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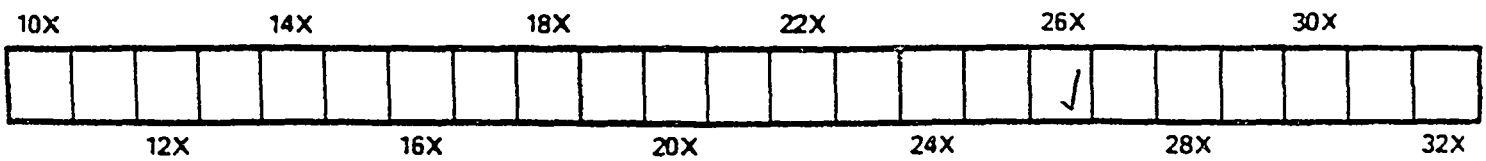

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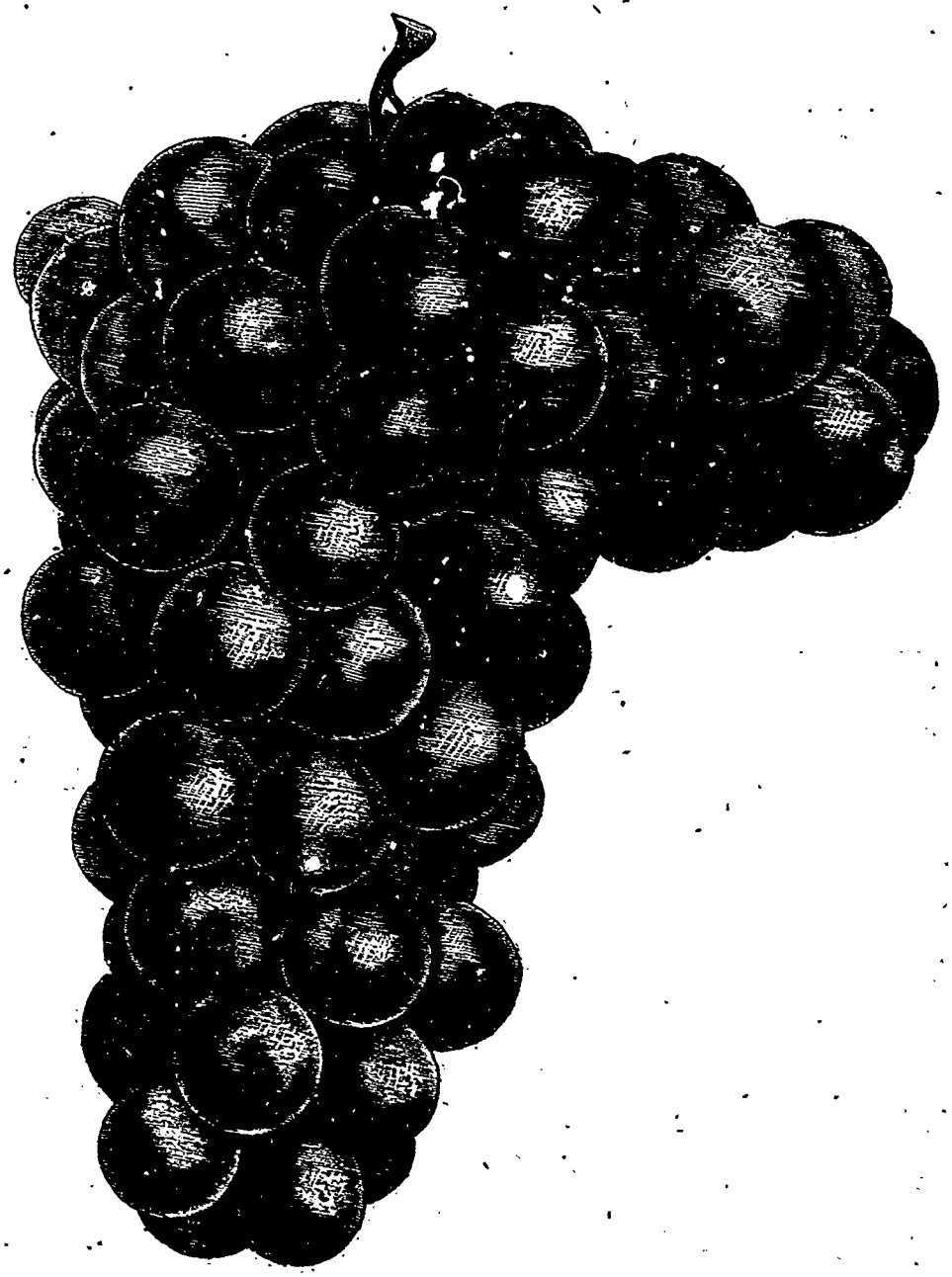
The Pocklington Grape.

Amongst the many new white grapes which are claiming public attention just now, the Pocklington has particular merits of interest to the Canadian fruit-grower. This grape was originated at Sandy Hill, N. Y., and is a chance seedling of the well-known Concord. It seems to partake of the hardy and vigorous quality of its parent and had it been named the White Concord instead of bearing the name of its originator, it would have been most appropriate. It is a strong grower, with large leathery foliage, and has never mildewed in the most adverse seasons. Its hardiness has been most severely tested, it having stood, without protection or covering of any kind, at Sandy Hill, when the thermometer registered as low as 34° below zero. This ironclad hardiness of the Pocklington is of the greatest importance to Canadian fruit-growers, and it will be well that the same test be applied to all new grapes before they are largely planted in Canada. The fruit of the Pocklington is of good quality, sweet and melting; bunches, large and strong, with berries thickly set; berries, large to very large, of a fine golden yellow covered with thick bloom. It is a splendid cropper and bears transportation well. Ripened last season side by side with the Concord, a few days earlier. Space will not permit the insertion of the many testimonials it has received, but the disinterested opinion of the Fruit Growers As-



THE POCKLINGTON GRAPE.

sociation of Abbottsford, P. Q., will not be amiss. They exhibited 27 varieties of white grapes on their tables last fall, and published in the *Illustrated Journal of Agriculture*, of January last, the opinions of the judges. Of the Pocklington they say:—'The bunch is large or very large, the berry, large, round, and a pale yellow. The skin is thin with slight pulp; pulp, tough but not acid. In flavor sweet and quite luscious, with slight muskiness or foxiness. It is said when fully ripe the pulp disappears, and it becomes sweet to the very seeds. In quality it is stated by Messrs. Morris, Stone & Wellington, (J. W. Beall, manager, Montreal), who control the grape, to be "fully equal to the Concord at its best." As we tasted it upon our Exhibition tables it was superior to any Concord we have grown here, superior to that sent to the Montreal market from Ontario.'—*Canadian Farmer.*

ENSILAGE.

I take it for granted that the practice of preserving green meat in silos is thoroughly proved to be advantageous to the farmer. Exaggeration apart, it is ascertained that a much greater number of stock can be wintered in good condition by this means than on dry fodder. It is better suited for dairy farms than for any others. Let us see what are the opinions

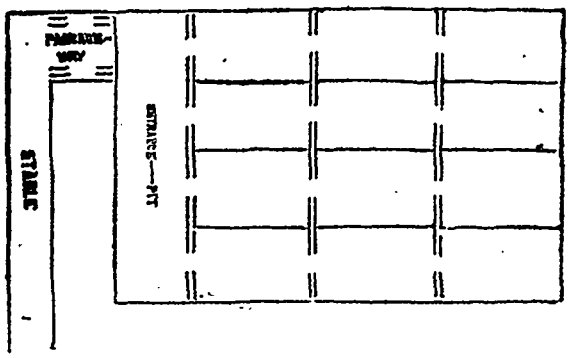


Fig. 1.

of those who have tried it as to the best mode of making the silo, of filling the silo, and of using its contents.

The pit should, clearly, be as near the barn as possible. If there is a basement cellar, a silo may be built in it.

Should the cellar not be above 8 or 9 feet high, it may be carried up through the floor, making a depth, in all, of 15 feet, which is considered by all to be the best. If the barn is on a side-hill, build the silo on the upper side, let the cut fodder drop into the pit; and your stock being kept in the basement, a door leading therefrom into the silo will give you every convenience in feeding. In wet, or in rocky soils, the silo must be above ground.

Silos may be built of stone, brick, concrete, wood, or earth. The chief inconvenience of the last is, that in spring, when the pit is emptied, the sides are apt to cave in. Of all, the insides must be smooth, lined with cement, if of stone or brick, that the cover may find its way without hindrance when the fodder sinks by fermentation.

If the silo is not under cover, a roof must be made to it. About $25 \times 11 \times 15$ feet is a good proportion; and this pit will hold $\frac{4125}{40} = 103$ tons. Allowing 60 lbs. to a cow per day, this quantity will keep 9 cows for a year, or 18 cows for the winter 6 months; or in our province, we must, I suppose, say 16 cows for the 7 months. On a large scale, I should be inclined to divide the pit by a party wall. Sixty pounds are as much, judging from brewer's grains, as a cow ought to have as a day's allowance; and I cannot help thinking that even this quantity might be reduced with advantage to the permanent health of the animals. Dry fodder, meal of corn, &c., should be given in addition, not forgetting the invaluable linseed, or cotton-seed. All sorts of green-meat may be used, chopped into half-inch lengths. It must be closely trodden down; the covers, weighted with stones, brick, rubbish, &c., must fit exactly. The contents of the pit generally sink about two feet after the covers are put on. So much for the general statement; for particulars we will see what Mr. Mills, of Arrareek farm, Pompton, New Jersey, has done on his estate, premising that the land is as poor as "ever lay out of doors."

In 1876, Mr. Mills had a field of corn, 20 acres in extent, which did not ripen, as it was a Southern sort, sown as an experiment. It stood from 12 feet to 15 feet high, and the question was, what to do with it. Having, probably, seen "Stephen's Book of the Farm," (v. p. 216, vol. 2, ed. 1876) which had been just published, Mr. Mills dug pits in a dry gravel bank, lined them with straw, placed the corn in them, covered it with straw and planks, and pressed it down with

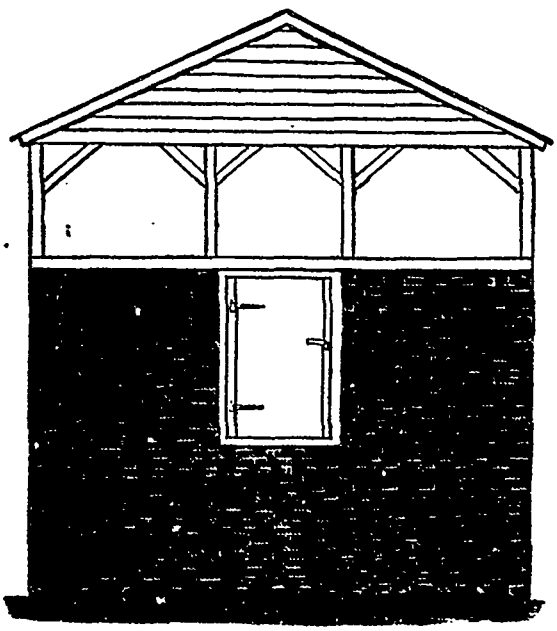


Fig. 2.

earth. On opening the silos in the spring, he found the fodder in an excellent state of preservation; and from this experiment sprang the most successful system of ensilage we have any account of. Corn is cultivated in drills, with 3 feet intervals—20 to 30 grains to the foot; manure, superphosphate and dried blood, i. e. nitrogen and phosphoric acid; seed, Southern white corn.

Harvested in the latter part of September, when the stalks are fully matured, not dead, but still green—the corn is at its best: the tassel is full and the ear forming. Two chaff machines are used, worked by steam, and cutting 100 tons a day into half inch lengths. Now comes the peculiarity of Mr. Mills' plan, which obviates the necessity of tramping.

