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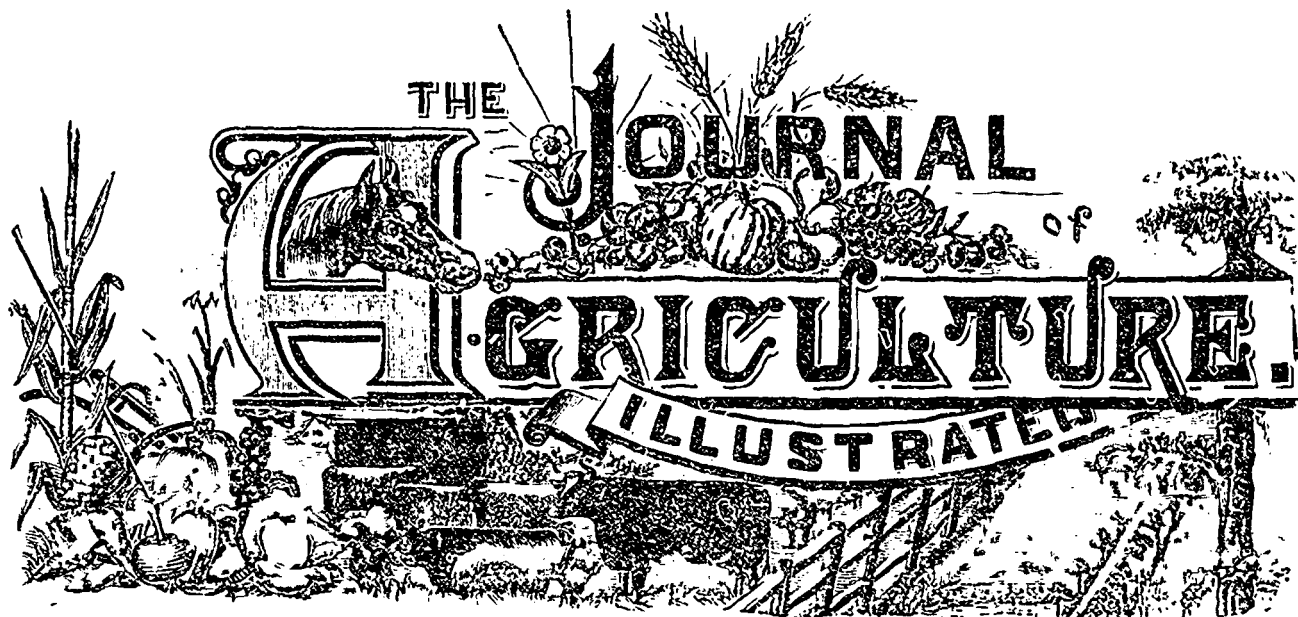
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NOTICE.—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through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

OFFICIAL PART.

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DE OMNIBUS REBUS.

Box 109, Upper Lachine—February 18th, 1888.

The Hackney.—There is a vast difference between what is now known as the *Hack*, and what used to be known forty or fifty years ago as the *Hackney*. A *hack* is either a *covert-hack*, which means a well bred, moderate-sized horse, used to carry its master to the *fixture*, i. e. the place when the hounds meet; or a showy, fine-actioned, otherwise useless beast, only fit for the Park and Rotten Row.

The *hackney*, a stamp of horse now almost extinct, was quite a different thing. The term denoted a strong roadster, of great bone and sinew, with a long, lean head, deep neck, round barrel, deep chest, short forchard, big broad feet, game to go his five-and thirty miles almost without a break, in one round, strong, steady, ground-covering trot. A stallion of such a stamp, were it procurable now, would be almost in-

valuable. It was on such animals as these that, about the beginning of the century, my father and his brother used to ride every autumn from Chislehurst to Wenvoe Castle, Glamorganshire, a distance of 175 miles; sleeping three nights on the road, and carrying their changes of clothes in *saddle-bags*. As they reached the Castle on the fourth day, this was equivalent to about 44 miles a day, and as they were both heavy men, the horses must have been made of pretty good stuff to stand such work. A picture of my father's *hackney* is still extant, and answers in every point to the description above given. I take it, a good Canadian mare, crossed with a fine, sloping-shouldered, close-built, thoroughbred stallion, would make about as good a *hackney* as could be found. Only, here there would be hardly any sale for such a beast, as Canadians never get on horse-back as long as they can find wheels of any sort. The more's the pity, say I!

Shorthorn bull-calf.—My friend, Mr. Bickford West, wants to buy a shorthorn bull calf, fit for service this summer, that is, about eight or nine months old now. Price not more than thirty dollars. Mr. West's cows are grade dairy-cattle, but what he wants is to have two-year old steers for the States' market, and he thinks, very wisely, that the shorthorn-cross will give him that. He complains dreadfully of the American duty on the importation of animals not intended for breeding.

Coal-oil cooking-stove.—I have always disbelieved in the roasting-power of a coal-oil stove until the force of ocular and gustatory evidence convinced me of my error. The old *two-burner* stove hardly supplied heat enough to cook a joint briskly, but the new *three-burner* I got this autumn does in work perfectly. Bread cake, beef, and turkey, are baked or roasted to a turn. Not flabby, but crisp and brown. After

the oven is once heated, the wicks have to be turned down very low, for fear of burning the subject. My good friend, Mr. Cole, the maker, deserves great credit for turning out such a perfect implement. My family is very small now—only four in number—so the whole of my cooking is done on this coal-oil affair, the kitchen-stove never being used. The broiling is perfect, and with a proper stew-pot—a pot surrounded by water—the tenderness and juiciness of a stewed *filet de bœuf*, or of a *noix de veau*, is inexpressibly delicious. Not one cook in five hundred understands stewing. In general, people imagine that simmering, i. e., very slow boiling, is the proper thing; but, the fact is the materials of a stew should never approach a temperature of 212° F.—boiling point—by at least ten degrees. Fry the meat in scalding hot lard, oil, or other vehicle, for a minute or two—to shut up the pores and prevent the escape of the *osmazone*, &c.; put the meat and vegetables, with the stock, into the stew-pot, and *don't* cover up. Stew for from two to four hours, according to the size and age of the piece of meat, not allowing even one bubble to mount and burst, and season with pepper, salt, &c., just before dishing. No nutmeg or lemon-peel, but a few cloves, tied up in a muslin bag, improve almost all stews.

Esparselte.—A correspondent of the R. N.-Yorker wishes to know all about the *esparselte* or *sainfoin*, as it is called in England. It is a most valuable plant for hay, or, particularly, for sheep-pasture, but as it never succeeds except on land with a chalk subsoil, it is useless trying it here. The R. N.-Y. says the hay of the piece grown at the experimental farm carried on by the proprietor of that paper was miserable stuff—worth no more than so many sticks. That was, Mr. Carmen, because you let it stand too long, which is also the reason, as I have remarked about twenty times before, why nine-tenths of the clover which presents itself to the Montreal market is nothing but flower and stalk.

Complete fertilisers.—I would strongly advise farmers to have nothing to do with what are called “complete fertilisers.” I think it is pretty well ascertained that, as a general rule, *potash* is not required on heavy land, and on very few light soils that are properly farmed. Moreover, potash applied, as usual, in the spring, exerts very little influence on the crop of the year; to do any good it should be spread in the fall, and at that season, it would be wasteful to apply the other component parts of a complete manure—phosphoric acid and nitrogen—as the thaw would wash most of them into the rivers. And, lastly, potash can, in nine cases out of ten, be bought much cheaper in hard-wood ashes than in the complete fertiliser.

At present, and confining ourselves to the productions of this our own country, the fertiliser I should recommend is a mixture of two cwt. of the plain superphosphate, which I see advertised by the Smith Falls fertiliser company at \$26.00 a ton, and one cwt. of sulphate of ammonia from the gas-works, costing \$70 a ton. The mixture would therefore come to \$6.10 for the three cwt., which would be a fair dressing for an acre of grain where the land is not absolutely poor. If land is in better condition, that is, when the grain-crop has been preceded by a manured root- or corn-crop, one and a quarter cwt. of sulphate of ammonia, alone, will suffice. Mangels, I should think no one would sow without dung, and if I could afford it, I should add two cwt. of sulphate of ammonia without superphosphate, but with addition, as an experiment two cwt. of salt. Swedes do not require either salt or sulphate of ammonia, but it would be false economy to sow them without two cwt. of superphosphate in addition to a fair dose of dung. If no dung can be spared for swedes or turnips,

three cwt. of superphosphate and one and a-half cwt. of sulphate of ammonia would produce a fair crop on almost any land.

I do not prescribe for corn, as I have grown but little of that crop, and that little always with dung; but for fodder corn, 2 cwt. of sulphate of ammonia, alone, and for ripening corn, the same dose of both ammonia and superphosphate as recommended for wheat, ought to turn out well. Still, this is mere theory, and I never advise anything as regards so important a business as the use of fertilisers on corn, except as an experiment.

I reiterate the advice I have so often given: if you want to grow, say, four acres of swedes, and have only forty loads of dung, give your land the ten loads an acre, and supplement this trifling dose with two cwt. of plain superphosphate. The latter will start the plant, and carry it on till the bulbing begins, by which time, the roots will be down into the dung, and that will furnish the crop with plenty of food until it arrives at maturity. You will find this a much better and more paying plan than restricting yourself to two acres of swedes and giving them the full dose of twenty loads to the acre, or growing two acres with all dung and the other two with all artificial.

Importations.—If any one is inclined to import, on his own account, any quantity of artificial manure, I would strongly advise him to select the best and most concentrated samples, and to make the purchase at Liverpool rather than in London. For, suppose I want to manure at the rate of 32 lbs. of soluble phosphoric acid per acre, I can buy in Liverpool two qualities, of superphosphate, of which one analyses 16.4 per cent, the other 22 per cent of soluble phosphoric acid. If therefore, I buy the richer lot, I save the ocean and other freight of 550 lbs. on each ton; for 1450 lbs. of the 22 per cent quality is equivalent in manure-power to 2000 lbs. of the other, and the prime cost per pound of acid is the same in both, that is, in England, 2½ cents a pound. And, remember, this is guaranteed “soluble” and not the vague mixture, I am sorry to see too often advertised here at \$26.00 a ton, containing from 12 to 14 % of “soluble and precipitated phosphoric acid,” every pound of which costs the buyer TEN CENTS, instead of 2½ cents as in England. Think of our apatite going across the ocean and manuring the English fields as cheaply as that!

Farmyard dung.—A cow, or fattening beast, is always supposed, in England, to make 14 tons of manure—litter included—during the time she is in the house. That number of tons is sufficient to manure an acre of land properly. I do not fancy the ordinary run of farmers here get anything like that amount of dung from their cattle, for they do not use one-tenth of the amount of litter we use. As to the value of a ton of manure, that varies so much with its condition and the food the maker of it has received, that it is hardly a calculable sum. Professor Brown, of Guelph, taking Sir John Lawes' analyses and valuation as a guide, puts it at \$2 50. Detweiler, a German agricultural chemist, says that the cost of the 14 tons of manure made by a cow in one year, estimated on four different farms in Germany, was, respectively, \$11, \$14, \$5, and \$18, an average of \$12, or about 84 cents a ton. Voelcker, our R. A. Society's chemist, values the contents of a ton of farmyard dung, rotted for three months, at \$3.00! Dung of the best-fed animals in the world is to be bought in London and the suburbs of that vast town for \$1 00 a ton, and finds a ready sale at that price, though in my father's time, I have heard him say that the stable-keepers and milk-men used to have to pay the tenant-farmers for carting it away. At Sorel, and other small towns and villages

on the Saint-Lawrence, dung can be bought at ten cents a load—about thirty cents a ton—the carts are very small in the French country, and the horses badly fed. It is a treat to see Dawes' great Shire mares trotting along at about 8 miles an hour with a heavy load of grains behind them. I do not suppose the elephantine beasts would answer well in those backward counties where the snow plough is never used, and the road is too narrow for double-harnessed horses to travel. But on the Island of Montreal, where pains of every kind are taken to keep the road wide and level, they are just as handy as a Canadian pony. Of course, if they got into a drift, they would wallow about like whales; but then, the road-masters do not allow drifts in this part of the country. A splendid young Shire-stallion will be ready for service this spring. At present the mares are in foal to one of Hender-son's Olydesdales, at Petite Côte.

