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FARM NOTES AT ST. ANNE'S.

I have been passing the summer at St. Anne de Bellevue. A lovely spot; situated, as most of my readers know, on the banks of the Ottawa. The soil is light, but of good quality; in other words, it will grow anything you like to ask it; but it is most admirably adapted to the cultivation of potatoes, barley, and Indian corn. The farmers of the neighbourhood are, as is usually the case on the Island of Montreal, of divers nationalities; the majority French-Canadians, but there are several sprung from Irish and Scotch parents, and a few English. As a general rule, the farming is pretty good, though, as we shall see further on, there are some woful exceptions. Artificial manures seem almost unknown, but the villagers get a good price for the dung they have to spare. The implements in use are of the usual kind; a Scotch plough, iron harrows, and a roller, may be found on most farms; the drill seems unknown, though the soil for the most part is perfectly well suited to the implement, and the horse hoes and grubbers are by no means constructed on the best models; the ploughing is shallow, and, in too many instances, sufficient care is not taken to abstain from working the land when wet, for even on this light soil I find plenty of steelly clods.

Though there are several herds of thoroughbred cattle in the parish, the general stock does not seem to have benefited by their introduction, the cows being, as a rule, of the usual mongrel description. I can see nothing to recommend them, either for milk, which is scarce and poor, or for beef, which is unattainable on such animals except at an extravagant outlay. Of sheep there are hardly any, the losses formerly experienced from the ravages of roving curs having entirely frightened the farmers. What an iniquitous thing it is that a stop is not put to this abominable havoc! One year's strict observance of the law, aided by a little exertion on the part of the farmers in shooting the pests, would make a quick end of the marauders, and the short, sweet herbage on the, at present, almost useless slopes, would afford plenty of keep for thousands of ewes and lambs, which could be finished off in the latter summer and autumn on the second crop of clover and rape. If ever there was a district cut out by nature for sheep-farming it is St. Anne's.

There are three or four lots of good Berkshire pigs: Mr. Dawes, I presume, being the founder of the stock; but, as I write, I am a most terrified by the sight of a monster, *informe, ingens*; with ears, compared with which those of the African elephant are merely rudimentary; two feet and a half, at least, in height; how long I don't know, but the head alone must measure eighteen inches; elegantly built as to his back, which slopes both ways towards the head and tail, and is terminated by a sharp ridge, for the purpose, I presume, of shedding off the rain. Plenty of bristles, but no hams, only a hook carried well up to the hip, and sides like a slab of marble. Fifty bushels of pease wouldn't fatten him, and were he made never so ripe, I pity the unfortunates who have to eat him. He would make a good charger for a light cavalry regiment, or, if his mate could be found, which may heaven forfend, the two in a plough could manage a fair depth in light land. As a target for rifle practice, with his head towards the marksmen, he would last a long time, only the bristles would shed off the bullets, and they would find it difficult to keep a correct score. His home is under the wing of an ancient store-house, long in the possession of the Hudson Bay Company, so I conclude he is a descendant of some of the original stock imported into this country at its first colonization. There are, I am sorry to say, plenty of pigs almost as hopelessly unprofitable as the one I have particularized, but now thoroughbred Berkshire breeders can be bought of Messrs. Dawes, Reburn, etc., for $5 a-piece. I hope the wild pig of the country will soon become extinct.

A beginning of root-growing has been made at St. Anne's, though not so successfully as might be wished. My own conviction has always been that the ordinary Canadian farmer, the *habitant* I mean, can hardly be expected to succeed with these crops until he has be shown *practically* how to manage them. Now we will take, for example, two contiguous farms, both belonging to French-Canadians, average cultivators, and see what they have done in this way. Alex. Crevier has three acres, or rather more, of sugar beets; the preparation for which was as follows: Sixty loads of dung per acre ploughed down last autumn; in spring, the land was harrowed, ploughed again, set up in drills, 30 to 36 inches apart, each drill about 9 or 10 inches broad, and the seed, too little by half, sown by a vile machine, and left to take its chance. I believe a drill-grubber has been once between the rows, but that is all the cultivation the plants have received. The land, a fine sandy loam, is full of steelly clods, from having been ploughed when wet; the plants are too thick in one place, and too thin in another; the drills are so wide atop that the singling, if it had been done, would have cost twice as much as it ought to cost; and from the great distance between the rows of plants, the beets, if of the size desired by the manu-

factured, viz. from 2 lbs. to 2½ lbs. each, must have made the crop at any rate a small one. But why this passion for sowing on the raised drill? The reason is clear: all the best farmers on the Island, following the practice of Scotland, where the plan originated, do it. Yes, but, stay a moment: is the climate of Scotland like our climate? By no means; it is always damp there, so damp, that whereas in the South of England we can sow our turnips in rows on the flat and still clean them well, if the Scotch farmer were to try the same plan his crop would be choked. Another thing: when Swedes, and Mangels are on the raised drill, the earth can be pared away with the horse-hoe up to the very plants, leaving only three inches wide, at most, for the hand-hoe, and when this narrow ridge is well pulled down in singling, so that the plants are left almost naked, the greatest possible crops are the result. Again, the drill economises manure, if that is desired, but this reason vanishes when the dung is ploughed in before winter. No, depend upon it the only way to get a crop of sugar beets which will pay the farmer, and satisfy the manufacturer, is to drill on the flat at 18 or 20 inches apart, and horse-hoe with an implement like Smith's, v. p. 62, vol. 3, French j.; p. 64, vol. 1, Eng j., which will do three rows at a time, covering six or seven acres a day, easily, and ought not to cost more than $25, at most.

The sugar beets on Mr. B. Crevier's farm, which joins that of his cousin, Mr. A. Crevier, have been treated very differently. They are after potatoes well manured, they have been well cleaned, and singled, at what an expense I hardly dare calculate, and the crop, which looked so well as to win the third prize at the County of Jacques-Cartier Exhibition, will, I regret to say, be far from remunerative. Why? Because the drills are too far apart; because the cultivation was, been too superficial; and because the dung was pretty well worked up by the potatoes. What practice can be more erroneous than to follow potatoes by a root-crop to be drawn off? In Hampshire, Eng., it is no uncommon plan to let swedes follow turnips; but both crops are fed off by sheep, and two grain crops are taken afterwards. Here, the fresh earth, and the well mixed remains of the dung, start the beet plant, and keep it going for a few weeks, but, if I understand the theory rightly, the sugar is secreted in the latter part of the beet's growth, and just at that time, the support fails it, the leaf becomes flaccid, and the whole plant hard and stringy. I fear the Managers of the factories will grumble a good deal this winter if the beets are generally like what I have seen this last week. Whether the *habitant* will try again, and do better, I don't know, but if he persevere it can only be from his own ardent desire to succeed, and this will bring its own reward with it:

.....Pater ipse colendi
Haud facilem esse viam voluit, primusque per artem
Movit agros; curis acuens mortalia corda,
Nec torpere gravi passus sua Regna veterno. (1)

By the bye, to-day, Oct 9th, the Messrs Crevier tell me that they have received advices from the Berthier Sugar Factory to set to work getting up their beet crop.

The potatoes are just being dug, only a moderate crop, about 90 bushels an acre, I should say. Straw-fed cattle won't make rich manure, and poor manure, in no matter what quantity, won't grow a full crop of potatoes.

The wheat crop on these two farms was, really, very fair, two pieces, about 4 acres each, would yield, I should guess, some 24 bushels an acre. I was sorry to see the careless way in which the crop was treated; after standing till it was dead ripe, it was cut down with a mowing machine, the horses walking on the grain, and the whole allowed to lie several days to be splashed with rain and dust, until it pleased the owner to rake it together and carrry it to the barn!

The hay was very poor, and no wonder, for it was quite fit to cut on the 26th of June, and it was never touched till the 20th of July! In the interval it shrank in bulk, and how much it lost in quality it is hopeless to calculate.

When I found the people here were planting their tobacco in the middle of July, I gave them a few lectures on the subject, which I hope will bear fruit another year. M. Lavigne, of St. Marie, who has a farm and market-garden about half a league from St. Anne's, errs on the other side. He began to set out his tobacco in the middle of May, and, in consequence, the plants, though not cut off, were checked so much by the frost that the crop was injured. Thousands of pounds were destroyed in this neighbourhood by the great and unexpected frost of the 4th of October, a time by which all the tobacco ought to be half dry. If this crop is to succeed *regularly* here, it must not be planted before the 5th of June, and should be harvested by the 10th of September. As for expecting to do any good without a hotbed it is ridiculous; it may answer in an exceptional year, but very, very rarely. There seems to have been a large quantity grown this year, so large that it will affect the price, which, for good samples, seems to be about 25 cts., duty paid.

Large quantities of pease are grown here by French-Canadians, with the effect of making the land as foul as possible. Perhaps as they have begun to horse-hoe their sugar beets, they will, some day, drill their pease and cultivate them properly. Plenty of buckwheat, which seems to be a good deal injured by the early frost.

I observe a few vines in all the gardens; some of them fairly pruned, but the majority running half wild. Dr. Girdwood tells me that his grapes have ripened regularly for seven years, and generally before the 20th of September. I know that in the very backward year 1879 he sent me a basket of *Dutch Sweetwater* on the 16th of that month, perfectly ripe and inimitably good. The Delaware, at Isle aux Prunes, matures with the D. Sweetwater, but Mrs. Girdwood thinks the latter is the more profuse bearer, and its flavour and *meat* are perfect. I cannot understand why more vines of this sort are not planted—there is positively no pulp. By the bye, Isle aux Prunes is worth seeing, as a specimen of what the energy and enterprise of one woman can effect on a most unkindly rock. Sixteen prizes fell to Mrs. Girdwood's share at the Exhibition, not in the *amateur*, but in the *professional* classes. I take the liberty, as Mr. Pecksniff would say, of thinking that this lady is over-scrupulous; if every exhibitor in the skating-rink who sells his surplus stock were to enter his plants in the professional classes, there would be very few amateurs on the price-list.

A bunch of grapes, the produce of an unnamed vine, but closely resembling the *Brighton*, was shown by Mrs. Girdwood at the *tasting* meeting of the Montreal Horticultural Society. Mr. Burnett, President of the Ontario Society, pronounced it the finest out-door grape he had ever eaten! It was bought, about three years ago, of a traveller, under the *nom de fantaisie* of the *Windsor;* it will be carefully compared with that valuable sort, the Brighton, and if non identical, may be a fortunate *trouvaille*. I observed last month that dessert grapes will not make good wine; I reason from analogy: the pear from which the finest Worcestershire *perry* is made is hard and bitter, in fact, quite uneatable; the *Cochlagt* pippin, from the cells of which flows the finest Devonshire *cider*, is also hard and bitter; and so of the wine grapes of

(1) When man first learned the art of husbandry, his teacher did not care that its practice should be too easy, but sharpening man's wits by the trouble he impesed, the Creator prevented his own domains from lying fallow through his pupil's laziness.

Gascony, Italy, and of those that grow "on the slopes of the sunny hills round Heidelburg." It is a fact as mysterious as that the barley-grain, with not a particle of apparent sweet taste about it in its natural state, should, after malting, contain 15 o/o of sugar; but this, science explains as the effect of the *diastase;* the other is, at present unexplained.

