

Comstock seed, whilst our station of St. Jacques l'Achigan yielded 10 pounds of excellent seed of various varieties. The whole of this seed was sifted and passed through a special separator in the laboratory of the Tobacco Division at Ottawa.

#### NOTES ON BEDS.

A new sort of bed called the 'warm bed' and possessing marked advantages over the hot and especially over the cold beds, was recommended to the growers in the report of this division for 1910. It will not be necessary to go into details, as the value and the advantages of these beds as well as their mode of preparation are set forth in bulletin No. A-12, to which our readers are referred. However, it is thought desirable to call the attention of our readers to this year's results. Of the six beds of 21 x 5 feet that were established this year at St. Jacques l'Achigan, only one was a hot bed, used as a check. The growth of the seedlings in both beds was carefully noted. At the very start, the seedlings in the hot bed grow quicker than in the warm bed but they lose in quality what they gain in earliness. The atmosphere of the hot bed is saturated with humidity, generally viciated, and the temperature is high. These abnormal conditions of growth result in what may be called an overfed seedling, which generally shows a tendency to elongate or spindle. It looks as though the proper balance was not maintained between nutrition through the roots and nutrition through the leaves, the latter being by far the most active. The result is that the roots develop very slowly and the mineral nutrition of the plant is deficient. This lack of balance in the general nutrition of the seedling results in perturbations by which its resistance to diseases is considerably decreased. On the other hand, in the warm beds the seedlings remain stock, and the roots system is much better developed. The nutrition through the leaves and through the roots goes on in a normal way, the seedling grows under natural conditions and its resistance to diseases is very little affected. As a matter of fact, not the slightest trace of disease was observed in warm beds, whilst the roots and collars of the seedlings were rotting in the hot beds. Lastly the hot beds were so infested with mushrooms that the surface, covered with spores, appeared to be entirely black. This bed had to be destroyed. Under these conditions it will be readily admitted that the sterilization of soils by formaline or by steam is necessary to prevent permanent infection of the soil.

This difference in quality between the seedlings produced on hot and warm beds persists and is chiefly apparent at the time of planting. As many as 19½ per cent of the former and only 3 per cent of the latter had to be replaced. It is supposed that damage from insects was the same in each case. For these reasons we conclude that warm beds are much superior to hot beds and they will altogether be used in the future.

Before concluding we desire to remind the growers that sowing with dry seed gives very good results on this system of warm beds. It has been observed, in every case, that a more uniform stand is secured where dry seed is used than when the seed is germinated before sowing. The greater the proportion of germinated seeds, the less uniform the stand. It should be remembered that the germ grows upwards. This is called heliotropism. The inverse phenomena is called geotropism. When sowing with dry seed, some germs have their terminal point pointing downwards whilst