rosea at Edmonton, Alta.; the rust is now known from every province in Canada, except Saskatchewan. A root rot caused by Diplodia radicicola Tassi was reported on Aristolachia Sipho from Ontario. Rust (Puccinia Cyani) on Centaurea Cyanus is now known from British Columbia and Nova Scotia as well as Ontario. Foliar nematode (Aphelenchoides ritzema-bosi Schwarz) was found on chrysanthemums in a greenhouse at London, Ont.; it is apparently a new record for Canada.

The Weather and Its Influence on Plant Disease

Crops suffered little winter injury due to the mild winter in British Columbia. Spring work was completed early and the moisture supply was adequate. Prolonged dry weather during the summer hastened the maturity of the crops.

Small fruits matured so rapidly during the hot dry weather in July that it was difficult to handle them on the market. The shipment of over-ripe strawberries from Coastal points resulted in heavy losses due to breakdown, upon arrival at their Prairie destination.

Diseases such as rust and downy mildew were quite prevalent, but the damage was less than in 1937. On the whole diseases did not seriously reduce the yield during the present growing season. (W. Jones)

In most parts of Alberta the crop went into the ground under more favorable conditions than in 1937, although seeding was somewhat delayed in the south by wet weather and in the north by lack of soil moisture, with consequent soil drifting in some areas. This reversal of the normal moisture relations continued during June and there was a general deterioration of the crops in the central and northern sections. Early in July heavy rains fell over most of the province from Edmonton south, but almost entirely missed the northern districts. Only light showers were received throughout the season in the Athabasca and Peace River districts, with the result that crops were very light and in many cases not worth harvesting. All the cultivated sections of the south received abundant rainfall, which was excessive at some points, including Pincher Creek and Cardston. Harvesting of the generally heavy, late maturing crop was completed under ideal conditions, since severe killing frosts did not come until early October. Heavy hail damage occurred in many sections of the province. Stem rust was usually abundant, but its spread was delayed by cool weather in early August and most of the crop escaped damage. Foliage diseases were

prevalent in the south and relatively scarce farther north, probably owing to the lack of moisture earlier in the season. (M.W. Cormack)

Spring weather conditions were unfavourable for early growth. Seeding started about April 18, but was delayed by more than a week of cold weather with snow and high winds. Moisture conditions were better, however, than they had been for several years. Growth during early May was slow due to cold backward weather and only a small proportion of seeded wheat was above ground on May 9. Moisture conditions continued favorable, as good general rains fell during the first few weeks of May, except in the north-eastern part of the province, so that about 45% of the seeded wheat was showing green on May 23. Germination was mostly good and weather conditions were favourable, for the development of a good root system. Slight damage was caused by soil drifting. The warmer weather in early June favoured rapid growth and, together with high winds, made heavy demands on soil moisture. Light rains failed to replenish this moisture and crops in the east-central and south-west portions were beginning to suffer. Browning root rot under these conditions, was fairly widespread and caused considerable injury, though good recovery followed heavy rains in some areas and good showers in others. Growing conditions during early July were fairly good in all areas except the north-east and extreme south-east. Severe grasshopper damage was widespread. The second week of July was dry and much damage from drought was becoming apparent in areas where previous moisture conditions had been poor. Traces of rust appeared at scattered points in western Sask. During the last half of July rust became prevalent on susceptible varieties in south-eastern Saskatchewan and eventually caused severe damage. The development of the rust was patchy, depending on the crop. In the drier areas the crop ripened quickly and escaped severe infection. In the west central area, however, cool weather and good growing conditions delayed the ripening of the crop, and rust became prevalent causing considerable damage. There was much variation in quality and grade in various districts and even on individual farms. Stem rust was more widespread this year than it has been for many years. This wide distribution may be accounted for by a similar distribution of occasional heavy crops of susceptible wheat and unfavourable ripening conditions in many areas. Common root rot was widespread but somewhat less severe than in 1937. The heaviest infestations were found in areas which suffered most from drought during maturation of the crop. The first frost at Saskatoon was on October 15. (H.W. Mead)

The influence of weather on the development of the rust epidemic in Manitoba is discussed in full under stem rust of wheat (p. 1).