It is certainly an advantage to have the command of a fair amount of capital in entering upon a new business of any sort; but of all cases in which it is advantageous, commend me to farming. Now, Mr. Dawes is one of the fortunate ones; and a slight glance over his land will not be out of place. You see, he had the additional chance of having been brought up on a farm, too, as every one knows who has seen the Lachine estate; and, thus, when he bought his St. Anne's property, he knew how to set about its improvement, instead of wasting time and money both, as so many wealthy people have done, in learning the business, thereby retarding, instead of advancing, the cause of agricultural improvement, and defeating the very object it was their amiable and patriotic intention to promote.

A German would tell us that the proper way to build a stable and barn is, to evolve from our inner consciousness the perfect idea of the erections, and then make them. But the inspection of other people's failures have led Mr. Dawes to his own success: and a successful end he has arrived at. I do not believe that it is possible to find a more thoroughly economically set of buildings in the Province. I see only one fault: the width of the passage behind the stalls is hardly sufficient. There is one peculiarity: a *silo*, 24 feet long, 16 feet wide, and 16 feet deep, entirely of stone, and sunk in the hill-side, with its door opening into the very passage at the head of the cows-stalls, may certainly be called a peculiarity in this year of grace, 1881. Two and a half acres of Indian corn, not chaffed, I am sorry to say, were placed in this pit, in September, and well trodden down by horses. After its completion, covering with boards and stones, the contents subsided about three feet; and when I visited it, on the 9th of October, a fruity smell, something not unlike the smell of a freshly turned piece of malt, was the only odour perceptible. Mr. Sidney Fisher's silo, at Knowlton, turned out a failure. It seems to have been made of boards, and not to have been air-tight. However, first attempts of this sort seldom succeed; and it is, perhaps, as well that they should not, or else the unimproving farmers would have nothing to laugh at. Mr. Dawes ought to have conducted his trial in perfect agreement with the rules laid down by the precursors in the system. It is possible that there may be too much air retained between the stalks; and, as has happened more than once to beginners in the States, the whole mass may be decomposed by its action. I hope not; for I devoutly believe that we are on the eve of an entirely new way of preserving the whole of our winter provision of cattle food—clover will no longer be made into hay, but buried and all its wonderful goodness preserved. Late as the clover was cut here this year, there is more than one tolerable piece of second-crop to be seen; but had it been siloed, say, on the 12th of June, I verily believe that, on these quick soils, even three crops might have been saved; and saved in spite of the weather, too; nay the worse the weather for hay making, they better the succeeding crop for the silo.

As I knew Mr. Dawes had only had his farm about 18 months, I was surprised to see the quantities of boulders that had been extracted by dynamite. Some of them were monsters, and must have weighed several tons each. His outlay in this operation must have been considerable; but here lies the advantage of capital in the hands of a practical man: the land was comparatively useless; the expense, if the work were spread over a number of years, would be the same; but done at once, the profit begins at once, and the gain in additional crops, to say nothing of less wear and tear to implements and horses will far more than compensate for the trifle of interest saved by less immediate outlay. It is too much the habit among farmers, in this province, to imagine that they pay no rent. Nominally, they do not; but in reality the interest on the purchase-money of the farm is its rent. A farm that costs $400, when money is at 6 o/o, should be debited with $240 a year, and this is *rent*, which must be made off it before a farthing of *profit* can be claimed by its owner. If by the outlay of a couple of thousand dollars the land can be made to yield a materially additional crop, it is clear that the sooner the outlay is made the better, for there will be a longer period for reaping the benefit. Hence, to a man with $4,000, 75 acres will, infallibly, be a more profitable investment, than 150 acres, all other things being equal.

Stones carefully gathered off the mowing land; fences neatly kept; a sound road; drains round the buildings; perfect absence of weeds among the root crops; and the plough started to work the moment a crop is off the ground; these are the principal things that strike one in going over this farm. The rye after corn, is already up, and looking well. It is to be ploughed-in next spring, but I should prefer its being fed off by sheep; for this light, shattery soil demands *à grands cris* the pressure that nothing can give like the little pointed hoofs, to say nothing of the dung and urine the sheep behind them. Rape with superphosphate, might follow, and feeding off the two crops would leave the land in perfect condition for grain and grass.

There is a fine piece of long red mangels, and a fair one of yellow globes; but the plant is uneven, and so it is with the white and red carrots. There seems to be no drills that sows these seeds with regularity, and I must say that, considering the small average of roots grown on these farms, I should sow the seeds by hand, having previously steeped them for 36 hours, and allowed them to *chip*. The drill which works with a lot of tiny cups on the periphery of a disc is the only one to be depended on for sowing such rough seeds as mangels, turnips, and carrots; where they have to pass through a hole, they are sure to cling together and choke the passage up. The swedes were persecuted to such an extent by the fly, that they never got a chance to grow.

There is a stump pasture, black earth, at the North end of Mr. Dawes' farm, which is to be cleared up next spring. With a fair dressing of bones, it would grow rape up to the horses' bridles; and this, fed off by sheep, would establish it for ever, at least for two grain- and half a dozen hay-crops. I hope its owner will not go to much expense in carting the peaty soil about for compost. The cost of this expended in bones, or in superphosphate, would prove much more remunerative.

Two or three very good Ayrshire heifers, a good Berkshire boar and two young sows, and a superb South-down ram, from Lord Walsingham's stock, are the most taking specimens of Mr. Dawes' stock. The ram, lately bought at Guelph, is a very superior animal; long and growthy, with a good shoulder, neck, and true character of head, he will not be beaten next year at Mile-End. I don't see any fault about him, though his rumps might be a little extended without any dis-advantage. The wool is all right, and he is evidently a sheep of a strong constitution, and fully as large as the descendants of Jonas Webb's flock usually are, that is to say, about one third larger than the general run of Sussex sheep.

ARTHUR R. JENNER FUST.

An experimental Silo.

To the Editor of the Journal of Agriculture.

Dear Sir.—Having read a great deal about the method

of curing fodder, called Ensilage, and having last winter visited the farm of Mr. Bailey at Bellerica Mass. where I saw his silos and the stock fed on ensilage, I decided this summer to make a small experiment on the method myself.

Having a couple of acres of red clover of last year's sowing which would be ready to cut for hay about the 25th. June, I chose that wherewith to make the experiment, intending to use it as feed for my cows when the pasture got short in August. To make the silo, as it was only an experiment and I did not wish to make much outlay on what might turn out valueless, I took a place in my cattle stable where the floor was tight, and stood up on end 2-inch hemlock planks, 12 feet long, securing them in place by strong girts, or beams, around them, so that the walls would not yield to the lateral pressure. These I lined with 1 inch hemlock boards, breaking the joints so as to make the silo tight, the pit being 9 feet 6 in. by 8 ft. 8 in. This took two men one days work (a rainy one chosen) and we did not cut any lumber except to square the bottom ends of boards and planks. I set my hay cutter up on the mow floor, just over the centre of the silo and my horse power (a one-horse, A. W. Gray's) alongside.

On the 27th. June I cut a patch of clover with the mowing machine, raked it up at once, and drew it in. One man cut and drew the clover, being able easily to pitch on the rack all the team could draw of the green clover. One man fed the cutter having a boy to carry the clover to the apron, and one man was down in the silo packing, levelling, and treading it down. It took us four days' work to fill the silo and cover it putting in the crop from two acres and filling the silo 10½ feet deep. We covered it with 4 inches cut hay and 2 inch plank laid on and one foot deep of stones to weight it down. Part of the time it was showery and some of the clover was quite wet, as wet as it would be with a heavy dew on it.

I left it just 5 weeks before opening, during this time we could not perceive any smell of fermentation or decomposition from it any where. The stone settled in the first week as much as it did at all, and when opened we found the clover only 7 feet 6 inches deep, instead of 10 ft. 6 in.

As there was some heavy rain between, during which he could not draw the clover, we did not finish the filling until the 4th. July, and I opened it on the 8th. August. As soon as opened, we perceived a very strong smell as of Brewery wash or grains, which pervaded the whole building and barn yard for a week or more, but decreased after a while. The clover was dark in color, slightly yellowish and moist, but not wet. More moist than was Mr. Bailey's corn ensilage, much darker and stronger smelling. Still I could not see more difference from his than would be naturally expected between clover and corn.

That night I fed my milch cows, eleven in number, 10 lbs each, of the ensilage. Most of them took to it at once and eat it up fairly clean, but some 3 or 4 of the younger animals did not. Next morning I again gave 10 lbs to each cow with somewhat better results, more of the meating it clean, I decided, however, that it was rather too much for a feed, and reduced it to about 7 or 8 lbs. giving to each animal about what it would eat, from this out, some one or two would eat up clean fully 10 lbs night and morning, but most of them would not eat more than 6 or 8 lbs. My cows are Ayrshire, or Ayrshire grades; and do not average at all large size.

I weighed the milk the first day I fed the ensilage, and again at the end of the first week. My cows had been shrinking somewhat as the pastures were getting short, but this week with the ensilage over and above their pasture, they gained just one pound of milk each, in the day's yield.

I continued to feed it for about 2 weeks, then got my cows on to clover aftermath, where they gained a good deal more than they did on the ensilage. Then after a week's intermission I recommenced on the ensilage, with some slight reduction in their yield, the aftermath being eaten down, and after this, notwithstanding I continued the feed, the cows continued to shrink until the ensilage was finished on the 2nd Sept.

At the same time that I commenced feeding the cows, I also commenced feeding a thoroughbred Jersey Bull, 2 years old, and a pair of 3 years old steers, as much of the ensilage as they would eat, they being kept altogether in the barn. The bull had been getting 3 quarts of oats a day and as much good hay as he would eat. He took about 50 lbs of the ensilage at once and eat it clean, getting all the time the same amount of oats. At first he fell off in condition, but after a fortnight seemed to regain it, and did as well as he did on the hay.

The steers were just brought in from pasture and took about 50 lbs ensilage each, to which I added a handful of oil cake, to each feed. They fell off considerably and when the ensilage was done, had decidedly lost flesh, how much I cannot say, as I have no scales for weighing animals.

I tried my horses and hogs with the ensilage, and found that both would eat it, though neither very greedily, nor as well as the cattle.

My silo was, as mentioned above, 9 feet 6 inches by 8 feet 8 inches, and 7 feet 6 inches deep, which gives 617½ cubic feet. I weighed one cubic foot of the ensilage, taking it out about 2½ feet, from the bottom, which weighed just 35 lbs Taking that as an average, would give me 23,412½ lbs, or about 11¾ tons. My men and I estimated that the crop of clover which we put into the silo would have made 4½ to 5 tons of hay, not having been an extra heavy piece of clover.

I found that after the week's interval when I did not use much of the ensilage, a good deal of the surface spoiled, and none of the cattle eat it as well or as clean when it got older. There was some waste too, at the cracks of the boards, and on the top which was mouldy and bad.

Having now stated as fully as I can the facts of the experiment, I will give, shortly, some of the conclusions reached, after considering the results as closely as I could. First, no doubt my wooden silo was somewhat imperfect in having the cracks between the boards, but as there was no odour from it, it cannot have been very much so. Secondly, it is quite possible that the hot summer weather may have caused the ensilage to ferment more than it would in the fall, but the advocates of the new system assert that winter rye and clover can be put in at that season. Mr. Bailey and others also maintain that a month in the silo is quite sufficient, while I gave it 5 weeks.

