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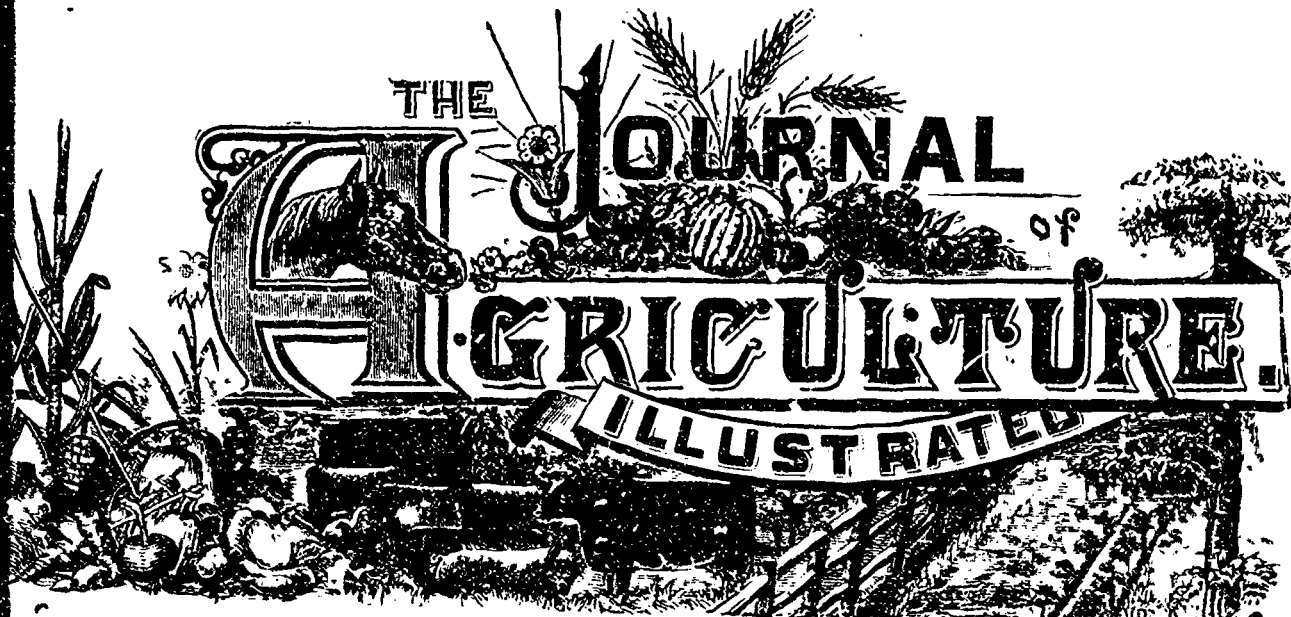
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NOTICE.—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through the secretaries of such societies.—**EDITORIAL MATTER.** All editorial matter should be addressed to A. R. Jenner Fust, Box 109, Lachine, Que.—or to Ed. A. Barnard, Director of the *Journal of Agriculture*, &c., Quebec.

OFFICIAL PART.

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Mr. Barnard tells me there is no duty on cotton-cake.

A. R. J. F.

DE OMNIBUS REBUS.

London purple.—I am told that London purple—an arsenicate—does not destroy the foliage of plants. If this is true, I should recommend its substitution invariably for Paris-green. The manufacture, or rather, I suppose, the diffusion of the latter varies so much from year to year, that I have seen the leaves of the potato thoroughly scorched up with a very moderate dose one year, and the following year, the same dose was not sufficient to kill the beetle. In spraying fruit trees, it would be well, in a bee-keeping district, to postpone the operation until the blossoms have fallen.

Cost of Silos.—The cost of building a silo varies, of

course, with the price of labour and of materials. Col. F. D. Curtis puts the expense of a silo for 20 cows at \$150.00; M. Arohambault at \$50.00. The Trappists at Oka built one 16 x 16 x 16, for \$20.00, and this would afford about 200 day's keep for the 20 cows. Prof. Cook finds that he can keep one-eighth more stock since he began ensiling corn with the ears fully ripe. It should be planted at the same distances as if it were intended for an ordinary crop, out when glazed, and the silo filled at once. This, of course, is very different food to the watery stuff that was put into nine siloes out of ten, and if it is a more convenient and a cheaper mode of harvesting the crop than the ordinary plan, no one can have a word to say against it either practically or theoretically.

Castrating rams.—I do not think there is much difficulty about the matter: All male lambs not intended for service should be castrated at ten days old or so. Rams that have been used in the previous season will be found free from *taint* if slaughtered in March or April. What says *Bailie Nicol Jarvie*: "There wad be a leg o'mutton, at our family-chack, and, it might be, a tup's head, for they are in season." Now, Francis Osbaldistone visited Glasgow towards the beginning of spring, as we find from internal evidence, for Andrew Fairservice "was trenching up the sparry-grass, and gaun to saw sum Misegun beans" on the eye of his departure from the Hall. The preparation of the tup's head is peculiar, it is sent to the smithy and the wool burned off with hot irons. Not a nice idea, but the Scotch seem to like it.

Rations for horses.—Mr. E. W. Stewart recommends as a ration for moderate-sized horses doing *good work*, twelve pounds of cut hay, mixed with ten pounds of corn-meal. I never tried it, but I should expect horses on such food to be

pretty faint at the end of a fair day's work. For five pounds of the meal, I should substitute the same weight of pease, in the probable absence of horse beans, and half a peck of carrots or swedes.

Artificial manures for pease and beans.—A correspondent asks again. What artificial manure do you advise for pease and beans? I reply: Ville prescribes as follows:

	Per acre.
	lbs.
Superphosphate.....	352
Muriate of potash.....	176
Land-plaster.....	352
	880

It may be found advantageous to use the above, but I confess that, with the exception of a fair dressing of farm-yard dung, I never found any benefit from any manure given to beans, pease, carrots, or parsnips. On poor, exhausted clays, plaster has been known to work wonders on the leguminosæ. Tares or vetches, plants of the same family as beans and pease, are very different, the finest crop of them I ever grew were dressed with 336 lbs. of guano to the acre, and they were on the eve of falling. The whole nature of the tribe is a mystery to me, but practically we know how to treat it, which is the main thing. Why should not nitrogen, phosphoric acid, and potash, increase the crop of carrots or parsnips as they increase the crop of swedes and mangels? I do not know, and nobody can tell me!

Ryegrass.—The discussion about ryegrass still continues to excite the farmers in England. The majority of the practical men say it is perennial, the theorists say it is not. I do not see that it signifies much, so long as it is universally found in all pastures, whether it is perennial, or whether it seeds down sufficiently to keep itself *en evidence* continually. But, if it is a constant constituent of the Hampshire irrigated meadows, as Professor Wrightson says it is, how can it but be perennial, seeing that these meadows are grazed bare by sheep in the spring, mown bare in the summer for hay, and grazed bare in the fall by cows, and this year after year continuously?

Ontario.—So hard put to it were the farmers of the district round Kingston last summer for cattle-food, that two yearling heifers and a weaned calf were sold for \$25.00! Strange to say, the times were so bad that the attendance at the Agricultural College was much reduced!

Bad cheese in the States.—Well, at all events, we cannot speak of our provincial cheese-makers in this tone; though I confess I cannot buy any good cheese in Montreal grocery-stores:

In the reports of the Dairy and Creamery Associations, on the other hand, there is much in the speeches and discussions that dairy farmers in this country would be interested in reading. Many a sermon on the obstinacy of dairy farmers in making bad butter and cheese, when they might, by a little painstaking, make first rate commodities, is recorded in these reports. To give one example. Mr. Hoard, of Wisconsin, who was the principal visitor and speaker at the Annual Convention of the Dairymen's Association of Western Ontario, held last January (though in the report for 1887), referred to the preponderance of poor cheese as follows:—"We are struggling with the problem in the United States

as much as you are here... Our people are clamouring, 'Why don't you give us some cheese we can eat?' I don't think there is a set of people on God's green earth who are so stupid as cheesemen. Now you have got it square in the teeth. I never saw a set of men that when a man asked them for bread they would give him a stone, and then damn him because he didn't like stones, as cheesemen do with respect to this question of home demand."

Cost of wheat-crop in Ontario.—Below will be found a statement of the cost of cultivating an acre of land for wheat. It will be seen that the whole expense of harrowing, &c., after the seed is deposited amounts to only 39 cents. Does this mean that, after the autumn-work of drawing water-furrows, &c., is finished, nothing more is done to the land until harvest? No harrowing, no rolling, no weeding in spring? If this is so, I no longer wonder at the small yield. There is no fault to be found with either soil or climate. Thorough farming, in those parts of Ontario with which I am acquainted, ought to produce at least 24 bushels of fall-wheat an acre, and exceptionally good farming 30 bushels. Twelve bushels from an acre of *manured land*, or even sixteen—1½ quarters or 2 quarters in English terms—are incredibly small yields for land of such quality as we find in the districts of Hamilton, St. Catharines, Kingston, &c., and I cannot see why men who succeed so well in fruit growing, cattle-breeding, and other agricultural pursuits, should not be able to produce a fair amount of that crop for which their province has been so long celebrated.

If a loss of \$2.33 is incurred on every acre of fall-wheat sown in Ontario, as the calculation annexed would seem to show, no wonder the President of the Ontario College complains that "farmers have great difficulty in getting a living: 'In Canada,' he observes, 'the prices of farm produce are unusually low, while manufactured articles are comparatively high. Generally speaking, we may say that what the farmer has to sell is cheap, and what he has to buy is dear. Therefore, the agricultural mind is disturbed. A feeling of unrest and dissatisfaction is abroad. The farmer finds it increasingly difficult to make a comfortable living, and something (*what?*) must be done to remove the difficulty, or the whole community will suffer." And the *something*, according to Mr. Mills, appears to be pretty difficult to do: "1. the yield of farm-crops must be increased; 2. better markets must be provided; 3. the cost of living must be reduced. And for these, he evidently hints at free trade with England and the States as the only remedy!

The following account is given of the average cost of growing an acre of winter wheat in Ontario, according to the returns of 197 correspondents of the Bureau of Industries:—

	dols. c.
Ploughing.....	2 95
Cultivating, &c.....	1 16
Barnyard manure (part charged).....	3 15
Manure applied previously.....	1 92
Seed.....	1 49
Sowing or drilling.....	0 42
After "fitting" or cultivation.....	0 39
Cutting and putting in barn.....	1 89
Thrashing.....	1 7
Marketing.....	0 85
Wear of implements.....	0 38
Rates, taxes, and insurance.....	3 76
Total cost per acre.....	19 43

The return for grain given in this estimate is 14 dols. 13 c. for the grain and 2 dols. 95 c. for the straw, or, altogether,

(1) They were four feet long, and of course had to be cut at once.

8 c. over 17 dols. Thus, there is a loss shown of about 2½ dols. an acre. In a similar estimate for spring wheat the loss shown is 11 c. under 2 dols. About half the value of the manure put on for the crop in each case is charged against the crop.

Growth of cereals.—A very concise account of the germination, growth, and maturation of a cereal has been lately given by Professor Wagner, of Darmstadt, which I condense for the information of those of my readers who believe that a thorough acquaintance with the origin and development of the plants they cultivate, is as useful as a knowledge of the origin and development of the cattle they breed.

