

rains, unless in the case of thunderstorms, are almost always from the north.)

From an agricultural point of view all these matters are important, and farmers in the different localities are rapidly learning to meet the local conditions; but they are far more important from the point of view of the silviculturist, for the farmer may change his methods every year to suit the seasons, but when a man plants a tree it may be years before he finds out if it is really adapted to the locality. If the occasional showers are continued until late in the season, tree growth is carried on correspondingly late into the fall, and if the first fall frost happens to be a little early, then the young tree-shoots get badly frozen, and the owner of the plantation is badly disappointed. Add to this the fact that, in the passing of the centuries, there has been added to the soil a goodly layer of humus from the decay of the grasses, which naturally took on a greater growth as a result of the additional rainfall. Humus encourages rank growth; rank growth is usually late growth, and there is an additional risk of the young tree-shoots being unprepared for the winter, and the consequent danger of being hurt by the early frosts. Thus it is that the very richness of the soil may be an adverse condition to growing trees, and in the 'higher regions' many of the trees so successfully grown further out on the prairie are found to be quite unsuitable. When this 'autumn killing' occurs several years in succession, the would-be tree-grower gets discouraged, and small wonder if he sometimes even gives up his attempts in despair.

The Ash and the Elm.

The ash, the hardiest of the trees used in the plantations on the prairie, in this region very seldom commences its growth from the terminal bud of the previous year, and as a consequence it develops a habit more resembling a sweeping-broom than anything else.

The elm is somewhat similar, and, like the ash, is not at all suitable for general planting; while the maple always loses from a few inches to several feet of its growth every year, and becomes a veritable bush. The cottonwood, notorious for its soft succulent growth, is perhaps the greatest sufferer, and in a few of the plantations in the region specified it is nothing better than a bunch of root-shoots, half of which are dead, and in one case, some years ago, trees seven to eight feet high were killed outright, root and branch.

This is perhaps not to be wondered at when one comes to remember that none of these varieties are native to the region under consideration. They are found in the river bottoms all over the prairie to the east, but they never seem to have been able to climb the last sharp rise towards the mountains. The ash comes no further west than the

Cypress Hills, south of Maple Creek, while the cottonwood and maple are found no further than a few miles west of Lethbridge.

The Poplar and the Willow.

Two Russian varieties have, however, been found doing well in this district, and there is no reason why anyone should hesitate about planting on account of trees being likely to suffer from frost-hurt. These are the sharp-leaved willow (*Salix acutifolia*), and one of the poplars (*Populus Petrofski*). The willow is doing well on the high land near Cardston, and in the Porcupine Hills west of Staveley, at the Oxley ranche, are several good specimens of both willow and poplar twenty-four feet high and about sixteen years old.

There is also a fine seven-year-old plantation with Russian poplars about thirteen miles east of Didsbury, and it is very interesting to note the contrast between them and the cottonwood in the next row beside them. The poplars are from twelve to sixteen feet high, sound to the tips,—and have to all appearance begun each year's growth from the terminal bud of the year before, while the cottonwoods are bushy from repeated freezings, and half of the stems composing the bushes are dead. The tallest is only about seven and a half feet. The difference in the two kinds of trees will not be wondered at when it is remembered that the Russian poplar matures about two weeks earlier than the cottonwood. There is also a plantation with a fine lot of Russian poplars about ten miles east of Calgary and four miles southeast of Shepard, which is beginning to make its appearance over the intervening ridges as one comes up on the C.P.R.

The Russian poplar is not the most desirable tree for general planting, as its roots have a tendency to throw up suckers, and it may in time become very objectionable from this cause; but in a treeless country it is better to have a tree that suckers and will grow and make a rapid shelter than one that is continually freezing back. If the Russian poplar is placed well towards the inside of the plantation, there need be little trouble from suckering in cultivated land adjoining, or it may be planted in narrower belts where the land is not intended to be cropped. Another objectionable feature about the Russian poplar is its tendency to contract stem-canker, and the variety with the erect branches and leaves with wavy edges (probably *Populus certinensis*) is particularly unfortunate in this respect. *Populus Petrofski* and *Populus Wobstii*, with spreading branches and thick leaves, are pretty free from trouble of this sort, and they are good sound trees in the older plantations at the Indian Head and Brandon Experimental Farms.

When the tree is left alone for nature to prune, there would seem to be little danger of this sort of trouble; but when a man