I think, my experiment shows that cattle will eat it, though no better than, if as well as, hay, and certainly mine showed none of the eagerness they evince for corn stalks, turnips or grain. The crucial question, however, is as to the cost of and the return from it. First then, as to harvesting the 2 acres of clover, to make it into hay would have taken one man and team ⅓ day to cut it, say 3 men and horse to rake and cock it ⅓ day. In case of rain perhaps 2 men half a day to shake it out and cock it up again, and 2 men and team ½ a day to draw it, making in all 3½ days work for one man, 2 days work for a horse. To ensilage the same clover 4 days work for 3 horses and 3 men and a boy, calling the boy ½ man, in all 14 days for 1 man and 12 days for one horse, or fully 5 times as much work to put in the ensilage. Some, no doubt, will say that a larger gang would have done the ensilage more rapidly, but on our ordinary farms it is not easy, even for 2 or 3 days, to get 6 or 8 men, to board them and furnish tools, teams, etc., while we can all do the haying without extra trouble.

Now for the return from the 2 acres under the 2 systems, as hay I am confident I am not putting it at all too high

when I say there was equivalent to 4½ tons of hay. I make the ensilage come to 11¾ tons. The advocates of the system, and the best qualified chemists, who have examined and compared the feed with hay say that it takes 2 tons of ensilage to equal 1 ton of hay, my 11¾ tons ensilage therefore, would equal say 6 tons hay which is 1½ tons better than the hay I should have got off the 2 acres, for this 1½ tons of hay I had to pay 10½ days work for a man and 10 days work for a horse, which in July when we did the work cannot be reckoned at less than $20, and wages are at least $1, and board and horses to be hired at 50 cts, and feed, or $13.60 ton, rather a high price where hay can nearly always be bought for $10 a ton in the winter, delivered at the barn.

The only advantage I can see in the system of curing is in case of continued stormy weather at haying time, when it is no doubt difficult to cure clover in the ordinary way. Again, it is possible that with corn, of which a much larger weight per acre can be grown and in the curing or ensilage of which no doubt there would not be so great a difference, the result might be different.

I had intended to complete my experiment, refilling the silo with fodder corn in September, but the absolute impossibility of procuring labor prevented me,and I had to cut up and stook my corn in the ordinary way, thus illustrating what I said above in regard to the labor.

I do not pretend that this is a conclusive proof, either way, as to the value of the system, as it only deals with the ensilage of one kind of fodder, but it may throw some light on a subject greatly agitating the agricultural community, and its publication may lead to some discussion on the question, and perhaps I may obtain some information which may enable me to conduct another experiment to a more satisfactory issue.

I will however take the liberty of advising my fellow farmers of the Province, not to be in too great a hurry to invest any large sums of money in the erection of stone or cement silos, but rather to let the present enthusiasm for the new system give place to some more thorough trials and favorable results than I have been able to procure..

Trusting that we may see more in the Journal on this question, and that the further experiments may be more successful and accomplish even all that is claimed for ensilage,

I remain etc

Alva Farm, Knowlton, P. Q. S. A. FISHER.

NOTE.—Our remarks on the forgoing article are necessarily defered to next month,—ED.

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 Horse's Foot.

CORNS.—A corn may be defined to be a bruising of the sensitive sole at the heel, it being compressed between the wings of the *os pedis* and the horn forming the heel of the hoof. Some feet are from their form, or from the softness of the horn covering them, particularly liable to corns.

The form of foot most subject to corns is the flat thin foot with low heels and bulging quarters. Such feet usually are covered by a soft porous quality of horn, and the heel is, to use a common expression of grooms and farriers, fleshy. Badly fitting shoes are the most common exciting causes of corns, by causing too much pressure on the heel, the tendency being increased by undue paring of the heels and bars, rendering them thin and weak, and consequently liable to suffer from any undue pressure. Corns are also produced in cases where the blame does not rest with the farrier but with the owner or his groom; by allowing the shoes to remain too long on, they become embedded in the heels and cause *bruising*. Sometimes also the insinuation of stones or gravel between the shoe and the heel bruise it, and may give rise to a simple contusion, which disappears with the removal of the cause, or it may give rise to inflammation, which will end in suppuration. From whatever cause a corn arises, it is very apt to produce pathological changes in the vascular structures covering the wing of the *os pedis*, and not unfrequently the bone itself becomes diseased, and is found porous and laminated, the inflammation in some cases extending till the whole wing and its lateral cartilages are involved in ossification, constituting side-bone.

Such cases are usually incurable.

The common seat of corn is on the inside heel of the fore foot, although they are also seen on the outer, or on both.

The inner side is most subject, because through it the centre of gravity passes constantly; it has to sustain proportionally a greater weight than the outer, and on account of being easier to cut away, it suffers more at the hands of the unthinking farrier.

Corns are also seen on the hind feet, but much more rarely than on the fore ones, as the latter are the weight carriers while the former are the propellers, and consequently the weight is thrown on the toe.

The symptoms of corns are, heat of the foot, which is pointed, the weight being thrown off it when standing; tenderness of the heel when tapped by a hammer; in walking or trotting the weight is thrown off the weak heel on to the toe and opposite quarters. The degree of pain and lameness will depend on the severity of the bruise, its duration, the condition and degree of hardness of the hoof, the tissues involved, and the stage of the inflammatory process in which it is examined. When suppuration has set in the pain is very great, and it is intensified by tapping the foot with a hammer; in many cases the suppuration detaches the horn at the heel, or it may lead to the formation of sinuses, and *quittor* results.

On removing the shoe and paring the heel, the horn is found red from extravasation of blood. This redness may be diffused, particularly in old cases, or it may be dark in colour and confined to a small spot. Sometimes, in flat feet with thin horn, it becomes laminated, and openings form in the heel through which mud finds its way into the heel, acting as an irritant causing suppuration; this is the conditions poken of by farriers as a *gravelled heel.* In some cases especially in old horses the heel of the bone becomes diseased, of its *caries* under surface ensues, and the case becomes hopelessly incurable; the reparative process is very deficient, and we are apt to have imperfect nutrition and consequently defective secretion of horn immediately covering the seat of corn, while the surrounding secreting surface is stimulated, and we have a growth of thick strong horn in the wall forming the heel, which from its unyielding thickness, compresses and bruises the heel,thus aggravating the symptoms.

TREATMENT.—The first thing to do is to remove the cause: the shoe must be taken off and the heel pared out; remove the horn which covers the bruised heel, reduce the heel beyond pressure of the shoe or floor, then immerse the foot in hot water for half an hour, and apply a soft linseed-meal poultice.

Free opening of the heel is indispensable, the surrounding thickened wall must also be thinned. All pressure from the enclosing hoof or any other cause must be removed.

If suppuration exist, a free opening must be made for the pus to escape by. If the vascular structures are diseased, the direct application of pure carbolic acid, nitric acid, or butter of antimony, may be necessary to stimulate it to a healthy condition. The foot should be poulticed till all pain and suppuration ceases, when dressings of tar ointment should be used. In reapplying the shoe, the severity of the case and the nature of the foot will guide the farrier as to what kind of a shoe should be applied. Thus, for a slight bruise of the heel, it

will be necessary only to lower the heel out of pressure, pare out the angle of the heel, poultice for a day or two, and reapply the shoe in such a manner as it will not press on the weak heel. In worse cases a bar-shoe will be best, as by distributing the pressure over the toe, quarter, and frog, the diseased heel can be perfectly protected from pressure.

In chronic cases where we have disease of the bone, necessitating frequent dressings, a ¾ bar-shoe is best, as it leaves the heel bare, so that it can be dressed as it is found necessary. A common practice with farriers is to put on a shoe with a caulkin at the toe and outer heel, leaving the inner heel low; a little reflection, or the placing of a similar projection on the outside of the farrier's own foot and causing him to throw his weight on it, will convince him that such a shoe instead of taking the weight off the weak heel not only increases it, but violently distorts the foot and leg. A corn in whatever degree it exists constitutes unsoundness, and no matter how lightly a dealer or a farrier may speak of a corn, a buyer will study his own interest best by refusing a horse with corns, especially if he is intended for road work.

BRUISE OF THE SOLE.—This is a common cause of lameness in the foot. Any horse's foot may be bruised by the insinuation of a stone or other hard body between the shoe and sole. The feet most liable to bruising, however, are the naturally thin weak feet and the flat open feet, but more especially those feet, good or bad, which have been denuded of the beautiful and sufficient covering which nature has provided by the restless knife or buttress of the farrier. Not very long ago, instructions were given to farriers to pare the sole till they could make it yield to pressure of the thumb; and, unfortunately, this idea has become hereditary in the farrier family; for we find that, no matter how often we direct them to stop the practice, they will go on, generation after generation, to use the knife mercilessly in denuding the sensitive sole of the horses' foot of its natural covering and protection, and what is equally provoking, the men who pare most are first to propose the use of artificial (leather) soles.

Let the farrier reflect: is it possible for a horse's foot to be so thinned as to yield to the pressure of the thumb, and yet be exposed to the constant pressure of stones and hard substances on which the horse is constantly stepping on the road without seriously bruising the sensitive sole?

To prevent bruises therefore, insist on the natural covering, the horny sole, being left, as nature provided it, thick and strong, with a hard resisting outer layer, and a soft elastic inner layer, not only intended to protect the delicate structures superincumbent to it from injury by pressure, but materially adding to the resiliency of the hoof.

Bruises, from stones or other bodies being wedged into the shoe, or from an animal casting a shoe and being driven barefooted, are common enough. The effects of the bruise will vary of course with the severity and extent of injury to the soft textures.

SYMPTOMS.—Inflammation of the foot, heat, pain, lameness, increased vascularity, discolouration of horn, pain on pressure, or tapping with a hammer; in bad cases, suppuration when the lameness becomes excessive.

The treatment consists in removing the shoe, thinning the horn over the bruise, applying hot soft linseed meal poultices. Should suppuration ensue, free openings to allow of the escape of pus. When the acute symptoms subside, apply a shoe with an artificial protection from bodies on which the animal is liable to step, in the form of a leather sole, and a wide webbed shoe, with caulkins on toes and heels "to lift him off the ground"; tar dressing, and working him, if possible, on soft ground for some time, till the sole grows again sufficiently to protect the denuded sole.

When suppuration occurs, all detached horn must be removed, readhesion will not take place, and its remaining, only retards the new growth.

Agricultural Machinery.