"There are five stages in the life of a cereal; 1. the germination, or stage in which the infant plant lives upon sugar and albuminoids, just as the young mammal lives on the milk sugar, butter-fat, and caseine of its dam's milk." These materials are derived from the starch and gluten of the seed, and this is precisely what takes place in the grains of barley in the malt ster's *couch* and *floers* after steeping; the *aerospire*, which would ultimately become the *plumule*, or green shoot, presents itself at one end of the grain, and, as if frightened at the rough aspect of affairs, turns back, pursues its way under the skin of the *pickle* until it approaches its other end, and then has its travels rudely arrested by the fire of the kiln. Were the plumule allowed to shoot out, it would consume the whole of the sugar, into which the action of the diastase had converted the starch of the grain, and the malt would be worthless. It is worth anybody's while, who desires to appreciate these changes, to spend an hour or so daily in a malthouse, for a week from the time any *steep* may be discharged, "2. as soon as the seedling has thrust down its axis or radicle, and its plumule has appeared above ground, the roots begin to develop themselves, which development," in the malt floors, begins as soon as the *aerospire* makes its appearance; "3. when the roots are fully developed, begins a rapid growth upwards, as we see in wheat, oats, &c., in the summer months, 4. next comes the period of flowering, and, last of all, that of fructification, during which the chief supplies of the plant are derived from its own leaves, its stem, and its roots. An example of this may be seen when the stored root-crops throw up their stems and leaves though entirely deprived of their roots."

Ryegrass again—Mr Gilbert Murray, a well-known land-agent of Derbyshire, England, one who, like myself, regards an ounce of practice as worth a pound of theory, has been investigating the vexed question of the permanency of ryegrass. Everywhere, he finds it an important constituent of the best pastures; one of the earliest and most prolific of all English grasses, and he especially adverts to one point which I am surprised to see Professor Wrightson neglected to notice: the great grazing farms of the midland counties are administered in a peculiarly careful manner; they are divided into several fields, each of which is fed off in turn, and special care is taken that no plant, whether weed or grass, is allowed to go to seed. Did any such tendency appear, the piece was, in my time, immediately brushed over with a scythe, though now, I presume, a mowing machine is used for the purpose. And yet, these pastures are full of ryegrass! If the plant dies out every three or four years, or, as Mr. Evans, of Montreal, believes, every year, how on earth are these fine pastures stocked with it? If you persist in treating your pastures as if they could take care of themselves, they will not serve you well, my friends; whether they be of carefully selected grasses and clovers, or only the remnants of hardly scoured timothy meadows. Level feeding of a pasture and

then letting it rest for a few weeks, is one of the most certain methods of making it last.

The block test.—We have in England no adjunct to the exhibition of fat-stock such as there is at Chicago, though it is supposed that one will be established next year. A good judge of beasts, Mr. Turner, has taken the trouble to follow several of the prize-winners at the late Smithfield Club show to their last homes, and has kindly sent notes of his observations to the English Live Stock Journal. From these notes we learn that the best butcher's beast in the exhibition was, strange to say, a Sussex steer, whose per centage of carcase to live-weight was 71.67! Next came a Shorthorn heifer with 71.61, and after her a Hereford ox—70.02. No one who, like myself, knew the Sussex cattle forty years ago, and had lost sight of them since, would expect to see the very rough beasts they were then, stand so well at the Xmas show.

The Welsh cattle show the lowest per centage of all, with only 61, 62, and 63 per cent. of carcase. And yet they used to be, and, I hear, still are, great favourites with the butchers! This may be, though, on account of the great quantity of loose fat they, like the Sussex, invariably carry.

The champion beast of the show, Mr. Wortley's Devon steer, a few days short of three years old; live weight, 1,568 lbs.; carcase 1,160—per cent. 67.79.

Sheep in the U. S.—The following letters are from the Home and Farm, a paper published at Springfield, Mass. They offer another proof that the taste for good mutton is increasing among our neighbours, though I observe a tendency to stick to the wretched merinoes, carcasses of which I remember to have seen hawked about at Chambly, 30 years ago, by the sleigh-load, at \$2.00 apiece! Eugh! such miserable skeletons: only fit for stewing down in the stock-pot.

Mr. Powell's idea, that "sheep enrich and benefit the pasture even upon strictly dairy-farms," is erroneous; the flocks should be grazed by themselves, as they feed too close on ordinary grass-land. To say that they enrich pastures, from which they carry off the materials of their bones, flesh, and wool, is almost, if not quite, as great an error as the statement referred to in Mr. Barnard's letter of last month, that cheese-making tends to the improvement of a farm. But, when once the desire for mutton invades the American people, it will not be long before crops, such as rape, tares, &c., will be grown expressly for the flock, and the consumption of these within the hurdles with grain, pulse, and cake, will really enrich and benefit the land.

A shepherd, with a lad to help him to move hurdles, &c., will manage a flock of 600 sheep in an enclosed country.

An acre of good rape, with a pint of pease, or a pound of cake a day per head, will fatten 8 sheep. Our rape on the Kentish hills (chalk) in England, stands about 3 feet 6 inches high, by the 1st September. Many a dozen brace of birds (partridges) have I shot in it. Judging from memory, I should say there must have been an average of 15 tons an acre. Here, I should make the first sowing of tares, two bushels, harrowed in, and three pounds of rape-seed rolled in afterwards. The second and third sowing of eight pounds of rape-seed alone. Land to be prepared as for swedes or mangels, and the sowing to be broadcast.

Mr. Woodward, whose ideas I have often remarked to be sensible, fats "lamb and dam," a proceeding which, if he is a good buyer, must be profitable, but with the exception of the Dorsets and an Irish breed, the name of which I cannot recall, I know of no breed of sheep that can be depended upon for lambing down so early as, say, November 15th; for, in

order to bring that about, the ewes must take the ram on the 21st June. Now, ewes must suckle their lambs for at least 12 weeks, and it will take them at least eight weeks to reestablish themselves after the lambs are weaned; thus, unless the ewes have lambed in the January previous, I do not see how Mr. Woodward's plan can be carried out, and it cannot be easy to pick up such early lambed ewes even in the States. Col. Curtis recommends turnips and merinoes. He would find rape and Downs more profitable.

Eight sheep are generally supposed to eat as much as one cow, but a good deal depends upon the size of both sheep and cow brought into comparison.

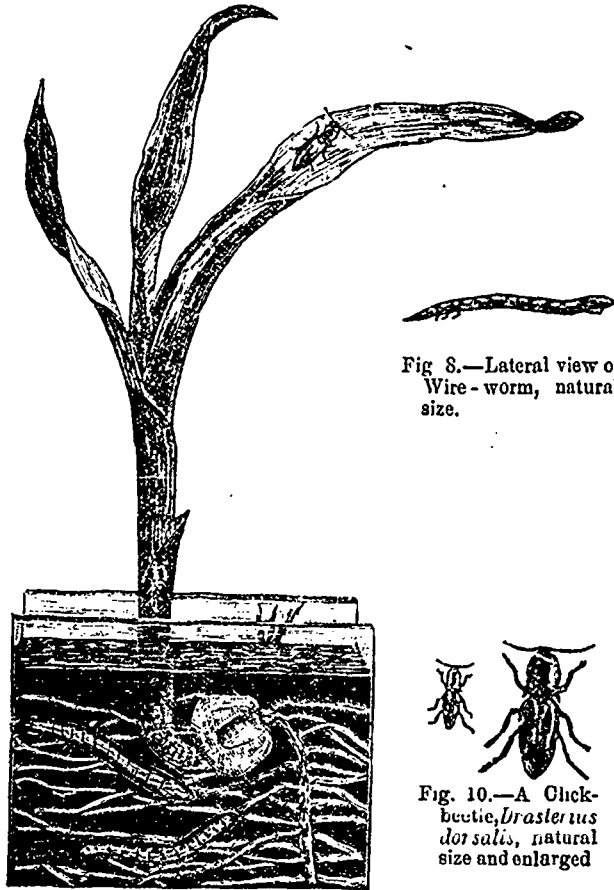


Fig. 6.—A corn-plant growing in a root-cage infested by wire-worms and click-beetles (from a specimen in the Cornell Insectary). The spotted beetle represented near the base of the plant is *Drasterius dorsalis*: that near the top of the plant is *Agriotes mancus*.

A large, roomy sheep is all very well on paper, but the most saleable sheep is one that weighs about 75 lbs. the carcass. The only reason for Southdowns selling a halfpenny a pound higher in London than the Hampshires, is that the joints of the former are more suitable to family consumption: there is no difference in the quality of the meat, but a neat, moderate-sized leg of mutton, weighing about 9 lbs., will always fetch more than one that weighs 12 lbs. or 13 lbs. In England we do not cut part of the loin in with the leg; that is the Scotch butcher's way, and the joint is still called in that country a *gigot*! The two loins form the *saddle*; and until one has tasted a saddle of well-fattened Down

wether mutton, one cannot be said to know what mutton means.

Sheep for cash.—All recognize the fact that there is no more profitable stock on the farm than sheep; and still there are many difficulties to contend with. The reason why so little mutton is eaten in this country is because there is so little good mutton produced. In England, the quality is even better than their renowned beef. Our farmers insist on feeding fine-wool sheep heavily with corn-meal and piling up the fat within their carcasses. Such meat is not fit to eat. Dogs are the greatest curse we have to withstand. If there could be some protection afforded by effective legislation, the profits that would accrue to the country would be marked. We need a tax on dogs that will rid the country of worthless ours. Sheep have their value upon every farm, even upon the strictly dairy farm, for here they enrich and benefit the pasture. I am in favor of sheep-raising always.—[George T. Powell, Columbia county, N. Y.]

I began keeping sheep, and made dog-proof pens in each pasture. A handful of oats will call the sheep there every night, and there is but one drawback. Sheep like to feed in the cold, early morning, and unless let out very early will lose a portion of this time and pleasure. But the sheep dung is saved and can be put where it is desired, and no piece is over-manured. There is no way in which a farmer can get so much money in proportion to the labor expended as with sheep. In South America, men go out and stay with the flock, taking care of them each day. As a result wool can be sold at 6¢ profitably. As a consequence of this cheap foreign production of wool we are forced to raise mutton for our profits. For this we need a large, roomy sheep with quantities of lean meat. Such an animal will take on the fat in such a way that the meat will be marbled, or the fat and lean mixed. Hundreds of finely-fed carcasses are annually sold in New York city for the highest prices. The best brings the highest price, and other mutton the very lowest. The money is what we are after. A lamb is worth more at four months old than at any time afterward.

Secretary J. S. Woodward buys ewes in July, turns them out and begins at once to feed them highly to stimulate them to come in heat early. They are bred at once to mutton rams and drop their lambs in November, when they are put in a barn basement that is dry and well-ventilated and the dams sheared. The temperature is kept uniform and the lambs are given the best treatment to force their development. Some of the lambs sell in January and the others in February and March at \$7 to \$15 each. He then carefully and persistently forces the ewes with food and sells them in April and May at the best prices which mutton brings in all the year. If we want money from our sheep we must follow his example so far as results are concerned. (1)—[James Wood, Westchester county, N. Y.]

Every farmer should have a flock. The Merino is better adapted to the rigors of our climate than any other breed. We must cross them with the mutton breeds, and the product will lay on fat and please and pay their owners. Again, if we make sheep pay we must raise crops to feed them on. Raise turnips, and feed your mutton to your family, selling any surplus.—[Col. F. D. Curtis of Kirby Homestead.]

