getting on the land with the result that grain was sown about the usual time. Some potatoes were planted early, but many who normally plant around the middle of June were delayed until late in the month on account of wet weather. June as a whole, however, was warmer, and less rain fell than in the previous year, with the result that no outbreak of Botrytis rots was observed and diseases generally were much less apparent than in 1937. No discharge of apple scab or brown rot spores was noted until after the blooming period and these diseases were not as severe as usual.

July was wet and cloudy; there were 17 days in which 5.08 inches of rain fell, as compared to .79 inches, and 185.3 hrs. of sunshine against 306.8 hrs. for the same month last year. Late Blight appeared in mid-July in some sections, and on July 29 at Charlottetown. August continued wet, with the temperature below average; late blight spread rapidly and by the end of the month potato fields in some sections were practically dead. Crown rust of oats was general and in some cases severe. Early in the month the amount of leaf rust of wheat was high and stem rust was developing rapidly.

Rainfall during September was only slightly higher than last year and about average for a four-year period.

Control of brown heart of turnips by the use of borax was good, due undoubtedly to the generous amount of precipitation which would render the borax available to the plants. (E.H. Saunders)

Recording Phenological Data

R.C. Russell

Phenological data have been compiled for three years at the Dominion Laboratories of Plant Pathology, situated at Winnipeg, Saskatoon, and Edmonton. The 1938 records were collected by B. Peturson, R.C. Russell and M.W. Cormack.

The records concerning two dozen species, for the three-year period, 1936 to 1938 inclusive, are given in the following table. Other species were observed at one or more places, but as the records concerning them are less complete, they are not included in Table I.

We are now in a position to study the relative earliness of the three seasons by comparing the dates on which the same species

started to bloom in the seasons in question. From a careful examination of the data, it may be seen that an early spring does not necessarily mean that an early harvest is to follow. In this region a cold period around the first part of May frequently delays the development of plants while, on the other hand, dry hot weather in summer hastens their maturity. For instance, the season of 1938 at Saskatoon was well ahead of the other two seasons around the middle of April, but for the most of the growing season 1937 was the most advanced of the three.

It was decided last year to compile data concerning the development of early sown wheat at Winnipeg, Saskatoon and Edmonton. These data are arranged in the table below:-

	Winnipeg			Saskatoon			Edmonton		
	1936	1937	1938	1936	1937	1938	1936	1937	1938
Seeded			16/4	22/4	14/4	14/4	2/5	26/4	27/4
Emerged			4/5	9/5	1/5	3/5	14/5	4/5	13/5
Headed			21/6	26/6	23/6	28/6	4/7	30/6	29/6
Harvested			29/7	29/7	19/7	29/7	12/8	10/8	14/8

The work of collecting data at the three places is becoming somewhat standardized and will be more valuable from now on. As some of the species listed are not readily available for observation at all three places, the list of species under observation at each place is somewhat different, but a goodly proportion of the species is the same at two or more of the points. It is felt that great emphasis should be laid on the selection of species which are seen almost daily. Moreover the same species should be observed in the same situation every year, to avoid variations due to habitat. An attempt is being made in 1939 to fill in certain gaps of a week or more in this year's data with suitable species at each place.

Table I. Dates at which certain plants were first seen in flower at Winnipeg, Saskatoon and Edmonton, 1936-1938.

	Winnipeg			Saskatoon			Edmonton		
	1936	1937	1938	1936	1937	1938	1936	1937	1938
Pulsatilla ludoviciana	-	-	-	24/4	17/4	11/4	7/5	6/5	17/4
Populus tremuloides	1/5	30/4	17/4	27/4	20/4	14/4	10/5	13/4	11/4
Acer negundo	11/5	7/5	3/5	11/5	3/5	11/5	-	2/5	1/5
Betula papyrifera	12/5	15/5	12/5	13/5	4/5	15/5	12/5	30/5	10/5
Amelanchier alnifolia	19/5	15/5	16/5	17/5	7/5	15/5	18/5	9/5	15/5
Prunus americana	-	17/5	16/5	-	-	-	-	-	-
Prunus pennsylvanica	-	-	-	-	18/5	22/5	20/5	11/5	16/5
Hierochloë odorata	20/5	19/5	20/5	18/5	12/5	18/5	2/6?	-	-
Smilacina stellata	24/5	27/5	23/5	22/5	18/5	20/5	15/5	10/5	21/5
Svida sp. (Cornus sp.)	-	30/5	30/5	30/5	30/5	31/5	-	-	1/6
Elaeagnus commutata	4/6	-	4/6	30/5	28/5	2/6	1/6	-	30/5
Viburnum lentago	-	4/6	2/6	-	-	-	-	-	-
" opulus (trilobum)	-	13/6	11/6	-	-	-	-	-	10/6
Anemone canadensis	8/6	15/6	10/6	5/6	8/6	12/6	-	-	12/6
Achillea lanulosa	-	-	19/6	11/6	13/6	8/6	22/6	-	18/6
Rosa (alcea?)	-	-	-	18/6	15/6	21/6	-	-	-
Bromus inermis	17/6	24/6	20/6	23/6	21/6	19/6	20/6	18/6	18/6
Symphoricarpos occidentalis	-	23/6	24/6	-	-	-	-	-	28/6
Gaillardia aristata	-	-	25/6	-	20/6	20/6	-	-	-
Steironema ciliatum	-	1/7	7/7	4/7	-	-	-	-	5/7
Cirsium (lanceolatum?)	-	8/7	11/7	-	8/7	17/7	-	-	-
Grindelia perennis	-	-	-	26/7	14/7	20/7	-	-	-
Oligoneuron canescens	30/7	-	-	28/7	16/7	23/7	7/7?	-	-
Aster laevis (purple)	-	-	-	10/8	4/8	-	-	-	2/8