D. Hald & Co's Cream-separator (Gust. de Laval's patent).

The annexed engraving (fig. 1) is a sectional view of the improved Laval cream separator, exhibited at the recent Dairy Show in the Agricultural Hall by Messrs. D. Hall & Co., of 24, Great Winchester Street, London, E. C., to which a silver medal was awarded. The Swedish patent was not extended to England in time for the separator being entered at the

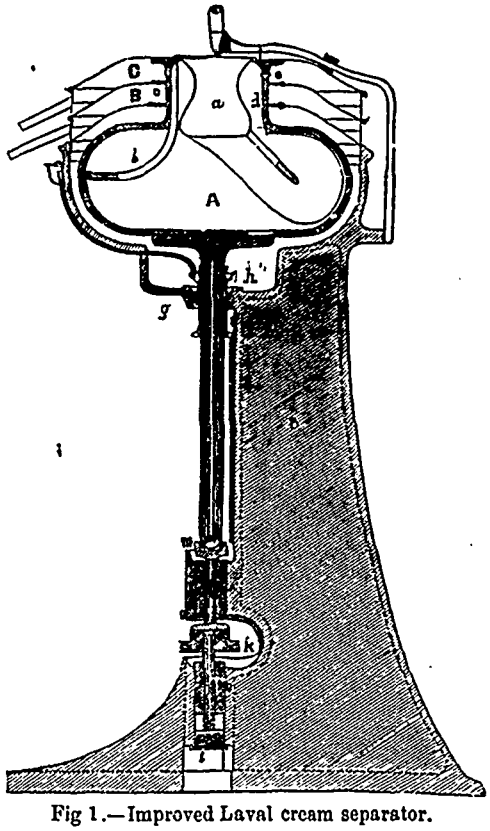


Fig 1.—Improved Laval cream separator.

Derby trials of the "Royal," but at the trials of the Royal Agricultural Society of Sweden, held at Malmö, last July, it was exhibited in competition with three of the Danish separators, similar to the one sent over to the Aylesbury Company, and shown by them at Derby. After a fair trial, the Grand gold medal was awarded to the Laval separator, and also the King's Prize of Honour. A large number were sold, and some to dairy farmers who were using the Danish separator. Mr. Hoffmeister, of Östrä in Skäne, South Sweden, bought one and placed it alongside his Danish separator, and the results, after working side by side daily, fully confirmed the awards of the judges at Malmo.

The old Laval separator had only a capacity of about 30 gal. of rich milk per hour, and of poor milk, which is more difficult to separate, from 25 to 27 gal. per hour. At the recent trials in the Working Dairy, noticed last week, 35 gal of rich milk were separated in 24 minutes, which is at the rate of 87½ gal. per hour; of poor milk, from 60 to 70 gal. per hour.

The estimated driving power required to work the improved Laval separator is, by steam, ½ horse power, and by horse gear 1-horse power.

The price of the new separator is the same as that of the old one, viz., £33, including the intermediate motion. The price of the Danish separator is £80, and the capacity 120 gal. of rich milk per hour, and 100 gal. of poor milk per hour.

Two improved Laval separators, costing £66, separate 175 gal. of rich milk per hour, being 55 gal. more than a Danish separator, and at £14 less money. Two Laval's can be set so as to discharge their cream into one can and their milk into another. In point of fact this may be seen exemplified at the Shorthorn Dairy, London, &c. For a small dairy, a single Laval doing 300 to 350 quarts per hour will suffice, as it will separate the milk as fast a small dairyman can milk his cows, and for larger dairies any number required can be driven from a common lay shaft 3 feet for two separators.

The engraving, fig 28, illustrates the improvements which effect these important results. It will be seen, on comparing it with fig. 2 below, already referred to, that the inverted T supply pipe and cream and milk discharge pipes have been removed from the centre of the revolving milk drum, and the configuration of the milk drum itself much simplified in construction. In the old machine the neck of the milk drum was made in separate pieces, and bolted to the body of the drum

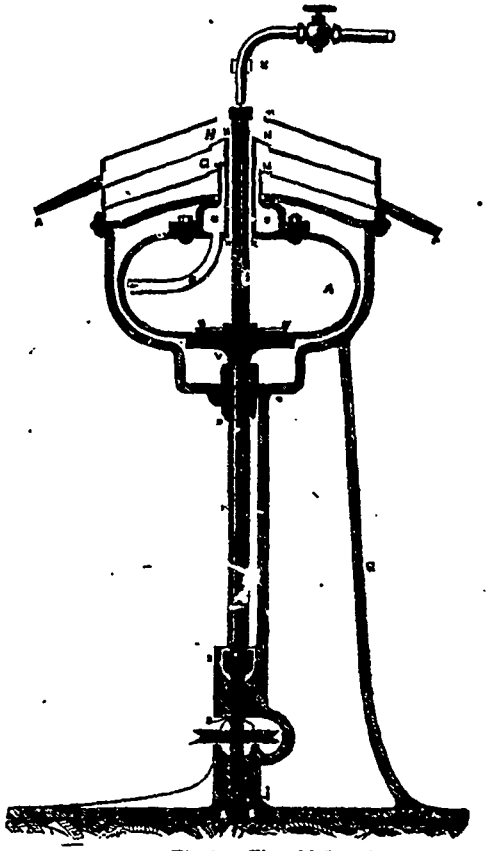


Fig 2.—The old Laval.

by four bolts, the supply pipe being in the interior of the cream discharge tube, and the latter surrounded by the milk discharge tube. All this complicated mechanism is done away with, and the neck and body of the milk drum A, formed of best wrought steel, is in one piece, not unlike an old-fashioned wide-mouthed bottle. This shape greatly increases the strength of the drum, lowers the centre of gravity, which makes it more easily driven for separating the cream, as it rotates more steadily. It is also more handy for being removed from the chamber in which it works, also for taking off the last cream and for cleaning.

The standard D has been improved from top to bottom. The principle is the same, but the details of construction are different. There are two driving spindles, as in the old machine—viz., the spindle *l* of the driving pulley *k*, which rests on a convex support on the top of the foot screw *i*, which can be put in and taken out without unbolting the standard from the bed plate of the floor. This is a very important practical improvement, as the screw of the old one had to be put in from below, which could not be done without taking the separator to pieces so as to turn over the standard. The spindle of the milk drum rests on wood in the box *m*, on the top of the driving pulley spindle *l*, and is supported in a strong bearing *g*.

The lubrication of both spindles has been improved. At *h* is a cup for lubricating *g*, supplied by a pipe from a cup on the outside of the milk drum chamber, conspicuous on the left side. Below *g* is a close cup collar, which intercepts the spare oil from that bearing, directing it into a small brass pipe on the inside of the standard D, which conveys it down to the bearing R, of the pulley spindle. The bearing, O, of the pulley spindle is lubricated as before.

The chamber in which the milk drum A rotates forms the upper part of the standard D. In the old machine this had to be held together by a heavy cover. In the new separator this cover is not required. The milk tray B, with its outlet pipe, rests directly on the edge of the chamber, and the cream tray C on the top of B The two trays are the same as in the old separator, and held in position by a tripod, only one leg of which is seen in the cut on the right hand side.

A funnel-mouthed cup, *a*, fits closely into the neck of the milk drum—about the capacity of a pint. From the bottom the supply pipe descends. It is soldered to a thin metal plate, in the form of a wing, from the bottom of the cup, in size and shape as shown in the engraving. On the opposite side the milk exit pipe, *b*, shown in section, is soldered to the neck of the milk drum. It curves round at the bottom, its mouth being open to catch the milk, as it were, on the principle of an Archimedian screw. In the old machine, the mouth of the exit pipe opened the other way, adverse to centrifugal force. And, although there can be very little, if any, Archimedian screw action, the milk and the mouth of the screw moving in the same direction, and at equal velocity, there is, nevertheless, an influent current of milk into *b*, due to the force of the influent milk from the supply pipe in the bottom of *a*, and the position of the mouth and bend unquestionably favours a more rapid entry of milk as compared with the old machine, the actual discharge being one and a half times greater, *i. e*, 87½ gal. per hour instead of 30.

At *c* a small hole is pierced through the neck of the drum A into the pipe *b*, and out at this orifice the milk is forced by centrifugal action over a ledge-ring *d* that surrounds the neck of the milk-drum, guiding it into B. Around the funnel-cup *a* there is an open space *d* between it and the neck of the milk drum. Into this space the cream is forced up by centripetal action, and out at the small aperture *e* over a ledgering immediately below into the cream tray C. The size of the aperture *e* is regulated by a screw *f* above. In making this aperture narrower the cream obtained will be thicker, and, *vice versâ*, by enlarging it the cream will be thinner.

The internal diameter of the milk drum A is the same as that of the old drum—11 inches, and the velocity required to separate the cream about 6000 revolutions per minute. When working at full speed the funnel-cup *a* is comparatively empty, the milk being thrown down through the supply pipe into A as fast as it flows into *a*. Looking down into *a*, not a drop of milk is to be seen in it, whereas, were it allowed to stand on a level with the milk outlet *c*, the surface would be perceptible to the eye, whilst, were it allowed to rise to the level of *e*, in the centre of the cup *a*, it would flow over the edge of the cup from its centrifugal action. Hence the practical rule in feeding the cup is that the milk shall not be seen in it.

Runtling with a large empty funnel cup, *a*, is important in two ways. For first, it lowers the centre of gravity, thus making the drum revolve more evenly and smoothly, with little or no liability to accident from the high speed at which it is driven, less than from an ordinary flywheel on a horizontal shaft driven at the same surface speed; second, there is no risk of spilling milk at the starting, and, when once up to the full speed, the milk is thrown out with considerable force from the mouth of the supply pipe, and by means of the wing in its rear moving at the same velocity as the drum, the influent current of milk receives immediately the separating velocity with comparatively no adverse commotion in the drum to disturb the mutual and conjoint action of the two separating forces.

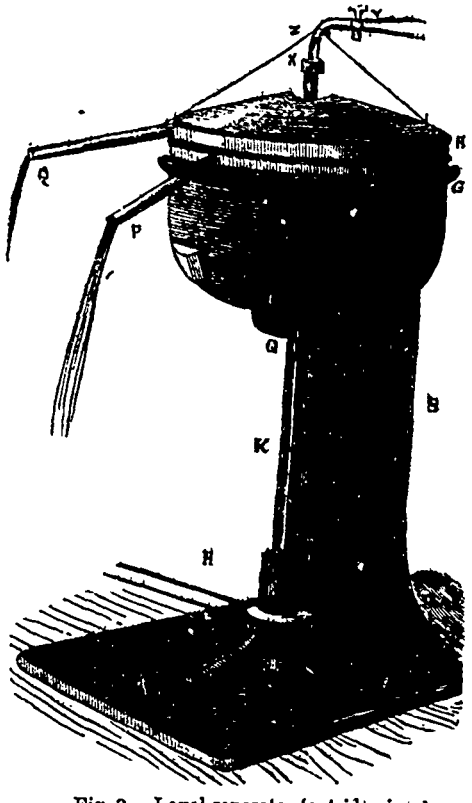


Fig. 3 —Laval separator (outside view)

The force and pressure of the milk from the supply pipe is distributed over the interior by centrifugal action, producing a continuous current of milk to *b* and cream to *c*, the former by centrifugal force, the latter by centripetal.

At the minor axis of the milk drum there is no centrifugal force, whilst at the extremity of the major axis, *i. e.*, the widest part of the drum, the centrifugal force is greatest. And as the milk globules are separated from the cream globules by centrifugal force (an outward force from the centre), and the cream globules from the milk globules by a centripetal force ? (a force from the circumference to the centre), the arrangement for bringing these two forces into operation in the new separator is a great improvement upon the whole plan, as will be seen on comparing figs. 1 and 2. In the new machine the new milk is thrown into the drum when the two separating forces are greatest, whilst in the cream, globules driven to the centre are free to rise upwards, there being nothing in the way until they reach the bottom of the funnel-cup *a*, where the whole volume is cream under a uniform pressure upwards from the centripetal forces below. The reverse was the case in the old drum, the central supply pipe standing in the way of the rising of the cream, whilst the new milk was thrown in near the bottom from two pipes, producing much commotion, thereby disturbing the free play of the separating forces.