Sheep or Cows.—How many sheep will be equal to nine

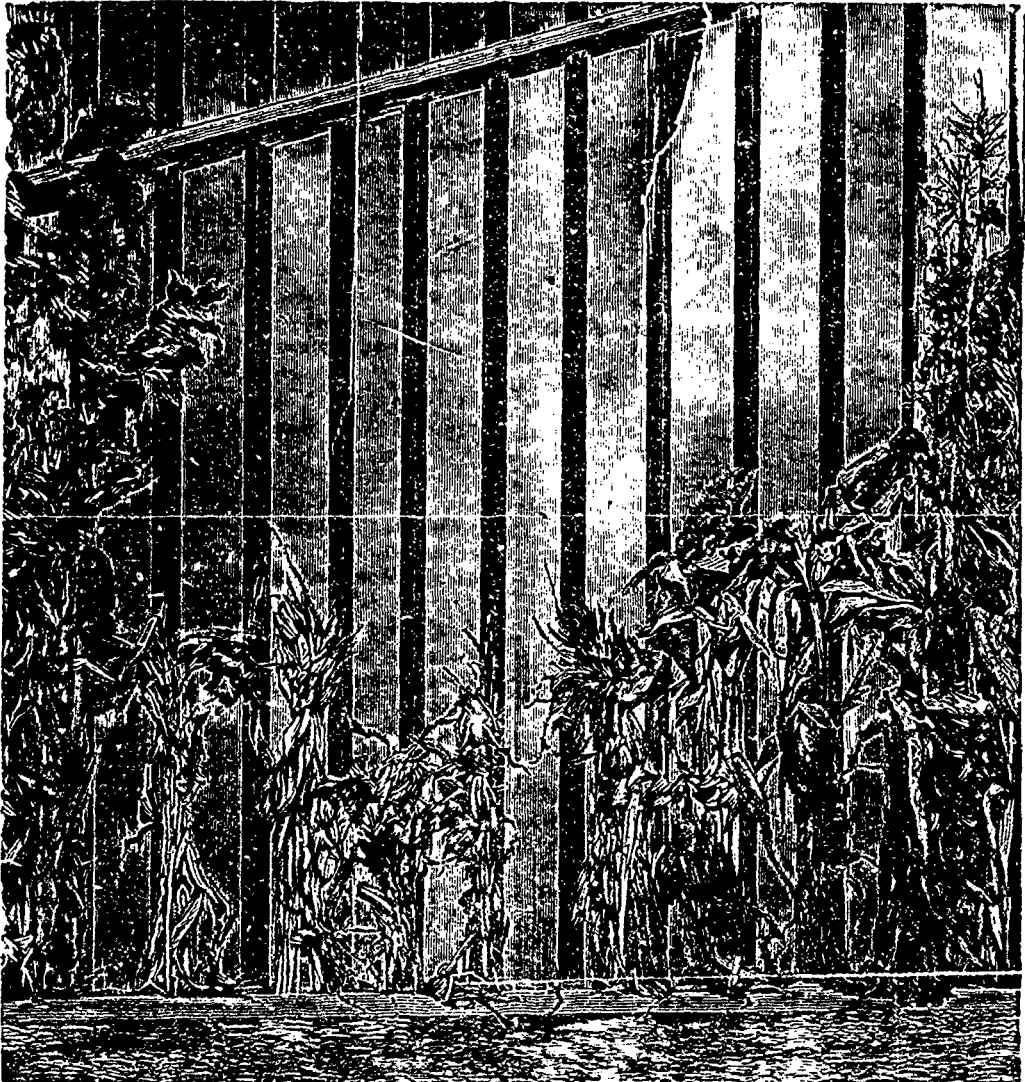
(1) Good gracious! We cannot all rear early house-lambs, any more than we can all go into dairying. A. R. J. F.

head of cattle? What kind of sheep are the most profitable, and what is the average profit on one sheep per year?

E. W. P.

Sheep require much less labor in tending than mixed cattle, or cows, and with good judgment in handling, will pay quite as well. Six breeding ewes of medium size—say about 100 lbs. weight—will require about as much feed as one cow and those larger and smaller in proportion. If P. has keeping for 9 head of cattle, besides a horse and cow, he can safely put in 50 store ewes. If grass lambs are raised, the

labor and time required to see that a stock of cattle (say 25 head) are properly watered and fed daily, is about all one man can do these short days, when they have to be driven some distance for water on cold, windy days. But while sheep need prudent and watchful care they do not require such constant attention. Nor do they need to be tied up by the head to prevent mischief. They will eat snow on cold rough days when they cannot well get to the water and their pens do not need cleaning out daily as those of cattle. The farmer who has a good, healthy flock of sheep and success in raising the lambs, can make more money than on a stock of cattle. Es-



FODDER-CORN.

yearly income should not be less than \$1 each for wool, and \$3.50 to \$4 each for lambs. Grass-lambs will pay about as well as stall-fed, providing the pasturing is good. An experience of nearly 40 years in raising lambs, confirms me in the opinion that a thoroughbred Southdown ram crossed with any good-sized, medium-wooled e. c. will give good results, though I prefer grade Southdown ewes from one-quarter to one-half bloods.—[Smith Harding.

Sheep in winter vs. cattle.—The difference in the labor of caring for sheep and cattle is largely in favor of sheep. The

pecially has this been the case for the last two or three years when there has been very little demand for cattle.

[J. L. Hersey.

Turnip and cabbage flea-beetle.—I am told by Professor Porter, of the Minnesota Experiment Station, that finely sifted coal-ashes, mixed with about one $\frac{1}{10}$ of London purple, is a complete protection against the *fly* which is so injurious to the young turnip- and cabbage-plant. This must be lightly sown on the young plants when damp, after dew or a shower, and if heavy rain follow, the dose must be repeated. I can

easily fancy that this mixture would be preferable to my own recipe of flower of brimstone and wood-ashes.

Wire-worms.—If the Experiment Stations of the U. S. succeed in devising means of arresting the ravages of this pluripresent beast, they will have deserved well, not only of their country, but of the world at large. My own idea is, that the animal is too hardy to suffer itself to be destroyed, and too crafty to fall into traps in any number. Though here and there, there may be found a simpleton amongst the tribe, the majority will keep themselves aloof from slices of potatoes, bouquets of clover, or any other deceitful form of food.

The wire worm has an especial liking for the tender roots of grain—whether to satisfy its appetite therewith, or for what object, I really do not know. This I know: he does not like obstructions to be placed in his path from one plant to another, and I proved this satisfactorily on my farm in Kent, England, some time about the year 1848 or '49. I had sown a small piece of oats—some five acres. The previous crop had been white turnips fed off by sheep eating pease and cake with a little clover-chaff; the land was ploughed in December, a long frost ensued—long, that is, for the S. E. of England,—and the seed-bed was, as the Kentish man says, like an ash-heap. The oats—Black Tartars—came up well and were flourishing, when one morning I saw that the wire-worm was at them. I had seen Crosskill's clod-crusher at work, and had heard of its effects, so I immediately ordered one to be sent to me from the Beverley works. It arrived within a week; the oats were rolled with it twice; and the crop was saved. The weight—2240 lbs.—of the twenty wheels jammed down the ground so tightly that the brutes could not travel. At least that was my solution of the question.

Mr. Charnock, in his essay on the farming of the West-riding of Yorkshire, which received the gold medal of the R. Ag. Soc. of England, propounded, as a cure for the wire-worm, the exhibition of rape cake, not as usual when used as a manure, in powder, but in pieces the size of a small marble. The brutes, he said, gorged themselves with the cake, and died in their gluttony. But Miss Ormerod, the celebrated entomologist to the R. Ag. Soc., having tried this as an experiment, declares that it failed utterly.

"The wire-worms are the *larvæ* of certain beetles, called *click-beetles*, from their peculiar habit of jumping with a *clicking* sound. Hence, if the parents are destroyed, the offspring will soon disappear. Baits of sliced potatoes, corn-meal-dough sweetened with sugar, and clover, were placed in various places in a badly infested field, and a series of twelve traps caught in three days no less than 482 beetles." Very possibly; but only conceive the time and labour expended in the setting and examining of the traps. The clover traps seem to have been the most successful.

Corn for the Silo.—In the words of the IV Bulletin of the Agricultural Experiment Station of Cornell University: "It has been for some time practically settled by those that are most successful in growing and making ensilage of a good quality that the corn must be grown, either in hills or in drills, with much the same cultivation that is given the crop when grown for the grain." So it comes to this, that the corn-crop being grown and ripened as usual, it is easier to harvest it in a silo than in the usual way of shocking it in the field until sufficiently dried for stacking. Well and good, and the same might be predicated of the oat-crop, the pea crop, or any other crop destined to the consumption of the stock of the farm. Unfortunately, this is not the general procedure, for "a large majority of the farmers of the State of New York, who annually raise a patch of fodder-corn, still

sow it broadcast in the manner that has long ago been shown to be disadvantageous, at least. In a ride of fourteen miles through Tompkins County, the past season, more than thirty such patches of sown corn were counted."

The illustrations on the page 53 will show what some of the corn was. see Nos 2-8. All were of the large varieties. No. 8 is a sample of State corn, and grew within a few feet of No. 7, the latter was green when the frost struck it, while the former, being nearly mature, was unaffected by the frost. I observed just the same effect on green tobacco after an early frost in 1869. the ripe leaves were uninjured.

Experiments were made at Cornell Station on the best periods for cutting silage-corn. The seed was planted May 7th, the first cutting was made July 24th, just as the bloom was showing. The second cutting was made August 8th, when the corn was hardly in roasting-ear condition. The third, September 3rd, when the majority of the ears were out of the milk, and in one week's time the adjoining corn was fully ripe. The enormous difference in the quality of the three lots will be seen by the following table:

Period	Date of Cutting	Yield pounds per acre	Per cent Water.	Dry Matter pounds per acre.	Protein lbs. per acre	Fat lbs. per acre	Carb. lbs. per acre
I	July 24	18762	89.34	2000.	250.6	42.	1543.6
II	Aug. 8	24578	83.57	4039.	368.4	81.99	3328.5
III	Sept. 3	27674	73.93	7214.2	585.8	199.1	6166.7

Other experiments, notably a series with artificial manures, were tried. Neither ground bones, cotton-seed-meal, nor the ash of cotton-seed, seem to have had any effect on the corn-crop. It is a pity, I think, that nitrogen in the form of nitrate of soda or of sulphate of ammonia was not used, as I can easily understand that though some 25 lbs. of nitrogen per acre was applied in the dressing of 400 lbs. of cotton-seed-meal, this nitrogen was hardly in a state to be assimilated by so rapid a growing plant as maize. Besides, during the whole time of growth, the season was very dry.

Plot.	Kind of Fertilizer.	Amt. per acre.	Yield. Lbs. per acre.
1.	Ground bone.....	400.	17100.
2.	Cotton-seed-meal	400.	15450.
3.	Cotton-seed ashes.....	400.	13900.
4.	Equal parts of cotton-seed ashes and cotton-seed-meal.....	400.	13600.
5.	Equal parts ground bone and cotton-seed-meal.....	400.	13200.
6.	Equal parts ground bone and cotton-seed ashes.....	400.	14730.
	Unfertilized plot on similar soil, but in a moister situation.....		20610.

The corn was cut September 12th and was well matured.

Sheep and pastures.—Dr. Hoskins is right, as usual, when he says: We have never been able to believe all that has been said of the "golden hoofs" of the sheep, when by that is meant to convey the idea that sheep necessarily improve a pasture. E. K. Seabury of Walpole, N. H., says, in this connection: "I know one pasture that years ago would keep 400 sheep as well as it does now 100, and there has never been anything but sheep on it since it was once a good hill farm, there is hardly a bush on it, and it brings up a mighty question: How can we renovate the pastures without its costing more than they are worth? Most of the farmers here

buy sheep because they can winter more than they can summer." Here is a subject for some of our sheep men to write about, and we should welcome a statement of any well-considered views on the subject."