The season was one of the most unfavourable in years in Eastern Quebec, especially for the potato crop. The following data are prepared from meteorological records at Ste. Anne de la Pocatiere and Quebec City, Que.:-

Month	Days of rain	Precipitation in inches	Temperature Maximum	Temperature Minimum
June	12	2.73	90.3°F.	46.8°F.
July	15	5.33	87.4°F.	48.3°F.
August	18	11.87	89.0°F.	46.7°F.

In September rain fell on 14 days and the total precipitation exceeded 8 inches. The month of October was very fine. (C. Perrault)

The onset of winter conditions in New Brunswick for 1937-38 was somewhat delayed when compared to last year. The soil froze hard on November 23, and ploughing operations ceased after that date. Except for the last four days, December was comparatively mild. The Saint John River froze over December 11, the latest date since 1923. Light snowfall beginning December 9, covered the soil with a blanket of snow which was removed by a warm rain on January 25. Beginning February 3, snowfalls were again experienced, and although the depth of the snow never exceeded 16 inches, the fields were well covered until March 18. Warm weather after that date rapidly melted the snow and the fields were bare by March 22. Owing to the mild winter, frost did not penetrate the soil to any great depth and ploughing operations began at the Experimental Station, May 4. Frequent rains during the early part of June greatly retarded seeding operations. Over 26 inches of rain fell in the six months, April to September, inclusive. This was almost seven inches greater than the 25-year average. A corresponding reduction in sunlight also occurred, almost 100 hours less than the 25-year average. The month of October was warm and dry and very favourable for the harvesting of root and tuber crops. Little, if any, frost damage was found in potato tubers harvested as late as October 24.

Ascospores of the apple scab fungus were first liberated May 12, at which time the blossoms were in the pre-pink stage. Ascospore discharge was completed June 23. The first leaf infections were noted June 2. The weather during June and July was very favourable for the development of apple scab and in consequence, scab was severe in

poorly sprayed and non-sprayed orchards. The favourable weather conditions in September favoured late apple scab infection, and immoderately high temperatures in October caused a serious development of pin-point scab on apples held in common storage.

The aecial stage of oat stem rust was found on the barberry June 10. Urediniospores were trapped June 23, and stem rust was noted on Garnet July 16. Crown rust of oats was found on the buckthorn June 1, and infections noted on the oat plant July 16. Leaf rust of wheat was first detected July 6. Buckwheat yellows made its appearance July 25. The season was particularly favourable for the development of the late blight disease of potatoes which first appeared during the second week of July. The epidemic was equal in intensity to that of 1926 and occasioned a large reduction in yield and destruction of tubers. The worst epidemic of leaf roll in the history of New Brunswick potato production was also experienced this year. Of significance is the fact that the alleged vector of this disease, Myzus persicae Sulz. predominated in numbers above all other potato aphid species last year. The heavy rainfall during the summer months, coupled with high temperatures during October and November, favoured late growth and retention of foliage on many trees and shrubs, particularly the apple. In the event of severe conditions, much winter injury may be anticipated in apple orchards. (S.F. Clarkson)

Meteorological records show that climatic conditions from November 1937 to May 1938, in Nova Scotia approximated average conditions in the apple growing sections. The months of June, July, August, and September 1938, were exceptionally wet. The rainfall for those months was 19.86 inches compared to a 20-year mean of 12.34 inches. Sunshine was less than average. The months of October and November were bright and slightly warmer than usual.

General disease conditions were satisfactory until early July when the effects of wet weather began to be evident. Botrytis and Monilia blights spread rapidly and are reported in this survey from several host plants. Leaf spotting diseases increased rapidly as well as mildews. The summer was very favourable for the spread of disease and unfavourable to the practise of disease control measures. Root crops generally produced disappointing yields and much rot developed, both at harvest and in storage. (J.F. Hockey)

On account of a comparatively mild winter and warm clear weather during March, early planting and sowing were predicted in Prince Edward Island. Rain, however, in April and May delayed

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