He has two silos, each 40 ft. long, 30 ft. wide, and 20 ft. deep; the walls are of a concrete of stone and cement, two feet thick, the sides and ends parallel, and the bottom well cemented. Upon the walls, flush with the inside of them, a structure of ordinary boards is raised, fifteen feet high, which serves as a feeder to the pit, and which, when both are filled, will compensate for the shrinkage of the mass by compression. When the pit and the superstructure are filled, the surface is levelled, and sectional covers four feet in width, and in length one inch shorter than the width of the pit, are placed upon

it, on which are put 50 tons of grain in bags (5 tons on each section) evenly distributed. Mr. Mills uses grain for weight because it is convenient. In ten days, the cut corn is pressed down level with the top of the pit, and the boards can be removed.

The two silos cost $700. They hold about 600 tons, grown on 13 acres of ground, at a cost of less than $500, including all expenses; equal to 80c. a ton! The contents of one silo were the only fodder Mr. Mills used last winter on his farm from the 15th of October to the 25th of January, during which time 120 horned cattle and 12 horses were kept in healthy condition with less grain than if they had been fed on the best hay. The second pit would, according to calculation, be enough to carry the stock on to the end of May. Is this worth imitating? I think it is, for, if 132 head of stock can be fed for 7 months on the produce of 13 acres of land, it follows that 10 head can be fed on one acre siloed; whereas, at 30 lbs. of hay a day for each head, a fair crop of 3,000 lbs. will only keep one cow for 100 days; or, that, whereas $36 worth of hay at $12 a ton, are eaten by a cow during the winter half year, only $4.40 worth of ensilage are required to do the same duty!

Credat Judæus Apella,
Non ego!

I must say I could wish that the people of the United States would "draw it a little milder." What with 778 lbs. of butter per Jersey cow, per annum, when the best cows in the island do not exceed, on the finest grass land in the world, 400 lbs. per annum, it is very hard to attach any value to their figures. After all these practical remarks, Mr. Mills starts off with the stunning statement that, "the meat of animals fed on tares, rye, corn, &c., cut for green-meat in the summer, is injurious to health, and that their milk is the frequent cause of dysentery and death amongst children; that butter and cheese produced from animals thus fed, are necessarily bitter and unwholesome. In short, Mr. Mills believes that the natural effect upon an animal of eating unripe fodder (green-meat) is to poison its product, because, as he says, "in consuming the unripe food it is only eating poison!" And then he goes on to talk about a farmer having on his hands in the winter a dozen, or so, of animals "sick with hollow horn," and, I suppose, with "tail evil," and a variety of like diseases, all of which are purely imaginary. All I can say is, that thousands of cows are fed every year on grass or other immature food—hay itself, if properly managed, is immature—without injury to themselves or to children and that no chemical action can take place in the silos that can account for such a wonderful difference as Mr. Mills would make us believe exists between green corn freshly cut, and the same preserved for some days, weeks, or months, in a pit. If people will talk nonsense, they must expect to be laughed at.

But a lucid interval appears. Mr. Mills has not much opinion of fodder corn: he prefers grasses. He thinks his stock will do better on 10 tons of ensilaged grasses than on 40 tons of ensilaged corn. But again the shadow comes over him, and he talks about keeping 300 cows on a farm of 100 acres, using 30 acres for ensilage, and the other 70 to grow his grain on!!! Mr. Moulton, to whose account of Mr. Mills system I am indebted, concludes by stating that "the exhaustion of phosphoric acid and potash from the soil was, in, 1879, equal in value to $100,000,000, or 20 0/0 of the whole crop of corn. Does he not see that only a part of this can be true? Was none of it returned to the soil as manure? A pretty calculation to make, for any of my readers who like that sort of amusement: if maize contains 1.2 0/0 of ash, and the ash contains 50.70 0/0 of phosphoric acid and 28.37 0/0 of potash, what is the value of those manuring matters in 500,000,000 bushels? I make it $35,150,000 or thereabouts, and only the exported corn, whether in grain, in hogs, cattle, &c., ought to be lost, irredeemably, to the land.

ARTHUR R. JENNER FUST.

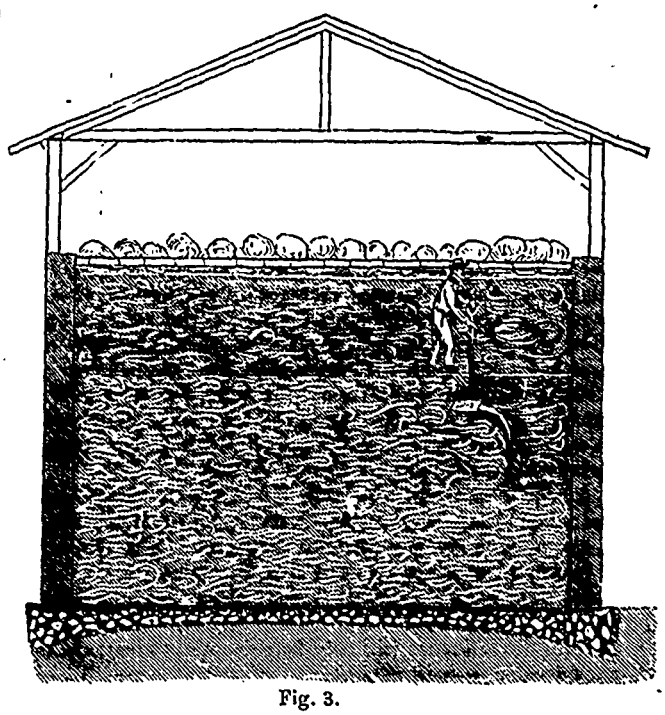


Fig. 3.

COPROGÈNE.

(Translated from the English by Arthur Thiboutot.)

It is always pleasing to a well constituted mind to see persons taking pains to benefit their fellow creatures. And when we know that the motives which actuate these persons are purely disinterested, our admiration of their endeavours is considerably heightened. Success does not always reward them. Failure, from causes utterly unconnected with their aims, may often disappoint them; but we must all reverence their devotion to the good of others, and though bound to expose their errors, we need not, by bitterness of criticism, exacerbate their feelings.

The work, of which the heading of this article is the title, appears to be the production of a certain Mr. Bommer, an American, apparently, of very ardent views. The copy I have perused is a translation of the original into the French language—and very well done too; Mr. Thiboutot has, in almost every instance, caught the meaning of the original.

One great mistake seems to pervade the whole work; that *carbon*, in the form of humus, is the one thing essential to the growth of plants; for, to show how to make *humus*, is the sole lesson taught in this work.

"Rain water is preferable to spring water because it contains more electricity. Since the nourishment of plants is composed of humus, &c." Again; "Sir Humphrey Davy says 'no substance is more necessary to plants than carbon! Therefore," concludes the author of *Coprogène*, "the manure you apply to plants should rather contain carbon than nitrogen. The leaves absorb nitrogen, which the air contains abundantly, with facility; but assimilate very little carbonic acid gas." Which is quite a novel way of stating the question. Plants absorb carbonic acid gas, reject the oxygen, and assimilate the carbon. As to nitrogen, v. Lawes, passim.

If you look into any of the earlier works of Davy,

Johnston, Solly, &c., on Agricultural Chemistry, you will see a remarkable virtue attributed to this substance. It was supposed that plants derived their carbon from the organic matter of the soil; that the brown decaying substances called humus were directly absorbed by plants, and their carbon appropriated: it is now known that this is not the case. Mulder, about the year 1847, taught that vegetable matter, during its decay in the soil, liberated hydrogen, which in its nascent state united with nitrogen and formed ammonia; that humic and other organic acids united with ammonia, potash, &c., and that these compounds formed the chief food of plants. Mulder spoke in the strongest terms against Peruvian guano, and other artificial manures then coming into general use. Lawes, in his Rothamsted experiments, tested (and continues, I am happy to say, to test) every variety of manure known to man. In order to settle the question of the use of organic matter in the soil he applied 4000 lbs. of rice to the acre in combination with superphosphate, and again with superphosphate and alkaline salts, while in other two experiments the minerals were used with out rice. During the four years the trial lasted, rice produced no appreciable increase in the growth of the crop. Now, rice contains almost 90 0/0 of organic matter.

Again, of two plots, A and B, receiving superphosphate and alkaline salts as manures, A received in addition 1000 lbs. of cut wheat straw per acre for 12 years. The mean yield of twelve years was; A = 1901 lbs., B = 2034 lbs.

Dr. Lawes, as a practical farmer, comes to the conclusion, that if humic acid does obtain ammonia from external sources, its influence will only be perceptible when taken over considerable periods of time.

In the Woburn experiments, too, whereas the wheat dressed with mixed mineral and and ammoniacal manures produced per acre 27.3 bushels, the plot dressed with *farm yard dung* containing the same quantity of ammonia &c., fell nearly 8 bushels short. As to the barley crop, Dr. Voelcker found that 200 lbs. sulph. potash, 100 lbs. sulph. soda, 100 lbs. sulph. magnesia, 336 lbs. superphosphate, and 550 lbs. nitrate of soda, (equal to 150 lbs. of ammonia) gave 37 bushels per acre, while 6 tons of dung, estimated to contain 200 lbs. of ammonia, and made from 1400 lbs. of decorticated cotton cake; 2240 lbs. maize meal; 16,800 turnips; 2,800 lbs. wheat straw chaff as food, and 3220 lbs. of wheat straw as litter, gave only 27 bushels.

You will gather from these experiments that the two great agricultural chemists, Lawes and Voelcker, are practically indifferent to carbon.

Think a little.—Superphosphate grows turnips year after year, and as fine crops as need be. Ammonia as sulphate, or nitrogen as nitrate of soda, combined with mixed mineral manures has given Dr. Lawes' crops of wheat and barley, sometimes as much as 60 bushels per acre, and always far above the average yield of the neighbourhood, and this not for a year, or for a rotation, but for 40 years in succession. I fancy the inquiry, is organic matter, or humus, necessary to the growth of plants? can meet with only one reply, No! But a French chemist, Mr. Ville, and mind, there is no nonsense about Frenchmen of science, Mr. Ville, I say, has expressed himself very fully on the point we are considering. And he first defines the matter on which he is about to experiment: "humus, a black substance, found in heath-mould and also in farmyard dung, is soluble in a solution of caustic potash but insoluble in water. Its composition is doubtful, but it is supposed to contain carbon combined with hydrogen and and oxygen in the proportions necessary to form water."

"Humus has its origin in the actual substance of plants, which, by a kind of spontaneous decomposition, has lost a portion of its water. Many intelligent men place humus in the front rank as a fertiliser, but can give no proofs in support of their opinion. The nutrition of plants is an extremely complex affair, the *thorough* investigation of which hardly dates back 20 years. When sufficient data were wanting to explain, hypotheses and words supplied their place. Humus had the honour of serving as an explanation for everything that could not be understood."

After giving some results of experiments on land in various of France, and stating that M. Payen, M. de Mathard, as well as M. le Chevalier de Mussa, in Italy, all arrived at the same conclusion, he ends with the following pregnant remark:

"If we observe that in these experiments, in which the land was of very inferior quality, farmyard manure, containing compounds analagous to humus, proved to be much less efficacious than chemical manures, it is clear that we can, strictly speaking, do without humus and still obtain very fine crops."

What then are the real offices of this humus? First it retains water, and thus helps to keep the soil moist. If, however, we remember that the per centage, in any soil, is very small, it cannot have much power to modify the condition of the soil. Like clay, it fixes the ammonia in the soil and prevents it being filtered out by rains, giving back this ammonia to vegetation, and it has a solvent power on certain minerals, and especially on phosphate of lime and limestone.

