of which appear to have been carefully made, neglecting any which give reason for doubt, when selecting for summation on the form within. Great care must also be exercised in copying the figures and entering them, so that no slip may occur. Every entry should be checked. One slip may spoil the effect of all the accurate numbers entering into the summation. In like manner great care has to be taken in adding and averaging the figures, and for this purpose every sum should be done twice (once in reverse order,) so as to give absolute confidence in the accuracy of the work.

REMARKS.—The compiler filling one of these blanks should keep one copy for himself while sending the other to the compiler-in-chief.

The set of stations on the right under "when becoming common," must be EXACTLY the same as on the left, under "when first seen." The compiler can enter explanatory remarks in the blank below, and should sign each sheet as a guarantee of its correctness. These sheets will be bound into a volume for each year.

THE PHENOLOGY OF NOVA SCOTIA 1923 (CONTINUED)

PHENOLOGICAL OBSERVATIONS IN																						
WHEN FIRST SEEN						WHEN BECOMING COMMON																
OBSERVATION STATIONS						OBSERVATION STATIONS																
YEAR 1923						OBSERVATION STATIONS																
Average Dates						Average Dates																
Day of the year corresponding to the last day of each month.						Average Dates																
Jan. 31 July..... 212						1. Yarmouth & Digby																
Feb. 29 Aug. 243						2. Shelb., Queens & Lunenburg Co., N. S.																
March..... 30 Sept..... 273						3. Annapolis & Kings Counties, N. S.																
April..... 120 Oct..... 304						4. Hants & Col. South of Cobequid Bay																
May..... 151 Nov..... 334						5. Halifax & Guysboro Counties, N. S.																
June..... 181 Dec..... 365						6a. Cobequid Slope to South.																
For Leap Year add one to each, except January						6b. Chignecto slope to North West																
						7. Strathumberland																
						8. Richmond & Cape Breton Counties, N. S.																
						9. & 10. Bras D'Or & Inverness Slopes, N. S.																
147	148	153	153	153	166	162	156	154	158	161	165	162	157	156	163	171	160	159	170	171	171	
146	141	150	163	147	168	23. Ranunculus acris.....	162	166	159	161	167	23. Ranunculus acris.....	162	166	159	161	167	158	166	160	160	160
145	144	143	143	147	148	24. R. Repens.....	150	147	149	148	147	24. R. Repens.....	150	147	149	148	147	153	144	146	155	162
144	143	143	151	162	146	25. Trill. erythrocarpum.....	153	146	149	149	156	25. Trill. erythrocarpum.....	153	146	149	149	162	157	152	155	156	162
143	147	148	151	163	156	26. Rhododendron Rhodora.....	159	149	155	151	156	26. Rhododendron Rhodora.....	159	149	155	151	164	157	161	164	170	170
142	147	150	141	146	153	27. Cornus Canadensis.....	151	148	155	151	151	27. Cornus Canadensis.....	151	148	155	151	160	155	156	162	167	167
142	146	145	144	156	149	28. Cornus Canadensis, fruit ripe.....	156	147	155	152	151	28. Cornus Canadensis, fruit ripe.....	156	147	155	152	160	155	153	156	162	167
142	146	144	151	160	157	29. Trientalis Americana.....	161	162	155	151	162	29. Trientalis Americana.....	161	162	155	151	162	167	161	155	164	169
135	140	144	159	160	157	30. Chionoxia borealis.....	159	166	159	161	167	30. Chionoxia borealis.....	159	166	159	161	167	158	169	163	133	133
160	154	154	162	177	149	31. Calla palustris.....	170	166	162	163	171	31. Calla palustris.....	170	166	162	163	171	180	174	165	161	177
163	158	158	167	176	162	32. Cypridium acaule.....	171	166	162	163	169	32. Cypridium acaule.....	171	166	162	163	169	173	165	161	177	172
166	162	161	165	168	160	33. Sisyrinchium angustifolium.....	162	164	160	164	167	33. Sisyrinchium angustifolium.....	162	164	160	164	167	166	160	157	157	169
154	154	155	156	161	148	34. Linnaea borealis.....	162	155	160	164	167	34. Linnaea borealis.....	162	155	160	164	167	157	157	169	159	159
151	162	159	164	163	148	35. Kalmia glauca.....	169	165	170	161	161	35. Kalmia glauca.....	169	165	170	161	161	180	169	173	178	178
164	156	152	158	175	174	36. Kalmia angustifolium.....	169	165	170	161	161	36. Kalmia angustifolium.....	169	165	170	161	161	180	169	173	178	178
167	161	162	158	175	160	37. Crataegus oxyacantha.....	174	170	171	175	163	37. Crataegus oxyacantha.....	174	170	171	175	163	178	180	168	174	171
164	166	167	169	176	159	38. Crataegus coccinea, etc.....	174	170	171	175	178	38. Crataegus coccinea, etc.....	174	170	171	175	178	180	165	174	170	177
169	166	164	169	175	164	39. Iris versicolor.....	173	174	174	166	161	39. Iris versicolor.....	173	174	174	166	161	173	180	163	170	177
161	167	165	165	178	143	40. Chrysanthemum Leucanthemum.....	172	172	172	169	172	40. Chrysanthemum Leucanthemum.....	172	172	172	169	172	172	169	160	166	166
163	162	165	164	164	155	41. Nuphar advena.....	163	170	167	174	169	41. Nuphar advena.....	163	170	167	174	169	160	166	151	164	166
163	162	165	164	164	155	42. Rubus strigosus.....	196	178	178	170	170	42. Rubus strigosus.....	196	178	178	170	170	170	232	151	164	166
162	166	173	169	166	178	43. Rubus strigosus, fruit ripe.....	165	171	165	171	176	43. Rubus strigosus, fruit ripe.....	165	171	165	171	176	170	232	151	164	166
162	166	173	169	166	178	44. Rhinanthus Crista-galli.....	171	165	171	176	176	44. Rhinanthus Crista-galli.....	171	165	171	176	176	170	232	151	164	166