The milk globules and cream globules are both subject to centrifugal force, but differently, owing to difference of specific gravity, and it is this difference of specific gravity and fluid pressure that gives rise to the centripetal force inwards to the centre. The force of gravitation due to the depth of the drum, 4 inches, may be considered *nil* in estimating the pressure on the internal surface of the drum at the major axis, due to a velocity of 6000 revolutions per minute. But the smallest cream globules are heavier than the milk globules, as the shell enclosing the butter is of greater specific gravity than the milk; others are of equal specific gravity. These cannot be separated; both go up *b* with the milk. The larger the globules of butter, and the thinner the skin in which they are enclosed, the lighter they are, and the more easily separated, and as a rule the better the quality of the butter; hence the reason why rich milk is more easily separated than poor milk, whose butter globules are small and the enclosing shells thick and coarse in quality. Hence also the advantage of testing the quality of cream by the new processes, in preference to the old plan of churning only.

The milk and cream as they come from the separator are not much increased in temperature above that of the milk in the supply can, thus proving that very little friction is experienced in passing through the machine. The milk from the separators appears sweeter to the taste than the new milk, but the milk sugar in the cream is slightly changed into lactic acid, thereby ripening it (the cream) for churning. Air is drawn in with the milk through the supply pipe, giving rise to the acidity of the cream. Cream from all separators is thus affected, but none of the creams we have examined from the Laval and Danish separators are so acid as to be unfit for using with tea and coffee, much less too sour for churning; and if the atmosphere is pure, the acidity thus acquired is better than keeping cream to sour in cream-crocks, or mixing sour milk in sweet cream to ferment the whole. The objection thus raised against cream separators is more in their favour than against them.

At the close of separating, the cream left in the new separator is easily removed by a cream extractor or dip skimmer. In removing the funnel cup *a*, the whole of the cream will be found floating in the neck of the drum, and, by dipping the skimmer, a vessel something in the form of a retail dairyman's measure, gently into the drum, the cream flows into it. All the cream can thus be removed in no time, which is a great improvement on the old plan. The drum can then be lifted out by hand, and its contents emptied into the milk can. As in the old separator, the milk and cream cans can be placed anywhere most convenient, the discharge pipes being turned and fixed in the proper position.—*Agri. Gazette, (England).*

AGRICULTURE.

Paris, August.

Messrs. Porion and Mehay have discovered a means by which the residue of distilled maize can be employed either to fatten stock or act as a manure, besides extracting an oil suited for the manufacture of soft soap. The plan rests on the well-known fact, that the oil contained in the grain remains constantly fixed to the undissolved solid parts, and the azotized matters rest also for their greater portion similarly united The composition of the cake prepared exhibits but slight variation, and can be made either in the end for food or a fertilizer; 2 cwts. of the refuse yield 6½ lbs. of a colored oil, and 22 lbs. of feeding cake. M. Ladureau, of Lille has tested the products; in point of aliment, these pro-

ducts are equal to good linseed cake, and as a manure, are on a par with groundnut refuse.

The excessively high temperature which reigned during some fifteen days has hastened the maturity of cereals; by this the harvest may be considered as completed. If the yield leaves something to be desired under the head of quantity, the quality is excellent. Nearly all grain crops ripened simultaneously, a circumstance which conclusively demonstrated the utility of reaping machines; small cultivators have found it advantageous to hire steam threshing machines; this season they have clubbed together to secure the services of a reaper. For tying sheaves, cord appears destined to cut out wire and supersede straw bands, although the latter can now be twisted by machinery and cut into any length. Farmers regard the general result of the harvest as a good average, and are contented: the certainty that the grain crop of the United States is inferior to that of last year does not lessen their satisfaction. Forage crops have severely suffered from the drought, but this draw back will have its lesson even, by compelling farmers to cultivate hasty-growing green crops and by preserving them, cut green, in trenches, secure valuable fodder, not only throughout the winter, but up to spring. After M. Goffart's system of conservation of green maize, farmers have no excuse for being short of cattle food. Of all the plants grown for trench preservation in the green state, maize appears to possess the most advantages.

M. Pasteur's experiments at Melun successfully demonstrated that sheep could be preserved from the decimating malady of *charbon*, by inoculating them with the disease specially prepared, while the virus not prepared produced, invariably, mortal results. Some farmers, Doubting Thomases, did not deny the results of the experiments, but desired to see the virus taken directly from a sheep just a victim of the disease, and its blood, in a word, injected into sheep already inoculated by M. Pasteur, and others perfectly healthy, but not inoculated at all. On the 17th July last, 19 vaccinated and 18 unvaccinated sheep were inoculated with the blood, taken from a sheep but three hours dead from charbon; in the course of three days all the unvaccinated sheep were dead, while the others remained in perfect health. Since, the demand is unanimous for vaccinating sheep. While on the subject of sheep, I may observe in reference to the discussion still taking place on the question of wool *versus* mutton, that in Germany, the prevailing opinion, as the results of ten years experience, leans to the simultaneous production of flesh and wool, that is to say, to precocious sheep.

Inventors have been occupied for many years in endeavoring to substitute the weighing for the measuring of liquids. Many dealers in alcohols adapt the metrical weight, to determine the volume of liquids. Wine merchants have tried to follow the footsteps of the spirit dealers, but have encountered the obstacle of varying densities, a difficulty even in the case of alcohol. M. Sourbé appears to have solved the problem; the ordinary Roman balance is retained: from the centre of the yard is suspended a recipient, capable of containing ten quarts; by graduated tubing, the liquid in the recipient measures the density of the liquid to be weighed; and the weight recorded, the volume of the cask is easily determined. Thus liquids measure liquids.

A good distributer of pulverulent manures seems still to be a desideratum. In Prussia and Belgium, the machine manufactured by Jaeschke, of Neisse, Silesia, is highly spoken of. But it has also its drawbacks: its capacity is limited to 1½ cwts. and the hopper is not long enough; the running out of the stuff too, which of course must not be humid to avoid clogging, is very sensitive to jolts from a stone, a hard lump of clay, or a furrow.

The prospects of the sugar-beet crop are good since the alternation of rain and warmth; an average crop is expected, judging from the manner the roots are at present swelling. Within the last ten days I have taken a run through the north of France, Belgium, and the southern and eastern counties of England. Beet, mangolds, turnips &c., are better in France than elsewhere; in several turnip fields in England, the bald patches were lamentable to see. Belgium intends establishing a model farm, to be exclusively denoted to testing experiments connected with the culture of sugar-beet.

Respecting the phylloxera, it is the old, old story. There is a decided tendency to rely on American vines, and some persons commence to plant nurseries of such. In Burgundy, the sulphuret of carbon, save upon shallow soils with an impermeable substratum, has not given satisfactory results; however, in other vine regions chemicals are courageously tried to destroy the scourge. There is more of confidence now than of discouragement among vineyard proprietors. Rich manurings are in vogue, and enable the plant to struggle successfully against the insect. Not a few cultivators have been the victims of something like a practical joke; they were assured that boring a hole in the trunk of the vine, near the ground, and pouring mercury therein, would cause the insects to decamp.

Along the marshy borders of the Scheldt, (1) in Belgium, osiers are extensively cultivated; the rods are for basket work, but the bark, the peelings, till lately were made into cords, much in request among fishermen. Of late these peelings are exported to England, where they are subjected to a process for extracting their *salicine*, of which they contain 4 to 5 per cent. This salicine is presumed to replace hops in brewing; the Arabs cure the tertian fever by inhaling the fumes of burning leaves and branches of osiers, and a decoction of that plant is popularly considered efficacious against rheumatism. The refuse of the osiers, that is to say, the peelings, can be made thus to yield four times a greater profit than the rods, estimating salicine at its current price of 30 fr. per lb. The Belgians prefer to raise the osiers. (2)

A commission was appointed in Belgium, lately, to test the comparative merits of skimming milk after its repose, following the ordinary method in porcelain pans, or in specially constructed pans immersed in a receptacle containing running water or susceptible of receiving ice. The same quantity of milk, 30 quarts, was placed in the pans, and allowed to throw up the cream during 24 hours; the pans were then skimmed and the cream churned. There was, invariably, 11 per cent more butter, and of superior quality, obtained from the milk artificially cooled, than from that treated in the ordinary way.

The harvest this year has been very bad in Algeria, the yield below one half. To this misfortune is to be added, the mildew disease which has attacked the vineyards, the consequence of a very dry winter, and a wet and spring. The malady is a small fungus that destroys the vitality of the leaves. However, the Algerian Muscat grapes now selling here are very good.

OXFORD DOWNS.

One of the greatest advances in sheep breeding was made by Mr. Druce, of Eynsham, when he successfully crossed the Hampshire Down and Cotswold, and thereby produced the Oxford Down. The rise of this remarkable breed has been rapid, and it seems likely to extend further in its geographical distribution. It is undoubtedly a farmer's and a rent-paying sheep, possessed of great vigour of constitution, and it

(1) Escaut, in French.

(2) I had the pleasure of curing the amiable Mr. Senécal's rheumatism with this remedy, last spring.—A. R. J. F.

is in good hands. It has been hard run by the Shropshires, a race of mixed origin but of great excellence, which has also had its day. No doubt a future is in store for both these breeds, neither of which were known some forty years ago. An unfortunate predisposition to foot lameness is one of the weakest points in the favourite breed of the midlands, and a slowness in coming to maturity may possibly be also recorded as a frequent mark against him (1).—*English Farmer.*

CROSS-BREDS.

To establish and consolidate a breed (says a German paper) it is not sufficient that there should be repeated cross-breeding with thoroughbred male animals, but that the breeding should be continued for generations between the male and female progeny of such cross-bred animals The Duke of Hamilton brought over a Flemish stallion for cross-breeding purposes with the Scotch pack-horse, in order to make the latter more capable of drawing heavy loads up the hilly roads of Scotland, more especially in the district about the Clyde; and thus, by breeding in the same line, not by continued cross-breeding with Flemish stallions, formed the well-known Clydesdale race.

The Scotch pony in the Lothians [?] is said to have originated by cross-breeding with an Andalusian stallion, accidentaly brought to Scotland from the Armada; but the race was formed by breeding in the same line. The Yorkshire (Cleveland) bay horse, perhaps the most excellent and most stately carriage-horse in the world, is said to have been formed by one crossing with a thorough-bred stallion—a real indigenous Cleveland stallion—and then by breeding in the same line. (We may mention here, by the way, that Queen Victoria has sixty Cleveland horses, among others.)

The Dutch *Dreuthe*, black horse, is said to have acquired its peculiar type from the blood of an Andalusian stallion, in the time of the Spanish rule in that country, by continued strict breeding in the same line. The large-boned Orloff horse is said to have attained its muscular strength by one crossing with an English stallion. The Lithuanian horse, we are told, owes its astonishing strength for work to some Oriental stallions in the first instance, but by following up a careful breeding in the same line. In England, as well as in in Hanover, the half-thorough- bred race produced by crossing with a thoroughbred stallion, is bred on in the line, and only mingled with additional thoroughbred blood for special purposes. In Oldenburg they are forming a breed from the progeny of two Cleveland stallions. (*)

C. Colling formed by his, we might almost say, accidentally-acquired Hubback bull and specially-selected cows his Teeswater breed, and by some admixture of Galloway blood, his Shorthorns, which he again bred in the line. Repeated crossings we do not hear of, even the various breeds or families of Shorthorns were generally kept pure.