These offices are doubtless useful in Nature's laboratory but to expend hours of labour, both of man and horse, in the farmer's laboratory is simply to buy dearly what can be procured cheaply in another form.

But to enter more into details, we are advised, in the work we are considering, to make a trench 24 feet long by 14 feet wide, on the sides of which is to rest a grating on which is to be collected grass, corn-stalks, straw, vegetable refuse of all kinds, earth, swamp-mud, &c., &c., &c. If one thing won't do, another will. To a heap of these substances a liquor, called *fermentative*, is to be added, and in three weeks, or so, the mixture is to be equal, or rather superior, in value to *poudrette*, i. e. dried human excrement! In this "ferment," changes may be made at the convenience of the compounder. For instance, it does not seem to signify whether you use mortar rubbish or soot, for as the author says, 'mortar rubbish contains the principles of soot!" Two antiseptics, lime and salt, are added to the heap to promote *fermentation*, and saltpetre is not to be bought, but manufactured on the premises by the simple, cheap and rapid process of scraping the walls of the stables, and making piles of earth and manure. Among other trifling ingredients, 100 barrels of water are to be laded, or pumped, over the compost heap; which water is to be mixed with.

Lime	2 bushels
Soot	2 "
Wood ashes	2 "
Salt	4 pounds
Crude saltpetre	2 "
Plaster (burnt, I hope)	5 bushels
Human excrement	3 barrels
Yeast! (levure)	1 "

This last, I suppose, I ought to call *leaven*, seeing that it is the juice of old heaps which have been used, and this is to start the new mass into fermentation—by contact, I presume. All right enough, I doubt not, but what I most admire is the easy manner in which the expense of labour is treated. Collecting these materials is no slight job, to be done at what our Scotch friends call "an orra time"; "In well managed operations the ordinary labour employed on the farm will be found sufficient. The farmer, in arranging the work of his servants, can always find time for them to prepare these

manures. Besides, even if two or three extra hands were employed, would not the increased size of the manure heap be cheaply purchased at the cost of the wages?" I should answer—certainly not! And then comes this marvellous statement; "If you have 25 tons of straw, on the 1st of October, you will have by the 15th 100 tons of manure, worth 200 tons of farm-yard dung." It is really so—I have taken the figures as they stand in the book, p. 76.

The peculiar feature of the book is that not one chemical analysis is given—it is all assertion from beginning to end; *my* manure is better than this—there is no manure to be compared with *my* manure. It, on the whole, reminds me strongly of the philosophers of the island of Laputa as described by Lemuel Gulliver, ship's surgeon. I do not think it is worth while going deeper into the question. I will therefore finish with a quotation from Stephens;

"Having access to rough bog-turf and peat, dry leaves, black mould, couch grass, potato hulms, shell marl, fine clay, and lime shells, I was favourably situated for making composts. But little did I anticipate the labour I had undertaken. Two years convinced me that it was no child's play, and I dropped it, going to the nearest town and purchasing street, stable, or cow-house manure, and bone-dust. These never disappointed me and soon put the soil into a fertile state."

If the plans suggested by the work we have been considering were followed out, it would be equivalent to renouncing the advancement of agricultural practice during the last 40 years, and reverting to a theory which we fondly suppose has been dead for some years, and buried out of sight.

It seems to me after all, that the chief uses of the organic matters in manure are these: the mechanical alteration of the soil; the additional warmth imparted by the sun to the earth made darker by them; the more perfect diffusion of the different elements that accompany them. For if we look at the special manures, which, in the hands of skilful farmers, grow, year after year, from 30 to 60 bushels of wheat per acre, large crops of turnips, mangolds, &c., we shall see at once that there is really no organic matter in them worth speaking of. Take Guano, for instance, with its 50 0/0 of organic matter; at 4 cwt. per acre, only 212 lbs. of organic matter is added to the soil. Again, sulphate of ammonia, phosphates, soluble or insoluble, nitrate of soda, sulphate of potash; all these are absolutely destitute of organic matter, and yet, when properly applied they are the perfection of manure. As a whole, the mixed minerals and ammoniacal manures, have year after year for 40 years, on Dr. Lawes' experimental farm, absolutely beaten the plots where 14 tons of farm-yard dung were applied every year for the same period.

By the bye, a good deal of talk has been going about the value of *Kelp*, the ashes of sea-weeds. I really cannot see that it is worth much, and it certainly will not bear long carriage by land. There is hardly any phosphoric acid in it:

Carbonate of soda. Sulphuret of sodium.	55
Sulphate of soda	190
Chloride of sodium and potassium	375
Carbonate of lime	100
Sulphate of lime	95
Alumina and oxide of iron	100
Sulphur and loss	85
	1000

Analysis by Dr. Ure.

A. R. J. F.

FERTILITY.

In this pamphlet, Dr. Lawes arrives at certain conclusions in answering the question, "What is fertility?" which are the result of investigations made at Rothamsted.

The author does not deny that plants may take up some carbon from the soil, and that they, or the soils in which they grow, obtain some combined nitrogen from atmospheric sources, still the results of the Rothamsted experiments relating to the chemical statistics of agricultural production, clearly show that the atmosphere is the main, if not the exclusive source of the carbon of our crops, and that the soil is the main, if not the exclusive source of their nitrogen.

He maintains that the amount of nitrogen supplied to our crops from the atmosphere—whether as combined nitrogen brought down by rain, or that absorbed by the soil or the plant—constitutes but a very small proportion of the total amount they assimilate; and that the soil itself (or manure) is practically the main source of their supply. Indeed, it is a question whether, on arable land, as much or more may not be lost, by drainage, or otherwise, than is applied by the atmosphere.

"I am quite aware that in making the soil the source of nitrogen in plants, I am liable to be misunderstood; I will, therefore, briefly state the views which I hold in regard to the subject.

I believe that the atmosphere is the original source of the nitrogen in plants; that the very large amount which we find in our soils has been stored up by natural vegetation, such as forests, pastures, etc. The nitrogen thus obtained is one of the main elements of the soil's fertility, and is derived from atmospheric sources by the accumulation of ages.

On the Rothamsted pasture, which has been under experiment for the last 25 years, the nitrogen on the permanently unmanured land amounts to 8,000 pounds per acre within the first 15 inches from the surface, equal to 9,712 pounds of ammonia, the quantity contained in 40 tons of the best Peruvian guano." A. R. J. F.

"One of the most valuable facts ascertained in Mr. Lawes' experiments is that the sole manurial value, strictly speaking, of farmyard manure depends on the small quantity of chemical salts and of organic nitrogen which it contains, the bulky portion of organic matter being useful only in the way of lightening up the land, and making it work the more easily, and of adding to its capacity for absorbing and retaining moisture."—Prof. J. P. SHELDON.

VETERINARY DEPARTMENT.

Under the direction of D. McEachran, F. R. C. V. S., Principal of the Montreal Veterinary College, and Inspector of Stock for the Canadian Government.

Diseases of the Feet.

Laminitis.—"Laminitis or inflammation of the feet," says Professor Dick, "is one of the most dreadful diseases to which the horse is liable, and is not confined to the feet, although its chief seat is there. It is caused by over exertion, inordinate feeding, drinking cold water when heated, long journeys, and from the horse being compelled to stand in a constrained position, or a sudden chill. It is often communicated to the feet from internal organs, as from Pneumonia, Enteritis, or Bronchitis; in this case the feet are affected as well as the whole surface of the body, the hair of the mane and tail being thrown off, and the tendency of laminitis is to throw off the hoof, as well as the common integuments in consequence of the general irritation."

There are two forms of this disease: namely, where the inflammation is primarily limited to the sensitive laminae and

sensitive sole; and where the inflammation involves the os pedis (the bone of the foot) the laminae and sole; the first, however, may run into the second. Another division is into acute and chronic laminitis, but here again the acute may terminate in the chronic, and the chronic may from simple causes develope into the acute form.

Causes.—Hereditary predisposition is here as in other cases an active agent, where there is defective conformation, and general weakness. Bad management of the feet is another prolific cause of this disease. Flat footed horses are said to be more liable than any others, but this has not been proved by experience. Heavy horses are more liable to the disease than lighter breeds, the great weight which has to be sustained by the feet of draught horses will account for this fact, weakened as they too often are by the paring of the sole.

There are two classes of horses which are most liable to this disease. 1st. The horse which has over grown his breed, that is to say an animal with the legs and feet of a well bred, and the body of a cart horse. 2nd Small ponies that are excessively fat. In both cases the weight of the body compared with the legs and feet will account for the predisposition, though in many cases the exciting cause may be traced to the removal of the solar horn. The more immediately exciting causes are *concussion*, (as from fast driving over a hard road), *excitement*, *over exertion*, *indigestion*, more especially when caused by engorgement of the stomach with wheat or oats; bad shoeing, paring of the feet, tight nailing of the shoes, and high calkins.

Generally this disease is confined to the two fore feet, especially when caused by concussion; but it is not unusual to find all four feet affected, sometimes the two hind feet only, and in rare instances one fore or one hind foot. When one foot is affected it is due to an injury of the other foot or limb which compels the animal to throw all the weight of that part of his body upon the sound side. The sound foot becomes inflamed which is indicated by lameness, heat, and pain.

Symptoms—When, as is most frequently the case, both fore feet are affected, the animal is excessively lame, almost immovable, especially at starting; he seems as if all his body were cramped; his fore feet are advanced while his hind are drawn under his belly in order to relieve the weight on the fore feet as much as possible; if compelled to back he does so with the greatest difficulty, he elevates his toes and stands on his heels, when quiet he stands straight, occasionally resting on each foot His pulse is found to be full and strong but very quick. As a rule he will stand persistently for the first day or two as if afraid to move. In other cases he will lie down, and stretch out his fore feet as far as possible, seemingly getting relief from the position. When the *hind* feet only are affected the patient stands with all his four feet together; the fore ones are pushed under the body, and not extended forwards as when they are inflamed; the hind ones are extended forwards in order to throw the weight upon the heels and relieve the toes

When all four feet are affected there will be a combination of these symptoms and the animal will lie persistently. On manual examination of the feet they are found to be hot and he will flinch on striking with a hammer, the planter arteries may be found to throb considerably. There will also be found in recent cases quickened breathing with dilatation of the nostrils and slight congestion of the mucous membranes.

Pathology.—In this affection there is an inflammation of the sensitive foot with or without the os pedis. The pain of Laminitis is most agonizing and persistent, because the sensitive foot is encased in an unyielding horny box pressing upon the engorged blood vessels, preventing free exudation and swelling, and in this way proving an obstacle to the method by which congested blood vessels are relieved. The exudation is greatest at the toe, that being the most vascular part of the foot. It is found to limit itself to the external surfaces of the sensitive laminae, but where the cause has been concussion it might be subperiostial or beneath the covering of the bone, and may be so extensive as to fill up the canals and lacunae of the bone and prevent free circulation, in this way leading to Necrosis, or death of the bone, and destruction of the foot.

Simple Laminitis will pass off without leaving any structural changes, there is but slight exudation, and this is soon absorbed after the inflamation subsides Sometimes this absorption progresses rapidly, and leaves a space between the sensitive and the horny laminae, this is subsequently filled up with an imperfect growth of horn ,which is cheesy in consistence, constituting what is known as *seedy toe.*

Should the inflammation of the feet persist, the exudate gathers at the toe, increases in thickness, presses upon the toe of the os pedis in one direction, and on the crust on the other separating the two, forcing the toe of the bone downwards and the toe of the crust upwards. The effect of this change in the position of the bone is the formation of a *convex sole* or *Pumiced foot.* The outer horn of the wall is also found to present characteristic appearances, it becomes *ribbed* as if there were successive efforts to cast off the hoofs. The rings of laminitis are irregular and run to the anterior of the foot.