THE PHENOLOGY OF NOVA SCOTIA 1923 (CONTINUED)

WHEN FIRST SEEN		YEAR 1923		WHEN BECOMING COMMON					
OBSERVATION STATIONS		OBSERVATION STATIONS		OBSERVATION STATIONS					
1. Yarmouth & Digby Counties, N. S.	2. Shelb, Queens N. S.	3. Annapolis & Kings Counties, N. S.	4. Hants & Col. South of Cobequid Bay.	5. Halifax & Guysboro Counties, N. S.	6a. Cobequid Slope to South.	6b. Chignecto slope to North West.	7. Northumberland Straits Slope	8. Richmond & Cape Breton Counties, N. S.	9. & 10. Bras D'Or Inverness Slope, N. S.
128	129	130	131	132	133	134	135	136	137
128	125	139	143	147	141	142	147	141	142
129	132	141	141	146	136	135	143	146	145
130	131	135	150	147	161	153	143	143	134
131	132	201	210	201	207	253	223	212	141
132	263	253	241	253	256	256	256	256	221
133	263	285	244	258	281	281	277	277	259
134	72	108	97	101	117	116	107	107	279
135	107	124	105	123	121	123	117	117	144
136	116	114	111	123	114	116	117	122	147
137	116	117	120	143	143	126	123	147	147
138	116	144	115	103	147	159	159	187	143
139	153	164	143	115	103	147	156	158	131
140	122	99	108	110	127	121	110	111	240
141	172	305	279	264	272	137	124	137	265
142	331	296	298	311	272	272	176	175	267
143	305	297	345	300	298	272	272	272	274
144	345	319	345	346	300	311	312	312	290
145	338	367	367	350	356	350	350	350	268
146	96	84	113	98	117	103	95	102	274
147	283	238	329	290	320	320	320	320	293

Day of the year corresponding to the last day of each month. 212 Jan., 213 Feb., 214 March, 215 April, 216 May, 217 June, 218 For Leap Year add one to each, except January.

67. Sowing. 68. Potato-planting. 69. Sheep-shearing. 70. Hay-cutting. 71. Grain-cutting. 72. Potato-digging. 73a. Opening of dykes. 73b. Opening of lakes. 74a. Last snow to melt. 74b. Last snow to fly in air. 75a. Last spring frost—hard. 75b. Last spring frost—hoar. 76a. Water in streams—high. 76b. Water in streams—low. 77a. First autumn frost, hoar. 77b. First autumn frost, hard. 78a. First snow to fly in air. 78b. First snow to melt. 79a. Closing of lakes. 79b. Closing of rivers. 81a. Wild ducks migrating, N. 81b. Wild ducks migrating, S.

Average Dates

1. Yarmouth & Digby Counties, N. S. 144
 2. Shelb, Queens N. S. 147
 3. Annapolis & Kings Counties, N. S. 149
 4. Hants & Col. South of Cobequid Bay. 129
 5. Halifax & Guysboro Counties, N. S. 136
 6a. Cobequid Slope to South. 139
 6b. Chignecto Slope to North West. 141
 7. Northumberland Straits Slope 142
 8. Richmond & Cape Breton Counties, N. S. 143
 9. & 10. Bras D'Or Inverness Slope, N. S. 146

THE PHENOLOGY OF NOVA SCOTIA 1922 (CONTINUED)

