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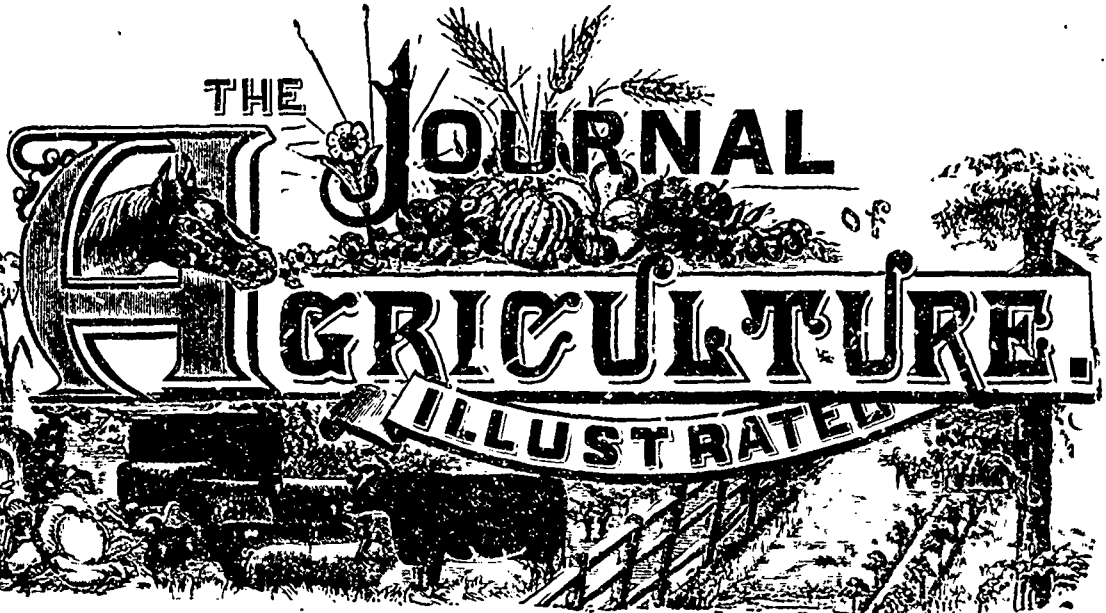
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**NOTICE.**—The subscription to the *Illustrated Journal of Agriculture*, for members of Agricultural and Horticultural Societies, as well as of Farmers Clubs, in the province of Quebec, is 30c annually, provided such subscription be forwarded through the secretaries of such societies.—**EDITORIAL MATTER.** All editorial matter should be addressed to A. R. Jenner Fust, No. 4 Lincoln Avenue, Dorchester Street West, Montreal—or to Ed. A. Barnard, Director of the *Journals of Agriculture, &c.*, Quebec.

**OFFICIAL PART.**

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Jenner Fust, by which New-Zealand butter is packed in hermetically closed metal vessels, by the aid of an air-pump and a special apparatus. If this is the butter our correspondent speaks of, no doubt it will keep better than Canadian butter, and the price will be conforming.

ED. A. BARNARD.

**THE GOLDEN REGISTER.**

**CERTIFICATES OF ENTRIES.**

The cows bearing the numbers 19, 22, 18, 20, 9, 32, 14, 13, 12, 21, in the Herd-book (Jersey-Canadian section), and No. 182 of pure-bred Canadians, are entered in the Golden-register.

All the undermentioned animals are the property of the Rev. Ladies of the Hospital of the Sacred-Heart, at Quebec.  
(Signed) S. LESAGE, President.  
J. A. COUTURE, Secretary.

We add the following document which gives the exact results obtained. They are most encouraging. The calves of these cows are now entitled to registration on the Golden-Register. We hope the demands for them will be numerous, for, "as the father is, so is the son," "as the mother is, so is the daughter," are recognised principles of the art of breeding. It will be remarked that a three year-old heifer, Rex "Rex" Rieter gave 8,700 lbs. of milk in ten months, and 15 lbs. the day before she calved, i. e., that she gave an abundance of excellent milk throughout the whole period between two calvings. Three things rarely met with will be observed in the table: 1. The length of milking period;

Mr. S. C. Stevenson informs us that the Provincial Exhibition will be held in Montreal on Sept. 17th to the 25th next.