Later, the bone being pressed down by the exudate becomes absorbed at its borders, which reduces its bulk; this occurs more particularly at the sides and toe, while the structure becomes brittle.

As a further result, ossification of the sensitive foot and suppuration are sometimes found especially appearing at the coronet. *Acute Laminitis* terminates in resolution of the parts or in that form which is termed sub-acute or chronic, in suppuration, and sometimes in gangrene.

Chronic Laminit's is that condition of the feet remaining after the subsidence of the febrile attack, or it may exist independently of an acute attack, the changes in both cases are identical, the difference being in the severity of the accompanying febrile disturbances.

Treatment.—On the subject of the treatment of laminitis there are great differences of opinion held; some advocating hot applications to the feet; others cold; some bleed at the toe, while others do not. From experience, the following is the treatment which I have found most suitable in such cases.

When the case is quite recent, and the pulse full and bounding, I have the shoes removed, and the feet put into hot linseed poultices (or a tub of hot water); these are changed in 12 hours; at the same time I administer 10 drops of tincture of *aconite,* with an ounce of *Liquor ammoniæ acetatis* in ½ pint of water, repeated every two or three hours. The oats and hay are stopped, and bran mashes are given only. The following day I give an aloetic purge, and if the pulse is slower and steady, reduce the aconite to three times a day. The poulticing is kept up for a week, when it may be stopped, and the animal allowed to stand on clay for a week, when, if sufficiently recovered, a run at grass for a month will generally effect complete recovery.

WM. MCEACHRAN, M. D. V. S.

Bulb culture.

So much has been already given to the public on this subject that it seems almost superfluous to attempt to write about it.

Still, if an amateur experience of many years and a

enthusiastic love of flowers entitle one to speak, I may claim to be heard.

Most of the suggestions which have been published on the subject come from those engaged as florists and seedsmen in the selling of bulbs, and it therefore seems to me possible that the words of one who is a grower and amateur may be of some value, as coming from one, who has gained his knowledge by actual experience. In a country like our own, where winter reigns for so large a portion of the year, it seems very desirable that attention should be called especially to the cultivation of such plants as can by their flowering during the winter and early spring supply our houses with bright blooms and sweet perfumes, and these at a low cost and light labour.

It is easy to procure geraniums in abundance for window culture, but how sparse and unsatisfactory the blooms are in proportion to the trouble they require! Hyacinths, Polyanthus Narcissus, and other spring bulbs, furnish us with a never failing supply of fragrant blooms from Christmas to the end of March. These are the staple of our cultivation, and to these the cultivator turns first; but there are many others equally beautiful yet not so well known.

Our first business is to select our bulbs; in many cases we have to leave this to the Florist from whom we purchase; but as our friends would often prefer to make their own selections, I would offer a few suggestions. In selecting Hyacinths, we should look first to two things. First the crown of the bulb: this in a good flowering bulb, should be full and round like a dome, where there is any depression on pressing with the finger, it is a sign that the bulb has been exhausted by flowering, and, it should be rejected.

2nd. The lower part, whence the root springs, should be carefully examined to see that there is no sign of mildew, and that the roots are not advanced, so as to be injured in potting.

Next, regard must be had to our requirements, whether for pots or glasses. If for the former, large bulbs may be selected, if for the latter, we must carefully examine that the root circle be not larger than the opening in the glasses to receive them. I have often seen roots struggling in vain to reach the water, and filling the cup of the Hyacinth glass.

My own preference is to grow in pots, as the blooms are stronger and finer than in glasse. The bulbs, too, are not exhausted, but do well in the open border next season.

My potting soil I make of well *rotted* cow manure and leaf mould about one half, and sand one half, with about 2½ in. charcoal dust at the bottom of the pot. This will serve for drainage, and also supply nutriment. I fill the pot a little more than half, *shaking* down but not pressing the soil. I then put in my bulb easily but with no pressure, then I put in a handful of soil and work it down and continue until the soil is level with the top of the bulb. I then press the soil all round the bulb, being careful not to touch it again; the pot is filled to the crown of the bulb, then shaken very thoroughly so as to settle the bulb in the soil. I then water carefully, and place an inverted flower pot filled with moss over my bulb, and then put it away in a dark and cool place for at least three weeks, when I find some are beginning to make shoots. One must be careful to remove all offsets as these take a great deal of strength from the plant.

Those in glasses.—I place in glasses filled with pure *rain water* and sink a piece of charcoal at the bottom of the glass. I have found a little guano added to the water of great use to the bulbs, but as it discolours the water, it is undesirable on that account, as the beauty of the roots in the water is quite an attraction. I have found a few crystals of ammonia also of great utility. Care must be taken that the water only just touches the root. The glasses must then be put away in a cool and dark place till the glasses are filled with roots. When the leaves begin to grow, the plants may be removed into the light, and from time to time sprinkled lightly with a hard broom.

The Polyanthus Narcissus must be grown in pots the same as Hyacinths. The covering with an inverted pot with moss is very advantageous, as it prevents the strong roots from lifting the bulbs out of the ground, in which case it is very difficult to grow successfully. I have sometimes in such cases pulverised carefully some soil, and then filling it around the bulb, washed it under the bulb. I have also tried repotting, but this is so difficult and hazardous that I hardly recommend it.

For other bulbs I would recommend Tulips; Crocus, Iris Susiana, Narcissus, Van Sion, Jonquils; Scilla Peruviana, and Siberia and Cyclamen. These are all of the easiest culture. A few Lilies of the Japan order will complete a most lovely collection for house culture.

But, some will say, I have gas in my house, therefore I cannot grow anything Now as a remedy against gas. I would advise to take every morning a tea-spoonful of Spirits of Camphor to half a gallon of water, and with a broom-whisk sprinkle the leaves of your plants. Do not be afraid of cold for your plants, if only you keep them from freezing. I found last winter that Hyacinths kept in our drawing room, where there was neither stove nor fire, and which only had heat from the hall stove, lasted longer and bloomed better than those in a warmer temperature; and observation has convinced me that the main reason why some persons do not succeed well with their Hyacinths &c is, because they attempt to force them with heat.

I wish very much that lovers of flowers would do more in the way of spring gardening. Tis true winter holds its own until it is time to prepare our beds for summer, but by filling beds which we intend for annuals, as Zinneas, Phlox Drummondii, Verbenas, and Petunias, with Tulips, Hyacinths, Narcissus, and Polyanthus Narcissus, we can easily insert our seedlings as soon as requisite between the other roots.

In closing this I would strongly recommend to your readers a novelty which flowered with me this summer, the Hyacinthus Candicans.

It is a lovely thing, grows about 3 feet high and is perfectly hardy.

If these few remarks are of any use to those who, like myself, are dear lovers of flowers, I shall be glad.

EDMOND HENRY SPRING RICE.

Côte St. Antoine.

In 1843, the Royal Agricultural Society of England held their annual meeting at Derby. There, my old friend and farm-tutor, William Rigden, exhibited a Southdown ram, which was so far from meriting a prize that Jonas Webb and his brother Tom advised the owner to tie it round his neck and to throw himself and the ram into the nearest mill-pond. This year, however, the tables are turned, as I see that, at the R. A. S meeting, at Derby again, Rigden takes first and second prizes for Shearling Southdown rams; and second, reserved number, and highly commended, for old rams! The exhibition of dairy produce seems to have been very poor.

A. R. J. F.

THE WORKING DAIRY.

At the Royal Agricultural Society Show, Derby

The working dairy at Derby is arranged in two compartments In the first compartment is shown, at one end, the American and Danish systems of setting milk. The Cooley creamer, which was brought out in America, and first introduced in this country at Kilburn, is now prettywell known.

The principle is to submerge deep cans in a tank of water, and an improvement upon the original "Cooley" has been made whereby a stream of water passes constantly through the centre of the can. The Swartz or Danish system was the first using the "deep" pan which was introduced into England, but it had previously been largely in use throughout the North of Europe. It differs from the American in that the cans of milk are placed in the water, but are not totally submerged.

Next to these two tanks are a couple of tables for weighing up and making up the butter, and next to them are two butter-workers. The most generally approved of these is the "Fimbree" butter-worker, an American invention, which was awarded a medal at the Philadelphia Centennial Exhibition, and has since held its own against all competition. It is now pretty well known, and consists of a circular revolving table rising in the centre, upon which the butter is placed. As the table revolves the butter passes under a fixed corrugated mould roller, which effectually expresses the buttermilk without in any way injuring the butter. The "M. M." butter-worker is a cheaper and very useful implement.

There are four churns fitted up in the dairy, viz., an "Eccentric," a "Midfeather," an "American Swing churn," and a large churn for factory use. The Aylesbury Dairy Company make the following remarks respecting the much-vexed question of rival churns: "We consider that for a small dairy of one or two cows the box-churn is the best, as it is easily taken to pieces and scalded. Where a large quantity of butter, say up to 18 lbs., is made at a time, the best churn is the "American Swing." In dairies where from 20 lbs to 200 lbs., of butter are made, either a "Midfeather," "Eccentric," or plain-barrel churn, with a simple arrangement of beaters, is recommended."

The Aylesbury Dairy company have introduced at this show a new patent butter-worker, or rather mixer, for merchants and factory use. It consists of a tub, in the centre of which a revolving upright is fixed, which is fitted with six curved arms or beaters. These work through a set of straight arms, which project from the side of the tub. The butter, after thorough mixing, issues from an aperture at the bottom of the side into a large tub, from whence it is taken to be made up. For mixing the butter of various dairies, and for salting or washing butter, this machine is an obvious desideratum. There is only one more machine in this section of the dairy, and this is a machine which was shown at Carlisle, for weighing milk. It consists of a weighing-table about 3 ft. 6 in. square, on this are two A-frames, between which is supported, on trunnions, a copper tank, holding thirty-five gallons, or about 3 cwt., of milk, in one-half of this is fitted a wire strainer, eighty-three meshes to the inch, through which the milk is poured. The tank being full, the contents are weighed, a catch is released, and the whole tipped up into a tank on the floor, whence it is used as required.

Between the two compartments of the dairy a 10-horse power steam engine is stationed to drive the shafts running throughout the shed from which the various machines are propelled. The smaller of the two compartments is devoted to separators. Of these there are three. The first brought out was the "Lefeldt," which however, never came into general use, and was, indeed, at first too clumsy and complicated to be practically available. In 1880, however, considerable improvements were made in it, and it is now more useful and worthy the attention of those who require such a machine In 1879, at Kilburn, a separator invented by Laval was first exhibited, and created considerable sensation. It has since been shown in operation at several shows, and never fails to attract attention. The work it does has always been satisfactory, bmt it has nevertheless been the general opinion that the expenditure of power was too great for the results obtained. Very recently, indeed only just in time for the present show, the Aylesbury Dairy Company have introduced a new separator, manufactured by Nielsen and Petersen, of Copenhagen. This has been tried for the first time in this country, and although the Aylesbury Dairy Company have scarcely yet got it into the proper working order required by its inventors, they are making experiments to test its capabilities, and already express confidence in its results. Two hundred of these machines are already in use in Denmark. This machine will separate from 100 to 120 gallons of milk per hour against 100 by the "Lefeldt," and 3 by the "Laval." Its chief point, however, is in the working, as it runs at only 1,500 revolutions per minute, whereas the "Laval" requires 5,000, and the "Lefeldt" 2,400. The respective prices of the three machines are—"Laval," £33; "Lefeldt," £90; "Danish," £80. It is said that the percentage of cream separated can be regulated with the greatest exactness. This is a point of great importance. When we saw the machine and inspected the skim milk, it appeared to us that a good deal more than the cream was being taken away; in fact, it was obvious that the proportion of cream removed was far too large, the volume issuing from the "cream" pipe being almost, if not quite, as great as that pouring from the "skim milk" aperture.