Plaster.—The R. N.-Yorker says that "the use of plaster upon potatoes raised in the poor soil field of the Rural Grounds three successive seasons did not increase the yield." I dare say not, since, except where lime is absolutely required, plaster has little effect on any plants, except those belonging to the leguminosæ. Ville never omits plaster from any of his mixture, wherein I think he is wrong. Almost all land has lime enough in it to serve the purpose of plant-food: lime, when given in doses of 150 bushels, or even 250 bushels, as in Scotland, must be applied more as a mechanical agent than as food for plants.

Bone-meal and ashes.—Professor Storer, whose book on Agriculture I have never seen, is reported by the R. N.-Yorker as recommending the use of 600 lbs. of bone-meal and 20 bushels of unleached ashes—to the acre I presume—on good land. This, at present prices—\$35 a ton and 20 cents a bushel—would cost at least \$14.50, without reckoning carriage. With wheat at 90 cents, barley at 70 cents, and oats at 40 cents, a bushel. I do not see how any farmer could afford such an outlay. The only thing that could make such a dressing pay, would be its use as a preparation for permanent pasture. And, again, if this is the dose for good land, what would it cost to treat bad land?

Sulphuric acid.—I saw it stated the other day—I have unfortunately mislaid my reference—that chamber acid only cost \$5.00 a ton to make. Add \$2 50 to this for profit, carboys, &c., and it seems to me that \$10.00 ought to be the extreme price for it delivered in Montreal—half a cent a pound! Now, unboiled bones can be bought anywhere for \$1.10 a ton. One hundred pounds of these smashed to pieces with a sledge-hammer, and moistened with, say, 75 lbs. of chamber-acid, would make, at the above prices, the cost of sulphated bones=\$14.62 a ton! The proceeding is easy enough: place the smashed bones in a vessel of any kind that will hold them and leave one third of its capacity empty for the swelling; pour in water=twice the bulk of acid you intend using; then add the acid, and after stirring up the mass with an iron fork, or something of the kind, leave the mixture to work. I used to make my own superphosphate, and except burning an obstinate Scotchman's trousers, who would not believe in the caustic powers of a simple liquid, I never had the slightest trouble or accident. I prefer placing the carboy on a bench or shelf above the mixing tub, and emptying it by means of a siphon—a bent lead-pipe will do—for if the acid is poured out too hastily, splashing will take place, and it stings where it falls. When cooked, dry up with ashes or mould, and pass through a finish sieve after turning and mixing well. Any bits of undissolved bones that will not pass through the sieve may be reserved for a second batch.

The great knuckle-bones of bullocks had better be burnt in the stove, as they are almost unsmashable—the nitrogen, of course, will in this case be lost, but that cannot be helped.

Nitrate of soda.—"Several years ago," says the R. N.-Yorker, "potash, in the form of kainit, and burnt bones was spread on a plot of our experimental grounds, and on half of the plot nitrate of soda, at the rate of 150 lbs. an acre (= 24 lbs. of nitrogen), was also spread. The yield of the latter part was about double that on the other, while the difference in the colour and vigour of the plants could be seen a long way off." This would seem to confirm my theory as to the fertilisers for seeding-corn and fodder-corn—see p. 50.

Hen-manure.—I remember, some six or seven years ago, a correspondent was very angry with me because I would not allow that poultry manure was equal in value to Peruvian guano. I see that Professor Storer, the author of the latest American publication of agriculture, values hen-manure at \$7.00 a ton. Peruvian guano, of very moderate quality, is worth \$60.00. Any one can see at a glance that hen-manure can only be used on the spot where it is dropped, as the carriage of it for, say, only 50 miles would be worth at least 25% of its value. Individually, I should be sorry to give more than double the price of good dung for it.

Nitrate of soda.—Mr. Mapes, a fertiliser maker, says "that the use of nitrate of soda alone as a source of nitrogen on light soils is very injudicious, as it requires very favourable circumstances to prevent rapid loss by leaching through the soil." Nobody who knows what he is about sows nitrate of soda except after the crop is well up, and a rainy day or dewy morning should be chosen for the purpose. The nitrate sticks to the leaves, and the loss by leaching is trifling. If used for mangels, in preference to sulphate of ammonia, it should be sprinkled along the rows after the plants are singled. Still, I must say I prefer the sulphate of ammonia as a source of nitrogen, the price being suitable. One hundred pounds of sulphate of ammonia are equal in manure-power to about one hundred and twenty-five pounds of nitrate of soda.

Acids injurious to plants.—The above-mentioned, Mr. Mapes also laments the use of highly concentrated superphosphate, without mixture with some materials which would reduce or neutralize the acidity. "Damage," he says, "is often done in the use, on very light soils, of fertilisers rich in soluble phosphoric acid, when coming into contact with the roots of the plants." I have seen 1120 pounds of superphosphate applied to an acre of very light land, and an excessively fine, healthy crop of swedes produced by it. A common dose in the north of England is 672 lbs. Both these dressings are absurdly large, as experience has taught us that 336 lbs are a full allowance. As an acre of land, nine inches deep, weighs about 3,000,000 pounds, the soluble phosphoric acid in an ordinary dressing of superphosphate containing 15% would not amount to more than $\frac{1}{1000}$ of the whole of the ploughed surface; I do not think such a proportion as that would injure the roots of our most delicate plants. This, of course, refers to cases in which the manure is sown broadcast and harrowed in; when the superphosphate is drilled in under the seed, it is, I may say, the universal practice to mix it with a considerable quantity of ashes or other diluent. In the light lands on the chalk in Wiltshire and Hampshire, great use is made of "Chandler's Water drill." The fertiliser is mixed with about 100 gallons of water per acre, and, no dung being used, is drilled in "on the flat," the entire

crop being consumed, where it grows, by sheep receiving, in addition, cake, horse-beans, pease-haulm, and clover-chaff.

The Sparrow Pest.—The Chester, England, Farmers' Club has recently paid for the destruction of 7192 sparrows, at the rate of 6d. for every dozen killed, and yet the number of birds is said not to have been appreciably affected. I am afraid if we do not try to stop the increase of these interesting immigrants soon, we shall find them pretty nearly as bad as are the rabbits in Australia. I think I mentioned before that Mr. Irving, of Logan's farm, has been obliged to give up sowing fall-wheat, as that grain ripening before barley and oats, the little robbers utterly destroy it.

Importation of Store Cattle.—The attempt to make a trade for the importation of Canadian store cattle into the north of Scotland has been watched with interest, and few will be surprised to hear that it has collapsed. A meeting of shareholders is called, when the directors will recommend that the company be wound up by voluntary liquidation. The company was registered in July last, when 899 shares, on each of which £1 had been paid, were allotted. Three cargoes have been imported. On the first there was a loss of £215, on the second a profit of £48, and on the third a profit of £50. Only 12 cattle were lost, for which the company received £98. The total loss, including all the working, &c., has been £356, and it is anticipated that the shareholders will receive 12s. per share.—*Gloucester Chronicle.* (1)

Warm water vs. Music—So cows will give ten per cent more milk if given warm water to drink, will they? Pooh! that's nothing: "Cows are sensible to the charms of music. In Switzerland, a man-milker or milk maid gets better wages if gifted with a good voice, because it is found that a cow will yield one fifth more milk if soothed during the milking by a pleasing melody"!!!

Brewer's grains.—Well, I always thought that, during my brewing time, I did not leave much stuff worth preserving in the grains. I also found that my cows fed upon these grains at the rate of a bushel a day with plenty of hay gave a lot of very poor milk, and such, I believe, is the experience of every farmer who has tried them.

This is the analysis of the great German agricultural chemist, Dr. Wolff, and is, I have no doubt, perfectly correct:

Water.	Ash.	Digestible			Nutritive ratio.	Value per 100 lbs				
		Albuminoids.	Carbohydrates Fibre.	Fat.						
75.2	0.3	5.9	3.9	13.2	1.5	4.8	11.3	1.2	3.0	0.30 ct.

No doubt, a nutritive ratio of 1:3 is a very strong point in any food, but how about the 75.2% of water. Mr. E. W. Stewart, in a recent number of the Country Gentleman, says, in answer to a question: "Brewers' grains in a sweet condition, if fed on cut hay, would be a rich nutritious food for breeding ewes. But as it is a very concentrated food, it probably would not be safe to feed it alone." The Brewer, whose grains Mr. Stuart fed his sheep on, could not have un-

derstood the business of extraction. A bushel of grains weighs about 70 pounds, whereof 52.50 lbs. are water. At 30 cents per 100 lbs. a bushel of grains ought to be worth 21 cents, but Mr. Stewart's correspondent pays only 10 cents a bushel for what he uses, and in England the price is about 7 cents. At Dawes' brewery, Lachine, they fetch 10 cents in winter and 4 cents in summer, and so in Montreal. I take it, in such a thoroughly practical business as milk-dealing and brewing, we may trust the cowfeeders for knowing the value of what they are buying, and the brewers for knowing the value of what they are selling.

New-England farms.—The Country Gentleman, of February 16th, begins an article thus: "The great number of abandoned Dairy-farms in New-England, &c., &c." Are these the farms that are liberally offered as allurements to the English tenant-farmers to settle in the States at less than the original cost of the buildings on them? After saying that "the relative amount of plant-food derived from the atmosphere by different growing plants is not yet fully agreed upon among scientific and practical men; and in selling butter, cheese, milk, and meat, from a dairy-farm, more material is carried off than when the whole product of the crops remains and rots down on the land," the editor concludes by the very sensible observation that "after all, while we may be assisted in our investigations by the teachings of science, we must at last turn to practical results for reliable conclusions." Which is precisely the reason why the writings of Lawes and Gilbert are of such extreme value: they are all based upon practical experiment conducted on the most exhaustive scale.

Early Sown Oats.—Sowing oats on frozen ground is a very important question. I have always been a great advocate of early sowing in the spring, and I intend to sow about ten acres on the frozen ground, and the rest of the field, ten acres more, when I can work it and give it a fair trial. I wish some of your correspondents would answer the following question: Does the ground have to be smoothed down and furrows filled in in the fall where you sow on the frozen ground? What time does the frost break up in the spring in the different States? It breaks up here about the last of March or first of April. What kind of oats would be suitable to sow on frozen ground? W. F.

North Norwich, Ont.

