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Notes by the Way.

To our readers:—It is to be hoped that all our readers thoroughly understand that the publication in this periodical of any communication from outside correspondents does not necessarily imply that the editor endorses the views therein expressed. We believe in laying all the facts and argu-

ments that can be brought forward in behalf of any opinion before our readers, that they may know all that can be said on the question, and draw their own conclusions therefrom.

Montreal Exhibition Company.—The Montreal Exhibition Company held a meeting yesterday afternoon at which Mr. G. A. Gigault, assistant commissioner of agriculture, announced that that Department would offer prizes in connection with the fall exhibition, for essays on the following subjects, the essays to be written in either English or French: 'The making of Cheddar cheese,' 'Buttermaking, Raising and fattening of swine,' 'Raising and fattening of sheep,' 'The feeding of milk cows,' 'The cultivation of mangold wurtzel,' 'Cultivation of carrot for feed,' 'Making and preservation of farmyard manure,' 'Ploughing and sub soil ploughing,' 'Artificial manures and their use.'

The manager of the exhibition announced the prize list had been increased by the sum of \$4,500 this year, chiefly in the dairy and live stock departments.

Fertiliser - application.—All fertilisers should be applied to the land in as finely ground a state as possible. When such small quantities as one or two hundred pounds are to be spread over an acre, it is advisable to mix the fertiliser with from twice to three times its bulk of finely sifted earth. Nothing is easier than to pulverise the manure by spreading it out thinly on a barn-floor, and rolling over it a barrel filled with stones; then, mix the earth with it and pass the whole once more through a sieve.

If the fertiliser is to have its full effect, each filament of the roots must be able at the same time to absorb all the substances that enter into its composition, and this result cannot be obtained unless the mixture is equally made throughout.

These remarks were brought out by what we saw last autumn in a large field of sugar-beets. In parts of this field the nitrogenous constituent of the manure was evidently supersubstant, while in other parts there appeared to be very little of that matter present.

In our opinion, all "hand tillages," as fertilisers are called in some parts of England, should be applied on the top, before the last harrowing, except in the case of *potash*, which cannot be applied too early in the season, and *nitrate of soda*, for roots, which is so soluble that its best effects are found when it is sown after the singling is done.

Calf-feeding.—M. Georges Ville gives an experiment on calf feeding in his well known book, in which he shows that a calf fed on skim-milk increased in the course of 7 days, 13 lbs., a calf fed on skim-milk with a little whey, 26½ lbs., and a calf fed on the same quantity of milk not deprived of its cream, 48½ lbs. The gain of the last, by the bye, seems to us rather extravagant, but then Ville is rather extravagant in his statements.

Now, he asks, what has the second calf received more than the first? sugar of milk and carbohydrates. And the third? an excess of fatty matter and albuminoids.

For every 100 lbs. of living weight the three calves received:

	Casein.	Fatty matter.	Sugar of milk.	Increase obtained.
	lbs.	lbs.	lbs.	lbs.
1. Skim-milk	1.6	1.2	5.5	13
2. do and whey.....	1.6	2.0	7.7	26½
3. Whole milk.....	5.1	7.5	6.3	48½

So the progression is as follows:

- Increased weight.
1. With insufficient rations... 13 lbs.
 2. " more carbohydrates. 26½ "
 3. " more albuminoids and fatty matter..... 48½ "

Ploughing in manure.—We think we see a change of opinion working its way on the disputed point: is manure wasted by using it as a top-dressing? Till very lately, the answer would be generally given in the affirmative; but, thanks to the experiments conducted at Ottawa two years ago, we do not hear of many objections to the practice, and we are glad of it, for a practice so universal in Europe cannot, one would think, be so emphatically bad as the decisive remarks of some of our judges of "Mérite Agricole" would lead us to imagine. No marks seem to have been deducted from the total allotted to the Dames Ursulines, at Lake St John, who received the highest number in the competition of 1894.