The truth is, sheep do not benefit pastures; on the contrary, they injure them by keeping the more delicate herbage nipped off continually and thereby dwarfing its growth. The sheep's feet are golden, in England, in this way: they feed all day on the downs, and at night they are brought to fold on the green crops of tares, raps, &c., where they leave the manure from the food they have found during the day. The herbage of the downs is very short and close—I never saw enough to hide one's shoe.

Even during my time, on the chalk-hills, sheep were really considered as dung carriers. I have seen, over and over again, six-tooth—three-year-old—down-wethers going to fold, night after night, on the bare fallows, as a preparation for wheat, having had nothing all day but what they could pick up on the hills. They passed the whole night in the fold, and were let out in the morning when the dew was off. As six-tooths they were sold to the wealthy landlords, who used to boast that they always had four-year-old down-wether mutton on their table. And it was mutton, too.

Decomposition.—The Southern Cultivator recommends the use of "acid-phosphate" to hasten the decomposition of pig-cow- and horse-manure. It will have the very opposite effect. A correspondent of that paper "has two acres of turnips that he intends ploughing under next spring and planting in early beans." And this in North-Carolina, where cattle-food cannot, one would think be too plentiful. Another wants to know all about vetches for cattle pasture in winter, and is told that there are two sorts, the winter vetch and the summer vetch, "the former of which the English sow with their turnips!"

Two litters a year.—Mr John Gilmore, Iowa, said, at a late farmers' meeting in that state, that "two litters of pigs a year from a sow were not profitable. Even if a man is successful in raising a litter of fall pigs, they do not grow as well (as the spring pigs I presume), and the pigs of the following spring are not worth as much by the value of the fall pigs as if the sow had had but one litter of pigs." Rather involved, this statement, but the meaning is discoverable with a little pains. No one, I should think, would in a cold climate like Iowa's keep fall-pigs over the winter. Littered in in September, they should be all marketed by Xmas, half as sucking pigs and the rest as porkers of from 50 lbs. to 60 lbs. each. The sow, if properly cared for while nursing and afterwards, will have plenty of time to recover her strength and condition before her next conception. A sow goes with young 16 weeks, to an hour almost, and as her life is but a short one, very few having a third litter, she should be induced to make the best possible use of it.

OUR ENGRAVINGS:

- Fodder-corn.—See p. 54.
- Wireworms and Click-beetles.—See p. 54.
- La Ferté.—Percheron stallion.—See p. 57.

Superphosphate.—M. Bergeron, of St. Martin, county of Laval, writes to inquire about superphosphate; how to use it, and hopes it will not exhaust the land! He proposes to buy two tons, and his neighbours are, many of them, willing to do the same. M. Bergeron says that nothing has appeared in the French Journal of Agriculture concerning this manure; but this is a mistake on his part, as mention has been made over

and over again of this as well as of divers other fertilisers. Unfortunately, M. Bergeron does not say on what crops he intends to apply the manure; but let us take the ordinary crops grown on the average farm of the province and see how we should proceed.

If for roots, I recommend that half the usual dressing of dung be spread in the drills, and, in the but too probable absence of a manure distributor, the superphosphate sown broadcast, before splitting, at the rate of 2½ cwt. to the *arpent*—about 3 cwt. to the acre.

For corn, I do not think superphosphate is of much use, unless coupled with some highly nitrogenous manure, of which I should employ, say, 1½ cwt. of sulphate of ammonia or 1½ cwt. of nitrate of soda, with 3 cwt. of superphosphate, to the acre, in addition to half a dressing of dung as before.

For grain, the land being in fair condition, I propose using 1½ cwt. of sulphate of ammonia and 2 cwt. of superphosphate.

By superphosphate, I intend the plain mineral manure, made from our *apatite* dissolved in sulphuric acid. This can be obtained from either Messrs. Brodie and Harvie, Bleury street, Montreal, or Messrs. Lömer and Co., Custom-house Square, Montreal. The latter firm imported, last autumn, from my correspondents, Messrs. Downes and Co., Liverpool, a cargo of superphosphate which I hope they will be prepared to sell at a reasonable price. I write to them to-day to find out their terms. Messrs. Brodie and Harvie charge \$26.00 a ton.

Sulphate of ammonia, containing 20½ per cent. of nitrogen, (1) is to be had of Mr. T. E. Vasey, box 1727, P. O. Montreal, or at his ammonia-works, Hochelaga. The price varies, according to quantity, from \$3.20 to \$3.50 per 100 lbs.

In order to reap the greatest possible benefit from these manures, they should be reduced to the finest powder and mixed with twice their bulk of fine mould or wood-ashes, but care must be taken, if the latter is used with the sulphate of ammonia, to spread the mixture on the land at once and cover it with the harrows, &c., as otherwise the ammonia would soon vanish.

Crows.—Crows do winter on the Island of Montreal! We have had them in the bush, on the crest of the hill behind the new station at Laohine, all the winter.

Sulphuric acid.—I am given to understand that the 20% duty on sulphuric acid to be used for making superphosphate of lime is to disappear from the tariff. (2) This will be of immense benefit to all farmers. Two hundred and fifty pounds of raw bones and one hundred and twenty-five pounds of brown sulphuric acid, mixed with ten bushels of hard-wood ashes and two hundred pounds of land-plaster, will be amply sufficient to produce a crop of swedes or turnips. The cost of the above mixture per acre should not exceed:

250 lbs. of bones, at \$1.10	\$2.75
125 lbs. sulphuric acid at \$2.00.....	2.50
200 lbs. plaster at 30c	0.60
10 bushels ashes at 20c.....	2.00
	7.85

For the following grain-crop, top-dress with 125 lbs. of sulphate of ammonia at \$3.25 = \$4 05; total = \$11 95. Nothing will be required for the first crop of hay or pasture after the grain; so we have as an average cost for manure of the three crops of roots, grain, and grass, \$4.00!

(1) 25 % of ammonia.

(2) Alas! the information was false.

Say; 15 tons swedes at \$2.50.....	\$37.50
" 40 bushels of oats at 35c.	14.00
" 1½ tons of hay at \$8.00.....	14.00
	\$65.50

The dung made from the consumption of the hay, oat-straw, and swedes, should be put on the meadow in the autumn after the severance of the hay-crop. How long the grass is allowed to lie-out is a matter for individual concern. I should break it up for grain after two years' mowing and two years' grazing at most.

Should any one be tempted to collect bones and make an essay of manufacturing his own superphosphate, I should advise him to proceed as follows :

In any village, boys will collect bones, which have been thrown out from the houses, at two cents a pail-ful—about 7 lbs in weight. These should be put into a large tub, the larger bones having been previously smashed with a sledge-hammer. To the bones add ½ of their own weight of water, and pour in afterwards half the weight of the bones of the common brown sulphuric acid, stirring the mixture for a few minutes and then leaving it to repose. If the bones are large, and *knuckly*, they will require stirring again in a day or two, and it will take some time for them to dissolve. The knuckles, knees, and heels I almost think I should burn: the nitrogen would be lost, but that must give way in this case.

The bones being dissolved, make a heap, by the side of the tub, of the requisite amount of plaster and ashes, into which turn out the dissolved bones, mixing the whole by turning continually until no moist lumps appear. In a week or so, heap will be dry, and can be passed through a sieve and sown where wanted. The heap of plaster and ashes should be hollowed out in the middle, to avoid waste, and should be under cover. The finer the mixture the more immediate will be the effect on the young plant.

Apatite—The price of our native phosphate of lime—*apatite*—has increased of late so much so that superphosphate in England is up \$3 00 a ton! If any one should import this manure from the old country, I should advise him to select the higher qualities—those containing 35 to 37 % of soluble phosphate—as the cost of conveyance on these is the same as on those containing only 26 to 28 %. The same quality of superphosphate that was worth, in Liverpool, last year, only \$8.50 per 2,000 lbs., is now fetching there \$10.60! I append Messrs. Downes' prices, in quantity, for both sorts :

Superphosphate in bags—26 to 28 soluble per ton of 2240 lbs.....	£2.10 9
Superphosphate in bags—35 to 37 soluble per ton of 2240 lbs.....	£3. 5 0

I need hardly say that the manuring power of 75 pounds of the latter is equal to that contained in 100 pounds of the former.

M. Bergeron is evidently afraid of superphosphate exhausting the soil! No manure of any kind can exhaust the soil; manure is, emphatically, plant-food. *It is only what is sold off the farm that exhausts the soil.* Tobacco, for instance, exhausts the soil: cabbages, consumed by the cattle, do not. It is decidedly funny to hear a man—my friend M. Lavallée, of Sorel, for instance—talk, as I have heard him talk, of one sort of oats exhausting the soil more than another sort, and at the same time sending off all his hay and a good deal of his straw to the Sorel market!

I forget to mention just now, that when the land to be manured is of a heavy quality, ashes—potash in effect—may be left out of the recipe. Still, even in such land, I should feel inclined to try one picce with and another without ashes,

as there is no tolling but that in soils so thoroughly scourged with grain-crops as most of the soils of the province have been, potash may be wanting.

Duty on manures.—The duty is not to be removed from imported manures. The reason assigned is a curious one: the amount of duty on imported fertilizers last year was only \$2,250, and the removal of that small impost could not benefit the farmer much! The deduction to be made from these premises I leave to my readers.

Vegetables.—I always wonder, as I pass through the Eastern-Townships, why, with such fertile, easy-working soil, the farmers of that district have such miserable kitchen-gardens. To say nothing of the pleasure they afford the palate, vegetables, freely consumed, add greatly to the health of the consumer. They, too, like man, have their history, their legends, their poetry, and it is not uninteresting to recal whence they came, and how, in slow procession, they reached us, by the hands of crusaders, pilgrims, and monks, from eastern meadows and from western forests.

The cauliflower, chief of all the cabbage tribe, came to Italy, by way of Cyprus, and thence to England in Elizabeth's reign, but did not spread there much before the end of the 17th century. Turnips were known to the Romans, and were grown in English gardens in the 16th century, but did not become a cattle-crop till somewhere about Queen Anne's reign. Even as late as 1838, I remember our Welsh tenants were reluctant to thin them out: "If God Almighty," said one of them to my brother, "sends us as a good plant, why should we destroy it with the hoe." However, they soon learned a better lesson.

Spinach, which, as Thomas Ingoldsby says, "is perfectly antiphotetic to Greenwich," comes, of course, from Spain: Hispania, Hispanica, Hispanage. It was a favourite of the monks in England as early as 1358. Wash it in innumerable waters, strain and press it as nearly dry as possible after boiling it, and serve with lightly cooked poached eggs and sippets of fried bread. We waste a good deal of land here. In the part of the garden intended for tomatoes, which can hardly be set out before the Queen's birth-day, a crop of spinach can be had long before the tomatoes assert their right to the entire occupancy of the ground.

Scorzonera, or black salsify, used by the Moors as an antidote to snake-bites, entered France in 1616. The eschalot, or shallot, as we English pronounce the name, is from Ascalon, where it grows wild.

Blenheim, (Hochstedt) strange to say, led to the introduction of celery into England! Thus: if Marlborough had not taken Marshal Tallard prisoner at that battle, the latter would not have passed eight years in England, from 1704 to 1712, where, finding the people ignorant of the finest flavouring material of soup, and compassionating their unhappy palates, the benevolent captive sent home for celery-seed, and instructed the great Duke's gardener in the art of growing it.