We have received the following extracts from a letter from London dealer in butter who is engaged in commerce with parts of the world:

"New-Zealand and Australian butter is worth here about as much as ordinary Canadian and American....."

"Danish butter does bring the best price; I only mentioned Australian and New-Zealand to show that the distance is not the difficulty. Canadians don't seem to understand king butter to suit this market....."

Our correspondent does not seem to be aware of the method described in the English Journal for January, by Mr.

2. the maximum yield of from 57 lbs. to 18 lbs., i. e., from 3 $\frac{3}{8}$  pottles to 11 $\frac{1}{2}$  pottles, imperial measure (pottle =  $\frac{1}{2}$  gallon);  
3. the total weight of milk during only ten months. The rules of the Commission order the yield to be at least 6,000 lbs. in ten months. Thence, the total given. It is easy to see that the total yield of milk from one calving to another is much greater.

(Signed) ED. A. BARNARD.

the organic matter was or was not dissipated by the incineration of, the top-soil was a matter of indifference to them, for they had never heard of such terms. It was enough that the burning of a few loads of parings produced a crop of rape, and that the feeding off of the rape by sheep produced a crop of grain, followed by sainfoin, which, after being, in its turn, fed off by sheep, enabled the land to bring to maturity a crop of wheat, on the lower, or of oats on the upper portions of

ENTRIES IN THE GOLDEN-REGISTER OF THE HERD OF JERSEY-CANADIANS, THE PROPERTY OF THE REV. LADIES OF THE HOSPITAL OF THE SACRED-HEART, QUEBEC.

NAMES.	No. in register.	Date of birth.	Before last year.	Last calving.	Weeks giving milk.	Lbs. milk a day.			Lbs milk in the 10 months following last calf.	REMARKS.
						Max.	Min.	Average.		
Rioters' B. Montcalm I.....	19	June '82	1477/88	474/90	88	57	18	37	11,100	gave 9 lbs. milk day before calving.
Rioters' Brodeur de Varennes I.....	22	May '82	1573/89	12710/90	81	46	19	31	9,600	
Reine Fléchée de St L.....	18	27/3/85	1073/89	2477/90	70	42	25	33	9,900	
Rioters' B. Montcalm II.....	20	21/6/83	372/89	2873/90	53	40	14	27	8,100	
Reine Malo de St L. II.....	9	15/1/86	1671/89	3071/90	52	41	10	25	7,500	
Rex "Rex" Riotor.....	32	16/3/87	974/89	2275/90	55	41	18	29	8,700	410 lbs. in 10 cons. days.—15 lbs. day before last calving.
Rex Rioters' Bretonne I.....	14	27/4/84	2574/89	1075/90	54	46	16	31	9,300	
Rex Rioters' Bretonne II.....	13	22/3/85	22712/88	30712/89	52	43	27	5	10,500	
Reine de St Lambert.....	12	12/4/85	1573/89	473/90	50	35	10	22 $\frac{1}{2}$	6,750	
Rioters' Brodeur de V. I.....	21	27/5/83	1173/89	1767/90	53	43	19	31	9,300	395 lbs. in ten cons. days.
Medéc.....	182									350 lbs. in ten cons. days—first known date of calving: 27 Sept 1890.

Certified agreeably to the record showing the weekly yield of the cows of the Hospital of the Sacred-Heart, Quebec.

(Signed)

SR. STE. ANNE.

DE OMNIBUS REBUS.

*Vacant farms in the New-England States*—More than 3,400 farms in Maine, and nearly as many in Vermont, are now lying idle. Taking the extent of each at an average of 120 acres, we thus have 888,000 acres of land that having been once in a fair state of cultivation, are now returning to a state of nature. The farms in question I take to be, generally speaking, hill-side farms; the soil rocky and not prodigiously fertile, but, probably, infinitely superior to many a thousand acres of the Downs of the S. E. of England that, from being worth from 75 to 80 cents an acre, *per annum*, as sheep-runs, have been, by treating them in accordance with their natural qualities, compelled to yield large crops of roots, rape, barley, sainfoin, and wheat. I say "compelled," because no other word conveys an idea of the rigorous way in which these soils have been subdued to the will of their masters for the time being: the tenant-farmers, not the landlords, made the arable land of the Downs, and what they, with their short and hazardous tenure, have done, is there any reason on earth why the owners of the fee-simple of our farms in the Eastern-Townships should not do? Their soil is better, their climate is far more active in pushing crops forward in the summer; and after reading Mr. Shaw's description of the effects of rape in fattening sheep no one can doubt that the process is a profitable one. (See Journal for February, 1891).

