

but the wildest imagination cannot look upon it as good work. No wonder the average of the U. S. wheat crop is so low (11 imp. bushels an acre in 1893) if this is the way they treat their land in the great wheat-fields of the West. One thing is certain: it will not be long before the land will refuse to yield even the present poor crops, and the farmers—do they deserve such an appellation?—will be obliged to resort to the process so scornfully described by "A Southern Kansas lady" in an exchange:

"When I see my neighbour farmers laboriously spending the time of two men and four horses for five or six weeks putting in 40 or 50 acres, it looks like a hopeless task, even if transportation gives them an advantage of 20c. a bushel."

Well; we will with pleasure back the farmer who spends the time of two men, &c., to come out better, at the end of twenty years from the present time, than the man who scamps in the same superficies of land in ten days or so. In other words; the energetic, skillful farmer, with his painstaking process, of New-York, of Vermont and the rest of the Eastern States, will last longer than the farmer of the Western States in spite of the comparatively maiden soil with which the latter has to deal.

THE CHICAGO DAIRY-TEST.—A correspondent of the "Farmer's Advocate" is of rather a sceptical turn of thinking. He wants to know "why the finest 25 cows of each of the three breeds that had courage enough to face a public test, open to all, can only produce an average of 2 lbs. of butter a day?" "Surely," he says, "when we farmers have cows that, on grass alone, and in spite of flies, &c., will give from 1 lb. to 1½ lb. of butter a day for three or four months, we may consider that we have good cows, when the best cows in all America can only make 2 lbs. a day on high feeding and with every comfort. Why did not the owners of the cows with their 800 lbs. and 1,000 lbs. records exhibit them?"

The writer seems to forget that the wretched selection of Shorthorns pulled down the average yield in butter of the 75 cows submitted to the test to a terrible extent. And it was not very likely that the owners of the marvelous cows that tested the 800 lbs. and 1,000 lbs. as sworn to by perfectly trustworthy witnesses, would risk the lives and limbs of their valuable stock at a public exhibition. Besides, every one knows that these high-bred, full fed cows are extremely nervous and excitable; wherefore, they would not be likely to do themselves justice in so necessarily strange a place as a crowded fair.

EXPERIMENT-FARMS.—Talking the other day to a gentleman who is about to start a small experiment-farm in the spring, we tried to impress upon his mind the absolute necessity of selecting a thoroughly worn out piece of land for that purpose. Many mistakes have been made at some of the stations in the United-States from not having attended to this point. In Ohio, for instance, the experiment-farm is in the Scioto valley, chiefly what is there called "first and second bottom-land," which, in good average seasons will grow from 30 to 40 bushels of wheat an acre without fertilisers of any kind. The Indiana farm, again, is on warm, black, rich land on the Wabash river. On such soils, what earthly good can be derived from experiments never so wisely conducted?

No wonder that the managers of these experiment-farms, after having used all sorts of commercial fertilisers for many years, report that in no case has the extra yield of wheat paid for the manure.

Seeing this, we can only wonder how it came to pass that the wise proceedings of Lawes and Gilbert in establishing their first lot of experiment-plots at Rothamsted were so completely ignored by the authorities in the United-States. Sir John and his associates did not plunge into their work like a clown into a circus. They weighed matters carefully, and the first idea that struck them was that, by analysing the soil of the proposed experiment-field, they might succeed in discovering what the soil of that field required to be added to it to enable it to produce a crop. But, upon mature consideration, this plan appeared to be fallacious, although it had authority of the great Davey to back it. For reflecting that the addition of 400 lbs. of sulphate of ammonia would only increase the amount of ammonia in the soil by 1000, the acre of land being taken to weigh 1,344,000 lbs., they saw that some other plan must be adopted, for no method of analysis would enable the chemist to appreciate the difference between the soil before and after the application. Just the position we have so often maintained in this periodical.

The next question that the associates in these trials asked themselves was: In what condition should the land be to make it fit for replying fully to the enquiries to be propounded to it? Now, the answer involved the following considerations:

In British farming, some system or other of rotation is invariably pursued. What is called "a course of rotation" is the period of years which includes the circle of all the different crops grown in that rotation. Generally speaking, in a course of rotation no two crops of the same kind are grown consecutively on the same soil. Wheat, for instance, is never sown after wheat, but only after some other crop has intervened, and at such a period of the rotation as, by experience, it is known that the soil will, by direct manuring, or by some other means, have recovered its power to produce a profitable crop of that cereal.

So, looking at these considerations, it was decided to begin the experiments on land that had just been put through a course of rotation, and which was, in consequence, in what may be called a *practically* exhausted state.

Thus, it was determined to proceed by way of *synthesis* instead of *analysis*, and all the experiment-plots were selected when they were in a state of *agricultural exhaustion*; they had grown, that is, the regular number of crops which constitute a rotation: turnips, barley, clover, wheat, since the application of manure. Indeed, the plots on which the wheat was experimented on had been regularly scoured, for since the manured turnip crop, it had grown barley, pease, wheat, and oats, without any further manuring; the pease having been substituted expressly in the place of clover in that rotation.

We have therefore full reason for saying that, as every body acknowledges the conduct and management of the Rothamsted to be and to have always been the most perfect of their kind, it behoves every one who intends to set going experiments of the same description, whether in China or in Canada, to follow strictly the first essential point, as conceived by Lawes

and Gilbert: the previous *agricultural exhaustion* of the land on which the experiments are to be tried.