It is quite impossible to define either Pliny's animals, fish, or herbs. It is a mere chance whether the creature he writes about is a mule, a zebra, or an onagra; whether the fish he mentions is a turbot, a cod, or a good red-herring; the plant, a plum, a pear, or a quince; so, he calls both the carrot and the parsnip by the same name: *pastinaca*. Apicius, however, the "notorious glutton," who wrote about thirty years before Pliny the Elder, speaks of *carota* as well as of *pastinaca*.

Salads were not common in England before the middle of the 16th century; that is, what we call salads, though as early as Chaucer's time the *cresses*, both land and water, *chenopodium*, or goosefoot, *bonus Henricus*, or good king

Henry, and other wild plants, were gathered and eaten "with a vast deal of relish" by those whom Sir John Chester(1) condescendingly terms "our friends of the lower orders." Lamb's quarters—goosefoot—is nearly as good as spinach, though the Lincolnshire people still prefer the *bonus Henricus*.

Dandelion, the forerunner of our *endive*, I never could tolerate, either in a salad or as a cooked vegetable. The flavour is coarse, and the material harsh.

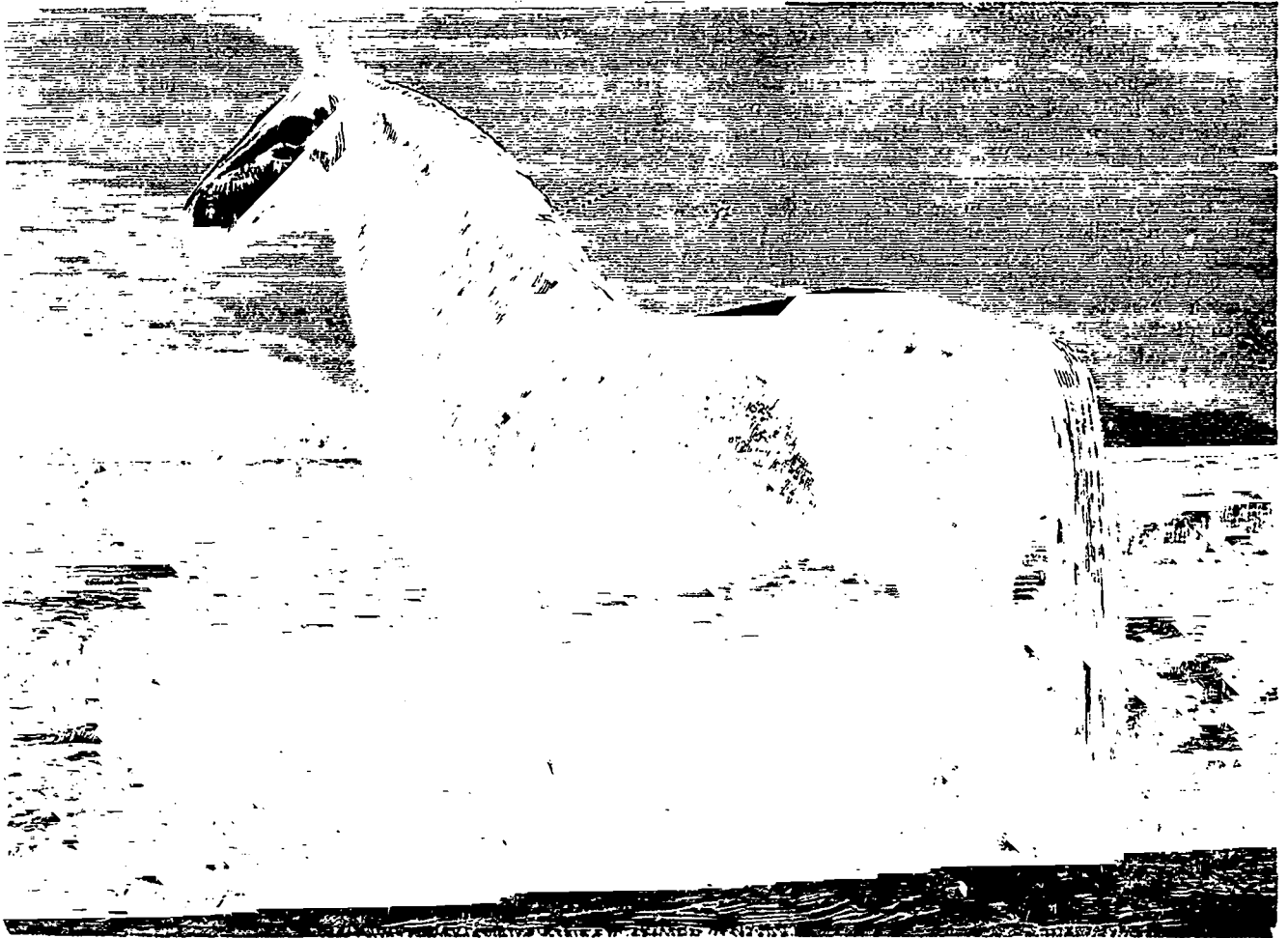
Of *leeks*, one may say that no good stock for soup can be made without them. The Scotch have two soups, or rather broths; *cockie-leekie*, which I ate in Dumbartonshire in 1846 and found delicious, and barley-broth which I did not like at all. To make the former: take an old fowl and stew

dant last year, particularly at Laokino. The *puff-ball*, sliced and broiled, with pepper and the tiniest piece of fresh-butter, is delicious.

But unless a great deal of rain falls in early September, mushrooms are never plentiful anywhere.

Haricots verts, green French-beans, are good, if they are young and tender. Sow them twice as thick as usual: the shade is of importance. In Provence, they dress them with oil and garlic, for which atrocity the Provençaux deserve impeachment. I adore both oil and garlic in their proper places, but with such a delicate vegetable as the French-bean—Fough!

Asparagus, I am convinced, was the ambrosia of the vegeta-



LAFERTE 5144 (452).

it, for a week or so, with sliced leeks. To grow leeks: sow them in a seed-bed, and transplant into trenches six inches deep, a foot or so apart, and earth up like celery. Boiled, and served on toast with melted butter—not the *sauce blanche* of the Canadian *cuisine*—they are the best of the onion tribe.

To cook a cauliflower *properly*, place it in a pot only large enough to let it stand upright in, cover close, and let the water reach only up to the middle of the stalk: so shall the head be crisp and not sodden.

Mushrooms, of these I have spoken at length more than once in this periodical. Wild mushrooms were most abun-

rian party among the *Di Majorum Gentium*. Here, again, keep the heads out of the water, as before recommended for cauliflower.

Pease should be gathered young, boiled savagely in lots of water, drained thoroughly, and served at once. If the boiling has been stopped for an instant, they will be brown instead of green.

After this summer, we unfortunate Lachiners shall have neither good tea, coffee, nor well cooked vegetables! An aqueduct is in preparation, and the water will be taken from the limey St. Lawrence, instead of from the soft Ottawa! What a *bêtise*: the extra amount of soap consumed would almost pay the difference of cost of placing the pumping ap-

(1) See *Barnaby Rudge*. My leeks are sown to-day.

paratus. However, as my house is only twenty-five yards from the Ottawa, I will take care it is supplied with soft water for the more important operations of the household.

Did my readers ever hear of "Marrow-puddings?" As neither animal nor vegetable marrow enters into their composition, the name has always been a puzzle to me. I found out lately, however, that the original puddings were called *Mary*-puddings, in honour of the Blessed Virgin.

Jersey cattle.—Here is good news for the purchasers of Jersey cows! "The prices of Jersey cattle after getting up to a high standard, have fallen to pretty nearly the rates current thirty years ago. In 1859, Col. Le Couteur, the author of the prize essay on the farming of the island, which appeared in vol. XX, part I, first series, of the Journal of the Royal Agricultural Society of England, gave \$60 to \$70 as the price of a two-year-old heifer, and it is now \$60 to \$75; while the price of a *first-rate* four-year-old cow was about \$125 in 1850, and is so still, though fancy prices are still given for show animals." See "Glimpses of Farming in the Channel Islands," by Wm E. Bear; R. A. Society of England's Journal for October, 1888.

Butter is still generally made in Jersey in the old fashion: the cream is allowed to sour on the milk, and a pleasant mixture of butter and cheese is the result. The butter is churned into a lump, not washed in grains in the churn. There is one creamery in the island, the patrons of which receive 8d a gallon for their milk, and get part of the separated milk back at half-price, the rest being made into cheese.

A Laval separator, an end-over-end churn, a *delaiteuse*, and a Norwegian butter-worker are used. The butter is excellent, a rare thing in Jersey, but the dairymaid was trained in one of the English or Irish dairy-schools.

Immense crops of tomatoes are raised in the island. Mr. Bashford has 13 acres of land under glass, and last year sent 224,000 lbs. of tomatoes to the English market, besides 25 tons of grapes! French-beans, potatoes, and tomatoes are grown in cool-houses in alternate rows. Green-pease are produced early in April. In February and March, tomatoes fetch 50c to 70c a pound, wholesale, in the London market; grapes, from \$1.00 to \$3.00 a pound in March and April.

Few things are more amusing than to listen to a Jerseyman's opinion of the cattle and Chaumontel pears of Guernsey, and afterwards to hear a Guernseyman's depreciatory account of the cows and pears of Jersey. I wish those of my friends who object to "general purpose" cows would just visit Mr. Abbott's herd of Guernseys at Ste-Anne de Bellevue!

One thing the farmers of the Channel islands are not afraid of: employing labour. Mr. Le Pelly, whose farm of 36 acres imperial, is nearly the largest in Guernsey, besides the hands employed in his glass-houses, &c., has four men constantly at work throughout the year—he works hard himself, too. Wages are about 75 cents a day, with 10 cents an hour for over-time.

A mixture of seeds for seven-years-ley, which is new to me, is grown on several farms in Guernsey: clover, lucerne, and Pacey's perennial ryegrass. I hope to get this tried at the Experimental farm of the province when it is in operation; in the mean time, a small piece of land will be sown with the mixture at Sorel, and an account of its behaviour given in the Journal.

Of the Guernsey cows, Mr. Bear says: "I was much struck with the generally high standard of excellence in the Guernsey cow I saw. The uniformity of type is certainly greater than it is among the Jerseys, and seemed to me that the same might be said of the standard of merit." But there is the same defect in the butter that was noted in Jersey; by

churning the whole soured milk into a lump, the casein gets mixed up with the butter irredcomably, and to my mind the stuff is detestable; at least, I know that during a stay of four months in the island I never tried it after the first day. Still, as Mr. Bear says: So long as they get 36 cents a pound in summer and 50 cents a pound in winter for it, they may well be satisfied, and have no reason to change a system under which, in reality, they dispose of a considerable quantity of cheese at those high prices.

Now the famous herd of Mr. James, of Les Vauxbeléts, whence Mr. Abbott's is derived, is dispersed, the chief herds in the island are those belonging to Mr. Le Pelly and Mr. Le Patourel. I regret very much that that fine bull Rufas, from the Vauxbeléts stock, was slaughtered for beef at Sorel last summer. He was just in his prime, and a finer specimen of the strain did not exist. I did all I could to save his life for a year or two, but was unsuccessful. There must have been a *jettatura*, as the Italian peasants call it, or an evil spell, over everything connected with Lincoln College.

Colouring butter.—I take this opportunity of mentioning that high-coloured butter is not liked by the wealthier classes in England. A deepish straw-tint is about the thing. Butter made on our own (cheese) pastures in Glostershire is always sold at an inferior price, the richness of the grass imparting almost an orange-tint to it.

ARTHUR R. JENNER FUST.

Vick's Floral Guide, 1889.

We have just received from Mr. James Vick, of Rochester, N. Y., a magnificent publication which should be seen in all houses, where people take an interest in gardening and flowers.