For it is entirely owing to these two things—sheep and rape—that the rescue of the Down farms from a state of hopeless sterility is due. For, as most of them were, from any possibility of obtaining manure, the men who farmed them were obliged to invent some means of starting their first crop of sheep-feed; and they found it in F I R E. They did not trouble themselves about the theory of the process; whether

the hill-sides.

Then came the discovery, due principally to the tenants of "Mr. Coke of Norfolk," (1) that certain waste matters, such as rape-cake, the residue of the oil-factory, bone-dust, &c., contained in a condensed form the virtues of the more bulky farmyard dung; and this enabled the Down-men to extend their conquests more rapidly than before; so that, by the time the 19th century had run through one-third of its course, the lands that in its earlier days had been yielding a few bushels of rye to the acre, were turning out from 32 to 40 bushels of wheat!

Do the farmers of the province imagine that they can go on exporting cheese for years without eventually ruining their land almost past redemption? I am sure it cannot be done. Butter draws nothing from the soil to speak of, but cheese robs it of its most expensive constituent, nitrogen. Is this a mere theoretical statement? By no means. One of our richest English dairy-districts, Cheshire, was so impoverished, 50 years ago, by the exportation of cheese, that, landlord and tenant alike, the whole farming population of the county was at the very threshold of ruin. Bones saved the land, and the cows now produce their normal yield of milk. Fortunately for many farmers of this province, the export of hay is at an end, for, speaking very seriously, I do not see how any soil—and in spite of political flattery, ours is not of the finest quality,—I say I do not see how even the richest soil could bear the persistent export of cheese, hay, grain and calves, without throwing up the sponge before the lapse of many years.

If only one or two of the Townships' men, whose farms lie at a distance from towns, would try a couple of seasons' sheep-

(1) Afterwards Earl of Leicester.

feeding on a fairly large scale, say from 100 to 150 lambs, with crops grown expressly for them, a long experience convinces me that their example would very soon be followed by the majority of their neighbours.

You will ask perhaps: how is it that land is so wonderfully improved, as you say it is, by the feeding off of crops by sheep? And I may just as well say at once that I do not know: that is, I am not sure that I know. It is quite true that in sowing a few pounds of rape-seed to the acre we add nothing to the soil to signify, for the principal part of the seed is only a hydro-carbon—oil—and the plant to be grown can easily obtain both its water and its carbon from the air. My idea is that the conversion of the rape or other fodder plant by the sheep into dung and urine fits certain matters, already existing in the soil in an unprepared state, for their proper office of affording food to the subsequent crops. We who have grown lots of crops of rape, tares, rye, &c, for sheep, have often been obliged to plough in some few rods of the crop when the season was too far advanced to admit of the sowing of the fall-wheat being any longer postponed; and never once have we found that the grain grown after the ploughed-in green-crop has anything like equalled in yield the grain grown after the fed-off green-crop.

I have seen, in Essex and Cambridgeshire—England, of course—hundreds of acres of white turnips and rape given away to large flock-masters on condition of their being fed off by sheep, in plentiful years; but I never saw a single acre ploughed in (1). And the Essex and Cambridgeshire men know their business as well as the most highly educated scientists.

Again; in feeding off a crop of green-meats, we always add at least a pound of cake or of pease to each sheep *per diem*. Now, a fair crop of rape, for instance, will weigh about 15 tons; a lamb, or teg as we call the beast when weaned, will eat, say, 15 pounds a day; so, an acre will last one 150 days, during which time he will have consumed 150 pounds of cake, by means of which not only will the lamb have added at least 3 stone = 24 lbs. to his dead-weight, but the land will have been improved by the addition of, say, 6 pounds of nitrogen, 4 pounds of phosphoric acid, and 3 pounds of potash!

