

weak growth and inferior quality. All but a few of those which fruited were as good as the named varieties of Russian apples. Nearly all of them were summer apples. A few only were considered sufficiently promising to propagate, among the best of them being Chaire, Neville, Oscar, Percival, Roslin, and Rupert.

In 1898 the writer, believing that in an orchard at the Central Experimental Farm, Ottawa, containing between 400 and 500 named varieties of apples all sorts of combinations of characters would be taking place by natural pollination and that the chances of obtaining some good seedlings by sowing seeds from some of these varieties would be very great, had seed saved of some of the best-flavoured apples then fruiting in the orchard, as well as some other varieties desirable on account of other characteristics. There were included in these the McIntosh, St. Lawrence, Fameuse, Wealthy, Shiawassee, Swayzie, Scott Winter, Salome, Lawyer, Gano, Northern Spy, Winter St. Lawrence, and Bullock (American Golden Russet). The seedlings of these and others which were sown later have been planted out at different times, beginning in 1901, until about 2,000 trees were planted, this being all we had room for. The first tree to fruit from seed was a Wealthy seedling now called Crusee, which fruited in 1903, two years after planting and five years from seed, and it may here be stated that the great majority of the Wealthy seedlings were early bearers like the female parent.

The good results which it was hoped to obtain by planting seedlings from fruit from trees which must have received pollen from a great many varieties has been abundantly borne out by the actual results. During the past twelve years, 1,211 of these seedling varieties have fruited, of which detailed descriptions had been made up to this year, and of these 83.30 per cent were of marketable size (medium to large), and only 1.95 per cent were small or crab-like. Of the 1,211 varieties, there have been 378 considered so promising that they are being propagated for further test and 99 of the best have been named.

Some most interesting facts have been noted in regard to the way in which the seedlings resemble the female parent. If the parent is bright in colour most of the seedlings are bright in colour, but if dull in colour then the seedlings are dull in colour. If the parent is an apple of good quality then with few exceptions the seedlings are above medium to good in quality, and on the other hand if the parent is of inferior quality the seedlings are of medium quality also. If the parent is a long keeping apple then most of the seedlings are good keepers. Size has not been as constant as some other characteristics. Where there is a marked difference in size between the majority of the seedlings and the female parent it is in the direction of larger fruit in the seedlings. For instance, the fruit of the seedlings of American Golden Russet, Swayzie, and Fameuse average larger than the parent. Where seed has been examined carefully it has been noted that as far as size of seed is concerned the seed of the majority of the seedlings resembles the female parent. The varieties which gave seedlings which had the most characteristics of the female parent are Wealthy, Gano, McIntosh, Northern Spy, and Langford Beauty. Those least resembling the female parent are Swayzie and Fameuse. The seedlings of Fameuse have been the most disappointing of all, there being a large proportion of varieties of inferior quality. The largest proportion of promising seedlings are among McIntosh, Langford Beauty, Northern Spy, and Wealthy. Elsewhere will be found descriptions of a few of the most promising varieties.

As there are very few winter apples hardy enough for the colder parts of Canada where the apple is grown successfully and as there is room for better summer and autumn varieties all over Canada, these new varieties should prove of great value, and they are being propagated with a view to a more extended test of them. As this kind of apple breeding had given such good results, seed was saved in 1908 of some more of the best hardy winter apples grown at Ottawa, including Milwaukee, Bethel, Winter Rose, Baxter, La Victoire, Stone and Forest, of which 312 were in the orchard in 1915.