Plot No. 1.—500 pounds sulphate of ammonia, 300 pounds sulphate of potash and 300 pounds of superphosphate.

Plot No. 2.—500 pounds of sulphate of ammonia, 300 pounds sulphate of potash and 200 pounds superphosphate.

Plot No. 3.—600 pounds sulphate of ammonia, 300 pounds sulphate of potash and 100 pounds of superphosphate.

Farmyard manure, at the rate of 12 tons per arpent had been applied during the preceding winter.

The yields were as follows:—

Plot No. 1.—1,423 pounds per arpent.
" 2.—1,302 " "
" 3.—1,348 " "

As the figures show, plot No. 1 gave the best results, corresponding very closely to the results obtained during the two preceding years. This was to be expected, but the test does not leave any doubt as to this point.

In presenting the results of the test made in 1909 it was concluded that nitrogen seemed to be the most important element. This fact is confirmed by this year's test, whilst the rather important part played by phosphoric acid is clearly brought into light. Comparing plots No. 1 and No. 2 it is seen that the addition of 100 pounds of superphosphate increased the yield by 121 pounds. A comparison between plot No. 3 and plot No. 1 brings further evidence as to the value of phosphoric acid. Although plot No. 3 has received 100 pounds more of sulphate of ammonia than plot No. 1, yet, compared to the latter, it shows a decrease in yield of 75 pounds, which can be attributed to the fact that it had received 200 lbs. of superphosphate less than No. 1. It would thus seem that the mixture of fertilizers designed for plot No. 1 is the best all around.

It was shown in chemical analysis that the soil contained 0·71 in phosphoric acid. It may be a cause for surprise that this insignificant quantity of superphosphate (200 pounds) should have such a marked effect on the yield when there is already such a large proportion of phosphoric acid in the soil. It cannot be admitted that the addition of this quantity of superphosphate has made good a lack of phosphoric acid in the soil, even considering the rather high yield in grain and the fairly large production of tobacco seed. One may, at this stage, recall a suggestion of Mr. E. Gauthier, who wonders if the action of chemical fertilizers is really a nutritive action, or if it is not rather of a 'dynamic, exciting, anti-toxical nature'? Do not chemical fertilizers rather act as 'a stimulant, a diastase or of an anti-toxin.' This hypothesis is perhaps not very far from becoming a law. In fact it has been practically proved to be true so far as manganese is concerned. An interesting experiment would be to act upon this suggestion and see if those soils of Ontario, which absolutely refuse to grow some varieties of tobacco, could not be made to grow these varieties with the help of chemical fertilizers.

No doubt the continuous growing of tobacco on the same field produces a sort of infection and such infected soils are said to be 'tobacco sick.' The question is to find a means to avoid this infection or to correct it.