The engravings are splendid, and as for the chromocms which adorn this beautiful book, they are worth framing.

We have frequently ordered seed from the Messrs. Vick and they have always given us entire satisfaction.

Send fifteen cents in postage stamps for the "Floral Guide" and after having chosen the necessary seeds, the firm will give you credit for the price of their catalogue, which thus costs nothing.

The seed is sent to any address, free of postage, *merely at catalogue price.*

ROOT-GROWING.

Mr. Séraphin Guèvremont, of Sorel, in his address to the Dairymen's Association at L'Assomption, in January last, expressed himself as follows:

Before the year 1885, I had never grown any root-crops, unless you like to call potatoes, of which I used to grow a good many, by that name. In 1884, having remarked some very fine crop of mangels, carrots, swedes and cabbages on the Fosbrooke-farm, which was then under the management of Mr. Jenner Fust, (1) I made up my mind to imitate him, and to make a trial of a system of cultivation which, up to that time, I had regarded as very difficult. In 1885, I followed his instructions, and, under his immediate direction, I grew about 1½ acres of swedes and carrots, the yield of which so pleased me that I kept on increasing the extent of my root-crop until this year, it exceeds 19 acres. Up to the end of 1887, I worked under Mr. Jenner Fust's daily direction, who called me and my brother "his pupils," but this year, 1888, we have been left to ourselves, Mr. Jenner Fust having left Sorel, and have succeeded perfectly well.

(1) It was the farm intended to be a farm of instruction for Lincoln College, but there were no funds! A. R. J. F.

M. Péloquin, the well-known extensive market-gardener and farmer at St. Hyacinthe, in a letter to the Secretary of the Dairymen's Association, writes as follows :

From what I hear from my relations who reside at Sorel, these crops (swedes, mangels, &c.,) seem to be easy of cultivation, and, comparatively, cheaply produced on the farm of the Messrs. Guèvremont, who were taught the system by Mr. Jenner Fust during his residence at Sorel.

(From the French.)

Tushingham House, Waterville, P. Q.,
March 8th, 1889.

ARTHUR R. JENNER FUST, ESQ.,

Sir,—I often see in your paper articles with reference to growing roots, and this month I see a statement of cost (I presume of an acre) by Mr. Wm Morton. I thought I would give you an estimate of what it costs me, altho' I only raise from 7 to 10 acres annually. I always plough oat stubble in the fall, manure, and harrow, and then let the ground rest until spring. In the spring I put a two-horse duck-foot cultivator through and a cross it, then roll lightly, and drill up 27 inches wide; then I sow 3 lbs. per acre, and if I don't raise 600 to 800 bushels to the acre of swedes, it is not my fault. One of the main things is the thinning. I can not get any one but an Englishman to do that: a good man, such as I have, will thin 4 rows to a Frenchman's one, and then, probably, the latter does not half do his. A good man will thin 2 acres in 3 days; or, rather, my man and myself can thin 4 acres in 6 days. I cannot understand how it cost M. l'abbé Chartier so much to thin his roots; his acre must have been a big one. The reason I do not manure in the drill is that it takes less manure and less time, which is something in this country; altho' practically the manure is all in the drill, it being on top of the ground when I drill, the double plow closes it together. I manured in the drill 5 years ago last summer but have always raised a better crop broadcast :

Ploughing	\$2.00
Carting 20 loads dung....	1.00
Harrowing25
	\$3.25 cost in the fall.
Cultivating.....	\$1.00
Rolling.....	.25
Drilling75
Sowing.....	.25
Thinning at most.....	1.75
3 lbs. seed at 23c.....	.70
To cultivatings.....	.50
	\$5.20 cost in the spring.
	\$8.45 total cost per acre.

I raise mangels the same way.

I wonder how the above will strike your learned friend the Abbé. I remain yours very truly,

J. WALTER N. VERNON.

From Mr. Vernon's letter on the cost of growing roots we may gather two things of great importance to the farmers of the province: 1. that roots can be grown as cheaply here as in England, if the grower knows his business; 2. that swedes and mangels can be produced at a cost of less than 2 cents a bushel.

Last Monday—March 4th, Mr. Ewing, the seedsman at Montreal, after a good deal of conversation with me on this subject, summed the question up the following words: I remember that, in Forfarshire, a woman used to single half-an-

acre of roots in a day, and I see no reason on earth why the same should not be done here.

I suppose there are Frenchmen and Frenchmen: my Sorel lads were very handy and easy to teach, but I fancy, as a general rule, the Canadian French do not like jobs that require the niceties that are demanded in singling roots.

Mr. Vernon supposes that M. Chartier's acre must be a large one: on the contrary, the Abbé speaks of an *arpent*, which is nearly one-sixth less than an imperial acre!

Mr. Lond, of Cowansville, I should recommend to try 125 lbs. of sulphate of ammonia to the acre, without bone-compost, for oats, unless the bones are completely dissolved. I do not think ashes would help grain unless sown the previous autumn. His plan for mangels on heavy land is perfect. I hope he will sow them on the flat, after a good harrowing and grubbing, and rolling. The Messrs. Dawes drill up their autumn dug land, and it does not answer at all.

I should keep my bone-compost for sowing on the young seeds, after the grain-crop is removed, or, *best of all*, with swedes. A ton of bones should bring a good crop of swedes on 5 acres.

Mr. C. E. Johnson, who writes from Warwick, "wishes to know if he can buy land-plaster and phosphate at the same place, as he wishes to load a car with them." I suppose Messrs. Lyman and Sons would supply the plaster and either Messrs. Lömer and Rohr, or Messrs. Brodie and Harvie, the phosphate. But I do wish people would learn that the word I have underlined conveys no distinct meaning to the scientific mind except as the partial definition of a chemical compound. It is, I regret to say, used in the States as an appellation of fertilisers in general, but I hope its use in that sense will not creep in here.

ARTHUR R. JENNER FUST.

Cowansville, P. Q., March 11th 1889.

A. R. JENNER FUST, ESQ.

Dear Sir,—Will you kindly give me the address of Mr. T. E. Vasey. (Box 1777 Montreal) I have been wanting to try some sulphate of ammonia for some time but did not know where to get it until I saw your letters in the Journal.

I have about two tons of bones that were broken on a maple block a year ago, I composted them with lime and woodashes and after turning them, I covered the heap with black muck.

I thought of applying this mixture with 100 lbs. of sulphate to the acre for oats on a yellow clay.

I ploughed in manure last fall for mangels and intend using some sulphate before seeding. Yours truly,

G. E. LOND.

I get from 100 to 150 bus of ashes every year what would be the cheapest source of phosphates to buy to mix with them. Brodie and Harvie offer one for \$31.00 the total, phosphoric acid being 14 to 16 per cent which is only 2 per cent more than No. 1 fertiliser: is that good value? G. E. L.

ARTIFICIAL MANURES.

Messrs. Lömer and Rohr have had the goodness to send me a price list of the artificial manures they imported last year from England.

I regret to see that all four qualities contain more or less *potash*, which adds materially to the cost of the fertiliser, is rarely necessary on three-fourths of our soils and, if required, can be more cheaply supplied in the form of woodashes.

Au reste, these manures come from a good, respectable

firm at Liverpool, and are as cheap as anything of the sort in the market.

If Messrs Lomer and Rohr wish for an honest report on the *practical* effects of their manures, I will undertake to have the Nos. 1, 2 and 3 carefully tried on two farms of different soils, and publish the results in the Journal.

200 lbs. of No. 1, with the addition of 100 lbs. of sulphate of ammonia, would make an excellent dressing for an acre of any *grain-crop*, at a cost of \$6.00.

The prices are NET, carriage paid to the nearest station; but the firm informs me that for carloads, 10% will be deducted.

A. R. J. F.

PRICE LIST.

COMPOUND GENERAL FERTILIZER.

No. 1.—GUARANTEED ANALYSIS.

Total Phosphoric Acid 11 to 13 % of which 9 to 11 % Soluble and Available. (=19.6 % to 24 % Phosphate of Lime.)
1½ to 2½ % Ammonia.
1 to 1½ % potash.

ACTUAL RESULT.

Total Phosphoric Acid 12.39 % of which 10.58 % Soluble and Available (=23.09 % Phosphate of Lime.)
2.01 % Ammonia.
3.89 % Sulphate of Potash.
Price, \$28 per Ton of 2,000 lbs.

CEREAL COMPOUND FERTILIZER.

No. 2.—GUARANTEED ANALYSIS.

Total Phosphoric Acid 11 to 13 %, of which 9 to 11 % Soluble and Available.
2½ to 3½ % Ammonia.
1½ to 2½ % Potash.

ACTUAL RESULT

Total Phosphoric Acid 12.74 % of which 11.21 % Soluble and Available (=24.47 % Phosphate of Lime)
2.93 % Ammonia.
3.22 % Sulphate of Potash.
Price, \$33 per ton of 2,000 lbs.

COMPOUND ROOT FERTILIZER.

(Potatoes, Beets, Mangels, Vegetables, Tobacco, Flax, &c)

No. 3.—GUARANTEED ANALYSIS.

Total Phosphoric Acid 10 to 12 % of which 8 to 10 % Soluble and Available.
3½ to 4½ % Ammonia.
6 to 9 % Potash.

ACTUAL RESULT

Total Phosphoric Acid 11.37 % of which 9.84 % Soluble and Available (=21.48 % Phosphate of Lime.)
4.24 % Ammonia.
10.75 % Sulphate of Potash.
Price, \$37 per ton of 2,000 lbs.

COMPOUND FRUIT FERTILIZER.

No. 4.—GUARANTEED ANALYSIS.

Total Phosphoric Acid 10 to 12 % of which 8 to 10 % Soluble and Available.
2 to 3 % Ammonia.
7 to 10 % Potash.
9 to 12 % Alkali Salts.

ACTUAL RESULT.

Total Phosphoric Acid 11.59 % of which 10.31 % Soluble and Available (=22.51 % Phosphate of Lime.)
2.55 % Ammonia.
13.79 % Sulphate of Potash.
10.44 % Alkali Salts.
Price, \$38 per ton of 2,000 lbs.

The actual analysis above referred to, is the result of samples drawn on shipment at Liverpool, and submitted to ALFRED SMETHAM, F.C.S., F.I.C., Liverpool.

Goods are packed in extra strong bags each containing

200 lbs. They have been manufactured this summer, and by our special order.

Prices are net, freight paid to nearest R. R. Station.

Buyers receive full instructions how to use Fertilizers.

A Farmer's Earth Closet.

EDS. COUNTRY GENTLEMAN—When our farms were first settled, from 50 to 100 years ago, little or no attention was paid to sanitary matters. For a few years it probably made no difference, as the earth would absorb a good deal of filth before the air would become dangerously impure, or the well water unfit to drink. Now, it is becoming a serious matter, and one that every farmer should look into promptly. The contents of closet vaults will in the time work into the well water. Foul drains, or slops thrown always in one place, have sent many children to the other world.

At this time I want to write you about managing the closet. I say only what I know when I tell you that the accumulations in the great majority of farmers' out-houses soak away into the earth unobstructed. Sometimes they are 50 or more feet from the well and sometimes they are not. In the light of the present day it is a strange thing that any reading man can use a place year after year, that is almost directly over his drinking water; but I can show you too many such cases. (1) When I came on this farm, this was pretty nearly the condition of affairs here, and some previous residents paid a terrible penalty for it, too. Doubtless the doctor and the minister did not ascribe their trouble to filthiness; but if I should truly narrate just how things were around the house I think you would.