The above is an extract from the Country Gentleman of February 16th. I have seen something of the sort once or twice before. The Editor does not answer the question, for what reason I cannot tell. If the object of W. F. is to feed the crows, oats, mice, squirrels, and other vermin, I should say he was going the easiest way about it. If this is the proper way to treat land, why not give up the idea of *cultivation* being beneficial to the soil? Fancy filling in the furrows before winter! How is the snow-water to get away in the spring?

Roots, &c.—The first thing most of my readers will set about in the spring, is the preparation of the land for potatoes, roots, and corn. These all should follow a grain-crop, the last in the rotation, for sowing them after grass is, in my opinion, wasting the wealth of the soil. There is no crop that so delights in the food left in the soil by the accumulations of the three or four years during which it has been lying down, as oats, and however well corn or potatoes may thrive after turf, the preparation of a three year-old ley for either of these crops must be troublesome and, generally speaking, imperfect. Clods, unbroken lumps of turf, will occur, and in horse-hoeing, or harrowing, the implement run-

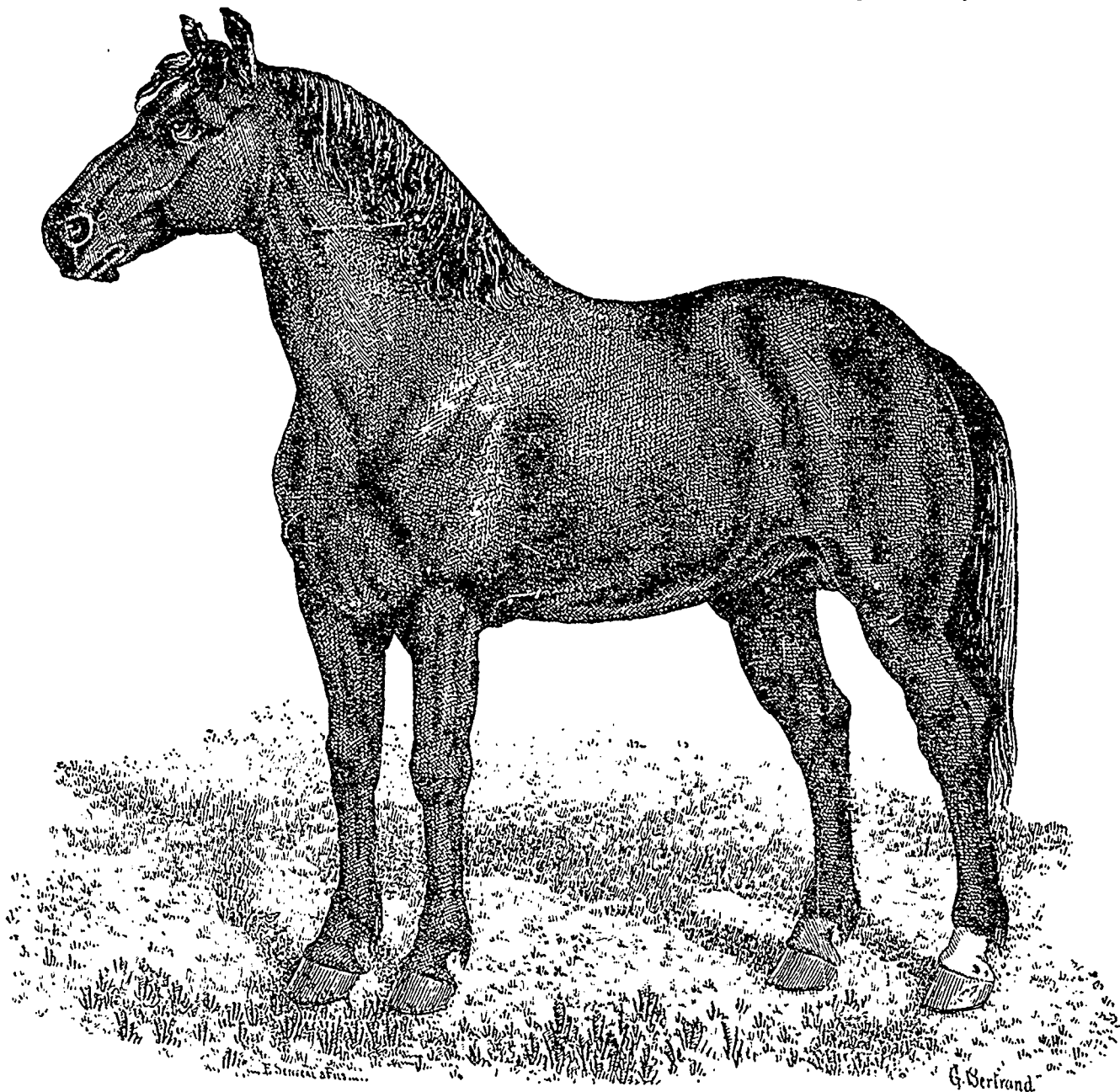
(1) I have since heard that the company intends to try on for two years more.
A. R. J. F.

ning against them will run the risk of cutting up the young plants. I am convinced that the really beneficial rotation for this and all other countries where the grass lies out several years, is Hoed-crops; wheat or barley; grass for the customary period; and last of all, oats.

This premised, let us suppose we are going to prepare, say, a piece of heavy land for a hoed-crop. This, on all well

there was no other work pressing, "hunt the furrows back," but I would leave any other operation until fine weather had fairly set in.

On heavy land, I prefer planting all hoed-crops on the flat. The state of pulverisation necessary for making good work on drilled land is difficult to secure, and occupies a great deal of valuable time. Potatoes I should plant in every third furrow



PERCHERON COLT PLUTARQUE 2911 (2838).

conducted farms will have been ploughed up a good depth in the fall, the waterfurrows drawn, and the cattle kept from poaching it. I do not think much is gained by meddling too early with heavy land. Cross-ploughing, or running the grubber across it, obliterating the furrows, is of course the first job; but suppose, as I have seen it happen, a heavy fall of rain follows, and the land is thoroughly soaked! You had far better have been asleep, or playing at skittles! I might, if

—holding not more than 9 or 10 inches,—having previously spread the dung on the surface. If the dung is long, a boy may be required to poke it into the furrow with a rough stick; if short, the *skim-coulter* I spoke of in my last will do it well. The only difficulty is to persuade people who have been accustomed to drill-work, that if the land has been well prepared, the gross-feeding roots of corn and potatoes will find out and appropriate the food you offer them just as well, and

even better when it is broadcasted as when it is concentrated in one rope.

Valuable as is the work of the horse-hoe on all soils, on none does it exercise so beneficial an action as on heavy land. You will therefore keep that implement at work continually until there is danger of the plants being injured by the swing-tree, always allowing the harrow to begin the work of cultivation. On this sort of land I think I should harrow along the ridges, about ten days after planting the potatoes, and across the ridges as well. If you are desirous of not getting the largest possible produce out of your land, you will carefully avoid hand-hoeing on this description of soil. It breaks the clods, loosens the earth round the plants, setting the roots at liberty to travel wherever they like, and as a man does not usually get over more than an acre a day, it will cost you for that extent of land from 80 cents to \$1.00. Hand-hoeing potatoes pays on all soils, and in my opinion is on heavy land the most remunerative of all the operations potatoes undergo. Put off earthing-up as long as possible, and do not raise the earth more than just enough to hide the young potatoes from the light. In all you do for this crop, remember that, properly considered, it is only a preparation for two grain- and three or four grass-crops. Harrowing, horse- and hand-hoeing destroy weeds, and of course are useful regarded as cleaners of the land; the potato-crop very often is profitable in itself to the farmer, but the real reason for all the fiddling about with the land on which I am always insisting is, that it entirely does away with the necessity of a summer-fallow; so far is this the case, that in my part of England, we never talk of hoed-crops collectively, except under the designation of "fallow crops."

Mangels, swedes, and other roots may be sown on heavy land more easily if the manure is turned in during the fall. The furrows should be well laid up at an angle of 45°, and in the spring, the grubber, the harrows, and, if absolutely necessary, the roller, should be used without a ploughing. The seed, of which a liberal quantity is needed, may be sown in rows two feet apart, the outside rows of each ridge being one foot from the open furrow, which, on 8 feet ridges, gives four rows to the ridge. After the last horse-hoeing, not forgetting to stir the open furrows, pass the double mould-board plough *between* the ridges, in case of thunder-storms.

I would not earth-up the rows on the ridges. The operation confines the roots of the plants and so far hinders their growth. I suppose we must earth-up potatoes on account of the colour, but I would neither do it to corn, roots, nor beans.

When the crop is harvested, clear off any rubbish, such as potato-haulm, corn-stalks, turnip tops, &c., and lay the land up for the winter, letting the plough down lower than the manure. Sheep do well on mangel or turnip-tops, with a few pease, and a little clover-hay on frosty mornings.

Those who are fortunate enough to farm real, good light land, have an easy task before them. Do the work with the grubber in preference to the plough. Roll everything after sowing; corn, potatoes, as well as mangels. The retention of moisture is most important. Keep the horse-hoe going: the more persistently it won't rain, the more frequently must the land be stirred. Sow white Belgian carrots; chop them out with a 2½ inch hoe, and single with women or children. I find these carrot yield as much weight as mangels, and they are worth one-third more. Try a piece of pease drilled thickly 30 inches apart, and horse-hoe them.

Linseed vs. Cake. — Mr. Brown, of the State of Ohio, writes to the *Country Gentleman* saying that he is "feeding some flax-seed ground with oats and corn. I find that when mixed with one-eighth flax-seed that is no trouble in grinding it." Three bushels of oats to one of linseed, I have always

found grind well together. "I am not quite sure but it would pay me better," continues Mr. Brown, "to sell the flax-seed and buy oil-meal (ground linseed-cake), as I can get \$1.00 a bushel for the seed and buy the meal for \$25 (10) a ton." And he asks for Prof. Stewart's opinion on the subject.

Now, thirty-seven bushels of linseed weigh, as nearly as possible, one ton, worth, at a dollar a bushel, \$37.00; therefore, if Mr. Brown sold his seed and bought meal he could apparently clear \$12.00 by the deal. But let us look a little deeper into the matter. What is the feeding value of the two substances? In reference to Prof. Stewart's book on feeding cattle, I find that Wulff gives the subjoined analyses and valuations of linseed and linseed-cake (oil-meal):

DIGESTIBLE NUTRIENTS.			
Albuminoids.	Carbohydrates and fibre.	Fat.	Value per 100 lbs.
Linseed. 17.2	18.9	35.2	\$2.47
Linseed-cake. 27.6	27.0	10.4	1.89

For the following resolution of the above problem, I am indebted to Mr. W. Dixon, one of the assistant-tutors in the High-School, Montreal.

\$100 will buy 54 $\frac{2}{7}$ cwt. of linseed;	
" " 80 cwt. of cake;	
54 $\frac{2}{7}$ cwt. + 2.49 =	\$133.51
80 " + 1.89 =	151.20
	\$17.69

* * * A loses by the deal \$17.69 or 88 cents a cwt.

JENNER FUST.

Allurements to Farmers

I mentioned, some two or three months ago, that inducements were being held out to English farmers to settle in the State of Vermont. The following extract from a paper of that State will show that I did not speak without book.

A. R. J. F.

"MR. EDITOR:—I am a reader of the *Vermont Watchman* and notice that you are its agricultural editor. In a recent issue some reference was made to the cheapness of Vermont farms, many being for sale, it was said, at about the cost of the buildings on them. I also saw in some paper (which I have lost) the name and address of an association or company in Boston engaged in the work of supplying purchasers and tenants for Vermont farms. I would like to have you send me the name and address of this company, in order that I may obtain a list of the property at its disposal." (1)

OUR ENGRAVINGS.