Bakewell did not raise his Leicesters by the repeated use of rams from a specially choice breed, but brought together various long-haired male and female sheep, and then again chose from amongt them those which would pair the best, till he attained his object in the "new Dishley" breed, with whose blood henceforth all white-faced long-haired races were improved. Sometimes a cross breed was effected between the black faced Southdown sheep and a new Dishley (Leicester) ram, and thus, by repeated breeding in the same line, was formed the favourite Shropshire breed.

The present Oxfordshire-down sheep was at first, in the year 1833, the product of a Cotswold ram with South-down and Hampshire-down sheep. Druce and C. Howard then made use of their progeny for breeding in the line, making careful selections, and exchanging rams to avoid consanguinity, till about the tenth generation (in 1862) it was declared an established breed. A trial was made of repeated crossing with a Cotswold ram, which was unsatisfactory; and Charles Howard himself told the writer in 1852 that the heterogeneous mixture of blood in 1833 had been the reason why the Oxfordshire Down race had been so long in becoming established.

Hermann von Nathusius' Leicester-Merino-Manchamp race was not created by repeated crossing of Leicester and Manchamp rams, but by breeding in the line with careful selections In the same manner an excellent estbalished breed was formed by Nathusius by the crossing of a Lincoln ram with Merino sheep, when about eight generations in the line had been bred.

These are facts which show us what must be done in forming "an established breed," and it cannot be called by this name till all the young are of a similar type. The length of time, or the number of generations which will have to pass before the breed is established, will depend upon the more or less heterogeneous mixture of blood. It is different when for the sake of improvement crossings are effected between animals of a similar type, or between two breeds related to eath other, such as Dutch bulls and Oldenburg cows, Oldenburg bulls and cows of Jever, Dutch bulls and Austrian Reed-land cows Sometimes, too, a thoroughbred stallions may revive a half-bred breed, (1)

HOWARD'S GANG PLOUGH.

A handy implement for breaking up stubbles after harvest, ploughing in manure in spring, etc., has long been wanted. The desiderata are two, lightness of draught and weight enough to keep the plough steady in its furrow: nothing frets and annoys horses more than an unequal pull at the collar, which is invariably experienced when the pressure on the furrow sole is insufficient to keep the share down to its work.

The illustration shows the solidity of the new implement, and the late, though not too late, adoption of the American "sulky seat."

What is a Shropshire Sheep?

The history of this valuable breed is now well authenticated. There has never been any doubt about the Oxfordshire Downs, as they are termed, as it has been well known all along that at the former part of the present century a direct cross between Hants-downs and Cotswolds was made, and the issue kept together till a fair uniformity of type and quality of wool were established. The way this cross breed has spread in Oxfordshire and some adjoining counties, and the way they have been improved in the colour of their face and legs, from mottled shades to uniform black or dark brown, by the skill in selection of the leading breeders, is well known. It will suffice to say that the breed is a valuable one for the production of wool, and with the dark points now produced the mutton makes a high price in the markets, as butchers leave a small piece of dark skin on the legs and shanks, and thus, fairly enough get Down prices for the joints.

But the Shropshires have a different and more complicated history. They are indeed not Shropshires in the strict sense of the term. A more comprehensive and correct term for them would have been West Midland Downs, as we shall shortly show. There are two old breeds on which the present Shropshires were engrafted, so to express it. Oddly enough, too, these old breeds are natives, as they may be termed, of

(1) *i.* Shropshire.

(*) Difficult job, I should think.

(1) The pure Downs are *races* the Leicester and Shorthorns are *breeds*.

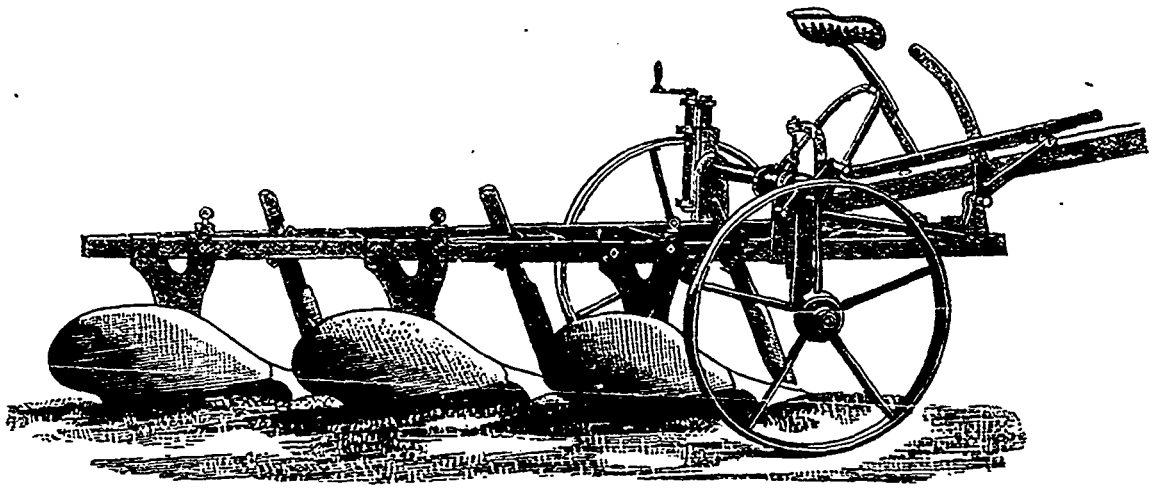
the two extreme points of the West Midlands. Cannock Chase is at the eastern, and Clun Forest at the western extremity. The centre of the picture has to be filled up by what occurred in Mid-Staffordshire and West Staffordshire and all over Shropshire.

Several decades ago there were developed great industries in coal and iron at Wellington, Coalport, and other districts in Shropshire. Wolverhampton, simultaneously, largely increased in population. The demand for mutton and lamb, of course, largely increased at the same time. To meet this demand, and to take advantage of it for their own profit, the farmers of Shropshire extended their turnip and green crops, and looked further afield for breeding sheep. The native stocks, in short, were not equal to the increased demand.

Breeding sheep were sought and bought in the midland and southern counties every autumn for many years, and they were walked to Shropshire and Staffordshire by thousands. Numbers of farmers paid this annual southward visit with this view. The occupier of Patshull at that time, Colonel Jones, was a pioneer in this movement. Some farmers bought Leicester ewes, others Southdown, and others Hants-down ewes, while according as taste ran for an increase of wool, or early maturity was required, so Longwoolled rams were put to Shortwoolled ewes, or the opposite practice was pursued. Thus Shropshire became filled in the course of time with a large stock of all the best breeds of sheep in England. So much was this the case that ultimately there was no necessity for the farmers of the West Midlands to turn southwards in search of stock sheep. There still remained flocks of the old native breeds. Eventually these native breeds and the migrated stocks were brought together. Hence the want of uniformity in colour quality, and length of wool that existed thirty or forty years ago. And hence, too, this breed of sheep, like the Anglo Saxon race of mankind, is equal to every quality of food, and adapted for almost every climate.

The stock of the old Cannock Chase sheep has no doubt given this breed the fine dark colour and fine flavour of their flesh. We have been informed that the flock of Beaudesert is the oldest one of this breed which has a recorded history The quality of their flesh and fat has been celebrated for many years as being more like venison than mutton. So much was this the case that the late Marquis of Anglesea had unlimited standing orders from the distinguished guests who visited him to send quarters, sides, or carcases to noblemen and gentlemen all over the kingdom, and could his agent have produced ten times as many, the demand would not have been supplied. These were somewhat leggy and flat-ribbed sheep, with black points, *and some of them had short horns curving prettily upwards.* They of course took some time to get fat, and the mutton the noble marquis used to put before his guests was four or five years old. But so much for quality.

Then there were the shorter-legged and more early maturing stock which had been cultivated in and around Clun Forest The sheep undoubtedly had—and the old-established flocks still have—a large strain of the Welsh breed. Their contour and walk still show this. The ewes of this breed are bought in large numbers for producing fat lambs near London on the Essex and Herts sides. They are reputed to be the most prolific in yielding milk of any known breed. So well is this reputation established in the districts named, that the farmers do not mind losing 5*s.* per head on the ewes when they are sold out fat in the following summer, as they produce such good and early lambs that they make from 35*s.* to 45*s.* and 50*s.* in April and May. This is, no doubt, the reason why Shropshire ewes may be justly looked upon as equal to any breed for suckling their lambs.



HOWARD'S GANG PLOUGH.

It was among these two breeds that the Leicesters and Downs, as above described, were introduced. Of course great want of uniformity and type was the result. Different opinions and tastes on the part of farmers had also much to do with this. Some preferred the old-fashioned mottle face with a Southdown type, while others liked larger sheep and black points. All this want of uniformity was made more and more conspicuous when the Shropshire breeders prevailed on the Royal Agricultural Society's authorities to appoint separate classes for the Shropshire breed of sheep. Judges at shows of course also differed in opinions. One year, two out of the three were in favour of the more Southdown colour and t[illegible], while the next year, two were in favour of dark colour, and more size, notwithstanding the legs of the sheep were a little longer, and that the latter required more cake and corn to mature them early, or more time to get them fat in the ordinary way. The advocates of the latter argued, that there were several breeds of small sheep, some of which were deficient of flesh as compared with the fat they produced. Upon this they said "we have in the Shropshires large frames and ample lean of a dark rich colour. The smaller Downlike frames must be discarded, and the larger sizes cultivated." The results, as seen at the present time, have clearly proved that the latter advocates were right.

This conflict of opinions and diversity of taste led to warm discussions. It was shown that in more than one instance

pure Southdowns had been introduced to flocks of the established Shropshire stock. In each instance the flock "went all to pieces," as it was termed. This was a lesson for the possessors of flocks which had been cultivated for many years on the lines above described. Out of this discussion, too, came the conclusion that dark points of uniform colour, with the largest possible size of frame, were the correct objects to arrive at. The more experienced and consistent breeders came to this conclusion among themselves about the time of the 'Royal" Battersea show in 1862, and most admirably have they carried it out by their skill in the art of selection.

It may seem odd at first sight to some breeders to read of a uniformity of black or dark brown faces and legs, when it is allowed or asserted that strains of the white-faced Leicesters have been introduced into flocks; but this is just a point which throws a light on two leading features connected with breeding—(1) on the skill of the modern flockmaster, and (2) on the way animals of a mixed breed will 'breed back" from the strains of their ancestors of many generations ago. Take the latter point first. It occasionally happens in the best flocks of Shropshires that a lamb appears with a long, wavy, "open" or "watery" fleece. This is a clear indication that Leicester or some other Longwoolled breed was introduced to the Shropshire flocks at some remote period. The symptom appears as scrofula or other blood poisoning does in the third or fourth generations of mankind. The way, however, these, open" coats have been made exceptional brings us back to our first point—viz, the skill of modern flockmasters. When the long wool appears, it is generally accompanied with a speckled, or what appears to be a halfbred, face. Whether the lamb be male or female, it is at once discarded from the flock and fed for the butcher. In this has consisted the judgment, care, and skill of the modern breeders of Shropshires, who have brought their flocks to their present state of uniformity.