When I came here the well was promptly closed up, for years, although we had to go 40 rods for water. A new out-house was built, and instead of a vault in the earth we got an oil barrel, sawed it in two and set it on top of ground. Then muck was used freely, as an absorbent. No more filth went into the earth. As far as sanitary conditions are concerned this was all right; but it was not handy. A half barrel is an awkward thing to take away and empty. The muck had to be got up in a dry time and put away in barrels in the barn. It was in the way, and a bothersome chore to have to go and get a large pailful every few days. I tried putting in a barrel at a time; but it was not handy getting the muck out of the barrel.

All this time I have been studying how I would have it when I got able and had time to attend to it. The good time has come. We have built a new closet, with a place to store the muck right in it, where it will be handy to get at with a little shovel. And we have something which we think will be much handier to empty than a half barrel, as well as cleaner.

Fig. 1 shows a cross section of privy at top of seat: *a* is the seat, which is hung on hinges

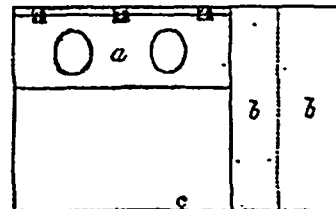


Fig. 1.

so as to lift up; *b b*, on the same level, is the bottom of muck box; *c* is the door which swings around against the muck-box.

(1) At the Fosbrooke farm at Sorel the well-water was unusable for man or beast.

A. R. J. F.

Now look at fig 2 which shows a perpendicular section lengthwise, one foot from the back side of building. You will notice the muck box *h*, which runs clear across from front to rear, over *b b*, (fig. 1). The front of this box, *g*, falls back at the bottom so the muck lies only over the back part of *b*. From the dotted line forward is a shelf to shovel on. The muck can be put in over the top of *g*, filling to the roof.

Where one has it, there is nothing better to use as an absorbent than dry muck. Where one can not get this, road dust or dry earth can be used. This box will hold some 30 or 40 bushels, enough we think for a year. When the first dry spell comes, in the summer, we hope to fill it once for all, for a year, and have no more bother. It will be as handy as possible to get it to use, daily, even to the last shovelful; *d d* are galvanized iron pails. They are 14½ inches high (seat 15) 10 inches in diameter at the bottom and 13 at the top. They are made of the best iron and have handles, of course, that shut over outside the pails. One can lift up *e* very easily and take them out, when they can be carried to any point desired and emptied. The pails were made largest at the top so the contents could be got out easier in cold weather. A little hot water poured on the outside of pails will probably make them empty easily.

In fig. 2, *f* is the floor which goes right across the building, all tight. The size of building

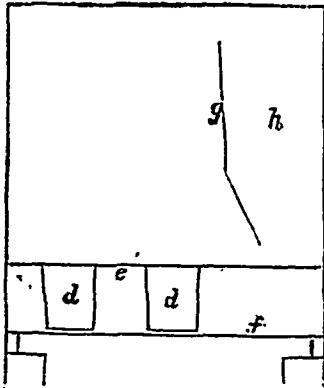


Fig. 2.

is 4½ feet by 7, and scale of drawings four feet to inch. I built entirely of matched flooring, planed on both sides, except that 2 by 4 pieces were used for sills and plates and rafters. This makes a cheap, neat, tight job. The building is painted all over, outside and in. The floor and roof boards (planed) are painted. Entire cost about \$25, which includes carpenter's bill, pails and all.

The muck box arrangement, so far as I know, is original. For the idea of using pails I am greatly, indebted to the New-York Tribune, which some years ago gave the experience of some gentleman who had used them. I made a note of it, right then, that they were just what I wanted as soon as I could get around to it.

A ventilating pipe of tin may be found useful, leading from a hold in the back part of *b* down under the seat, and then up out of top of building.

T. B. TERRY.

Summit County, O.

We re-engage from the London Live-Stock Journal a sketch of a cross-bred steer which attracted great attention at the late Smithfield Fat-Stock Show. This animal, appropriately named "Chillingham," was calved Jan. 17, 1885, his dam being a wild cow from the noted herd belonging to the Earl of Tankerville, and his sire a white Short-Horn bull, Baron

Bruce 47387. He was grass-fed in an open park, supplemented only by artificial food since it was decided, three months ago, to send him for exhibition, and is considered a great curiosity. He was three years ten months and two weeks old; weighed 16 cwt. 2 qrs. 24 lbs., and had a strong resemblance, except in color, to a crossbred Highlander. The judges awarded him the reserve number and high commendation. See *March*.

DAIRY BREEDS.

The various classes at the Dairy Show practically define which are, and which are not, the dairy breeds of cattle in Great Britain. It may be safely said that though individuals of other varieties are good milkers, yet if the general standing is not good enough to warrant the opening of a class for them under this head at Islington, then they must be reckoned as unsuitable for the purpose. Professor Sheldon in his great work on "Dairy Farming" describes nearly all the breeds in the British Islands, and states all that there is to be said in their favour from a dairy point of view, but still it must be acknowledged that many are purely beef breeds alone, and nothing else is claimed for them even by their warmest admirers. The beef breeds have been figuring at Smithfield during the past week, together with several which are noted for both beef and milk. The seven following are those of most importance from the dairyman's point of view:—Shorthorn, Red Polls, Ayrshire, Jersey, Guernsey, Welsh, Kerry. Some of these have several subdivisions into distinct varieties, such as the Welsh and Kerry, while the Dutch cow is a famous breed, though not exactly a British one.

The dairy qualities of some breeds over others have been brought about mostly by breeding and selection, as it is doubtful if soil and climate have had very much to do with it. Those varieties which have not been celebrated for milking powers, owe this deficiency quite as much to their masters who allowed it to drop out of sight as to anything else, as there is no inherent defect in any variety in this respect. This is proved by two facts—viz., that some individuals, or even whole herds of a non-dairy breed, have been known to milk quite as well as those which have always had a dairy name; and secondly, that all breeds must have been derived in remote ages from "a common ancestor," even although we may trace their descent in comparatively recent times from several varieties of the genus *Bos*.

It follows, therefore, that those which are not good milkers at present could be, in course of time, made so by selection and breeding. It would be doubtful, however, if this were worth the trouble for anyone try nowadays, when types are so firmly fixed, and when there are dairy breeds enough to choose from suitable to every part of the country. Of course one great object is to have animals which will fatten after they have done with milking, and though many oppose this idea, there does not seem any reason why selection should not develop this property as well as any other.

At the same time those breeds which are beefers only must give some milk, if it were only to rear their own young. Some years ago it was a notorious fact that pedigree cows sometimes could not give milk enough to suckle their own calves, and had to be helped with the yield of "common animals." Breeders are more enlightened in this matter now, however, and we have pedigree animals (as the Shorthorns at the Dairy Show) which cannot be surpassed, or even equalled in this respect. Those who work with other breeds than the seven mentioned above, therefore, while not going so far as to convert them into dairy animals, will yet do well to make them as good milkers as possible, and where other things are equal to retain for breeding purposes those cows which naturally yield most.

The further improvement of dairy cows has been often treated of from every point of view: it should be our aim to make them still more suitable for the dairy without injuring their other qualities, and to bear in mind that—all things being taken into consideration—one breed is perhaps as good as another; but much depends on the circumstances under which they are kept, and the ability of the owner to manage skilfully.

Ag. Gazette.

Straw as Food for Stock.

BY SIR JOHN B. LAWES, BART., LL.D.

Mr. Hunter Pringle appears to be anxious to make two great changes in the agriculture of the country—one is to reduce greatly the acreage of the root crop, and the other is to consume the whole of the straw produced on the farm, instead of consuming a portion, as is the custom at present, and using the remainder and larger portion as litter. Mr. Hunter Pringle quotes successful and intelligent farmers who, having grown thirty acres of roots in place of ninety, invariably say that they keep more stock, they are in better health, and are kept at greater profit with the thirty acres of roots than with the ninety. Assuming that the ninety acres were grown in a four-course rotation the reduction to thirty acres would bring the land into roots once in every twelve years, instead of every fourth year; it is, I think, almost certain that a farm could not be kept so clean when the root crop occupies so small an area of the farm, and a considerable number of years must elapse before the change of system could be fairly tested. With a reduction in the acreage of roots it is probable that more corn crops would be grown, and, as a necessary consequence, more straw will be available as food. The object I have in writing is to point out the difficulties which are likely to arise in carrying out Mr. Hunter Pringle's views, viz., to reduce the area of roots, and to consume all the straw as food. If we adopt the feeding value of straw as given in our tables, published in the Journal of the Royal Agricultural Society, there certainly appears to be a great money value loss when the straw is used as litter. I may observe, however, that in order to obtain the full feeding value of the straw as it given in our tables, it must be consumed with the other foods in such proportions as will utilise to the fullest extent the food ingredients contained in the straw. If we look at the composition of roots and straw we see that their properties are totally distinct and opposed to each other. In the roots we find an immense quantity of water, varying from eighty-eight to ninety-two per cent., and it is very remarkable that this water is so intimately combined with the solid matter of the root that even when cut up into small pieces no water runs from it; milk, which is perfectly fluid, contains less water than the solid root; the solid matter of the root is chiefly sugar, and what is not sugar is almost entirely digestible. Straw, on the other hand, is hard and dry, and the digestible matter is largely mixed with substances which are not digestible; the two foods when used together correct each other's defects, and if anyone undertook experiments in feeding to test the correctness of our figures, I should say that the results would be of but little value unless a considerable proportion of roots were used with the straw. I confess that I have not followed closely the various new systems of farming which have been suggested or adopted for the purpose of meeting the great decline in the profits of farming. The root crop is the great cleaning crop, and some considerable part of the cost of producing the roots should be charged to the corn crops. To give some idea of the importance of cleanliness in the growth of a wheat crop, I may refer to the Rothamsted soil, which has received no manure of any sort for forty-eight years, and has yielded a crop, which is probably equal to the average acreage yield of

the world. We cannot doubt that soils generally are far more fertile than the soil of our wheat field, but this fertility is not available for the wheat, owing to the large amount of other vegetation which grows on the land. The small amount of nitric acid liberated from the Rothamsted soil each year is entirely at the disposal of the wheat crop owing to the cleanliness of the land. Freedom from weeds is of far more importance to the British farmer than to the farmers of other countries, as his acreage yield is larger, and a considerable portion of his crop is derived from fertility due to the consumption of cattle foods or purchased manures. To squander the fertility of your soil in useless vegetation is bad enough, but to feed thistles and couch-grass with nitric acid at 6d. per lb. is wasteful extravagance. If land can be kept clean with a largely reduced acreage of roots I see no reason why such a course of cropping should not be adopted, but Mr. Hunter Pringle advocates at the same time a very much larger consumption of the straw of the farm. I fear that he must adopt some other standard for the food value of straw than that which is given in our tables.

J. B. LAWES.

Growing Mushrooms.

Your correspondent "M.," page 930, asks; "How can I grow mushrooms successfully in winter without the aid of artificial heat?" Also information on other practical points in connection with it.

I am very much interested in the cultivation of mushrooms, and grow them extensively, and I often wonder why it is that farmers, who have such good facilities for growing mushrooms, so completely ignore this crop.

In answer to M., I may say that in a shed, cellar, or any other frost-proof structure which is dry overhead and on the floor, mushrooms can be grown successfully all winter long; in fact, it is not necessary that the building be quite frost-proof, but it is imperative that it be a snug, warmish place, and not an open, airy, drafty one. Although for two years—1872-3—I was identified with mushroom-growing in the open fields in the London market-gardens, I never considered that method feasible enough to be profitable in this country. Here, in winter, mushroom growing must be practiced indoors.