A "*Home Dairy*."—The Rural New-Yorker's idea of what goes on in many of the farm-dairies of the United States.

Beau Nash.—"The handsome English Shire Stallion Beau Nash, whose portrait appears, was foaled in 1881, and imported in 1835 by Galbraith Bros., of Janesville, Wis., taking that same year the sweepstakes prize at the Chicago show. The Messrs Galbraith issue a handsome illustrated catalogue of their horses, filling 96 pages, and including considerable interesting matter."

Percheron colt, Plutarque.—The lecturer on horses at the Huntingdon meeting of the Dairy-men's Association of

(1) In the Rural Vermonter, mention is made of good (?) farms, fenced and every thing suitable, for from \$900 to \$1,200, and implements at nominal prices!!

A. R. J. F.

that county could find no terms sufficiently strong to express his dislike for Percheron horses. They will survive it.

Furrow-marker.—A useful tool for drawing out drills whose dung is not used; as, for instance, in planting corn, beans, &c.

Georgeville, P. Q., 6th March 1888.

ARTHUR R. JENNER FUST, Esq.,

Box 109, Laohine, P. Q.

DEAR Sir,—I paid a visit some days ago to a farmer, Mr. Harrison House, who lives about 8 miles from here. He is the only person in this neighbourhood, I think, who has tried the silo system. Unfortunately Mr. House himself was away from home, but I saw Mrs. House who told me Mr. House and his brother had used a silo for two years and were fully convinced that it would pay any farmer better to raise root crops than to feed ensilage. Mr. House was well satisfied that his cattle were thriving far better with turnips than they did with ensilage. He had been to considerable expense to build a silo and had paid fifty dollars for a machine to cut corn up but after a fair trial threw it aside, so there must be a decided advantage in roots as he raises turnips to-day and has nothing good to say for the silo. The expense of cutting up the corn and packing it seems to be a heavy item. However, opinions on the silo system are very conflicting. I enclose two clippings from last week's "New York Witness" which speak for both sides of the subject.

I should be glad to have your opinion as to which system of creamery has the most advantages, the "Separator" or the "Cream Gathering" process with the Cooley cans.

At Stanstead there is a creamery in operation, the patrons I believe hiring the Cooley cans from the proprietor of the factory who sends men round every day to gather the cream. The cans are gauged and the patrons get each a check for the number of pounds of cream taken. The milk of course is left in the best condition for the calves and swine. At the end of each month the patrons present their checks and get a settlement. The cartage of the cream is a much less expensive matter than that of the whole milk as in the Laval Separator system. Yet this latter must have some decided advantages as it seems to be much more widely adopted. People in this locality are talking of starting a creamery: which do you recommend?

I want to give some land I am breaking up for oats a moderate dressing of fertilizer—would 50 pounds per acre of sulphate of ammonia mixed with 4 or 5 bushels of ashes give good results, or would it be better to add 100 pounds per acre of bone meal. Would you kindly answer this question about fertilizer for oats on the enclosed card as I am anxious to make arrangements for getting the sulphate, &c., as soon as possible.

Yours respectfully,
BICKFORD WEST.

ENSILAGE.

The enthusiasm regarding this food product has very much abated from what it was a few years since; the fact is, a more conservative view is now taken of the matter, and even its best advocates are less extravagant in the claims that they make for it. As a means of securing under all the varying conditions of weather, there is no question regarding its convenience, but that it possesses any greater feeding value than the same in the dry state is now hardly claimed. It is also very reasonable to suppose that some portions of the food that would be hard and woody in texture, if cured by drying, would, when placed in the silo with all the natural juices retained in the liquid state, be continued soft and so eaten more

readily, but it ought not to be supposed that fodder that would not be eaten of its poor quality, would be likely to be much more palatable from being converted into ensilage. Major Alvord, of the Massachusetts Agricultural College, in speaking of ensilage, alluded to the convenience of the silo for storing coarse fodder, such as marsh hay, and even mentioned the saving of ragweed. In this we can hardly agree with this eminent authority, and we hardly think many farmers would consider it advisable to erect silos for the storing of coarse grasses and weeds to be fed to all kinds of animals and even milch cows, for if a good flavored article of butter is desired, good sweet feed is fully as essential as cleanliness in the operations attending its manufacture. Old coarse hay that cattle will not readily eat serves a good purpose as bedding, in which shape it is worth as much as for feeding.—*New-York Witness.*

RURAL RUIN AND DECAY.

To the Editor of *The Watchman*,

SIR,—A question of vital interest, not only to Laohute and our neighbouring townships, but to the country generally, rudely intrudes itself upon our attention. How are our country people to make a living, when the land is denuded of its timber? One not unlikely solution, if we do not mend our methods, is, there will be no rural population left. As it is, nearly half of the young men of the County of Argenteuil have gone to the United States. There is scarcely a family in the township of Grenville but has its representatives in Alpona, Marinette, or Chipewa Falls. In some instances, all the grown up children, boys and girls, have left, and little wonder, for the dull and mis-directed drudgery of the farm is admirably fitted to drive them from their homes. Not unfrequently, rough and worn out farms are entirely abandoned, where the government are conceding lots for firewood purposes, every stick worth cutting will shortly be removed, and the owners will then allow them to be sold for taxes and thus get rid of further responsibility.

Let any one take a ride through the farming lands of Wentworth, Chatham, and Grenville, old settled townships, and in the majority of instances, he will find only the aged, infirm or very young, at home. The land in these cases only half tilled, the fences broken down, the buildings dilapidated and the stock neglected. If it happens to be the winter season, he will often come upon some startled woman, trying to chop a little green firewood, which her husband has drawn home prior to leaving with his team for the shanty. The wind whistles and the snow twirls around her, for ignorant vandalism has not left a tree for shade or shelter. Bad grows to worse, under the changeless law that degeneration can only accomplish degeneration.

I am free to confess that I love the country rather than the town. The country was intended for a paradise, but our ignorance often turns it into a black wilderness. The first man in his innocence was placed in a garden; the first murderer went forth to build a city. These babels of civilization, necessary centres of art and commerce, drain the country of its best blood and brain. Thither wind the workers and there rise the smoky factories, because there the employer can obtain the cheapest labour. There too, many a bright country boy, the hope of a loving mother, learns to swear, and drink, and gamble, till he goes down into the gutter of crime and guilt. There too, many a fair country girl is found exhanging the health and freedom of her native hills, for the semi-slavery, the stifling air, and still more deadly moral leprosy of the city factory. If any one doubts about the factory let him read the recent remarks of Judge Armstrong.

Can nothing be done to stay the desolation that is slowly

but surely creeping over hill and dale? Can not our farmers be taught that, if their light and gravelly soil will not grow hay or wheat, it will yield sure crops of corn fodder, which, if kept in the cheap modern Silo, will enable them to keep ten cows where they now can keep but two? Why can they not be taught the value of *co-operation*, and establish creameries, and cheese factories; relieving their women from the almost profitless drudgery of the home dairy, and putting more money in their pockets? Why do they not raise more sheep, which the Arab rightly says, has a hoof of gold? Why are not their breezy uplands redolent with apple blossoms, and their warm, southern slopes clad in vines?

"Where the sun with a golden mouth can blow,
"Blue bubbles of grapes down the vineyard row."

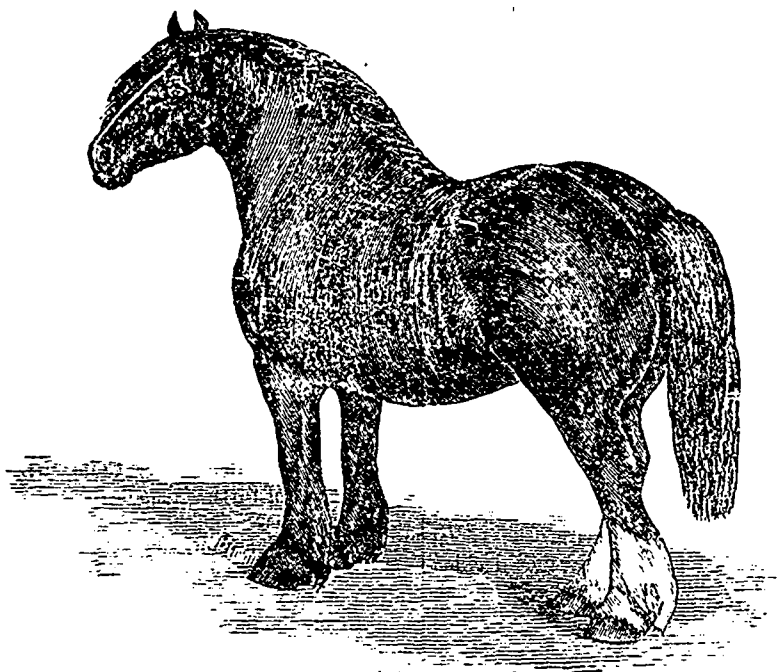
Argenteuil apples are among the finest in the world, and Grenville grapes of the right varieties, ripen before October

garden, with a few acres of land attached, where, in the balmy summer time, competent instructors could show to boys and girls, *how things grow*; alternating the irksome task with practical lessons, which are to all children, of absorbing interest, while in winter weather, dull abstractions could be exchanged for the curious teachings of the workshop, where both boys and girls could be taught *how things are made*?

Will our local members of the Legislature and the Commons, with their wealth, their energy, their wisdom and their patriotism, initiate some reformation in the educational system of our rural districts; and will the *Watchman* second their efforts?

R. LANIGAN.

Calumet, 29th February 1888.



BEAU NASH (2978) AN IMPORTED ENGLISH SHIRE STALLION.

frosts. The women of the house can tend the orchard, and the vineyard. One acre of land will grow fifty apple trees, and if these average only one barrel each, the return is one hundred dollars per acre. Five hundred grape vines can be grown upon an acre, and should each vine yield only five pounds, the return, at five cents per pound, is one hundred and twenty-five dollars per acre. If any one doubts what an intelligent woman can accomplish by fruit growing in the Province of Quebec, let him visit the home of Mrs. Annie L. Jack, of Châteauguay Basi and learn a history which will prove a revelation.

Our present generation of farmers can hardly be taught to change their methods. Our hope is in the young, if rightly and timely taught. What are we doing for our children in country schools? I am ashamed to answer. Is it not just possible to teach them some lessons that will tend to render country life not only profitable, but attractive? Can we not have, with a little effort and a little outlay, at least one school in each township, of a technical character, a matured kinder-

Quebec, 29th February 1888.

A. R. Jenner Fust, Esq., Upper Lachine.

Dear Sir,

I have a sod, not yet ploughed up, on which I wish to grow corn for ensilage, do you think I could get as good a crop off it as on land which has been in roots last year? Should manure go on broadcast? and how many tons? and how should it be seeded? I would like to know how you would proceed step by step, especially putting the seed in: the land is a heavy loam.

Where there is no pasture, what soiling crops for 4 cows would you advise, stating quantity of land and seed and times of sowing of each? What in your opinion are the best mixed grasses for permanent pasture for milch cows for rich milk? also for 3 years lay i. e. for hay for same animals? please give quantities? land is heavy loam with cool bottom.

