

(5) The cattle eat the Canadian corn quite clean and with great relish. Even Western dent corn will be eaten clean generally, but I gather from various experiments made in the states that it only contains 60% of the nutriment possessed by our small tender but solid Canadian varieties.

(6) 10 or 12 grains of Western Corn would be enough, whilst 5 or 6 grains of Canadian corn would be plenty. I make the rows 26" apart.

This question of quantity of *nutrition* per acre is yet unsolved. It deserves serious consideration. I have reason to believe that 30 tons of Western corn ensilage contains no more real food than is contained in 20 tons of Canadian corn. If so, why carry ten useless tons of water from the field to the straw cutter, and again, into the silo, and once more to the stock? Or in all why carry 30 tons of useless weight?

(7) Ensilage is no doubt softened by fermentation. However, the mixing up of butt-ends with leaf &c., through the straw cutter will be found a great improvement.

(8) The sectional views given at page—explain themselves. The elevated roadway and shed connected with it are still to be erected. The rest of the building is represented as it is with the exception of the sky light which is not made yet. The main barn and lean-tos were built some 28 years ago. The only change which I would now advise is in the width of the stables which I would make 16' broad instead of 14', outside measure. The internal arrangements, with (centrifugal) butter factory &c, were made quite lately.

The manure cellar is under the barn. The barn was built 4 feet above the soil, which was dug 4 feet, giving 8' feet of a cellar (not 7). A graded descent, covered, about 20 long, allows the easy ascent of the manure distributor.

(9) Using no litter, of any kind, it takes from 8 to 10 cubic yards to store the manure of an ordinary cow during the winter, say 6 months. The liquid and solid manure of a cow as dropped, contains 86% of water and 96% of soluble matter. It is therefore in the best possible state for assimilation if buried lightly as soon as spread, in order to prevent all escape of ammonia. It would be otherwise where large quantities of straw or other litter are used as absorbents. In this case, the amount of fermentation necessary for proper assimilation depends on the nature of the soil to be manured, and the mode of application. In drills and heavy soil we would use such mixed manure rather green, in order to keep the soil more loosened; in light soils, I would prefer it more decomposed, in order not to lighten the soil excessively.

ED. A. BARNARD.

HAMILTON, Dec. 18th, 1886.

MY DEAR SIR,—I am in receipt of your kind long letter with reference to Dorset show sheep and thank you my much indeed for your kindness in writing.

Situate as we are so near Toronto, with an establishment there and here, where we handle and do a good class of business with the very best families, and having facilities of reaching a market in even New York City, I am satisfied that I could place from 75 to 100 lambs any Christmas at good figures. If such be the case, these are the most profitable sheep we can handle.

I propose to take a batch of ewes, just lambing, to Chicago Fat Stock Show next year, where the novelty of sheep lambing at that time of the year will make them sell.

I am very much afraid of disease in sheep though, which makes me hesitate to launch out much in them, or risk the expense of stables &c., necessary to carry many. My manager professes to understand care of sheep perfectly and tries to dispel my fears. But rightly or wrongly I have this dread.

I again thank you for your kindness, and shall certainly avail myself of your kindness of asking questions as occasion arises.

Yours very truly,

VALANOEY E. FULLER

ARTHUR R. JENNER FUST ESQ.,
Sorel, Que.

Does Clover obtain its Nitrogen from the Air?

Some of us may recollect the lecture given by Professor Kedzie, of the Michigan College of Agriculture, at the Natural History Society's rooms, in the month of August, 1882. The published reports of this lecture made the learned professor say, what I felt sure he never did say, "That plants obtained their nitrogen from the air," and, consequently, I took the liberty of writing to Mr. Kedzie, asking him to allow me to contradict the published statement of his supposed views. To this request he most goodnaturedly assented in the following letter, which I published in the October number of the Journal—v. p. 85, vol. IV.

"My Dear Sir,—No man should be held responsible for the work of a reporter unless he has read the 'proof.' I confess I hardly recognise my ideas in some parts of the report you sent me. I am not a disciple of Ville, and in my article I distinctly said that the results reached by Boussingault, and by Lawes and Gilbert, were *everywhere* received as scientific truth, except by the followers of the French school of Ville.

I consider, however, the classification of plants into nitrogen consumers and nitrogen producers, made by Ville, an important one, and having a substantial basis. The error of Ville was in assuming that the nitrogen-producers *derived their excess of nitrogen from the air*. What I seek to establish is, that clover is a nitrogen-producer by obtaining its surplus of nitrogen from the "inert nitrogen" of humus in the soil. I do not consider this proposition established, and would be very cautious in announcing such result, but my experiments and investigations have this as the objective point.

Yours, &c.,

R. C. KEDZIE.

At the same time, Mr. Kedzie was good enough to forward me a copy of what he really did say, which will be found on page 84 of the above named volume of the Journal.

M. Ville is of all scientific writers the coolest. Without taking the slightest notice of the researches of Boussingault, or of those of Lawes and Gilbert, he says—v. p. 226—Eng. ed. 1879: "Clover draws its nitrogen from the air, therefore the incomplete manure, which does not contain nitrogen, is all it requires." Conceive the boldness of the man, who imagines that his *ipse dixit* will carry it over everything, on a point on which the greatest farm-experimentalists that ever lived dare not express themselves with any degree of certainty.

A. R. J. F.

Sherbrooke, Dec. 30th 1886.

Dear Jenner Fust,—After fifteen years of unsuccessful attempts to make apple trees grow, I came to the conclusion that in this otherwise fertile Valley of the St. Francis there were in many places certain elements against which it seemed useless to contend; and as I saw the last fifty hardy crab-apples succumbing to this mysterious destroyer, I thought I would try and get at the bottom of the matter, and set about trench-digging portions of the orchard and garden where these, almost literally *fruitless*, experiments had failed. There, in the subsoil from one to two feet below the surface, I found in many places a reddish brown "hard-pan", to break up