Still, we think the "Vermont Farmer's Advocate" carries the idea a little too far when it advocates the application of stable-manure in the following way:

Ought not manures to be plowed into the ground?

A. Under particular circumstances, as with coarse stable manure, and especially with such manure on heavy soils, plowing in may sometimes be best. But as the soluble parts of the manure are washed into the ground by rains, and need to be held in solution by the water which penetrates the soil in order that they may be taken up by the feeding roots of the plants, the best results are generally obtained by applying them on the surface and mixing them with the soil by surface tillage.

Q. What is the best season for applying manures?

A. Stable manures generally give the best results when spread upon the soil in the fall. The rains and melting snows carry their soluble parts into the ground and distribute them evenly through all the soil, thus enabling the roots of young plants to find abundant nutriment at once.

We have always found that, for root-crops and potatoes, dung freshly fermented and ploughed in—on the flat or in drills—just before sowing or planting gave the best crop. And Mr. Stephens, in his invaluable "Book of the Farm" emphatically remarks:

"There are other ways of cultivating the potato in the field besides the one I have described. When light soil, in which the potato thrives, is clean and in good heart, it is frequently dunged on the stubble in autumn, and ploughed with a deep square furrow by casting with or without a gore-furrow. Abundance of gaw-cuts are made to let off the superfluous surface-water in winter. It is then cross-ploughed in spring, harrowed a double time, when it is ready to be drilled up in the

single form, the sets planted, and the drills split in the double form, to complete the operation. In the neighbourhood of towns this is an expeditious mode of planting a large breadth of potatoes in spring on light soil, but it requires the land to have long been in very good heart. I have tried it at a distance from a town, on good potato land in middling condition, but could not succeed in raising much more than half the crop on dunging the same land in spring with the same quantity of dung."

The Rothamsted work.—The treatise, by Sir J. B. Lawes and Sir J. H. Gilbert, on the feeding of animals which appears in the current number of the Journal of the Royal Agricultural Society, is based not only on the experiments at Rothamsted, but on a mass of facts more recently ascertained; and its conclusions treat of feeding for the production of meat, milk, and manure, and for the exercise of force. They may be summarised as follows:

It has been shown that the amount of food consumed both for a given live weight of animal within a given time, and for the production of a given amount of increase, is, as our current foodstuffs go, measurable more by the amounts they contain of digestible and available non-nitrogenous constituents than of digestible and available nitrogenous constituent.

That this should be the case, so far as the consumption for a given live weight within a given time is concerned, seems consistent enough when the prominence of the respiratory function in the maintenance of the body and the large requirement for non-nitrogenous constituents of food to meet the expenditure by respiration are borne in mind. But more than this, store animals may contain more of the non-nitrogenous substance, fat, than of nitrogenous substance; whilst the bodies of fattened animals may contain two, three, four, or more times as much dry fat as dry nitrogenous matter. Obviously, therefore, the proportion of fat to nitrogenous substance in the increase in live weight of the fattening animal must be much higher than in the entire bodies of the animals.

It has been further shown that the fat is, at any rate in great part, if not entirely, derived from the non-nitrogenous constituents of the food. Of the nitrogenous compounds of food, on the other hand, only a small proportion of the whole consumed is finally stored up in the increase of the animal. In other words, a very large amount of nitrogen passes through the body beyond that which is finally retained in the increase.

Again, it has been shown that, in the exercise of force, there is a greatly increased expenditure of the non-nitrogenous constituents of food, but little, if any, of the nitrogenous. Thus, then, for maintenance, for increase, and for the exercise of force, the exigencies of the system are characterised more by the demand for the digestible non-nitrogenous or more specially respiratory and fat-forming constituents than by that for the nitrogenous or more specially flesh-forming ones.

In a paper published in this Journal in 1860 we concluded that—if fattening oxen were liberally fed upon good food, composed of a moderate proportion of cake or corn, some hay or straw chaff, with roots or other succulent food; if sheep were fattened under somewhat similar conditions, but with a less proportion of hay or straw; and