Are heifers first calves usually as good as later ones, some farmers claim they are not? I have a field of Alsike and timothy which gave a very heavy crop the year after sowing,

the aftermath was good and was also made into hay when first in bloom; the year after, no clover appeared. Can you say why it was? I understood it lasted several years, the land is a gravelly loam with damp bottom.

Yours truly, H. G. H.

Answers.—Mr. H. G. H. will find his first two or three questions answered in the article headed "Roots, &c." p 53. Twenty Scotch-Carts loads of manure, broadcasted, should be enough.

The quantity of seed will depend upon the sort of corn sown. If the small Canadian corn is chosen, which in the Quebec district would be the most advisable plan, two feet

1 bushel of pease.	} 4 bushels per acre,
1½ do oats.	
1½ do vetches.	

to be sown and well harrowed in, and immediately afterwards, two pounds of rape-seed to be sown broadcast, and covered with a roller, if Mr. H. G. H. has one, if not a very light bush will do.

From May 20th, every fortnight up to July 20th;

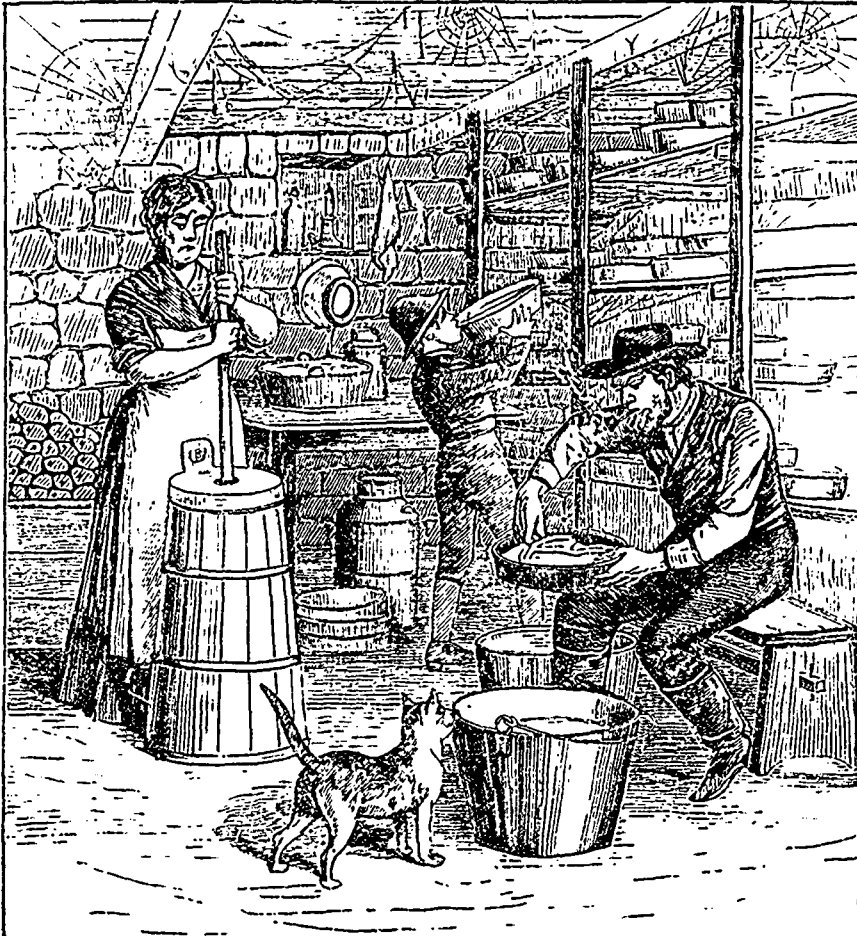
1 bushel of pease.

1 do oats.

1 do tares or vetches.

½ do corn, and the two pounds of rape-

seed, as before. Same treatment. If the rape-seed is buried



A "HOME DAIRY."

between the rows, and five or six grains to the foot in the rows would not be too thick. How that distance is to be preserved, except at an enormous expense I do not see. I, pace Mr. Sidney Fisher, M. P. (see his lecture at Huntingdon February 10th), should sow the corn as thinly as possible with a garden-drill—Mathews' or the Planet-jr. are both good—and if it seemed too thick when up, thin it out. There is a planter, Macomber's, that does its work well, according to Mr. Barnard, but it would hardly pay Mr. H. G. H. to buy one for his small farm.

Soiling crops for cows.—My favourite mixture for soiling crops has appeared often enough in the journal. However, I will repeat it:

First sowing, if before May 20th;

too deeply, as it would be if sown and harrowed in with the other seed, it would probably come up, but the tares, &c., would smother it. There is no use in sowing corn with the mixture before the 20th May; for although the pease, &c., would shelter it, it would fail to grow away rapidly, would turn red in the stem, and be worthless. Ewing, McGill Street, Montreal, has the vetches for sale. Each lot of seed should be measured, and not guessed at. Large, free growing pease are the sort; not the little *quarantaines*.

About August 1st, a piece of rape might be sown, at the rate of six pounds to the acre; and again, on the 20th of that month a piece of rape and tares, say, three pounds of rape, and a bushel of tares, per acre—this will not come to the soythe, but will make capital pasture in October, sending

your cows into the stable in good order for the winter. (1)

Three acres of these crops, sown in successive portions every fortnight, ought to feed four cows well, as I presume they are small cows. They will require, in addition, four or five pounds of grain, and, if you wish them to do really well, they should have a few pounds of clover-hay, and as grains at the brewery are dirt-cheap in summer, half a bushel a head *per diem* will do the cows no harm. I say three acres of the fodder-crop, to be on the safe side, for I cannot possibly tell how the ground will yield. If it is well done, and in good heart, Mr. H. G. H. will be surprised at the swathe. The crop should not be attacked until the tares are in blossom—unless food runs short, and then I suppose that rule must give way. Mow a few hours before feeding-time: unwilted stuff like this is dangerous. In pasturing the late-sown rape and tares, do not turn your stock on them till their bellies are pretty full, and never when the dew is on.

A list of grasses to suit the soils of the province will be found at page 63 of this number of the journal. Orchard-grass ought to do well on H. G. H.'s land *very well indeed*. Mow early: that is the grand secret for making good cow-hay. If I were farming close to Quebec, I would not use a pound of hay for my cows, but sell it all, every bundle, using oat-straw, pease, and linseed in its place. I wish H. G. H. would set out, say 1,000 head of cabbages. Sow an ounce of St. Denis, *very thinly*, in the open ground, about first week in May, transplant in June. They would be fit for food by the end of August. Two feet between the rows, and one foot between the plants in the rows. They will occupy about the 20th part of an acre, and if the cows do not want them, they will surely fetch two cents a piece where they stand.

Of *Alsike clover* I have often heard the complaint made by Mr. H. G. H., that it will not stand. *Red clover* is only, in reality, an annual though we make it a biennial by sowing it with grain, and I see no reason why *Alsike* should be different, though, in some places I know it lasts three or four years. (2) What we really want here for our permanent pasture is the genuine *cow-grass clover*—the *trifolium pratense perenne*, but the seed-men do not keep it. If the *rye-grass* is sown, H. G. H. must take care it is *Pacey's*: common *rye-grass* will not do. The difference of weight should be protection enough to the buyer: the common *rye-grass* seed weighs about 30 lbs. a bushel, and the perennial only 18 lbs.

An ordinary heifer's first calf is rarely reared by an English farmer. Whether this is a prejudice or not I cannot say. It is always allowed to suck its fill of milk, by way of improving the heifer's udder, and being of course fat with such treatment, naturally goes to the butcher at ten or twelve weeks old.

ARTHUR R. JENNER FUST.

MANGOLDS.

"Dr. Pusey, of England, many years ago made some experiments to find out how great an amount of farm manure he could use with profit on his land. To one lot superphosphate was added and here is the result:

No manure,	15½ tons mangolds.
13 tons farmyard manure,	27½ " "
26 " " "	28½ " "
13 " " "	" " "
with two cwt of super-phosphate added.	36 " "

(1) The first cut of the fodder-crop ought to be gone in time to make room for these sowings.

(2) At any rate *Alsike* left to stand till the seed is nearly ripe, is not likely to come again the following year.

This shows for the superphosphate and 13 tons of manure an increase of 20½ tons over the acre not manured."

The above extract from the *Rural New-Yorker*, is about as full of errors as it is possible for an article to be. To begin with, poor Dr. Pusey, the great Anglo-Catholic, hardly knew the difference between mangolds and swedes. The experimenter in question was Philip Bouverie-Pusey, member for Berkshire, and for some time editor of the *Journal of the Royal Agricultural Society of England*.

The real application of manures and the result were as follows:

- No. 1. Fourteen tons of dung. Eighteen tons of mangolds.
- No. 2. Twenty-eight tons of dung. Twenty-one tons do
- No. 3. Three cwts. of P. guano. Seventeen tons do
- No. 4. Fourteen tons of dung, and and three cwts. of P. guano. Thirty-three tons of mangolds.

The guano was in those days very much superior in quality to the best we get now. Containing as it did 14% of nitrogen, the whole dose of 336 lbs. added 47 lbs. of nitrogen to the acre, over and above the nitrogen contained in the dung. No superphosphate of any kind was used, and the deduction Mr. Pusey drew from the experiment was that nitrogen in a *readily assimilable form* is the manure distinctively required by mangolds. For observe; the 14 tons of dung contained at least 150 lbs. of nitrogen potentially available, that is available when it had been some indefinite time in the soil. The addition of the second dose of double the original quantity would give 300 lbs. of nitrogen to the acre; but this monstrous application only increased the crop by 3 tons; clearly showing that the nitrogen was not in a fit state to supply food to the plant. The dose of 336 lbs. of guano alone no doubt gave the young mangolds a good start, but when the time came for the bulbing process to go to work, food failed, and the result was a very moderate return for the outlay. But when the full amount of nitrogen, with a fair dressing of dung, was given we see how truly profitable the scientific treatment was, for the 3 cwts. of guano added 15 tons of mangolds to the crop, at a cost of only 36 shillings, or 2 shillings and six-pence a ton. The best Peruvian guano at the time sold for £12 a ton in 1846, when these experiments were made.

Since that time no good farmer in England dreams of sowing mangolds without adding nitrogen, in some form, to his dressing of dung, any more than he would sow swedes without adding superphosphate to the dung used for that crop. And here is another proof, in addition to those we have lately seen in the cases of wheat and swedes, that the analysis of a plant by no means indicates the manures required to assist the growth of that plant, for turnips contain a proportion of alkalies to phosphoric acid of 5:1, and yet alkalies are of no use as a manure for that crop. So we have reached certainty in three most important points:

Nitrogen is the manure distinctively demanded by wheat and by mangolds;

Phosphoric acid is the manure distinctively required by swedes and turnips.

Paring and Burning.—I see, by an exchange, that paring and burning is still practised in some of the States. There is no part of the world where it would be more generally useful than in our heavy *dull* clays about the valley of the middle St. Lawrence. I say *dull* clays, because there is still plenty of stuff in them, though in a sluggish, inert state. Oh! if some one would only burn an acre of worn-out meadow, spread the ashes, and sowing rape, feed it off with sheep, we should soon hear of his example being followed by his neighbours, and the whole face of his district would, in a few years, be a model of prosperous cultivation.

The advantages of this mode of treatment are: The destruction of weeds, of insects and their eggs; the additional friability imparted to the soil; and the increase of available potash, phosphoric acid and lime. There is, of course, a loss of nitrogen, but the immense improvement in the texture of the soil—an irreducible clay becomes converted into an easy-working loam—will soon make up for that.