There are six or seven leading breeders whose names may be mentioned, as they have been so consistent among themselves that their flocks are nearly all alike in uniformity of type and general character. These are Messrs. Crane & Tanner, Shrawardine; Messrs. Minton, Montford; Mr. John Evans, Uffington (all of whom live near Shrewsbury). Then there are Mr. Thomas Mansell, Harrington, near Shifnal, and his son at Dunmaston, near Bridgenorth; Mr. W. J. Nock, Sutton Madock; and Mr. T. Feen, Downton, who believes in size. Mr. John Darling, Beaudesert, near Rugeley, is now the possessor of the descendants of the Marquis of Anglesea's old Cannock Chase flock above mentioned, and he is showing much spirit in endeavouring to develop it so that it shall be second to none, either in Staffordshire or Shropshire. Mr. Joseph Beach, too, The Hatton, Brewood, near Wolverhampton, inherited a flock that has been bred on the lines settled down upon by the older breeders above mentioned. We remember having a conversation with the late Mr. Joseph Beach some fifteen or sixteen years ago, when he was enthusiastic in favour of the larger size and uniformity of colour. The way this flock has been improved by selections is alike creditable to father and son.

As an instance of the growing popularity of the best of the flocks of these sheep, it will not be amiss to mention a few recent prices. Last year Mr. John Darling hired Dudmaston Hero at 160 gs. A few days ago the same sheep was sold as a two shear at 200 gs. Another sheep was let for 100 gs. As Mr. Mansell's flock possesses strains of the flocks belonging to the above-mentioned breeders, these prices will suffice to show the high appreciation in which they are held.—W. W. G.

(1) The Devonshire plan coagulates the casein, and it is subsequently got rid of in the washing. A. R. J. F.

BUTTER MAKING.

Dr. Voelcker, the eminent chemist of the Royal Agricultural Society of England, delivered a series of four lectures on the "Principles of Butter-Making" at the recent annual exhibition of the society at Derby. We condense the following paragraphs from reports of the lectures:

"Cream consists of a certain proportion of water and fatty matters, and a small proportion of casein. If this latter element were absent, the principal difficulties in the way of butter-making would be at once overcome, because it is due to the rapidity with which casein turns sour that butter obtains the rancid taste which we sometimes detect. If by any means we could separate the fatty matter from this casein or curd matter, we should get excellent butter; and it is on this account that I believe dairy farmers will never obtain the first quality butter from whole milk, certainly not the same quality as that which is obtainable from cream. (1) The composition of cream varies greatly, and the same remark applies to the fatty matters of which it is constituted. This circumstance I attribute in a very large degree to the feeding of the cows. Nobody, for instance, can feel any astonishment that when cows are fed upon turnips, swedes, and mangels, there is a more or less disagreeable flavor in the butter made from the milk of such cows. In my opinion, the best flavored butter is made from the milk of cows fed, not upon rich pastures, but upon what are generally considered poor pastures; that is to say, those with scanty herbage, such as is to be found upon the hilly land which abounds in this county. By rich pastures I mean pastures which produce a large bulk of grass, but which are not composed of a great variety of herbage. The richer the quality of the cream, the richer will be the quality of the butter made from it.

"It has been said, with a good deal of truth, that by over-manuring pasture land we reduce the fine quality of the butter made from the milk of cows fed upon such pasture. My belief is that the finest quality of butter is produced from pasture which contains a great variety of herbs, some of which might even be ranked as weeds. The question is, Can ordinary pasture produce first quality butter? and I answer, '*Decidedly, if you take proper precautions to prevent the cream turning sour before it is churned.*' This sourness, let me repeat, is the great hinderance in making high-class butter. Many persons deem this a small matter, and unconsciously allow the cream to get somewhat sour before making butter; but if you desire to produce good, sweet, keeping butter, you must churn cream as sweet as possible.

"But how are you to prevent cream getting sour? In the first place, you must carefully look after all the people employed in and about the dairy, to see that they always have the importance of cleanliness before their eyes; and above all see that those who milk the cows do so with clean hands. Secondly, you should be sure that the cows are perfectly 'stripped,' because if this is not done it is the means of sowing the germ of rancidity. Then, when the milk is drawn from the cow, it ought to be cooled down directly to about 55°, so as to take the animal heat from it.

"As to the questions of shallow or deep pans for 'setting' for cream, I am an advocate for the use of deep ones. After being filled with milk, these pans should be placed in a vessel containing water—ordinary pump water answers well—for twelve hours; or, if the milk is extra warm, a little ice may

be used, and this would result in a large proportion of cream rising. In order to prevent rancidity, it is very important that the cream should be churned at once. In small dairies, however, this is impracticable, and in such cases every endeavor should be made to prevent the casein from turning.

And here let me say, do not churn too quickly. Do not be in too great a hurry and turn irregularly, because if you do failure will almost certainly result. Turn steadily, at about forty-five or fifty revolutions per minute. As soon as butter comes—and this you can tell by the sound—it is time to stop the churn and deal with the butter kernels. Strain off the buttermilk, put some cold water into the churn, and turn it again two or three times; this will have the effect of washing the butter. Perhaps the best way is to incorporate the smallest quantity of salt water, into the churn, so as to distribute the salt evenly among the butter. I do not recommend too frequent washing, as this only results in the butter losing that fine natural flavor which it should possess. After each process of butter-making, the churn and other utensils should be cleansed with boiling-hot water. In butter-making everything depends upon scrupulous cleanliness, the use of plenty of hot water, or steam if it is available, followed by cold water. (1)

"One of the first necessities in the making of good butter is to have at command an abundance of cold water—spring water if possible, or pump water—so as to get rid of the animal heat as soon as the milk comes from the cow. By this means, also, you get rid of the animal flavor. Whenever you have the means of deep setting milk for cream, I strongly advise you to do so. If you take care to keep cream as closely as possible to a temperature of 55° to 57° Fahr., you will not only get a larger produce of butter, but also butter of a better flavor. By using deep pans, and in hot weather putting a lump or two of ice in the vessel of water in which the pans are placed to preserve the temperature below 58°, I am ready to guarantee that cream will keep without turning sour for a period of at least eighteen hours. *Butter should always be made from perfectly sweet cream.*

"In the art of butter-making chemistry is not required. It is a simple mechanical operation. Some people are of opinion that a certain degree of sourness in cream is necessary in order to obtain good butter. My experience has taught me differently, *and I denounce the sour-cream theory as radically wrong.* There is an opinion that the longer cream continues cold the worse it becomes. Sometimes a novelty, if carefully investigated, proves to be far more useful when thoroughly worked out and practically tested than the experience of the man who has been going on in his own way for twenty years. A great many such men maintain at the present time that the best quality of butter can only be made if cream is allowed to turn a little sour. This is a great mistake. The sweeter the cream, the better the butter will turn out, other circumstances being equal.

"Milk is a mechanical mixture, not a chemical compound. It is well to remember this, because it is not by chemical means that we separate cream from skim milk, but purely by mechanical means.

"The cream globules rise to the surface, and by proper management the cream is taken away from the skim milk. In this way we obtain the cream perfectly sweet, and provided the food given to the cows is of such a nature as to produce sweet and not 'turnipy' cream, we can obtain excellent butter by churning it properly. Although my profession is that of a chemist, I would impress upon you that the less chemicals you use, or the less you attempt to meddle with chemical agencies in the separation of butter from the cream, the better will be the result. If you pour off the buttermilk as soon as the butter comes, you will have butter much more free from the cheesy or curdy envelope which originally encased it in the creamy globule. And you will never make first-rate butter unless you preserve a regular temperature in churning. The temperature should never rise above 60°, it should be rather below than otherwise. I am no advocate of all these beautiful air churns, and complicated contrivances. You do not want them. In a good churn you simply require an implement which enables you to churn sufficiently without overdoing it. All churns should be so constructed as to be easily cleaned. The requisites for successful butter-making are, a well-constructed dairy, not subject to great fluctuations of temperature; *a dry floor*, perfect cleanliness, appliances for introducing hot or cold water, or steam; and in the last place, washing it moderately, and salting it in the churn. If you want to make first rate, firm, fresh butter, there is no secret; no great chemical skill is required, only ordinary attention to a few simple principles; and by observing them I warrant that you obtain for your butter a better price."

(1) Cold water *first*—then scalded or steamed. A. R. J. F.

FLESH AND FAT PRODUCERS.

The *American Agriculturist* makes up from the published analyses of the most eminent agricultural chemists the following table exhibiting the relative nutritive value of different feeds. It corresponds strictly with the experience of many noted English feeders, and is probably the most trustworthy information yet collected in so compact a form.

	Flesh.	*Fat.*
Turnips	1	5
Rutabagas	1	7
Carrots	1	7
Mangels and kohl rabi	2	8
Straw	3	16
Potatoes	2	17
Brewers' grain	5½	18
Wheat and barley	12	67
Dried brewers' grains	16	70
Earth-nut cake	20	40
Beans (English field)	22	46
Linseed	23	92
Rice meal	6½	77
Locust bean	7	72
Hay (early cut)	8	50
Millet (seed)	8	76
Buckwheat	9	60
Malt	9	76
Rye	11	72
Oats	12	63
Corn	12	68
Palm-nut meal	18	97
Tares (seed)	27½	57
Linseed cake	28	56
Bran and coarse mill stuff	31	54
Rape cake	31	53
Decorticated earth-nut cake	39	45
Decorticated cotton-seed cake	41	77