Moreover, the mere treading of the sheep in feeding off the green-crop will have no slight effect on the succeeding crop of grain. I observe, with pain, every year just before harvest, how very little *root-hold* the plants of wheat and other grain have on the soil: a very trifling twitch pulls the whole stool out. A little attention in planting the seed deeper in the ground, and a little *firming* of the land with the roller would partly cure this defect; but sheep-treading is the greatest and most perfect remedy. I mentioned, I think, some time ago, that my dear old friend and farm-tutor, William Rigden, never followed a mown green-crop of tares with wheat, unless he had interposed a sheep-fed crop of turnips or rape between the two. After tares, on his highly farmed soil, the wheat always became *root-fallen*; but with the intervening crop of roots, the little pointed hoofs of the sheep so solidified the soil, that the wheat stood bravely upright till harvest. The heaviest roller on this farm of Mr. Rigden's weighed 36 gross cwt. = 4032 lbs., but in his opinion, the sheep's feet beat it hollow!

It is not, I suppose, worth while now to go over again the method of preparing land for this useful crop, rape. If your land is decently clean, sow the seed—6 lbs. or so—broadcast; if foul and out of order generally, drill it in rows from 21 to 22 inches apart. Heavy land, in good heart, will grow a fair crop without manure, but a couple of cwt. of superphosphate, with from 80 lbs. to 100 lbs. of sulphate of ammonia, will help rape on any soil. I do not advise dunging land for this plant, as the artificials mentioned will do as well, and the

dung, always scarce enough everywhere, can be saved for another field.

Should you feel inclined to try ashes, you can either use 30 bushels of hardwood ashes to the acre, harrowed in before sowing, or taking an old tough turf, break it up in any fashion you find convenient, and burn forty or fifty loads to the acre. Still, effective as this process is unless you have seen it carried out, or have some Gloucestershire or Pen-man on your farm, you will have a little trouble in learning how to do it. Sands and gravels should never be burned; 1. because the heaps are very difficult to keep going when once alight; 2. because the soil is already sufficiently pulverulent, and the quantity of organic matter is too small to bear dissipating. But a good tough clay sod may be burnt as much as you please, and so may a peaty surface. With us, this *stifle-burning* is an annual job, and in September you may see the air, in Gloucestershire, full of smoke from the arable lands that are being burned after the wheat-crop, the last of the rotation.

I, more than once, begged Mr. Brown, the late Professor of Agriculture at Guelph, to try this system of sheep-feeding rape, but he never seemed to be so inclined. They do not practise it in Scotland, except here and there. Now Mr. Shaw has taken it up, I trust the sight of a flock of sheep in the hurdles will not be so rare as it has been.

*Winter Dairying.*—From what I hear, it is very probable that a good many butter-factories will continue their operations all next winter. In this case, it must be remembered that milk from cows that have long calved will not make good flavoured, well coloured butter. The Danish farmers, who work all through the winter, take care to have a large proportion of their cows calve during the later months of autumn, and we, if we wish to succeed in our new enterprise, must take a little precaution. What it is owing to I know not, but at all events there is an enormous improvement perceptible in the butter to be found at the grocers' shops in Montreal this winter. I do not eat it myself, but my family all say that bad butter here is the exception, and not the rule, as heretofore.

A little pease-meal added to the cows' daily-ration, at the rate of, say, 2 lb. a head *per diem*, will be of great service in keeping them in good condition under the demands made on their constitution, and those who have roots of any kind may safely give them to their cows provided they feed them *immediately after milking*. This I have mentioned several times before in the Journal, and I see in the English Agricultural Gazette the following confirmation of my views.

Lieut.-Colonel Alexander, of Acton, Poyntzpass, has of late years made a speciality of dairying, and has had a very successful record in the show-yards both of Ireland and England. At the London Dairy Show a few years ago, with three exhibits he won first and second prizes, a highly commended card, and the silver medal. This year he had an enviable record of successes at local shows in the north. A few words as to his system cannot, therefore, fail to be of interest. His dairy stock is composed chiefly of cross-bred country cows, the only pure-breds being a few Devons. During the summer they are managed in the usual way on grass. In winter they also have a run out for a short time every day, when the weather permits. Inside they are fed on turnips, hay, and a liberal allowance of artificial foods. The quantity of turnips given is limited to from 2 to 3 stone per head per day. (1) Of hay there is an *ad lib.* allowance, while the artificial food mixture is made up of 2 lb. to 3 lb. oats, 2 lb. cotton cake, and 1 lb. of bean meal. Questioned as to his experience with turnips as tainting the milk or but-

(1) Except, as mentioned above, from necessity.