WHEN FIRST SEEN		WHEN BECOMING COMMON							
OBSERVATION STATIONS		OBSERVATION STATIONS							
Average Dates.		Average Dates.							
1. Yarmouth & Digby Counties, N. S.	2. Shelb., Queens N. S.	1. Yarmouth & Digby Counties, N. S.	2. Shelb., Queens N. S.						
3. Annapolis & Kings Counties, N. S.	4. Hants & Col. South of Cobequid Bay.	3. Annapolis & Kings Counties, N. S.	4. Hants & Col. South of Cobequid Bay.						
5. Halifax & Guysboro Counties, N. S.	6a. Cobequid Slope to South.	5. Halifax & Guysboro Counties, N. S.	6a. Cobequid Slope to South.						
6b. Chignecto Slope to North West.	7. Northumberland Straits Slope.	6b. Chignecto Slope to North West.	7. Northumberland Straits Slope.						
8. Richmond & Cape Breton Counties, N. S.	9 & 10. Bras D'Or & Inverness Slopes, N. S.	8. Richmond & Cape Breton Counties, N. S.	9 & 10. Bras D'Or & Inverness Slopes, N. S.						
107	96	90	92	101	148	96	102	82a Wild geese migrating, N.	Day of the year corresponding to the last day of each month.
280	96	356	331	364	114	98	325	82b Wild geese migrating, S.	Jan. 31
81	85	100	98	106	97	88	994	83. Melospiza fasciata, North.	Feb. 59
113	72	85	79	90	97	101	100	84. Turdus migratorius, North.	March 30
144	110	135	136	134	93	100	101	85. Junco hiemalis, North.	April 120
112	91	145	131	119	131	120	126	86. Actitis macularia, North.	May 151
111	112	127	117	129	127	122	135	87. Sturnella magna, North.	June 181
131	112	127	117	129	127	122	135	88. Ceryle alcyon, North.	For Leap Year add one to each, except January.
116	134	116	134	145	143	130	128	89. Dendroica coronata, North.	
132	137	135	145	143	130	131	147	90. D. aestiva, North.	
120	119	142	124	138	144	134	122	91. Zonotrichia alba, North.	
149	152	149	150	166	157	139	159	92. Trochilus colubris, North.	
136	138	138	141	146	141	136	141	93. Tyrannus Carolinensis, North.	
147	145	144	138	145	141	148	142	94. Dolychonyx oryzivorus, North.	
124	143	143	160	137	162	140	138	95. Spizus tristis, North.	
161	155	155	155	142	142	146	147	96. Setophaga ruticilla, North.	
142	96	164	141	154	147	136	128	97. Ampelis Virginianus.	
107	148	139	154	129	123	137	127	98. Chordeiles Virginianus.	
106	111	111	116	132	118	111	129	99. First piping of frogs.	
107	115	116	124	127	131	128	134	100. First appearance, snakes.	

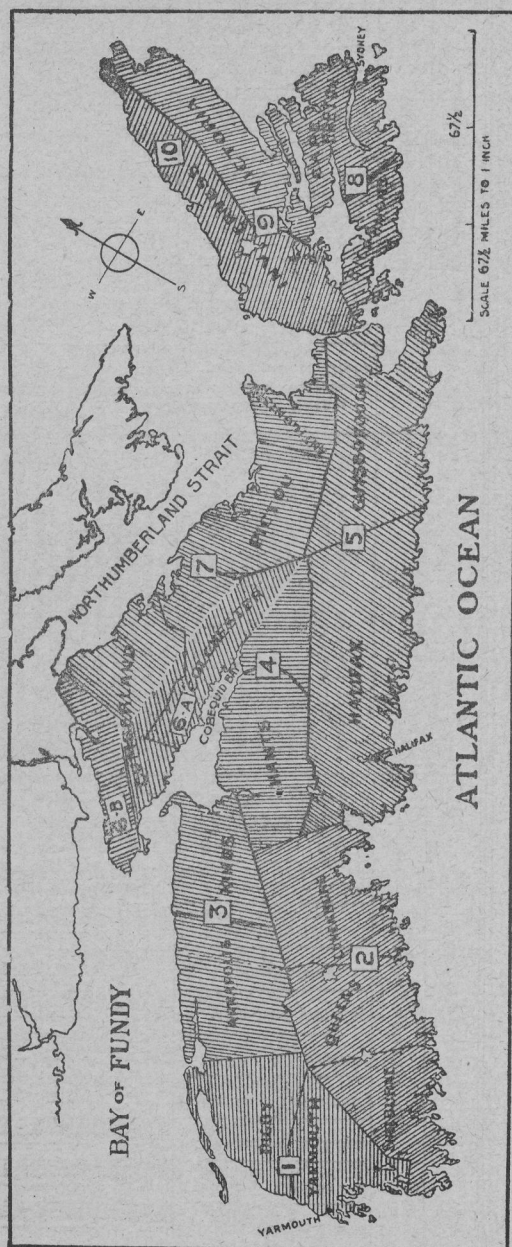
THE LOCAL COMPILERS FOR EACH REGION, 1923.

Region No.

- I. Mrs. Russell Yeaton
- II. Miss A. M. Bill
- III. Miss Bertha H. Currie
- IV. Miss Ethel F. Pugh
- V. Miss Pearl Archibald

Region No.

- VIa. Miss Ruth K. Chisholm
- VIIb. Mrs. D. B. Wright
- VIII. Mrs. I. M. Fraser
- VIII. Miss Margaret O'Toole
- IX & X. Mr. J. J. LeBlanc



THE TEN PHENOLOGICAL REGIONS OF NOVA SCOTIA.