In order to get mushrooms, we must maintain a surface temperature of 50°: 55° to 57° is regarded as the best temperature. I get capital crops at a temperature of 60°, and the only harm I find in 65° is that it draws up and hurries off the crop quicker than would a lower temperature. And as we cannot maintain an equable temperature of 50° or 55° in a shed or cellar in winter without artificial means, such as a stove or hot-water-heater, we must cover over our beds with hay or straw, and preserve the heat that is inside the beds. When well covered with hay, the surface of the bed is nearly as warm as the inside of it, and the temperature equable, and the mushrooms come up as well under the heavy mulchings as they would were no mulching used; furthermore, under a heavy mulching the beds do not get so dry as they are apt to do when not mulched, and the mushrooms are whiter, and last a little longer in good condition before cutting, and they are less liable to disease. The great drawback to this system is the bother of uncovering and covering in gathering the mushrooms, and the likelihood of breaking off or pulling out a few good buttons that may get tangled in the hay. But if a European market gardener, with an acre of out-door beds, covered over in this way, can uncover, gather and cover up again three times a week and make money by it, we, with a few beds in a shed or cellar, should not have much cause of complaint.

While capital mushrooms can be grown in totally dark cel-

lars, darkness is not at all necessary to their successful cultivation. The heaviest crop of mushrooms I ever saw was grown by John Cullen, one of my old foremen, at South Bethlehem, Pa., in a disused old cistern under his green-houses, and in which the darkness is absolute. About a month ago I visited John G. Gardner at Jobstown, N. J., who grows mushrooms extensively for the Philadelphia, New-York and Boston markets, and in addition to a very large, dark cellar, he has range after range—hundreds of running feet of green-houses, which are used for fruit-forcing in spring and summer—now filled with string after string of frames devoted to mushroom culture, and this is in the full daylight, except that the sunshine is intercepted by other crops growing on stages above the mushroom frames. And in my own case I find the mushrooms almost always come thickest near the doors of the cellars.

Horse-stable manure is what we use for the beds. Get it as fresh as you can, and if it has been pretty well moistened under the horses' feet in the stable, so much the better. Shake out and throw aside all the dry strawy part. Throw the manure into a heap to heat. When it gets warm, turn it and pile it as before, then turn it every day or two till the violent heat subsides—say in three weeks. Many growers mix loam with the manure. Some mix the loam with the manure at first—I do this; others do not add the loam till a day or two before the beds are to be made up. Mr. Denton of Woodhaven does this; and in many cases (several of my own beds, too) no loam at all is used in the manure. Manure alone is capital for floor-beds, but for shelf-beds I like the loam mixture best. Common field loam is what I use.

Make the beds on the floor, any length and breadth convenient, and—as you will have no artificial heat—18 or 20 inches deep, and in building them tread them as firm as a turnpike road. In a few days the heat will run up to about 120° or more. Wait till it declines to 90°, then spawn the bed. And as you have no artificial heat, cover the bed over with some hay or straw, the same day you spawn it, and leave it there for ten days. Then remove this covering, and add a 2-inch lining of loam all over the bed, firming it well with the back of the spade, and at once replace the straw covering, whose thickness—4 or 12 inches—will depend on the lowness of the atmospheric temperature. Five weeks after this—that is in six to seven weeks after spawning—you may hope to see mushrooms. All that will now be necessary is to keep the place as close and warm as possible, and change the inside lining of straw once, maybe twice, should it get wet from condensed moisture from the beds.

But it is now near New-Year's and pretty late to prepare for mushroom beds this season. To get and prepare the manure will take over three weeks; from making the bed up till spawning time will be some two weeks; and from spawning till mushrooms appear will be six to seven weeks—in all some three months. Then you will have only about a month's cutting before the maggots will render the crop worthless.

WM. FALCONER.

Queens County, N. Y., Dec. 13.

PASTURING COWS.

It is a well-known fact that the different domestic animals of the farm all pull and eat their grass in different ways. This is partly due to several causes, such as the predilection of each kind for particular grasses, and aversion to others, and also the arrangement of the incisor teeth in the mouth, as well as the size of the muzzle itself. The sheep is one of the closest feeders we have; in fact, with the exception of the rabbit and kangaroo, it will eat a pasture bare; than any other animal. This is, of course, due to the small size of the mouth,

together with its predilection for the finer grasses. Next to the sheep comes the horse in this respect, for, although his mouth is large, yet the fact that he has teeth both above and below, enable him to bite close. It is very noticeable in a pasture where horses are alone, that they eat over the land very unequally. Some of the "sweeter" spots are nibbled in to the very roots, while other spots are not touched, but left rough. Cattle, on the other hand, have not only a large muzzle, but also the absence of upper teeth, so that, of necessity, they cannot bite fine or close, and, therefore, we find with them that their grass is rougher, and less bare in parts than with the others.

It would, as a general rule, be best to let all graze together, because, in this way each can have what the other does not require, and thus more might be made out of the land. It seems certain that each has predilections for certain grasses if they can get them, though we do not know much about this matter as yet and thus each might be gratified without interfering with the other. As a matter of fact, in practice, several kinds of stock do graze well together, with one exception. That exception is the case of sheep along with cows. The fine flavour of summer produce and the cream percentage yielded depend altogether on the presence of the fine clovers, grasses, trefoils, etc., and if these are removed, as in recently sown down "seeds," the produce is comparatively poor. This is the reason why old pasture always yields more cheese and butter than young grass. Now, if we put on sheep, these very varieties are removed as they grow by the closer feeding of these animals, so that the cows get nothing but the coarser and quicker-growing grasses, and thus their yield will become deficient in richness. In fact, it has passed into a proverb in some places that there is nothing that will "cream the milk" more quickly than pasturing sheep along with the milk cows, and it should, therefore, never be done. Too long or coarse pasture is of course no benefit, and, in fact, the quality of the milk is often in the inverse ratio of the bareness of the pasture but it is the cows themselves that must eat it bare. Some other kinds of stock might be allowed, such as horses if they are quiet, but the cream of the pasture must be at the service of the cows, else there will be little cream on the milk.

Cows are not, of course, doing much outside at the present time, but the arrangements of the farm for next year as to cropping and grazing must be thought over, settled, and the fences, gates, and other etoeteras seen to during the winter. It will be best therefore to let the cows have their fields to themselves, and make up for it by putting on such a number as will keep the pasture rather bare.

P. M'C.

GRAND SWEEPSTAKES WINNER.

LaFerte has certainly become one of the most popular horses since the Chicago Live Stock Show ever brought to this country. In this unusual ring of Percheron horses he was shown in competition with animals a number of which would have done honor to the highest prize of such an institution, but the blue was tied to his bridle amidst the applause both of horsemen and spectators. In "Battle of the Breeds," when all the prize winners of the different breeds came into competition with each other, he was declared the "best horse" and carried off the grand sweepstakes. He is indeed a grand show horse. LaFerte 5144 (452) is a dapple grey, 16½ hands high, weighs 2,040, foaled in 1881, bred by M. Guillemain in the department of Orne; sired by Philibert (760), out of Jalib (7694) by Brillant 1899. The winner also in the three-year-old class for mares at Chicago last November was a

(1) I perfectly agree with Mr. McConnel.

A. R. J. F.

daughter of this celebrated LaFerte, out of Dunham's Brilliant mare. The family of Brilliant 1271 (1755), is most remarkable for the number of high prize winners it contains, and a goodly number of these have been at the head of the "Oaklawn Stud," many being among the winners of 1888.

Herds and Flocks.

In another column of this number is an article by Mr. Yeomans; in this he speaks of the warm stables the dairymen of Holland build for their cows; these are made so by being plastered and having tight fitting windows. The supplying of a warm stable is a great saving of food, but cow and all stock if kept in very warm barns are more apt to suffer from lung affections than those are which stand in stables only moderately warm. The liability of cows taking cold is greatly reduced by taking care not to drive them out in severe weather which is a common custom in Holland. Nevertheless many experienced breeders while they would not think of leaving their stock without proper shelter, prefer to let their stock "rustle" for themselves as long and as much as the weather will permit. Breeding stock cannot have too much "open air" exercise when the weather is fine. The health of such stock is of first importance. The examinations of breeding animals in England, especially horses, and also those made in other countries, show that a large per centage have such imperfections as would be detrimental to their offspring; even a large proportion of the stallions exhibited at leading shows in England were found by the commission of veterinarians to be affected with hereditary unsoundness. It is to be admitted that in many cases the disease germs lie dormant and in others the affections are very slight, but breeding from such affected animals will in time result in weakened constitutions. Such offspring is less able to withstand contagious disease, and ultimate results will no doubt be very disastrous.

Herds and Flocks.

One often notices an incrustation of salt on the surface of butter put in prints and rolls. The quality of the butter is apparently good, but the presence of the salt detracts from its appearance. Of course even the best of butter will "throw up" this salt if exposed long enough in very dry air, but why should it appear on butter that is comparatively fresh? Henry E. Alvord says that its appearance may be caused in several ways. If the salt used is of a poor quality, and particularly if it is too coarse in grain, it fails to be well incorporated in the butter, and changing to brine after the rolls have been made up, it comes to the surface and takes the form of a crust. The finest and best salt, not well worked into butter will act the same way. Again if there is more moisture left it will naturally hold, the salt joins with the extra water to form a brine; the brine finds its way to the outside, evaporates, and leaves the salt covering.—Exchange.

Butter Making on the Farm.

It seems to be the special province of many writers and speakers to impress on the minds of farmers that good butter can be produced only at the public creameries, or, as they are called, butter factories. Butter making is indeed the fine art of agriculture. It consists in a series of processes and conditions all of which must be correct, that the result, the butter, may be perfect. These processes and conditions must begin with the cows, and include good air generally, uniformly kind treatment, good food and enough of it, and of the right kind, care and cleanliness in milking, properly straining the milk and proper conditions for setting the milk for cream raising, that all the cream may be obtained and in the best possible condition. When the last result in the above mentioned se-

rics has been separated from the milk, and in good condition, and the cans washed, the farmer has done the greater part and painstaking enough in doing all properly thus far, if he has not the skill to do the balance he or his wife can soon acquire it.

There also seems to be a disposition on the part of many interested in the sale of apparatus and fixtures for public creameries or butter factories to mystify the art of butter making, and to create a conviction in the minds of farmers that it is beyond their attainment. It is true public creamer produce good butter that the every public creamery butter is better than a good deal of the farms butter no one will deny. But that the highest grade of butter, selling for the best price, is produced on farm dairies, one can be convinced by visiting the Philadelphia market, where butter in "prints" from the best dairies within a few miles of the Quaker City sells for fabulous prices.

If every patron of a creamery would see that each and every part of the process and conditions above referred to was conducted exactly right, even then the home butter maker has one advantage over the butter maker at the factory. It is this: His cream remains at home, subjected to proper conditions, while that for the creamery is trundled about for hours, some of it all day, and many times exposed to the heat of the sun. But all farmers who are patrons of factories will not take the pains that they should, and that perhaps the best ones do take; therefore the intelligent and careful farm butter maker who does the entire work in his own dairy house or-room has at the time of getting ready to churn the satisfaction of knowing that so far every process and condition entering as factors into the production of the butter maker at the factory cannot be sure, nor can he scarcely expect it.

But it will be said that creamery butter sells at a much higher price than farm or private dairy butter. This need not be so, for if the farmer produces as good an article as he can produce, puts it up in acceptable packages or forms, and seeks customers among good families or hotels or dealers who supply such, he will obtained the highest price and always have a steady market; for good families and hotels, especially the former, prefer butter at all times from the same dairy, provided it is good butter.—F. W. MOSELEY, in National Stockman.

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