(1) From 28 lbs. to 42 lbs.

ter, he replied that by feeding the animals immediately after each milking he never has any complaints on this score. "By adopting this plan," he said, "I have never had occasion to resort to saltpetre or any other material for preventing the objectionable taint so often complained of." The milk is set in shallow pans in the ordinary way. It is skimmed the day after being set, and churned the following day. Thus, Monday morning's milk is skimmed on Tuesday, the cream is then set apart and churned on Wednesday—the condition of the weather, of course, regulating the particular hour at which it is fit for being dealt with; but the souring process is not allowed to go very far until it is considered ready for churning. The ordinary barrel-churn is used, and the details of the churning process are the same as those generally followed. The butter is partly washed in the churn, and partly on the butter-worker. After being taken from the churn it is placed on the worker, and a strong brine is poured over it as it passes over the rollers. The brine used is of the ordinary strength, and it is found to keep the butter pure and sweet for any reasonable length of time.

**School-farms.**—I am happy to see that my ideas on the impossibility of making a profit on farms intended either for teaching, or for purely practical experimental purposes, are confirmed by so high an authority as Sir Richard Paget. In a letter lately written to the *Times*, Sir Richard, after insisting on the want of "thoroughly trained teachers of agriculture," proceeds: How these schools are to be established it is not easy to see. They cannot pay. They are not meant to.

I see in the report of the Agricultural School at Ste Anne de la Pocatière for 1889-1890, credit is taken for a net profit of \$1661.20. This, on a farm of 465 arpents is wonderfully good, but I do not see any *per contra* for rent, or, in other words interest on the purchase money of the farm. This rent or interest would alone swallow up the profit.

At this school, there seems to have been an average of eleven pupils during the year, to instruct whom, the services of six teachers were employed. The crops were not good:

Wheat.....	8 arpents.....	12½ bushels an arpent.
Oats.....	37 " .....	11½ " " "
Barley.....	15½ " .....	18 " " "
Mixed grain ...	31 " .....	15½ " " "
Potatoes.....	13½ " .....	134 " " "

At L'Assomption there were seven teachers and ten pupils. Crops:

Barley.....	19 arpents.....	21 bushels an arpent.
Mixed grain.....	28.84 " .....	25 " " "
Oats.....	.50 " .....	17 " " "
Potatoes .....	6.50 " .....	94 " " "
Maize, for silage?	3 " .....	12 tons " "
Sugar beets....	1½ " .....	260 bushels " "

Grain-crop better than that at Ste. Anne, but the potato one third less. The sugar-beets, at 260 bushels the arpent would give about 5½ tons the arpent.

Again, I have to remark that I find here no rent or interest on outlay for the purchase of the farm &c. The balance-sheet is as follows:

Expenditure.....	\$1918.68
Receipts .....	1655.98
Deficit.....	262.70

but credit is taken for three items = \$300, which wipe out the deficit.

**Nitrate of soda.**—The price of nitrate of soda to-day at Liverpool is \$32.00 per 2,000 lbs., 95% purity. This makes nitrogen worth a shade over ten cents a pound! Gray sulphate of ammonia (24% ammonia) is worth \$48.00, nitrogen, therefore, in that form costs 12½ cents a pound. Here, sulphate of ammonia, 20½% nitrogen, costs \$3.50 per 100 lbs., equal to 17 cents a pound. Too great a difference between the two markets. (1)

**Butter.**—Messrs. Moodie & Graham, Ste. Catherine St., who are good enough to supply me with groceries, tell me that the butter I praised so highly, on the authority of the butter-eating members of my household comes from *Millar's Creamery, Veunor, Ont.* If it is as good to taste as it is to look at, Mr. Millar is to be congratulated on his dairyman.