The principle of all these separators is centrifugal force. The new Danish machine might in fact be a modification of Laval's machine, although it differs from it in many important particulars. The whole milk is poured in a continuous stream into the centre of a large bowl, which revolves, as we have said, at the rate of 1,500 revolutions per minute. Here it rises all round in a wall against the sides of the bowl, the milk being outwards, and the cream forming the inner lining—so to speak. Into each of these "walls"—the wall of cream and the wall of milk—a pipe with an extremely small termination, about the size of a pin's head, is thrust, and each liquid forces itself into the pipe and flows away into separate receptacles.

Altogether it may be said that the working dairy at Derby is not only one of the most interesting features of the exhibition, but is certainly one of the most complete collections of the requisites for butter-making that has ever been made at any show. We cannot be far wrong in anticipating that this exhibition will give a most useful and desirable impetus to the proper management of dairies throughout the Midlands.

THE (London England) FARMER.

DR. VOELCKER'S LECTURE.

On Dairying, at the Derby meeting.

On Wednesday afternoon Dr. Voelcker, in pursuance of an arrangement, delivered the first of a series of short lectures on butter-making in the dairy on the show-ground. A large audience assembled to hear the lecturer, seats having been provided for many in a gallery covered with canvas. Dr. Voelcker said he was not going to aim at anything so pretentious as the delivery of a lecture every day of the show; he would rather give a few familiar hints on butter-making. They were aware that a large quantity of butter was annually imported into England from foreign countries. We obtained excellent butter from Denmark, and also from America. It had often struck him that there should be no necessity for importing a large quantity of butter from distant lands, when we had the means of obtaining good butter with comparatively little trouble in our own native country. The question would naturally be asked—How is it that so much butter is imported into England, when we can make it cheaper, without paying the expense of importation? The answer to that question was extremely simple, and it was this—The foreigners made better butter than we do, notwithstanding the natural advantages we had of turning out good butter, of selling it fresh, and obtaining a good price for it. He would have to speak of the

circumstances which spoilt butter-making in this country, and in order to do that he must allude very briefly to the composition of milk. No more serious mistake could be made than to withhold milk from young animals. Cream consisted of a certain proportion of water and fatty matters, and a small proportion of casein. The less casein there was in cream the better it was for butter-making. If by any means they could separate the fatty matter from the curd matter they would get excellent butter. It was the curd matter which caused all the difficulty in butter-making; and it was from that reason that we believed dairy farmers would never have first quality butter from whole milk—not the same quality as that which they obtained from cream. Like everything else, the composition of cream varied. Nobody could feel any astonishment at the fact that when cows were fed with turnips, swedes, and mangolds, there was a more or less disagreeable flavour in the butter made from the cream produced from the milk of those cows. The best flavoured butter was made, he believed, from pasture which had the general reputation of being poor pasture—not rich pasture. He wished them to understand what he meant by poor and rich pasture. He simply meant by poor, pasture with scant herbage on which cattle could be kept, such as uphill pastures. By rich pastures, he meant pastures which produced a large bulk of grass, but not composed of different herbs. The more mixed their herbage was, generally speaking, the smaller the produce, but the richer the quality of the cream the richer it was in butter, and the finer was the butter in flavour. It had been said, with a considerable amount of truth, that by over-manuring pasture land they reduced the fine quality of the butter made from such pasture. He believed the finest quality of butter was produce from pasture which contained a great variety of herbs, some of which might be regarded as weeds. Could ordinary pasture produce first quality butter? His answer was, decidedly, if they took care to prevent the cream getting sour. That was the great hindrance in making first quality butter. Many dairy farmers unconsciously allowed cream to get somewhat sour before making butter. They should churn cream as sweet as possible. That was an extremely simple matter; and he felt almost ashamed to speak of simple matters in the presence of so many experienced persons; but he found that simple things were difficult to learn. It was a peculiar tendency of the human mind to aim always at big things and to neglect little things on which so much of their daily comfort depends. It seemed a small matter to prevent cream getting sour; but if they considered the enjoyment they had in tasting first-quality butter as against the feeling experienced in having to eat rancid and illflavoured butter he did not think it would be regarded as quite so small a matter. How were they to prevent cream getting sour? In the first place they should carefully look after all the people they employed in and about their dairies, and see that the people who milked the cows had thoroughly clean hands. In the second place, they should see that the cows were perfectly stripped, or they would leave the germs of rancidity in the milk. Then they should cool the milk as rapidly as possible to about 55 deg. He was an advocate for the use of deep vessels for getting cream by placing them in water. For ordinary purposes pump water answered well. Twelve hours would be found quite sufficient to get by far the largest proportion of cream that the milk would yield. That should be churned at once. Rancidity would be prevented by churning as early as possible. In churning they should not be into great a hurry, but should turn steadily at about 40 or 45 per minute. As soon as the noise (they knew what he meant) came, they should stop at once, and deal with the butter kernels. Then they should churn it again with cold water, temperature about 57 deg. to 60 deg. He could not help thinking it would be a good plan to place at once a little salt into the churn, because it would distribute itself evenly amongst the butter. He confessed he would not push the washing process too far. If they had really good sweet cream, he recommended them not to wash the butter. After the process they should clean the churn with boiling hot water. Everything in butter-making depended upon cleanliness—scrupulous cleanliness—the use of plenty of hot water, or steam if they had it, followed by cold water. At the close of his remarks, Dr. Voelcker was enthusiastically applauded.

Feeding and Shipping Canadian Stock.

On this point Mr. E. C. Morgan, who was examined at Toronto in June, 1881, says:—

I am a shipper of cattle. I have been engaged in that business about three years. I buy cattle from farmers and on the markets to supply the British demand. For that market I would recommend farmers to produce nothing but the Durham. There are some differences in the quality and value of different families of this breed. We prefer the fine-boned heavy-fleshed animal to the heavy boned animal. I think the market in Britain for Canadian cattle will increase as soon as the industries of Great Britain get agoing again. The English consumption of our cattle is now 25 or 30 per cent, less than it was two or three years ago. At this time of the year we cannot obtain a supply sufficient for the British market, and we shall not be able to do so until the winter. That is a misfortune to this country, and I would recommend to farmers to have a good supply of cattle all the year round. It is a great mistake for the farmers to have their cattle all come at the same time, because it not only gluts the English market at one period, but prevents them from keeping up a regular supply.

Four-year old steers are the best to ship, but a great many good cattle are shipped from three years old upwards. No cattle weighing less than 1,300 lbs. should be shipped; the best weights for the English markets are from 1,300 to 1,600 lbs. We have sent fine animals weighing as much as 1,800 or 2,000 lbs., but they are not wanted by the butchers so much as those I have mentioned.

The most profitable period for shipment is during the months of May and June. One cross on our native stock, provided the sire is a thoroughbred animal, will produce a very good grade. The higher the breed of the bull, the greater will be its impressiveness on the calf, and consequently the better will be the beast produced. I don't think it is profitable to ship cattle which have been fed on grass. The grass just puffs them up, and makes them look very nice when they leave here, but they can't stand the journey; they must have grain. The difference in the shrinkage between grass-fed and grain-fed animals is 25 per cent.

SHEEP.—I have shipped some sheep to the old country. The weight preferred there is 150 lbs. live weight; that will make the carcase from 70 to 75 lbs. About eighteen months to two years is the proper age for shipment. In England they prefer the black-faced sheep. I would give two cents a pound more for a good cargo of good black-faced sheep than for other kinds. The Southdown, Shropshire, and Oxford Downs are the best. There is a penny to twopence a pound difference between the value of wethers and ewes in England; that is equal to a cent and a half a pound, here, livewe ight. There is a difference of two cents a pound in the price paid here for wethers over that paid for common ewes. You can ship nothing better to England than a good Southdown or Shropshire or Oxford Down wether. The English butchers, when they kill a Down sheep, leave the skin on the legs, so as to convince their customers that they are selling them Down mutton. It

is difficult to get cattle at three years old weighing from 1,800 to 2,000 lbs. There is no difficulty, with proper management, in attaining 1,400 or 1,500 lbs. weight at three years old.

PRIZES FOR CATTLE.—I think it would be desirable to continue giving prizes for other cattle besides the Durham, but I would give the Durham the preference. The Hereford, the Devon, and the Polled Angus are all good cattle. I have shipped only a few Polled Anguses. I like them very well. They command good prices in England—I don't know but better prices than the Durhams; but there is nothing liked better in England than a good Durham beast. The reason I advocate the giving of prizes for Devons is because of the fine quality of their beef. There is about the same difference between Durham and Devon beef that there is between Cotswold and Southdown mutton. It is a hard matter to get a good Devon weighing more than 1,200 or 1,300 pounds. You would have to pay a great deal more freight on them, and you would not get any greater price for them in England. If you take a thoroughbred Devon and a thoroughbred Durham, and feed them the same until they are three years old you will find 300 pounds more beef on the Durham than on the Devon, and you will get that extra beef carried free to England. If you could get hold of good Devon steers and heifers together, I think, perhaps, they would command a little better price. I do not think Devons ever will become so popular that we could get shipments of them. They will never become so popular as the Durhams, though they are a nice breed of cattle. If I were going on a large farm, and breeding cattle, I would breed the Durham.

Mr. Britton and several other witnesses consider common cattle unprofitable, but Mr. Britton has a decided preference for Durham grades.

Mr. C. S. Simmons advises a careful selection to be necessary. He says:—

I find that if you get an animal that breeds stock that are good milkers, he generally produces good grazers and good feeders. For a good feeding steer you require to get about the same shape of head that you do for a good milking cow. The high-bred cattle are all more profitable to the producer than common cattle. In the first place, at three years old, they will gain 200 pounds more than the common cattle on the same feed, and gain it more symmetrically, and have more flesh and less bone than the others, and are worth 5 dols. to 10 dols more if of the same weight. On the average, Durham grade cattle are worth 10 dols. to 20 dols. more per head at three years old than common cattle if raised on the same food.

The witnesses in general agree as to the utility of the Durham as a beef-making animal: but appear to be divided as to whether pasture-fed or stall-fed kine weather the voyage across the Altantic best. A few have found the latter unprofitable; but Mr. Richard Hall, the well-known importer, considers a stall-fed Canadian equal to any American. He declares the coat tells whether an animal is "swill"-fed stall-fed, or pasture-fed.

Mr. Albin Rawling, in the course of his evidence, has a good word to say for Shropshire and Hampshire sheep, and he says he was a breeder of Cotswold and Leicester sheep for some years, but the sheep he now recommends are the Shropshire and Hampshire Down sheep. They seem to do fully as well in Canada as in England, and their meat is worth a penny a pound more in Europe, and they are better shippers. He recommends the crossing of Canadian ewes with all Downs, Southdown, Oxford Down, Hampshire Down, &c. He prefers the Shropshire and Hampshire Down sheep because they have a heavier carcase, and have more wool, which is, however, a little coarser.

COOKING, by either steaming or boiling, is adopted by many persons; the food is probably more digestible, but for working horses I do not recommend cooking. It puts the flesh on soft and flabby; but to fatten a horse for sale, exhibition, &c., when expense is not so much an object, it is, no doubt, a good plan to cook all the food; but the outlay and additional expenses of apparatus and fuel, &c., for a tenant-farmer, for working purposes, is not needed.—*Sexton.*

State of Crops, &c.