If any one tries this plan, he must not expect to go on selling all the produce of his farm as is commonly done. If he tries that way of making a profit, he will soon come to the end of his purse. The continuance of the system for rotation after rotation in the early part of the century had the effect of utterly ruining many of the heavy-land farms in the East of England. But as a means of bringing worn-out, rough land into a pleasant workable state, I do not know its equal. I add a few instances of the effect of paring and burning on soils with which I am well acquainted:

In Kent, on the chalk, a farm was full of couch-grass; the previous tenant had lost all his capital on it; no one would hire it; so the unfortunate landlord had to take it in hand himself. The first season 80 acres of the worst part of the farm were pared and burned, a hundred large loads of ashes—probably 40 bushels each—were spread on each acre, and, after lying exposed to the air and rain for two months, were ploughed in shallow. Rape was sown, fed off by sheep, and, after another ploughing, fall-wheat was sown. Yield of the wheat-crop 48 bushels an acre, which, as wheat was then worth 8 shillings a bushel = £19.4, a good deal more than the value of the fee-simple of the land, which had let up to the previous year for 5 shillings an acre, which, at 28 years purchase, would only made £7 an acre. The total expenditure was £8.10.

Mr. Randell, a large Berkshire farmer, started to improve a piece of land, 5 shillings an acre rent, "of the very poorest description of clay, on the side of a steep hill, totally inaccessible to the dung-cart. After once ploughing, it was worked with grubber, harrows and roller, the clods of couch-grass and every turf dragged to the surface, collected with rakes and forks, and burnt in heaps, at a total cost of £2 an acre. The land was ploughed, after the ashes were spread; tares sown, fed off by sheep, and the crop of fall-wheat following turned out 45 bushels an acre! With our cheap fuel, I am, and have long been, convinced that this would be the easiest way of awakening the dormant fertility of the heavy clays in the valley of the St. Lawrence.

Rations for horses.—Mr. E. W. Stewart says that he cannot make a horse-ration out of oat-straw and oats. Possibly not; and yet I never was better carried to hounds than in 1855 when my hunters had no hay, but oat-straw and all the old oats they would eat, which was about 120 pounds a week each. Beans were difficult to come by at that time, and in that locality—Wallop, on the chalk lands of Hampshire—or my horses would have had half a bushel a week apiece, in place of a bushel of oats, but they did their work well on their food as it was, with a bran-mash every Saturday night, and were always ready when called upon.

Plaster.—Among the many puzzles I have encountered in my studies is the action of plaster on leguminous plants. Why should sulphate of lime exercise a specific action on plants which bear their seeds in pods? Some agricultural chemists attribute the effects of plaster to the sulphuric acid, others to the lime contained in this substance. Ville, who teaches that clover, &c., obtain their nitrogen from the air, gives the following formula for manure for clover, haricot-beans, horse-beans, sainfoin, tares, and lucerne—all pod-bearing plants:

	lbs. per acre.
Superphosphate of lime	528
Chloride of potash	176
Plaster (sulphate of lime)	352

Lawes, on the other hand, knows of no specific manure for clover, plaster having no effect in England on that crop; probably, because the land is generally sufficiently supplied with it already.

In this country, many a farm refuses to grow pease at all, unless they are plastered; but, then, these are worn-out lands, that have never seen a load of dung since they were cleared from the forest. So, it is clear that plaster has some powerful, if at present occult, influence on pease in this province, and if on pease why not on all the leguminoeæ, or plants of the same family.

And this brings me to a point which may serve to explain the action of this hitherto mysterious manure. All soils contain more or less potash but, unfortunately, the soil-potash is too frequently in an inert state; potash, in an active state, is an absolutely necessary ingredient in all soils if they are to perfect the growth of any plant, but emphatically so in the case of the pod-bearers. Exclude potash from an experimental pot-grown plant, and the effect is soon visible: the stalk, instead of growing vertically, bends as if it wanted solidity. What if plaster be a cooking-agent for the conversion of inert into active potash?

Fertilisers.—The present value of the constituents of fertilisers, according to the bulletins issued by the experiment-stations in the States, is as follows:

Nitrogen.....	16 cents a pound.
Soluble phosphoric acid.....	8 do
Potash	5 do

A simple formula for finding the worth of a mixed fertiliser may be thus stated:

$$N. \frac{\circ}{10} \times 16 \times 20 = \text{value of nitrogen. (1)}$$

$$Ph. \frac{\circ}{10} \times 8 \times 20 = \text{value of soluble phosphoric acid.}$$

$$P. \frac{\circ}{10} + 5 \times 20 = \text{value of potash.}$$

And taking the case of a fertiliser containing, say 5% of nitrogen, 10% of soluble phosphoric acid, and 6% of potash, the calculation would be carried out thus:

N. 5 × 16 × 20 =	\$16.00
S. P. A. 10% × 8 × 20 =	16.00
P. 6% × 5 × 20 =	6.00

\$38.00

To convert the value of gross ton 2240 lbs into our ton of 2000 lbs. say:

$$28 : 25 :: \text{value of gross ton} : x$$

Thus, if the ton of manure is fetching ten pounds in England, it ought be worth here nine pounds, or: As \$48.70 : \$43.83, plus, of course, freight, insurance, and (alas! that they will have it so) duty!

I copy the following from a fertiliser pamphlet:

No. 1 Fertiliser.—Use from 200 lbs to 400 lbs per acre.

GUARANTEED ANALYSIS.

Ammonia.....	1½ to 2¼ per cent.
Phosphoric acid (soluble and precipitated)	9 to 11 do
Potash (actual).....	1 to 1½ do

Now let us take the medium quantities and value them as above:

Ammonia (equal to nitrogen 1.64)	\$ 5.24
Ph. acid (calculated as all soluble)	16.00
Potash.....	1.25

\$22.49

(1) If nitrogen = 16 c. a lb., ammonia=13 c.

And the price charged for this stuff is \$32.00 a ton!!! What possible good a dressing of 200 lbs. to the acre of this fertiliser can do, barring the phosphoric acid, I do not see. It would only give at the outside $3\frac{1}{2}$ lbs. of nitrogen and $2\frac{1}{2}$ of potash to the acre. And, again, nobody can tell what is being bought with such a statement as "Phosphoric acid (soluble and precipitated);" for the precipitated may be any thing you please: if I buy "soluble phosphoric acid," I know what I am about; but when it is combined with "precipitated" in the analysis, I am made suspicious.

My readers may have seen, in the February number of the Journal, a letter from my friend Mr. Bickford West, mentioning a proposal from Messrs. Jickers and Sons, Manchester, England, offering to supply manure, free on board at Liverpool, for £5.11.3 a ton gross. This would be equal to \$24.00 for our ton, and the price, according to our previous calculation, would be, here, \$35.20; but allowing freight and duty to be paid at the rate Mr. West states, the cost, delivered in Montreal, would be only \$33.60. Now, if there were no duty, and the goods were imported by the cargo, in bulk, from Liverpool, the manure could be laid down here at a price not exceeding \$25.50 per short ton, and could be retailed, with good profit, for, at most, \$30.00.

Rollers.—I find, from Mr. Tuck, whom I mentioned in my description of Messrs. Dawes' farm last month, that they have and use a roller, but, unfortunately being made of wood and five feet in diameter it has comparatively no effect. I found one at Judge Armstrong's farm at Sorel, of the same size, made of thin iron, and these two instances confirmed me in my idea that farmers, as a rule, fall into a grievous error in selecting this implement. From the nature of its action, and its intended effects on the soil, there are two elements that should be carefully kept in view—the weight and the diameter of the cylinder. By the former alone can the desired effects be produced in the highest degree, but these will be modified by the diameter. Thus, a cylinder of any given weight will produce a greater power of pressure if its diameter be one foot, than the same weight if the diameter were two feet—of course the lesser the diameter, weight being equal, the harder work for the horses. A good roller should be of cast-iron, in two parts, to allow of turning at the headlands without scrunching the young plants, and a diameter of two feet, with a weight of at least 1800 lbs. Where fall-wheat is grown, 3,000 lbs. will not press down the earth round the roots in spring too tightly. Never roll anything in autumn.

On the top of the frame of the implement you will do well to have a good-sized box. In this, if additional weight be required, you can place half a ton or so of stones.

I never could see why, in England, barley is always gone over with a light wooden roller—about 3 cwt.—I have pressed that grain with Crosskill clod-crusher—about a ton, gross—and never found it the worse.

There is a good style of roller made in England, nowadays, of boiler-plate, closely rivetted so as to be water-tight. This can be weighted according to taste with water, so as to make a light or heavy roller at will. One, in two division, each three feet six in length by two feet in diameter, would be a handy size. The iron work would weigh about five hundred pounds, and if the two cylinders are filled, the weight of the water would be some seventeen hundred pounds = 22 cwt. in all.

The horses should be always yoked *abreast*, and the rolling done across the ridges, but I would not, even with a two cylinder roller, turn sharp round at the headlands, as part of the ground turned upon would be rubbed hard, and where young clover-plants are growing, they would probably be killed. It is better to roll in wide divisions of, say, 40 yards,

driving the horses towards you on one half, and from you on the other. as we say in Kent—*hither and gee*.

Composition of Milks.

Woman.	Cow.	Ass.	
890	860	907	Water.
110	140	95	Solids.
25	38	12	Butter.
35	68	16	Caseine.
48	30	65	} Sugar, Extractive and Fixed Salts.
2	6		

Carpenter's Physiology.

A. W. Blyth's "Foods composition and analysis" gives the following:—

WOMAN MILK.		Per cent.
Milk fat.....	.....	2.90
Caseine.....	.....	2.40
Albumen.....	.....	.57
Galactine.....	.....	.10
Sugar.....	.....	5.87
Ash.....	.....	.16
Water.....	.....	88. 0
Total solids..	.....	12. 0
Solids not fat.....	.....	9. 1

ASSES' MILK.		Per cent.
Milk fat .....	.....	1.02
Caseine.....	.....	1.09
Albumen.....	.....	.70
Galactine .....	.....	.10
Sugar.....	.....	5.50
Ash.....	.....	.42
Water.....	.....	91.17
Total solids.....	.....	8.83
Solids not fat .....	.....	7.81

The above analysis of the milk of the cow, the ass, and the woman, are worth study. So many children in Canada suffer for want of suitable nutrition, that a note on the subject may not be out of place.

Woman's milk contains 2.50 per cent of butter-fat.

Cow's " " 3.10 " of "

Ass' " " 1.02 " of "

Of caseine: Woman milk contains 3.5 per cent.

" Cow's " " 6.8 "

" Ass' " " 1.6 "

So, we see, cow's milk contains 60% more butter-fat than woman's milk, and nearly twice as much caseine. Which superfluity of nitrogenous matter will account for the fact that undiluted cow's milk seldom agrees with an infant under a twelve months old. *A fortiori*, then, must the milk of Ayrshire cows, which Mr. Curtis supposes to contain more than the average amount of caseine, be an unwholesome food for infants.

