Years.	PEAS. Over.	Average.	Under.	HAY. Over.	Average.	Under.
1887	2·5	60 0	37·5	—	—	—
1888	19·8	29·9	50 3	53·6	26·1	20 3
1889	22·2	46·2	31·6	89·0	10·5	0·5
1890	36 5	49·0	14·5	27·3	30·8	41·9
1891	21·7	56·0	22·3	4·8	33·3	61·9
1892	12·7	45·5	41·8	7.5	9·7	82·8
1893	11·0	30·3	58·7	1·5	4·1	94·1
1894	33·9	43·3	22·8	70·9	18·6	4·5
1895	5·9	31·8	62·3	0·5	8·0	91·5
1896	12·4	34·9	52 7	10·2	10·0	79·8
1897	33·8	53·4	12·8	62·4	23·0	14·6
1898	22·3	49·7	28·0	85·8	10·8	3·4

	POTATOES.			TURNIPS.		
1888	54·0	22·8	23 2	37·6	36·3	26·1
1889	56·7	35·0	8·3	48·3	43·3	8·4
1890	36·7	37·8	25·5	51·3	33.7	15.0
1891	31·4	63·2	5·4	9·9	45·4	44·7
1892	44·8	48·8	6·4	24·1	46·0	29·9
1893	48·5	31·3	20·2	28·3	30·9	40 8
1894	30·0	44 6	25·4	47·6	34·4	18·0
1895	24·1	48 9	27·0	4 0	22·4	73·6
1896	41·9	39·7	18·4	10·0	23·6	66·4
1897	23·2	46·3	30·5	30·7	52·0	17·3
1898	34·7	42 5	22·8	15·1	37·6	47 3

	MANGELS		
	Over	Average	Under
1888 ..	37·6	36·3	26·1
1889 ..	44·1	39·2	16·7
1890 ..	37·6	42·2	20·2
1891 ..	15·3	54·5	30·2
1892 ..	24·4	50·3	25·3
1893 ..	16·2	23·5	60·3
1894 ..	43·7	38·9	17·4
1895 ..	5·9	25·3	68·8
1896 ..	6·7	20·9	72·4
1897 ..	37·2	44·5	18·3
1898 ..	29·9	45·5	24·6

Inoculation.—We have to thank Mr. Shutt, of the Ottawa Experiment-Farm, for a copy of his report for the year 1897. In it we find the first of a proposed series of experiments on that peculiar substance *nitragin*, evidently conducted with great care, but, as yet, by no means decisive in the results.

Without going deeply into this matter, which would take a volume, suffice it to say that all food-bearing plants, such as clover, pease, beans, etc., have the power of appropriating the free nitrogen of the air, assimilating it and building it up in their tissues. As far as we know, it is only these plants that enjoy this power; hence, they are known as nitrogen collectors, in contradistinction to all other crops, which are known as nitrogen consumers. Of course, we all knew that wheat succeeded best after clover or beans, though, curiously enough, not after pease, but it was always supposed that it was solely on account of the deep searching roots of those plants bringing up nitrogen from the subsoil, until the two Germans, Hellriegel and Wilfarth, in 1886, announced to the world that it was chiefly from the air and only partially from their root-work that the *legumes* obtained their supplies of nitrogen.

But we must not supposed that the legumes have this power in themselves; by no means, they can only obtain the atmospheric nitrogen through the intervention of certain *microbes* or *bacteria* that attach themselves to the roots of the legumes upon which nodules or tiny lumps then form. In some way, not at present understood, these microbes, residing in the nodules, absorb the nitrogen of the air occupying the interstices between the particles of the soil, converting it into certain nitrogenous compounds that, after being taken up into the sap of the plant, are converted into its tissues.

Now, the nodules and their guests are not present in all soils, in which case, the clover or beans, etc., can, like all other plants, only get their nitrogen from the nitrates in the land; so the next move was to impregnate the nodule-free soil with other soil taken from a field growing a luxuriant crop of clover the roots of which were rich in nodules. This seems to have answered well; but it was a cumbersome job, and required a great outlay for labour.

The next step, taken by Dr. Nobbe, was in the isolation of the nitrogen-converting microbes from such soil, and the preparation, by certain well known bacteriological methods, of "pure cultures." These cultures consist of colonies of the organisms and the preparation has been named *Nitragin*.

It would appear that the members of the leguminosæ have each their own peculiar bacterium or micro-organism, for it seems that those influencing the assimilation of nitrogen in the clover plant are of no value for the pea crop, and *vice versâ*. Hence, the necessity for the preparation of clover "nitragin," pea "nitragin," etc. These cultures or bacterial preparations, to the number of 17, are now manufactured on a commercial scale in Germany, and a quantity of each, said to be sufficient to inoculate an acre, can be procured for about $1.25.

The practical application of *Nitragin* has been made in two ways; first, by diluting the preparation with sufficient water and sprinkling the seed with the fluid, and, secondly, by treating a quantity of soil with a dilute solution of the preparation, allowing the soil to dry, and then spreading