My dear Sir,

Your post-card duly received, and, in answer, I have conversed with parties who have visited the several Townships in our county, and from them gather the following items: The hay crop, that promised to be so abundant during the early part of the season, was much damaged by the frost in June, which stayed its growth. Since haying began, the large amount of rain has injured the quality of that already secured, at the same time preventing many from finishing, consequently, it will suffer from being overripe. Our crop will be short, say twenty to twenty-five per cent, in comparison with that of last year, and the quality much inferior. Oats, barley, and wheat are all good, the latter probably better than last year. Potatoes, a fair crop where the beetles have been attended to in season. Turnips, beets, mangolds, and carrots are not grown in large quantities but, wherever cultivated, promise a good crop. Corn, also but little grown, is this season a failure, the frost, to which I have already alluded, having frozen it to the ground, this was also true as regards beans, tomatoes, cucumbed and squash. Having not yet over on account of continued showers. If this is what you desired, I send it to you with pleasure. Anything more required by writing me, I will give it attention. I might add that the beets, being grown in this vicinity, for the Coaticook Beet Sugar Co., look well, my neighbous, Messrs. Pierce and Borland, have each five acres, but I have heard that some farmers who promised to grow them have failed, that is did not sow the seed; if that is the case it will no doubt cause disappointment and perhaps loss to the Company, who have depended upon a certain number of acresbeing grown for their use.

Stanstead, Aug. 6, 1881. ALBERT P. BALL.

My dear Jenner Fust,

Now to tell you what I think of the crops this year.—The hay crop is very thin, and a great deal was spoilt by the last rain, but what I made before the rain is very fine; in one field where last year I had twelve loads, this year I had twenty-three! But this was an exception. My spring wheat is magnificent, and will be ready to cut in a day or two; one of my neighbours has cut his, and it is a fine crop, but in some places near here the crop is poor. Oats, I say, will be good, barley also. I have a small quantity of English oats which are the finest I have seen anywhere. I got these oats from a gentleman who imported a horse last spring, and he gave me 11 lbs. from which I got 1¾ bushel, which I sowed this year, I will let you know with what result, but from present appearances I expect something very good!

My root crop is fair, the seed being a very long time before it came up, consequently the crop is small at present. The sugar beets (I have sown 2 acres) are very fine; I sowed one acre with ordinary manure, and the other with phosphate, at first the latter was much the finest, but now you cannot tell the difference. I succeeded in persuading a few of the "habitants" to sow the sugar beet about here, but the difficulty has been in getting them to give their attention and time to weeding; those that have weeded will, I think, be satisfied, though of course it is difficult to say until the crop is gathered.

Yours truly,

E. A. C. CAMPBELL.

Silos in Canada.

My dear Jenner Fust,

I have been so busy for some days back that I have not been able to answer your post-card.

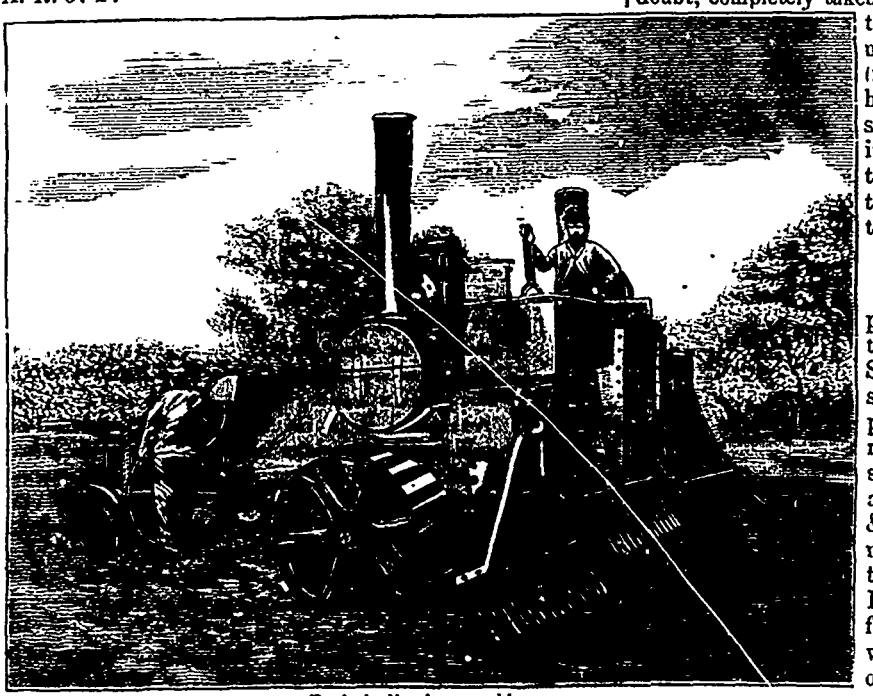
The last three weeks have improved the prospects wonderfully both in grain and root crops, and even increasing the hay very much on heavier land. Still the hay will be not more than ¾ of last year's, and the year before's crops. However, there is a good deal of old hay in the country, and probably the winter will start with almost as much on hand as was consumed last winter. The

grain is uneven, and will not be so good as for several years back, and the roots no better than last year, which is not saying much. Corn has grown tremendously in the last fortnight, and if this month and the first week of September are favourable, will be fairly good. We have had bad haying weather, and a good deal of hay has been hurt by the rains.

I put about 12 tons of early cut clover into a plank silo in my barn five weeks ago, and intend to open it to-morrow for soiling purposes. I shall write you result of the experiment, and if it is successful, shall refill as soon as emptied with second crop clover, peas and oats, and corn for the winter feed. We shall see. Do you know of any other being tried in the Province? Mine cost almost nothing, and so far as I can tell from smelling round it is absolutely air tight. Cut the clover when just right for making into hay; drew from field to hay cutter, and packed in showery weather when could not possibly have cured it for hay.

Yours truly, S. A. FISHER.

This is the first attempt, in the Province, I have heard of. A. R. J. F.



Darby's digging machine.

Our Engravings.

DARBY'S STEAM DIGGER.—When, at the great Exhibition 30 years ago, I recommended one of the great agricultural implement firms to turn their attention to a digging machine something after the fashion of a *hay-tedder*, to be worked by horses, I little anticipated the production of an implement worked by steam, travelling over the land on its own account, and cultivating ten or twelve acres a day in the most perfect manner. This has been accomplished in the apparently p- derous machine before us—it is, in reality, rather light, as it weighs no more than 4 ploughs with their concomitant 8 horses.

The engine is a single cylinder one, supplied by steam from two short multitubular boilers with a common firebox and tender between, where the engine driver is standing. This construction and the position of the two boilers enable them to generate steam in working up and down steep inclines and along hill sides. The general framing is supported at each end by a 2-wheel Darby-carriage pivoting under its boiler. Only the outside wheel, about 2 feet in breadth, of the near end carriage is shown, but the position of the other under the boiler will be understood. The wheel tires are furnished with angular cross bars, and spuds like the wheels of a traction engine. The two Darby carriages are alike, and work independently of each other in turning. When set for digging, as in the cut, the four wheels are in line with the boiler, and when going straight forward they (the four wheels) are driving wheels. When turning, one pair is thrown out of gear, when the other pair drives in a circle. The bearing surface of the four wheels is 8 feet, but part of the weight of the digger is borne by the steerage wheels. When not working, the whole weight of the digger is borne on the wheels, but when digging a large proportion of that weight is utilised in forcing the forks into the ground.

STEEL-WIRE FENCING.—Some time ago we presented an engraving of this most useful invention. It has, without doubt, completely taken the world by storm. I am told by the Director of Agriculture, Mr. Barnard, that on his farm at Varennes, (not a land of Goshen, by any means), he has had a temporary fence up all the summer (to divide a pasture), consisting of only *two* rows of wire, and this trivial inpediment has proved an effectual barrier against all transgression of the boundary.

THE WORKING DAIRY.—As we are promised a working dairy in full operation at the Provincial Exhibition in September, the plan given of the one shown by the Aylesbury Dairy Company should interest my readers. The rectangular and round figures represent the positions of the different articles at work, as separators, churns, &c. In the cream-separator department, or creaming dairy, there are three separators shown. The oldest, Laval's, is already out of fashion, and for good reasons, the small amount of work done by it, and the awful rapidity of its motion have quite cast it into the shade, though its price is in its favour.

	Price.	Revolutions per minute.	Milk per hour.
Laval	$165	5000	30 gallons.
Lefeldt	$450	2400	100 "
Danish	$400	1500	120 "

It will be seen that the Danish centrifugal, driven at only 1500 revolutions per minute instead of 5000, takes out the cream perfectly from 120 gallons of milk in an hour, which is about 4 times the rate of performance of Laval's. Looking into the top of the whirling cylinder the milk and cream are seen standing up in two distinct white walls around the vessel, and a couple of brass syphons dipping in run off the two products as they collect inside.

On the other side of the dairy are to be seen the Swartz and Cooley systems. The latter has been much improved by Mr. Allender, the energetic secretary of the Aylesbury Dairy Company. The old Cooley can with a bell top was immersed over head in water, and, in consequence, the milk cooled faster outside than in the middle. According to the new plan, a cooling water tube goes up the middle of the can, so that the milk cools from the middle to the outside, as well as from the outside to the middle, and the result is that all the cream is thrown up in less time.

ANTHRAX.

I beg to call special attention to the extraordinarily successful operation of inoculation performed by the illustrious M. Pasteur; the great French chemist. Those who have read the articles from his pen, kindly contributed by Dr. Girdwood, will understand the force of his reasoning. Curiously enough, a question, v. p. 62, was asked by M. Brouillette, which clearly refers to that terrible malady *anthrax, charbon,* or *splenic apoplexy,* for by all these names is it known. Will M. Emery Coderre, who so bitterly opposes vaccination, kindly favour us with his opinion on this, *pace suâ,* beneficent discovery?

ARTHUR R. JENNER FUST.

Steel barb-wire fencing.

Turnip Beetle.

"" One bushel of white gas-ashes" gas-lime) "fresh from the gas-house, one bushel of fresh lime from the kiln, six pounds of sulphur, and ten pounds of soot, well mixed together and got to as fine a powder as possible. so that it may adhere to the young plant. The above is sufficient for two acres, when drilled at twenty-seven inches. It should be applied very early in the morning *when the dew is on the leaf,* a broadcast machine being the most expeditious mode of distributing it; or it may be sprinkled with the hand carefully over the rows. If the fly continues troublesome, the process should be repeated; by this means two hundred to two hundred and twenty acres of turnips, swedes and rape, have been grown on my farm annually for eight or nine years without a rod of ground losing plants. The above is a strong dressing to be used when the fly is very numerous, and has never failed when applied at night. Numerous experiments have been tried, and amongst them I recommend the following in ordinary cases .....: Fourteen pounds of sulphur, one bushel of fresh lime, and two bushels of road scrapings per acre, mixed together a few days before it is used, and applied at night, either by means of a small drill or strewed along the rows by hand. I have known sulphur mixed with water applied in a liquid state by means of water-carts during the night, and the horse hoe immediately following the water-cart. This has succeeded admirably."' Ex.

Why not try white Hellebore? A. R J. F.

The Best Rent-paying Sheep.

CERTAIN writers in some contemporary journals have been recently very much impressed with the notion that the Hampshire Down is to be the sheep of the future, the thesis on which such an idea is founded being the great wealth of that animal as a mutton producer, and the exceedingly short period which is required to be occupied with good feeding in developing a large weight of carcase.