The milk of the ass which animal is frequently substituted for a wet-nurse in England, when infants are deprived of access to "Nature's founts," and most successfully—is poorer in both butter-fat and caseine than either woman's or cow's milk; hence, I presume, it hardly ever disagrees with the child. Morally speaking, the female donkey is by no means an ass, for except in the presence of the foal she refuses absolutely to give down her milk; whence arises a crafty trick of the ass-proprietors in the neighbourhood of London: having sold a new-foaled donkey, they retain the foal, under the pretext

that it would only be a nuisance for the buyer to look after it. The dam arrives at her new-home, but not a drop of milk can be extracted from her teeming udders; the seller is appealed to, and, after many explanations, he advises the purchaser to take the foal, at an exorbitant price, which the unfortunate dupe is compelled to do.

Ensilage.—The attached note is from the "R. N.-Yorker." I cannot see what is gained by ensiling "nearly or quite matured corn," over drying and stacking it. The cutting into chaff for cattle would be less likely to interfere with other work if done in the winter than if done when the corn is fresh-cut. The condenseries not being willing to receive milk from silage fed cows is a serious matter, particularly if this line of conduct is followed by the creameries.

On the subject of ensilage, it was generally agreed that the corn should be nearly or quite matured before it is packed in the silo, to receive the best results. It could then be cut up, or put in whole, with or without ears, and come out sweet and good. Mr. Moore had tried the Evergreen Sweet Corn, but it spoiled and he wanted no more of it—there is too much sugar in it to keep. He thought it might be saved perhaps, if the ears were taken off. He had succeeded well with ordinary State corn, making silage almost equal in food value to the best June grass. He feeds silage once a day. Mr. Hart had tried sorghum cane and it spoiled completely. The Wassau Condensery will not receive milk from silage-fed cows, but most of the members thought such milk was just as good condensed as any other, and could not be distinguished from it."

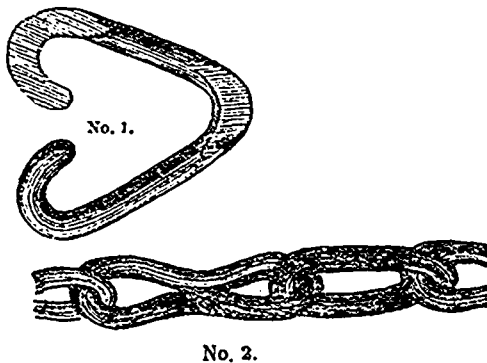
Mr. Brown's, of Guclph, opinion of the inferiority of silage to roots, as regards milk and butter, coupled with the results of the Woburn experiments on the same lines, are not to be thrown aside as of no value by sensible people. Besides, in Prof. Shelton's silage experiments it was apparent from the first, that the capital required for machinery, men, teams, &c., in making ensilage, puts the system quite out of the reach of the general run of farmers.

Mr. Jas. Dawes informs me that, owing to the lateness of the season, he does not believe any exhibition of fat cattle will be held in Montreal. All the beasts from the neighbourhood are already in the butchers' hands. A. R. J. F.

The Cold Shut Repair Link.

This article should be always on hand on every well managed farm.

Cut No. 1 exhibits the COLD SHUT as it appears before using, and cut No. 2 shows it as closed up in the chain.



These Repair Links are made in different sizes, and are designed for mending trap chains, trace chains, halter chains,

cow ties, &c. Trappers especially will find them a great convenience. With one of these Cold Shuts a broken trap chain can be mended in a minute, or a piece of chain can be spliced on to lengthen a short one.

Badly Discouraged.

"A Lamoille county correspondent writes that he thinks it high time to stop this blank foolishness of praising Vermont, and says that, though he was born in the state, and has lived to be past forty, he would get out of it mighty quick, if he could. He has been trying to sell his farm for less than half what it was once worth, and in four years hasn't had any half decent offer."

Is this one of the farms that the Vermont people are good enough to propose that English tenant-farmers are to leave their homes for the purpose of buying? *Pas si bêtes, mon ami!*

PERMANENT PASTURE.

BY ARTHUR R. JENNER FUST, EDITOR OF THE
"JOURNAL OF AGRICULTURE."

The age of miracles is past. The soil may be compelled to produce everything that nature has constituted it capable of producing, but to attempt to establish permanent pasture on an inferior sandy soil is to aim at the impossible.

That permanent pasture may be properly laid down, two things are necessary: the soil must be supplied with plenty of food suitable to the plants it is intended to produce, and the cultivation of the two preceding years must have been such as to insure the perfect pulverization of the land in which the grass-seeds are to be sown. The rootlets of every variety of grass are excessively fine, and will not grow freely among clods.

But you must not imagine that the proper preparation of the soil and the careful selection of the seed are all you have to provide for. Not at all; neglect for a few years the care due to your pasture, and you will soon see the herbage return to its primitive state; the choice seedlings will disappear; weeds, the original proprietors of the land, will renew their claim of mastery, and all the trouble you have taken will prove to have been thrown away.

A newspaper, the "Orillia Packet," used to amuse itself some six or seven years ago by making fun of those who advised farmers to lay down permanent pastures, to some extent, on every farm. But that cry is no longer heard. Only a short time ago an article appeared in the above named paper, not only recommending warmly the establishment of these pastures, but ridiculing Mr. Allen, a well known American agriculturist, for saying that no one but an enthusiast would persist in believing in the value of permanent pasture in these latitudes.

All those who have visited the British Isles must have been struck by the beauty of the meadows and pastures of those countries. I have no doubt that, with proper care, both meadows and pastures of equal efficiency might be established here. Our summer is hotter and the season of growth is shorter than in North-Western Europe; but the dews and rains of our climate are sufficient to supply the necessary moisture to our soil, especially if the land has been properly prepared for the crop.

Mind, I by no means intend to convey the impression that grass will prove durable on a poor, sandy, badly prepared soil. But, I do say that, if the subsoil be cool, and the preparation be well done, your cattle will find food in pastures thus treated for many years; the grass will sprout far earlier in spring, and last far longer in autumn than in those *pacages*, as they are called, which we generally find in this province. But, in spite of everything, the native plants will,

sooner or later, conquer the foreigners, and it will be your duty to postpone their victory to as distant an epoch as possible.

A lesson of great importance, as regards the permanent grasses, may be learned from the Rothamsted experiments: as long as, in a permanent pasture, the different species of grass are left to the guidance of nature alone, they live on good terms with one another, and all goes well; grasses and clovers, crow-foots and daisies, if uninterfered with, never quarrel. The plants that appear this year are pretty much the same as those that appeared last year, with this difference: certain seasons encourage the growth of certain species more than others.

But, let the hand of man once intermeddle with the peaceful scene, and the whole is changed like the changes wrought by the magic wand of a Harlequin. Daily is renewed the contest between the grasses and the other plants that occupy the pasture; one handful of nitrogenous manure will depress the scale of victory in favour of the grasses, while a little lime or potash will so nourish the clovers at the expense of the other plants, that the latter will be quickly driven from the field. In fact, the existence of the herbage under the rule of man is passed in a series of battles—grasses against clovers, and both against weeds—and it is your business, brother farmers, to guide these troubles to your own ultimate profit.

Here is something worth remembering: the success of your attempts to lay down land to grass depends rather on the preparation subsequent management of the pasture than on the most judicious selection of the seed. The Downs and the Heaths of Europe, the roadsides of this country, both tell the same tale. If the natural soil be rich, the herbage will include all the best species of the grasses and clovers; if, on the other hand, the plant-food be poor and scanty, the weeds will take possession of the turf, in spite of all the efforts of the better plants to keep them in subjection.

And here we have a generalisation of the greatest importance: Feed well your younglings, and you will soon find them fighting on your side against your enemies the weeds. We all know that, do you say? Possibly, but you do not, to judge from your practice, act in accordance with your knowledge. If you did, the pastures of the province would wear a very different face.

Much care is required in the preparation of the land for laying down to grass. The seed may be sown either with or without a grain-crop. I prefer the latter plan, and for this reason: each seedling will have the chance of profiting by every particle of suitable food it may find near it, without any risk of interference on the part of the grain-plants.

But here, some will say, it would be hazardous to sow down land for permanent grass without barley, oats, or wheat. Best, the grass failing, the whole profit of the year be lost. Only too true, but it is worth while trying it. One thing is certain: the turf will grow faster, and become close and thick sooner, if it is sown alone, than if it is sown with a grain-crop.

At all events, the first thing to be done is to thoroughly clear the land; and, for this purpose, there is nothing better than a root-crop. On heavy land, such as we usually find in this province, we should proceed something in this fashion:

The land will, probably, have just borne a crop of some sort of grain, the last of the rotation, and if it is infested with couch or other root-weeds, they must be got rid of. In my part of England we set about it thus: as soon as the grain-crop is carried—sometimes as soon as the shocks are set up—the grubber is passed along and across the stretches (lands, ridges), the harrows and the roller pulverise the grubbed surface, and the horse-rake collects the weeds into rows. With our feeble sun, we are compelled to burn them, but here, where the sun is so powerful during August and

September, two or three days of exposure to its rays will be sufficient to dry up the couch, and it will be useful hereafter as the base of the dung-heap for the future root-crop.

After having got rid of the weeds, the autumn furrow may be given. As to the depth advisable for this, it depends upon the condition of the soil. If it has been well farmed, and is not an absolute stranger to the dung-cart, there will be no danger of ploughing it too deep. As a rule, I do not care to bring up more than a couple of inches of the raw subsoil. Still, we must not forget the immense power of our Canadian winters over a well ploughed soil. The descent of some part of the former manurings into the subsoil will have mitigated its crudity, and made it less hostile to the penetrative force of the filamentous roots of the future crop, especially if we consider the heavy dose of manure which will be necessary if we look for a remunerative crop of roots.

Another rule: Always give a deep furrow in autumn to land intended for a manured root-crop. In spring-ploughing for grain, six inches are deep enough.

When the snow has gone and the land is dry, it may be either cross-ploughed or grabbed. I prefer harrowing, along and across, then a cross-furrow, finishing with the grubber. The cross-ploughing should be as deep as the autumn-furrow; it will bring up to the surface all the root-weeds left after the fall-ploughing, which, after a few days exposure to the sun, may be led to the mixen, or burnt.

When the swedes and mangels are up, do not forget to keep both hand- and horse-hoe going. The more frequently this is done, the more perfectly will the soil be prepared for the succeeding crops. The field cleared of roots, plough for the seed-furrow before winter. When the spring arrives, sow the barley—barley suits grass seeds better than wheat or oats—harrow, harrow, and harrow again, scatter the grass-seeds, cover with the chain- or bush-harrow, and finish with the roller.

Once more a rule:—Do not let any cattle or sheep feed on the young grass after harvest. Not only do they damage young seeds by nipping out the heart of the clover, but their feet on a frosty morning in early autumn tread the very life out of the grass. A slight coat of manure, laid on when the ground is hard and spread at once, will be most useful. Ten bushels of ashes and two of plaster per acre will be beneficial. Still, farmyard dung, acting both as a mulch and a plant-food, is to be preferred. Artificial manures, at present, are too absurdly dear in this country for me to recommend their use on grass.

The following, and every succeeding spring, pass the bush-harrow and the roller over the grass. The rolling should be done before the land becomes too dry.

And, now, we come to one of the most important points of all: how shall we make use of the pasture-grasses about which we have taken so much trouble? In my opinion, they should be fed off by young cattle, and for the first season neither horses nor sheep should be admitted to the fields. Cows are too heavy; they would injure the turf by treading it in wet weather. Horses and sheep bite too low, they would nibble out the heart of the clovers. Begin feeding off the grass sufficiently early in the spring, and send in enough beasts to eat the herbage off clear in ten or twelve days. The closer the grass is fed off, the more quickly and the thicker will it come again. If, on the contrary, some of the stalks are allowed to run to seed, it is but too probable that the roots, whence they spring, will die. Spread the droppings of the cattle carefully at least once a month, and if in the Autumn there are in some spots tufts of grass which the beasts will not eat, mow them: there is nothing more injurious to pastures than unequal grazing.