BEETS.—A correspondent of the "Country Gentleman," speaking of growing mangels and sugar beets, recommends the rows to be made from 25 to 36 apart, and the plants to be set out 12 inches in the row for mangels. All the best farmers in England drill mangels 20 or at most 22 inches from row to row, and set them out 10 inches from plant to plant. When we used to blame Mr. Tuck, of Lachine, for wasting space in his root-crop, his defence always was that there was plenty of land and space. True enough, but he would never understand that a crop of moderate sized roots was more valuable than a crop of great overgrown roots, or else why do the proprietors of the best-sugar factories insist upon the beets never exceeding 2½ lbs. in weight?

MODERATION.—Professor Dean, P. A. C. (what these initials mean I can not tell unless: Prof. of Agricultural Chemistry), of Guelph, holds rather strong opinions. He says, in a communication to the "Farmer's Advocate," that "The dairyman of this country need to be impressed with the fact that a cow which produces less than 6,000 lbs. of milk, or 250 lbs. of butter in a year, is not worth wasting food and labour on her carcass." Now, 6,000 lbs. a year is equal to 20 lbs. a day for the ordinary 300 days that a cow gives milk; allowing her to be dried off a couple of months or so before calving. How many cows in the hundred in either province do as much as this? More harm is done by such puerile exaggerations than their authors dream of.

GENTLENESS WITH COWS pays.—The kindest man we ever saw in his treatment of animals was a Swedish gentleman who had, for a time, a small farm at Sorel, which we fear did not increase his means. If you see a lot of cows get fidgety when their milker enters the yard, and try to hustle out of his way as if they were afraid of him, you may be sure he is not fit to be trusted with the care of pigs, let alone cows. Get rid of him as soon as you can, and your cows will show their gratitude by giving additional quantities of milk. If any one wants to see the grossest cruelty practised towards animals, they should go to Spain.

PRICE OF CHEESE.—The price of cheese, here, has been satisfactory enough during the late summer and early fall months. Fifty-three to fifty-four shillings for 112 lbs. at Liverpool must pay the makers well, as it means from 11 cts. to 11½ cts. at home. This is the price of the finest Canadian Cheddars, and we confess that we are surprised at its keeping up so, as the coal-miners are very large consumers of that kind of cheese, and we all know that their purchasing power has not been great this autumn. Almost all our "Single-Gloster" from the Vale of Berkeley goes to the South-Wales miners. English,—what Monsieur Paché calls authentic—Cheddar still retains its vogue, selling at 70 and 72 shillings per cwt. Cheshire, only eaten at taverns, restaurants, &c., is worth 80 shillings, but it should be known that the Cheshire people are liberal in weight, as well as in mea-

sure, for their cwt. is 120 lbs. and wheat is sold in Chester market by the bushels of 75 lbs., oats by the bushel of 46 lbs., and beans by the bushel of 80 lbs.!

ROOTS IN TILE DRAINS.—If you have trees growing in the neighbourhood of tile-drains, no power on earth can prevent them from, sooner or later, choking the pipes. In woods or orchards, upon ditches are better than any covered drains. We have even known pipes choked by the roots of mangels! As for cementing the joints of pipes, and trusting to the porosity of the material for the admission of the water, a heavy fall of rain, like the one we experienced here on the 28th and 29th of August, will soon show its absurdity.

CLOVER-HAY.—In Gloucestershire England, where, owing to the vast extent of meadow-land, hay-making is well understood, the following is the plan pursued in making clover-hay. The clover is cut by the machine, and allowed to lie and wither a couple of days or so, according to the weather and the bulkiness of the crop. As the leaf of the plant is extremely brittle when dried, it is worked as little as possible, but only turned once if the weather is favourable, and left lying on the ground till it is fit to carry to the rick. As soon as the dew will allow, threeswaths are pitched into little cocks on the centre one, and shortly afterwards, the hay is pitched on to the carts and stacked. This plan is not so good as the system carried out in the neighbourhood of London, where, as we have described in previous numbers of the Journal, the clover, after wilting for a couple of days is turned, put into large cocks the next day, allowed to sweat in the cock, and carried to the rick without spreading. Still, the Gloucestershire men have caught the right idea, that clover should be handled as little as possible, particularly after it has become partially dry.

ENSILING SUGAR-BEETS.—The Vermont station has been experimenting on the best way of keeping sugar-beets for winter cattle-food. The beets were cut up and ensiled between layers of straw chaff, at the rate of one part of straw to four of beets. The whole was found to be fair silage and was eaten by the stock after they became accustomed to it; but, surely, the best way to keep any roots must be to preserve them whole in a root-cellar or pit; and take them out as required for use. The chaffing of the straw, cutting the beets, and arranging the alternate layers of chaff and beets, must occupy a great deal of time and necessitate the employment of a great many hands at a very busy season of the year; whereas roots are quickly packed in a cellar or pit, and labour is always plentiful in the winter-months.

POTATO-SETS.—How many bushels of potato sets does it take to plant an acre? We saw, the other day, a curious statement, said to have been made by Professor Robertson, that three bushels were sufficient! We are perfectly certain that Mr. Robertson never said anything half so absurd. Think for a moment: at 27 inches between the drills, and 10 inches apart in the drills, the distances usually employed, it would take 2,232 sets, 10