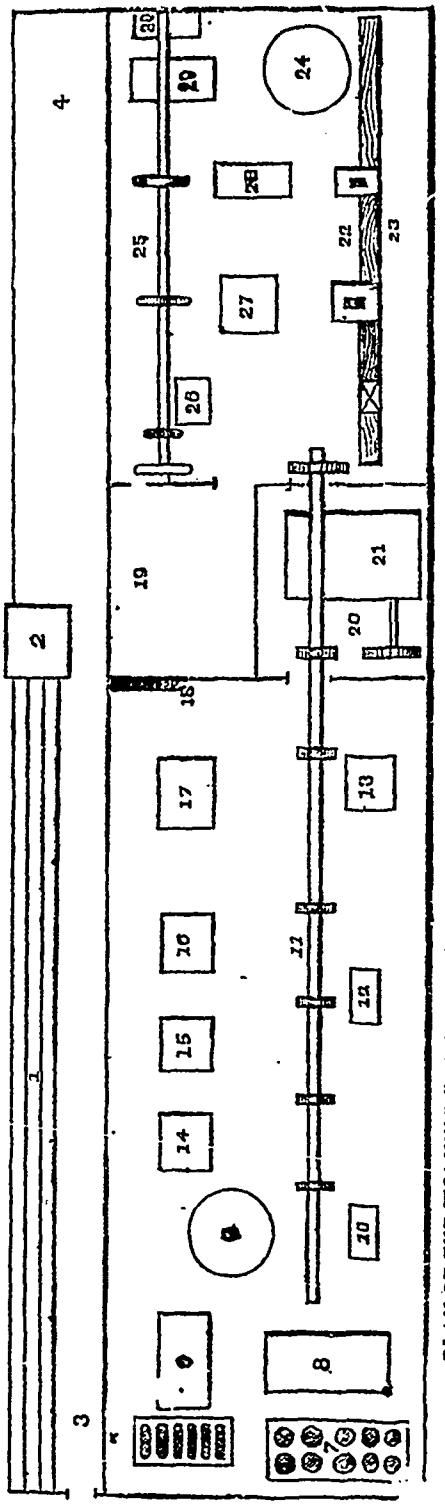
The fact may be admitted at the onset, that the early maturity and stupendous growth of the Hampshire Down in some of the South Wilts valleys is truly prodigious. Lambs at eight months old are made to exhibit far more meat on their forms than sheep in general used to have at two years old. But what of this? The evidences to be gathered do not show that the same results may be obtained in every other district throughout the kingdom by merely changing the breed in supplanting the existing one by the Hampshire Down. In its native home, where the animal makes these extraordinary strides, and come so rapidly to the front as a meat producer, there are very productive artificially-watered meadows, which afford to the flocks an immense deal of keep at the present period of the year, when most other districts are exceedingly barren and bare. This is what makes the South Wilts country throughout the spring and early summer such a veritable vale of Goshen. Sheep cannot be raised perpetually on such a magnificent scale, both as regards large numbers and the finest and ripest forms in briefest space of time, without great affluence in food and management. In a naturally fat country, where absolute scarcity seldom occurs, the sheep farmer always makes the employment of artificial nutritives more remunerative than would otherwise be the case. The leading Wilts flockmasters, at all events, see it to be their interest to drive the nail well home while it is going by the bountiful use of oilcakes and other rich substances. They have, in the first place, generally a great abundance of grass, roots, hay, and other farm produce. Their meadows form an absolute security against scarcity in spring, and they have the wit to supplement the ordinary abundant fare of their flocks with adequate proportions of more highly-forcing artificial foods.

The Hampshire Down flocks are made to lamb down early in the year because it suits the circumstances of the farms to have it so, and the earlier the lambs drop, the more forward will they be in the autumn. The yeaning often commences soon after Christmas, and the height of the lambing season is at the latter end of January or the beginning of February. For about two months afterwards, perhaps, there are abundance of turnip crops to be fed off, and two flocks are usually made of the ewes and lambs, according to the sexes of the latter, the object being to feed the wether lambs from the very first with some crushed oilcake, pea-meal, pollard, &c., &c., so that they commence to fatten with their earliest growth, and continue to do so without the slightest stagnation all the time they are increasing in stature.

When, in addition to the above, the fact is borne in mind that the moment turnips, swedes, and wurzel get scarce, every sheep which is being forced forward for mutton is removed to the verdant richly carpeted water meadows, where the oilcake feeding is still continued, no wonder need be felt at the great scale of development to which the wether lambs speedily arrive. The more rapidly they grow and fatten, the faster still may they be pushed with everything at command to favour the undertaking, and certainly a variety of sheep calculated to respond well to the entreprise.

Still it would be idle not to admit the fact that there are other breeds of sheep which deserve the appellation "rent

paying" quite as much as the Hampshire Down. The Smithfield Club Show record of weights no doubt gives the latter the pride of place as regards heavy carcases at an early period,



PLAN OF THE WORKING DAIRY AT THE ROYAL AGRICULTURAL SHOW HELD AT DERBY, ENGLAND, IN JULY LAST.

1 Seats for visitors.—2. Ice house.—3. Entrance.—4 Exhit.—5 Ice tank for milk cooling by the Swartz process, showing milk cans in the tank.—7. do on the Cooley process.—6, 8, 9, 10 and 11. Various butter workers.—12, 14, 15, 16. Various churns.—11, 20, 25. Main shafts and pulleys.—21. 10 steam engine.—18. Various systems for testing milk.—22, 23. Various cheese presses.—24, 29, 30. Various cheese vats.—26. *Laval's* centrifugal milk and cream separator.—27. *Lefeldt's* do do.—28. Neilson-Petterson's do do.—10. Office in which are shown various systems of book keeping in butter and cheese factories.

Plan of a working dairy.

but this is perhaps very much because of certain circumstances before mentioned, and it by no means follows that the sheep which would be the best rent payer in South Wilts or North Hants would be equally so in the Midlands, the Eastern Counties, or in the North of England. Even in Dorset, the adjoining county to Wilts, the flocks generally kept are not the legitimate Hampshire, but a cross between that and the South Down; popular opinion thoroughly enforcing the conclusion that an animal of less scale is best adapted to the country. Then again, on the Sussex hills, a farmer would be considered almost out of his senses to propagate a flock not of the native breed, the management there being devoid of those wealthy associations which are so rife near Salisbury, and the South Down being so well adapted to bite close and fare well on the short herbage of the chalk down.

The Shropshire has probably made more headway than any other modern English sheep, and no doubt deserves to be termed rent-paying quite as much as the Hampshire. More handsome in form, and of equal, if not superior, quality in mutton. there is also more wool, and the ewes are considered to be more prolific. The Shrop also does better on wet pastures than almost any other of its kind, and, somehow or other, has become such a favourite that the dominion of the breed has been extended almost to the Land's End, flocks have been successfully propagated in Scotland and Ireland. Probably, if the votes of farmers throughout the kingdom were taken to-morrow as to which is the best rent-paying sheep, more would be cast into the urn for this one than any single one. As, however, the excellent claims of several other breeds cannot be overlooked, the subject must be resumed in another article.

AN OLD SHEEP FARMER.

Breeding of Jerseys and Guernseys.

MR. WILLIS P. HAZARD, author of the work recently referred to in these columns in an article on the Guenon system, writes to *The Albany Cultivator* as follows:—

The visitor to the Channel Islands will most generally get some new ideas concerning the breeding of the animals so celebrated for their quality and beauty. He will expect, from his previous knowledge of them in this country, to see many superior specimens to those on American farms. This, he would naturally suppose, would be the case from the incentives that are offered to breed the best only. A readiness of sale, and an extra price for the choicest animals, are certainly arguments which affect the pocket, and usually are the strongest to be offered. But a somewhat extended observation of the herds in both Jersey and Guernsey, where every day of two month's time was spent in critical examination of them, has led me to the belief that too little care is used in the Channel Islands in breeding, as well as in America; in fact, I believe that among those who are really breeders, much more care is used in America than in the Channel Islands; and the time may not be so very far distant, as Mr. Richard Goodman has lately stated, when we may send to the Channel Islands better stock for breeding from, and at higher prices than have yet been realised there. I can recall no instance in either Guernsey or Jersey where any product of one of their animals has approached the recently announced yield of 23½ pounds, by Mr. Messchert's cow Sultane 2nd. And when I announced that as being declared to be the case, among a knot of farmers there were many queer looks of doubt and distrust, and they all declared no yield approaching that had been known in the island. The most I can recall at this moment were exceptional cases of 18 or 19 pounds. The breeder of Sultane, Mr. Marett, is noted for breeding for quality more than for beauty alone. He is known as one of the best and most careful breeders; his herd is not large, but it is one of the best on the island, and he has refused £200 for Sultane's mother, and it was with pleasure that I told him of the yield of Sultane 2nd, which he had sold to Mr. Messchert.

Of this same blood Mr. Havemeyer bought one last fall

through Mr. Burnett; Mr. Eugene J. Arnold has another daughter and full sister to Mr. Messchert's for sale at only £100, and Mr. Marett has two still younger, which he will not part with. He intends to keep one to preserve the strain of blood, and the other is a little beauty of a yearling he is preparing for competing for a prize at the show this May. He is quite a winner of prizes, and one of the most active members of the Herd-book committee. Now, if these instances prove the value of good blood, it seems strange that those who are striving to realise similar prices as those obtained for Coomassie Young Rose, &c. (and the buyer of Jerseys and Guernseys will find that all are endeavouring to get such prices), should not take every means in their power to keep the strains of blood pure, or to mingle only those of the best. It was my experience, when recently making purchases there and tracing the pedigrees, to find that the farmer had often been very careful up to a certain point, and then by one careless step had upset all his previous good efforts, and I was obliged to pass by otherwise good animals. For the small difference in cost between the price for the use of a good bull and an inferrior-blooded one, they would destroy a good chain of blood.

Nor is it only in the frequent careless use of a bull that the Channel Island breeders are at fault; but it is also from the use of immature bulls only. The steady persistence in the use of young bulls of only twelve months to two years old must deteriorate, and is certainly deteriorating, the quality of the stamina of the cows of the breed. The preproteney of the breed is well known, and has partly led to this great fault. Seldom or never is a bull kept for service after he is two years old, for several reasons: the farmers complain that it would cost too much to keep a bull longer than two years; that he would get too fierce, and that he would be too heavy for the cows. What should we think if it were allowed for boys of fourteen to marry? What would be the result upon the human race? The laws of nature are universal in every branch of the natural kingdom, and cannot be perverted. Just when American breeders think the bull has arrived at proper maturity for service, he is, in the islands, fatted off for the butcher, and another stripling of twelve months takes his place for a year. The law against selling bull beef in the markets without stating the fact, and that it necessarily brings less, is another of the farmer's arguments; for the older the bull the cheaper the meat. The use, then, of the cheaper priced bulls, and of immature bulls, is surely having its effect upon the present and coming race, and it is no improbable thing that we may before many years export the best animals for breeding purposes.

It behoves all purchasers on the island, for importation, to select the best for blood and for quality, as real working animals. And let us combine the best bloods, and before long we can boast of the quantity as well as the quality of the produce of the Channel Islands cattle. We believe the cause of the modern Jersey differing so much in size from the old style of Jerseys is this reproduction from immature blood. There is no reason why the size of the Jersey should not be increased, and yet retain their beauty. The lover of the delicate little lawn animal will cry out against this. But if we can combine extreme beauty, good size, and large yields of butter and rich milk, we have the perfect cow which is so often talked of and aimed at, but not yet attained. Here, perhaps, the lover of the Guernsey will break in, and say that this breed combines all that. Not yet, exactly; but I know of no breed so fitted to work upon for that object, or that has so far progressed towards it. The resolution of many of our best and most enthusiastic breeders of Guernseys to have that kind of animal will produce its results.

AGRICULTURE.

Paris, June 1881.