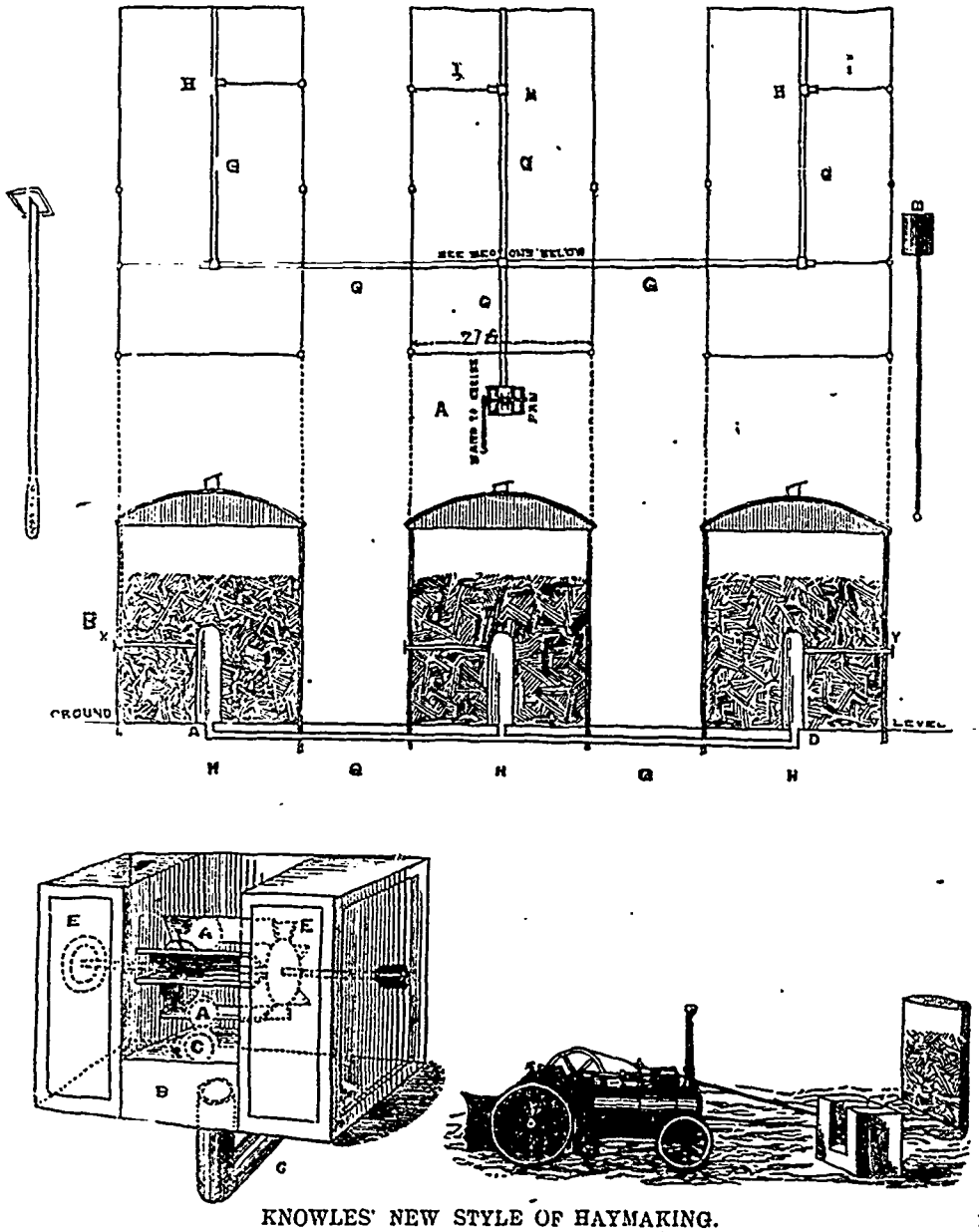
It will be seen from the above that cotton-seed meal has no superior as a flesh-former, and that for fattening it is better than every other article of stock feed. In a very short time it has established itself, both in this country and in Europe, as the food for beef cattle and for dairy purposes.(1)

(1) Yes, but why should it be sold for $35 a ton in England, and at $45 a ton here? *The Witness* gave that as the price ten day ago a good manure and feed merchant would do well here. A. R. J. F.

Knowles' New Style of Haymaking.

So bad has been the hay-season for the last two or three years, in England, that farmers have been driven to their wit ends to invent some means of finishing the half-dried grass after it has been carried to the stack. Mr. Knowles seems to have been one of the most successful in this pursuit, and we offer to our readers a representation of the plan he has thought out.

In one corner of a shed stands a strong fan, requiring only one-horse power to drive it.



KNOWLES' NEW STYLE OF HAYMAKING.

The current of air driven off at the circumference of a revolving fan is drawn in at the centres. Here the centres are inclosed within upright cases, and the current of air is drawn out of the box or cistern B, through the end cases C and E, and expelled at the circumference of the fan.

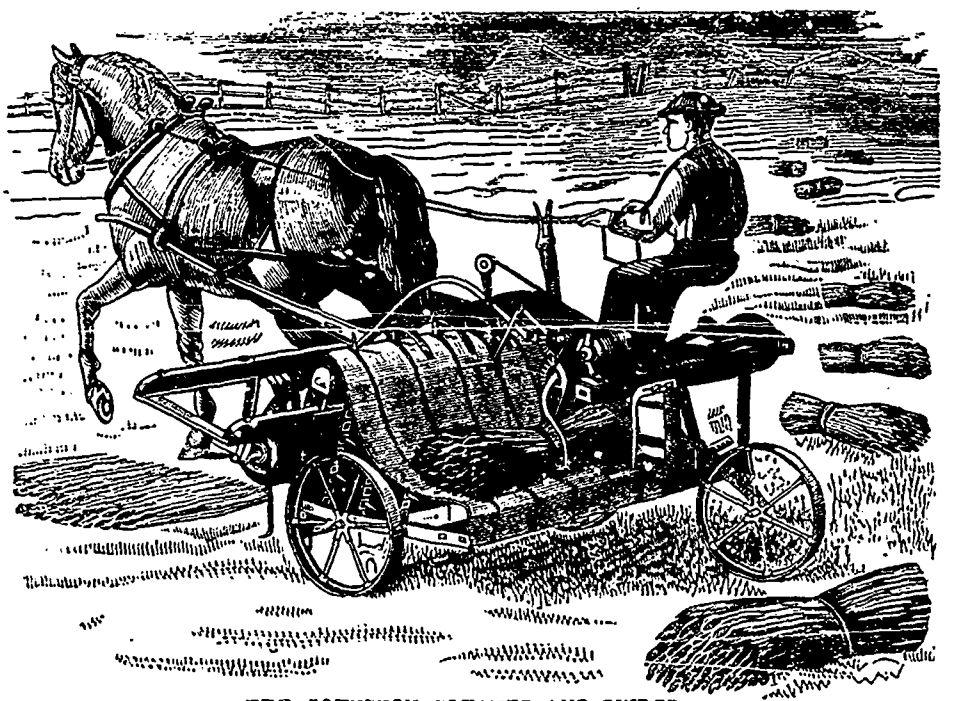
From the cistern B a drain or flue is laid in the ground, 3 feet deep, running under each stack that has to be dried. In the centre of each stack is a junction pipe H opening to the surface of the ground, and on the top of this is a common furnace damper I. As the stack is building, a sack filled with hay is set on the damper, the hay or grain i'ts built round it and the sack being lifted as the stack grows makes a chimney. The heat *cooks* the hay, and the fan keeps the heat under control. The draught comes down through the stack, drawing out the moisture through the chimney into the cistern, and the fan expels it. The action is a sucking, not a blowing, action, inspiring, not expiring, just like the best blowers over millstones.

"OUR contemporary *The Agricultural Gazette* persists in the belief that it has found the "coming sheep" in the Hampshire Downs, yet certain strictures on a previous article appear to have somewhat reduced the degree of confidence with which the advent of the new dominant breed was heralded. The breed is "coming," but "not yet come," we are now told; consequently the position which it is to occupy in the ovine world in the future is still problematical. It is clear, however, that our contemporary has a strong *penchant* for the Hampshires, and we are glad of it, for before those sheep can occupy a position equal to that of the Shropshires and Oxfords — both members of the same family—they will need some advocacy. At the same time, we venture to say that the Hampshires are a rising breed, and possess many valuable and profitable characteristics, but it remains to be proved whether they can become as cosmopolitan as the Shropshires, or as vigorous and massive as the Oxfords. For the districts from which their name is derived, and also for other soils and climates of a similar character, it is clear that they are excellently adapted, and it is not at all impossible, or even improbable, that they may be able to adapt themselves to other conditions with the readiness which has made the Shropshires the most valuable breed, perhaps, that we have in the country."—*Live Stock Journal.* (Eng.)

Horse-shoes kept on too long.

THERE seems to be no doubt that this causes more injury to the feet of a horse than anything else; for as soon as the shoe is fastened on, a double action begins, as his hoof grows

down and presses against the shoe, and the shoe is hammered forcibly up against the hoof every time the foot is set back on the ground after being raised. This makes the double action which is so apt to prove injurious. To obviate this it becomes necessary to have the shoe fit nicely and easily at all times to the horse's foot. To insure this it should be taken off and reset about once a fortnight; and in doing so care should be taken to first file off the clinching part of the nails outside of the hoof, so they cannot make large holes or tear the hoof as they are withdrawn. Some let shoes remain on the horse two or three months. Nothing can be more injurious to keeping up a sound good foot than this. The change twice a month or so allows the foot to expand, and keeps it in a healthy natural form.—*Rural New Yorker.*



THE JOHNSTON GLEANER AND BINDER.

The Johnston Gleaner and Binder.

In all nice work, simplicity is a sure promise of success. Too many intricate machines, are offered to our farmers, and we therefore hail with pleasure the principle involved in our present subject, viz., that separate implements are superior to combined.

In construction, the Gleaner and Binder is simple, unexpensive and not liable to get out of order. It is light of draught, and as the shafts are quartered the horse cannot damage the grain.

The Mammoth Bronze Turkeys of Mr. Taft are well known throughout the New England States, and are as fine in quality as they are in size and plumage.

Unoccupied farms in England.

SIR—Noticing a paragraph in your paper that there was 18,000 acres of land in Wiltshire going out of cultivation, and as the agricultural show is now being held at Salisbury, and as I want to take from 5 to 20,000 acres of land for rabbit warrens, and knowing that the principal landlords and tenants would be at the show, I sent my son and one of our *employés* to make inquiries, and do not hesitate for one moment to say that there is scarcely an iota of truth about the 18,000 acres being put out of cultivation. That there are farms to let I do not deny, but I do say in all sincerity, and will prove it, that where the landlords will make the rents and conditions of farming in keeping with the depression of agriculture, that I find no difficulty whatever in finding tenants I am rather more than a sexagenarian, and have been connected with landletting for rather more years than I like to talk about; and I can say that I never knew at any time more farmers ready to take good farms, provided that they can take them on fair and equitable terms. I repeat that where fair farms are unlet it is because landlords want more for the lands than they are actually worth under the present circumstances. I consider, and am prepared to prove, that the reduction of 20 to 30 per cent. will enable farmers to compete with the Far West, or any other country in the world. I shall take it as a special favour if your correspondent will put me in direct communication with any gentleman who has upwards of 2000 acres of land that he cannot find a tenant for, and will let it for the purpose I want. I am not particular as to country or district.—Yours, &c.,

N. B. Agriculturist. JOS. DAVISON.

Bakers' Profits.

An amusing proposal appeared in the Montreal papers the other day; that we should all give up housekeeping, and entrust our *menages* to the care of public cookeries. Pleasant enough, the plan, as regards saving trouble, but judging from the taste we have of it, already, in the one article of bread, I should say by no means economical. Have my readers any idea of what the profits of a baker ought to be? I will show them what the gross profits really are, in Montreal, to day:- premising, that a barrel (196 lbs.) of flour will make 66 four pound loaves, and taking as a basis of calculations the highest price quoted in the Montreal markets.

One Barrel of flour.....$ 8 00
66 loaves of bread at 22 cents..... 14 52

Gross profit = 81 per cent 6 52

Again, one loaf costs the baker in flour 12⅛ cents; the consumer, however has to pay for it 22 cents: gross profit per loaf 9⅞ cents. Once more, the pound of bread costs the baker 3 1/3 cents, the buyer is mulcted inthe sum of 5½ cents: gross profit 2½.

At this rate, if 20 barrels of flour are worked up per week, the pleasant result to the baker will be a *gross* profit of $130 or $6780 per annum. It is difficult to get at the *net* profits, but I think I am justified in saying that a *well managed*" Baking Company," with a moderate capital, and, an *honest* foreman, would pay a dividend of at least 25 per cent. It is very strange; we send wheat and flour to England, and yet bread is dearer here than in that far off country! It would be curious to find out what proportion of the profit of this barrel of flour, in bread, adheres to the farmer's pocket. Very little, I fear. ARTHUR R. JENNER FUST.

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