At the expiration of the ten days, turn your cattle into

another field let the grass in the former piece grow again, and fifteen or twenty days afterwards you will see, if the season be propitious, a bulk of herbage in excess even of what there was before the first feeding off.

The next season the pasture may be mown, if you really want hay, but it would be better for the permanence of the grass to pasture it continually. Bush-harrow and roll every spring, and give it a good dressing of we'll rotted manure, mixed with earth, ditch-clearings, &c., every third year. Ten bushels of lime mixed with ten loads of earth will help, if dung cannot be spared.

In the Eastern Townships, many pastures are to be found which are as nature left them; they have never felt the plough. Thence come the best butter and the most savoury cheese that are made in the country. Unfortunately, their proprietors have terribly neglected these fine pastures. They have robbed them of all their wealth, and have repaid them no part of it; the land is ignorant of the very existence of the dung-cart. If these farmers will listen to me, they will never break up these fields. They are full of every description of grasses and clovers native to the country, and only wait for food fitted to their wants to produce abundantly. Are they too moist? Drain them. Those who say that grass-lands do not benefit by drainage are mistaken. It is just the reverse: the best herbage will not grow in wet places. Every animal on the farm improves more rapidly on a dry soil; they find the grass more to their taste, and are generally more comfortable. In marshy soils, dung is almost wasted, it remains a *caput mortuum*, and, like a corpse in a wet cemetery, it takes some years to become decomposed.

But to return to the consumption of the now established pasture. As farmyard manure but too often runs short, give two or three pounds a day of oil cake, pease-meal, or corn-meal, to each of the cattle on the pasture, and within a twelve-month of beginning this system of feeding, both cattle and land will show its efficacy. With us, in England, the better class of farmers always treat their second-rate pastures after this fashion, and thus make them almost equal in fattening power to land of the first quality. Do not omit spreading the droppings of the stock two or three times a month.

Rape and colza are, unfortunately, almost unknown crops in this province. Frequently, grass-seeds are sown, in England, with rape, and the double crop fed off by sheep or young cattle. This answers very well, as the beasts tramp down the roots of the young grass, and thereby fix them in the soil more firmly than can be done by rolling. As rape is sown broadcast, it requires no hoeing, and you may take my word for it, that the cultivation of this plant, with its subsequent consumption by sheep, each one eating in addition a pint of pease with a little clover-chaff *per diem*, would restore the sadly worn out lands of the country sooner than any means that can be devised.

And what grasses shall we grow on our pasture?

The choice depends entirely upon the texture of the soil we have to deal with. Some grasses start into growth early in the spring; others are valuable from their persistence in the autumn. Again, the grasses long for nitrogenous food, whereas the clovers seek for lime and phosphoric acid; both grasses and clovers are fond of potash, and both, if these food-matters are freely presented to them, will be found in amicable occupation of a well managed pasture.

When the turf is thickly set, you will very probably find as many as thirty different species of graminaceous and leguminous plants in it, that is, provided that the soil be of good quality. And this variety of species is by no means unimportant, as all animals do better on mixed food than when confined to one sort of food. Butter and cheese too will be

more highly flavoured when the pasturage is such as I have described. Timothy grass and weeds, which is about what our cows get in August and September, will never produce good cheese.

The greater the variety of grass seeds sown, the greater the chance of some of them suiting the land. Soils have tastes as well as men, and are sufficiently skilled in selection to distinguish those species which are the most likely to survive when the terrible contest, which will inevitably take place between their true and their foster children, shall have terminated.

GRASS SEEDS FOR AN ACRE - PROFESSOR BROWN, OF GUELPH.

GRASSES.

Meadow fescue.....	6 lbs.
Meadow foxtail	3 "
Perennial ryegrass	2 "
Timothy	3 "
Orchard-grass	3 "
Canadian blue-grass.....	4 "
Red top.....	2 "
Yellow oat-grass.....	2 "

25 lbs.

CLOVERS.

Lucerne	4 lbs.
White clover.....	2 "
Red clover	1 "
Yellow and hop clover.....	1 "

8 lbs.

Total grass and clover..... 33 lbs.

GRASS-SEEDS AND THE SOILS FOR WHICH THEY ARE SUITED.

Meadow foxtail.....	Rich loams.
Red top.....	All soils.
Yellow oat-grass	Sands.
Crested dog's tail.....	All soils.
Rough fescue.....	All soils.
Meadow fescue.....	Rich loams.
Sheep's fescue.....	All soils.
Rye-grass	All soils.
Orchard grass.....	Rich heavy land.
Perennial ryegrass.....	All soils.
Timothy.....	All soils.
Blue grass.....	All soils.
Poa, the common.....	Clays.
Poa, wood.....	Shady spots.
Poa, evergreen.....	All soils.

Mr. Brown's list is very good, but I should, in this province, omit the Lucerne, which does not seem to do well when mixed with other seeds, though it is invaluable as a forage plant. The orchard grass, on light inferior sands, may be replaced by 3 lbs. of crested dog's tail and 2 lbs. of yellow oats.

My own mixture for the average run of soils in Quebec, is as follow:

Pacey's perennial rye grass.....	8 lbs.....	\$ 80
Timothy.....	6 ".....	25
Orchard grass	7 ".....	1 50
Meadow fescue.....	3 ".....	1 05
Perennial red clover.....	3 ".....	45
Alsike	1 1/2 ".....	45
White	1 1/2 ".....	30

30 lbs. \$4 80

The seeds in Prof. Brown's list would cost, in Montreal, about eight dollars.

As to the flavor of cheese depending on the pasturage, I append a letter I received some years ago from Mr. MacFarlane, a most successful dairyman in the Eastern Townships:

"You are perfectly right in saying that the butter you tasted in Montreal, at the Exhibition of 1879, was the production of *old* pastures. As to the variety of grasses of which the West Brome meadows are composed—they consist of timothy and white clover principally, but the pastures are all permanent, hilly for the most part, with the exception of here and there a piece of natural grass containing the species native to low-lying lands. We rarely see pastures that have been ploughed: they are just as nature left them after being cleared."

West Brome, Dec. 2nd, 1879.

The cheese in question was so good, both in form and in taste, that I was sure no young grass could have produced it, and I was right. It is clear that, all other things being equal, a varied food, like that yielded by the Brome pastures, must give a more high-flavoured cheese than where one or two grasses compose the whole meal.

And there is nothing easier than the improvement of these hill pastures. Lime and phosphoric acid are their chief wants, for the potash has never been extracted by successive grain crops. One barrel of plaster a year, and 2 cwt. of "old char" from the sugar refineries will supply all the manure wanted to start with, and careful grazing, with added food, will secure the continued success of these invaluable feeding-grounds. Oh, happy farmers of the Eastern Townships! If you only knew the value of these hilly pastures, down which flow hundreds of soft streams only waiting for the hand of man to lead them in graceful curves over the turfy slopes, and thereby convert them into the earliest and richest land of the whole country!

The above is a translation of an address, in French, read at the meeting of the Dairyman's Association at the meeting at Three-Rivers, January, 1887.

As all its older readers know, the R. N.-Y. has grown Prickly Comfrey in a small way for about 12 years. We have said that the plants are tremendous growers and will bear cutting back three or four times each season.

We have discouraged its cultivation because until of late no animals that we had tried seemed to relish the large, coarse prickly leaves. Last summer one of our horses was fed the Comfrey every few days during the summer, and he ate it with evident relish and a growing appetite for it. Now, in justice to the other side of the question, we must again allude to what Dr. Henry Foster, of Clifton Springs, N. Y., says of it. Under date of Sept. 21, he wrote to the N. Y. Station as follows:

"We have been using the Comfrey five years, and we think more of its value this year than in any previous year. We are now cutting the fifth crop grown this season. My foreman says that it will average ten tons to the acre for each crop, making 50 tons to the acre for the season. Of course, to get such an enormous yield it must be thoroughly cultivated between each cutting and top-dressed. We use for dressing nothing but stable manure, put on immediately after cutting, before cultivating. We have no forage plant that compares with it in producing quantity and quality of milk."

Now in the light of this testimony, as well as that given by the Station's analyses and several years' trial of Prickly Comfrey, the Station report says: "From a chemical standpoint, we have in Prickly Comfrey a promising forage plant for those interested in soiling, and we would recommend its careful trial by the farmers of our State."—*R. N. Yorker.*

NON-OFFICIAL PART.

The Richmond County Agricultural Society will give a Bonus of one hundred dollars for a Stallion to stand in the county for service for the season of 1888. The Stallion to be a Coaching Horse or a Cleveland Bay, to be approved of by the Board of Directors and be shown at the Town of Richmond, Que., on the 17th of May, next, for such approval.

Further particulars on application to the undersigned,
JOHN MAIN, Sec.-Treas.
Melbourne, P. Que., 6th March 1888

AN EXTRAORDINARY OFFER.

TO ALL WANTING EMPLOYMENT.

We want live, energetic agents in every county in the United States and Canada to sell a patent article of great merit, ON ITS MERITS. An article having a large sale paying over 100 per cent. profit, having no competition, and on which the agent is protected in the exclusive sale by a deed given for each and every county he may secure from us. With all these advantages to our agents, and the fact that it is an article that can be sold to every house owner, it might not be necessary to make "AN EXTRAORDINARY OFFER" to secure good agents at once, but we have concluded to make it to show, not only our confidence in the merits of our invention, but on its salubility by any agent that will handle it with energy. Our agents now at work are making from \$150 to \$300 a month clear, and this fact makes it safe for us to make our offer to all who are out of employment. Any agent that will give our business a thirty days' trial and fail to clear at least \$100 in this time, ABOVE ALL EXPENSES, can return all goods unsold to us and we will refund the money paid for them. No such employer of agents ever dared to make such offers, nor would we if we did not know that we have agents now making more than double this amount. Our large descriptive circulars explain our offer fully, and these we wish to send to everyone out of employment who will send us three one cent stamps for postage. Send at once and secure the agency in time for the boom, and go to work on the terms named in our extraordinary offer.

Address, at once, NATIONAL NOVELTY Co.,
514 Smithfield St., Pittsburgh, Pa.

SILK RIBBONS!

Those of our lady readers who would like to have an elegant, large package of extra fine, Assorted Ribbons (by mail), in different widths and all the latest fashionable shades; adapted for Bonnet Strings, Neckwear, Scarfs, Trimming for Hats and Dresses, Bows, Fancy Work, &c., can get an astonishing big bargain, owing to the recent failure of a large wholesale Ribbon Manufacturing Co., by sending only 25 cents (stamps), to the address we give below.

As a *special offer*, this house will give *double* the amount of any other firm in America if you will send the names and P. O. address of ten *newly* married ladies when ordering and mention the name of this paper. No pieces less than one yard in length. Satisfaction is guaranteed, or money cheerfully refunded. Three packages for 60 cents. Address,
LONDON RIBBON AGENCY, JERSEY CITY, N. J.

FOR SALE.—Ayrshire cattle, Berkshire pigs, Plymouth-Rock poultry, apply to Mr. Louis Beaubien, 30 St. James Street, Montreal.