One of the most important questions for the farmer is the alimentation of cattle; closely associated with this, is the bearing of science on the subject. Stock ought to be considered as machines, from which the largest and most immediate results are expected. Race and selection have much to do in the matter, but the superior quality of food, has more. Every vegetable substance, not toxical, can be utilized for alimentation, even to saw-dust; but it is incumbent to ascertain the nutritive value of the food. One of the elements that enters most largely into the constitution of every vegetable substance is water; now water has no alimentary virtue, consequently, the value of a food is in proportion not only to the percentage of its dry matter, but to the chemical composition of that matter. There are five substances, called also *immediate principles*, which enter into the composition of the dry matter; nitrogenous or protein; fatty; starch; cellulose or woody; and mineral, consisting of phosphoric acid and potash. To ascertain the per centage in which any of these enter into the composition of the dry matter, is the first step towards the determination of the relative value of a food. But even this end known, it remains to estimate the digestibity of the aliment, because substances chemically compared after a kind of common formula of elements act differently when in the stomach. It must never be forgotten that it is not exactly what is eaten which nourishes, but what is digested, that is to say, assimilated. For example, in lucern the quantity of protein or nitrogenous matter is 75 (1) per cent when the plant is coming into flower, and but 60, when it has reached maturity—hence, important differences in point of assimilation. Again; clover before coming into flower is 15 per cent richer in protein than when commencing to flower, and the latter 10 per cent higher, than when the plant is in full flower. Practical conclusion: in order to obtain the maximum of nutritive qualities from clover, cut it when it is about commencing to flower. In other words, a plant is more digestible the nearer it is to its commencement than to its development. Another point to be kept in view is that of rations. This depends on the capacity of the stomach, for no matter whatever be the food given, or how rich it may be in dry substances, it will be digested. The food must occupy a certain volume of the stomach, to enable the glands which line the coats of that organ being excited by contact with the aliment to induce them to secrete the gastric juice. But if the stomach be overloaded, these same glands can be prevented from working efficaciously, hence imperfect digestion. No rule can be fixed respecting the precise feed for an animal: this truth will be better comprehended when it is borne in mind, that the capacity of a horse's stomach, varies from 6 to 15 quarts. A diet rich in nutritive matters but poor in cellulose, is objectionable, because presenting no volume; whereas, were cellulose to predominate it would possess the requirements of volume, but not the elements of nutrition. Hence, all food must aim to possess volume as well as the constituents of blood. One rule under this head has been laid down, the younger the animal, the closer ought to be the relation between volume and richness. For example, milk, the diet of infancy, represents nitrogen united with the other immediate principles as 1 to 2; later, when an animal takes to grass, the nitrogen is as 1 to 3; in the case of the adult animal and dry forage, the proportion is as 1 to 5. All rations should contain about 1 per cent of the weight of the animal being fed of one

(1) Fresh Lucerne coutains 75 0/0 of water. probably our correspondent means 7. 50 0/0 of Albuminoids. Clover may contains about 14 0/0 of Albuminoids. Given nitrogen to find Albuminoids, multiply by 6,5. A. R. J. F.

of the elements that the animal would take were it at liberty —in its natural state, an ox that in a free state would have lived on grass and hay, ought to consume of this forage about 11 lbs. daily. Further; it is impossible to lay down any fixed rule as to the quantity of food to be given, since all will be influenced by the age of the animal and the quality of the food. In the case of oil cake for example, how fix the ration, since there is a difference in its richness of 20 per cent? In point of furnishing nitrogenous or really nutritive matter at a very low price, ground Nut and Ses-ame cakes offer the greatest advantages.

The French tribunal has made an important ruling: two farmers had the right to graze their sheep on a run; one flock came directly from the farm of owner number one and in good health; flock of owner number two arrived from the market, were affected with the rot and communicated it to the others; for the loss the second proprietor was held responsible. Respecting trichina, the country is not at all of the opinion of the government as to continuing the embargo on American pork &c.; in addition to boiling the meat well, one scientific authorty asserts, pickle will also destroy trichines.

Mr. Boussingault has made some very curious experiments on the decomposition of nitrates in the soil. It is well known, that a plant raised in obscurity, weighs less than the seed of which it is the issue; during development, matter is eliminated, although the plant possesses organization, rootlets, stem, leaves, &c. However, natural vegetation is powerless to fix the carbon of the carbonic acid of the air; but does this inability extend to fertilisers, nitrates and ammonical salts for example? The veteran chemist selected two parcels of sterile soil; to one only he added saltpetre; both developed plants in obscurity, yet the nitrate was not found in the plant: the salt did not act as a manure; but the nitrate had been changed not the less, in the sense that the nitric acid had disappeared and did not exist in the plant, but in its detritus; for the roots of a plant grown vigorously in obscurity, acted, in presence of a nitrate, as if the roots had been dead. More, when the sandy soil, made sterile by being burned and washed with distilled water, had been used, one portion to grow maize and the other retained in a phial as sample, the latter was a second time burned, and remained perfectly white, while the other, similarly treated, exhibited streaks of black. Boussingault does not go the length of reviving de Candolle's theory of soils receiving excrementitious matters from the roots of plants, and hence the necessity of a rotation, he merely wishes to establish, that plants excrete an organic matter capable of reacting on the acid of nitrates in the soil.

The agricultural budget this year is, in round numbers, 39 millions of francs, being an increase of one million, as compared with last year. This grant is not all for agricultural instruction proper; it includes expenses for breeding studs and keeping up 2,500 stallions; inspection of Woods and Forests, prizes to regional shows &c. A slight general increase is recorded for schools and agronomical stations, to the support of which local taxes contribute. The government is about adopting an excellent innovation, that of bringing the directors of the agricultural institutions to Paris every year, to form a congress, to examine technical questions, and report progress on agronomical matters in general.

In reference to the phylloxera, it has progressed during the winter, and so have the measures for arresting its march—the old story unfortunately. M. Rommier draws attention to the important fact, that in prescribing a special fortifying manure to vines, alleged to be excellent for all soils, a grave error is committed; only farm yard manure possesses in itself all the elements to meet variety of vineyards. The Champagne regions commence to apprehend the approach of the enemy; vigilance committees have been formed, and a voluntary tax struck per acre to pay the services of look-out men, whose duty is, to signal the appearance of every kind of vine insect.

Much confusion exists in France in consequence of having no official instrument for measuring the strength of alcoholic liquids; henceforth, Gay Lussac's alcometre is alone to be employed. A very ingenious instrument has been patented, astensibly for raising water from a canal or river to a certain height, and so enabling vineyards to be flooded in autumn, thus destroying the phylloxera; the invention can have other numerous applications: a well is sunk to a certain depth, so as to draw from a canal or river; in the well is placed a vertical wheel and sheaf-block, so arranged, that on turning, the water ascends to any height desired.

An agriculturist states neither his crops nor trees ever suffer from wire or worm; he keeps an immense number of Houdan poultry, that seek out, and live on the insects; the fowls lay profusely and cost nothing to keep. They are bad sitters—but an incubator remedies that defect.

The age of eggs.

A correspondent has sent the following note concerning the best method of ascertaining the age of eggs to the *Journal de l'Agriculture*:—"Certain journalists of Leipzig, who are much interested in subjects connected with the breeding of poultry, recommend that the following method should be adotped bythose who are desirous of ascertaing the age of eggs, and deciding which are fresh and which are stale. In this plan, the condition of the eggs is determined by their density, which decrease as the eggs get older. Suppose that 4 oz. of common salt are dissolved in 1¼ imperial pint of water; if a new-laid egg be put into this liquid, it will sink to the bottom of the vessel. An egg one day old will not go quite to the bottom; an egg three days old will be suspended in the liquid; beyond that age it wil rise to the surface; and the older it is the more it will rise to the top. This simple method of determining the age of eggs may be useful to those who are about to purchase a quantity of eggs, either for consumption or for hatching purposes." The editor adds: "Any one can try this plan; it would, therefore, be very easy to prove whether or not it is efficacious."—*Do.*

The Hereford cow is usually a small animal compared with the massive frames of the bulls and oxen, and is by some held in bad repute as a milker. This arises from the fact that her native soil is not adapted for dairy purposes, and the steers are looked upon as the rent-payers; thus both sexes of off-spring usually run with their dams during the grazing months of the year, and, when well cared for after weaning, they have a great start, and their early maturity is secured.

In dairy counties, where pure-bred herds are kept, and their milking properties well attended to and cultivated, they are held in high repute, and the slight difference in the yield of milk is considered to be more than compensated for by the rapidity with which they feed when no longer required for their milk, and the limited quantity of food they consume compared with some other breeds (1).

The Hereford ox used to be considered the most valuable ox for working purposes, but the early maturity of the steers, and the demand for meat, has caused them to pass to the shambles at the age they were formerly broken for the plough.

(1) There are, unfortunately, very few of these milking herds. The calves suck their dams, and the latter are dried off in autumn.

A. R. J. F.

FOR SALE—TWO FINE AYRSHIRE BULL Calves.—Price: $35.00 et $30.00 Apply to E. A. C. CAMPBELL, St-Hilaire.

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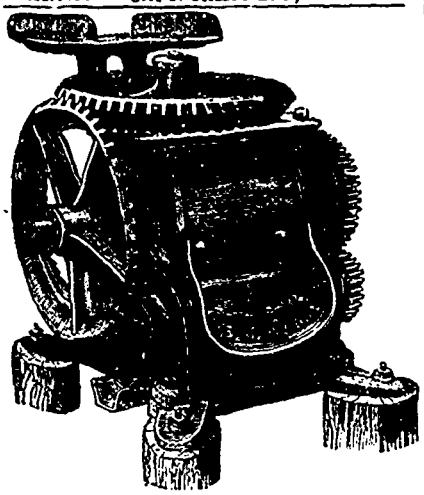

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As we ourselves are makers, on a large scale, of sugar and syrup from Sorghum, we are in a position to give every information on the subject of these new products. A circular will be forwarded if requested.
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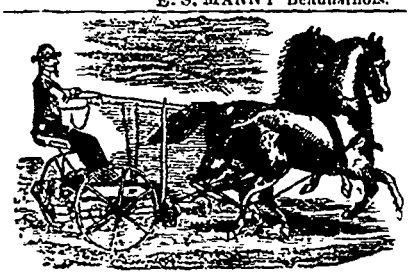

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NOTICE.—THE HON. M. H. COCHRANE begs to inform the Agricultural Societies that, about the last of June, he will receive 10 or 12 Young Hereford Bulls, from 10 to 13 months old, which he will be disposed to sell at $200 each, a price which barely covers the cost of purchase and importation. Also two valuable Clydesdale Stallions, just arrived; a bay, 3 years old, and a black, 7 years old, each weighing about 1900 lbs. They will be sold at reasonable prices to Agricultural Societies. For particulars apply to JAMES A COCHRANE, Compton, or D. McEACHRAN, Montreal.

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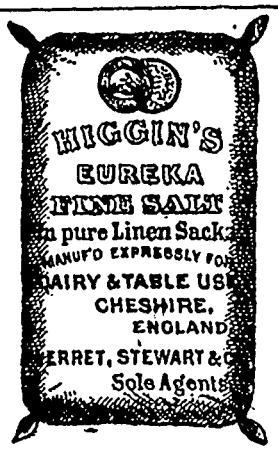

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The Eureka is used in the best creameries and cheese factories in Canada and the United States, and gives the utmost satisfaction, also at Her Majesty the Queen's Model Dairy Farm, Windsor, and by makers of the finest dairy products in Great Britain. It is also used extensively in Scandinavia, where butter-making has long been studied scientifically.
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GRAND PROVINCIAL EXHIBITION! To be held on the Exhibition Grounds, Mount Royal Avenue, Montréal. Arranged in three departments. Agricultural, Horticultural, and Industrial. Opens Wednesday, September 14th; excepting Horses, Cattle, Sheep and Swine, which arrive two days later, viz., Friday, September 16th. Closes Friday, September 23rd. $25,000 offered in Premiums. Entries in all departments must be made with the Secretaries in Montreal, on or before Thursday, September 1st. Prize Lists, and Forms of Entry, with any other information required, can be obtained on application to
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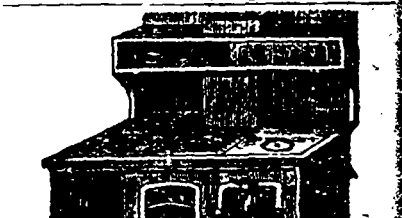

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