

fruit is about an inch in diameter to start with, and of fair quality. A hardy form of this tree has been secured which has stood several winters at Brandon and Indian Head without injury, and with this additional crosses have been made.

"Many of the best of the crosses produced on *P. baccata* and *P. prunifolia* have been re-crossed, thus introducing a second quota of the blood of the larger apple with the hope of obtaining fruits of larger size and higher quality. Regarding these there is as yet not much proof that they are sufficiently hardy to endure the climate of the Northwest; this can only be fully determined by further experiment. Two varieties of these crosses of Ontario and Spy have been tested for several years at Indian Head, but have not yet fruited. Thus far they have been fairly hardy. The first one-year-old trees produced by this method were planted in the orchard at Ottawa in the spring of 1904, and a full list of those now growing in these orchards is submitted in this bulletin.

" Apples from which Pollen has been Used."

"In the first crosses made on *Pyrus baccata*, in 1901, pollen was used from the Tetofsky, Duchess and Wealthy apples, but since then pollen has been obtained from many other varieties and used on *P. baccata*, *P. prunifolia* and *P. Malus*, among them Anis, Beautiful Arcade, Broad Green, Excelsior, Famense, Golden Russet, Haas, Herren, Krimscoe, McIntosh Red, McMahan White, Osmoe, Pewaukee, Red Astrachan, Ribston Pippin, Scott's Winter, Simbirsk No. 9, Swayzie Pomme Grise, Talman Sweet, Winter St. Lawrence and Yellow Transparent. The number and variety of the crosses have thus been very much increased. Many hundreds of these cross-bred varieties of *baccata* origin have been produced (about 800 in all), and most of them have fruited. While a large number have proved of inferior quality, there have been originated, up to the present time, about sixteen varieties in all, most of which, from their superior size and quality, may be regarded as useful for domestic purposes and deserving more extended trial.

" Second Crosses."

"Many of the best of the crosses produced on *Pyrus baccata* and *Pyrus prunifolia* and their related forms have been re-crossed, thus introducing a second portion of the characteristics of the larger apple, with the hope of obtaining fruit of larger size and higher quality. From these second crosses, which were made in 1904 and following years, there are now 407 trees growing in the orchards at Ottawa, several of which fruited for the first time in 1910."

SOME HARDY VARIETIES.

After being propagated and thoroughly tested on the prairies some of Dr. Saunders' hybrids have proved hardier than any other varieties of apples or crab apples tested, thus marking a stage of development in hardy apples for the prairie provinces. Some of the hardiest varieties have proved to be Jewel (*P. baccata* by Yellow Transparent, size 1.4 by 1.3 inches), Columbia (*P. baccata* by Broad Green, size 1.8 by 1.6 inches), Charles (*P. baccata* by Tetofsky, size 1.6 by 1.5 inches), Silvia (*P. baccata* by Yellow Transparent, size 1.4 by 1.5 inches), Tony (*P. baccata* by McMahan, size 1.6 by 1.4 inches), Elsa (*P. baccata* by Yellow Transparent, size 1.4 by 1.3 inches), Eve (*P. baccata* by Simbirsk No. 9, size 1.6 by 1.2 inches.) Descriptions of these, published by Dr. Wm. Saunders in Bulletin No. 68 will be found on page 124 of this bulletin. Seedlings grown from these gave in nearly every case fruit smaller than the parent. As none of the fruits resulting from this cross was large enough to compare favourably with less hardy varieties of apples and crab apples, the best of these first crosses were, in 1904, re-crossed with named varieties of apples with the object of obtaining varieties bearing larger fruits but which would retain sufficient hardiness to be grown in the open on the prairies.