**Extra food for cows on pasture**—At the New-York Agricultural Station, experiments were tried during the summer of 1890 on the effect of "a grain ration for cows at pasture." This seems to be rather a mis-nomer, as the extra good consisted of 200 lbs. of wheat-bran, 15 lbs. of cummins—malt-sprouts—, and 150 lbs. of cotton-seed meal. The cows experimented on do not seem to have been of very high class order, as they gave 28½ lbs. of milk a day when the trial began, though only, on an average, much less than two months from calving. The pasture—almost entirely blue-grass, *poa compressa*—was rich and luxuriant up to July 20th; then drought set in, and second-cut clover was given to the whole herd. After the 20th of August, frequent rains made the pasture what it was at the commencement of the experiment. The average yield of milk for the first period, from May 31st to July 12th was: Lot 1. pasture.

lbs.	lbs.
29.61—butter per week .....	8.34
Lot 2. pasture and grain.	
lbs.	lbs.
30.68—butter per week.....	7.91
2nd period, from July 19th to August 16th: Lot 1.	
lbs.	lbs.
22.02—butter per week.....	4.96
Lot 2. lbs.	lbs.
24.40—butter per week.....	5.44
Third period, from August 23rd to September 27th.	
Lot 1. lbs.	lbs.
17.87—butter per week.....	5.82
Lot 2. lbs.	lbs.
19.96—butter per week.....	6.19

As in 1889, when a similar experiment was made, no profit was gained by the extra food. "In the whole period," says the report, "we have 1.58 pounds of butter per cow, or about 4½ pounds in all to show for the consumption of 2,822 pounds of cotton seed meal, &c, by Lot 2." The conclusions arrived at are the following:

**CONCLUSION.**—In two trials in two seasons we have received no return in milk and butter from feeding a grain ration to cows on good pasture.

In one trial with cows soiled on fresh grass we have received in increased milk and butter production and in saving of grass consumed, barely enough to pay for the cost of the grain ration added.

In neither case has any allowance been made for increased value of manure when grain is fed, which would be consid-

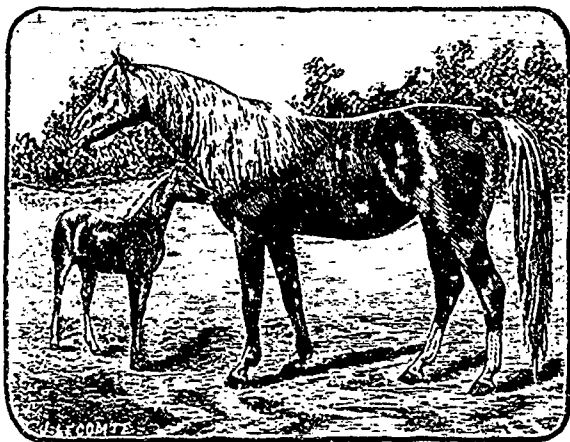
(1) But, as published in the May number, Mr. Evans sells nitrate of soda at \$2.50 per 100 lbs., which makes nitrogen=14½% a pound. Mr. Vasey's sulphate of ammonia is reduced to about \$3.00 per 100 lbs., in quantities.  
A. R. J. F.

able in amount but exceedingly difficult to estimate with exactness.

We are still of opinion that several repetitions of this experiment will be needed before the matter can be considered conclusively settled.

I. P. ROBERTS.  
HENRY F. WING.

Well, our people in England have been feeding in this way for many years, and as they continue the practice, I presume they find it answer, both as a means of causing cows to yield both more and richer milk, and as a cheap and handy way of manuring the land. But there is one important difference between the plans followed in the two countries: the English farmer gives extra food to his cows only when on inferior pasture, not when the grass is "rich and luxuriant." If the Cornell University people would try over again the experiment of extra food for cows, let them try it throughout the season on inferior pasture, and I do not doubt they will arrive at a very different conclusion. (1)



A PURE BREED ARAB MARE AND COLT.

**Barley.**—The length of time the best samples of English-grown barley take to ripen is worth thinking about. I see that the 2nd and 3rd prize-barley at the Brewers' Exhibition, held last November in London, were sown in March and harvested in September; having taken nearly six months from sowing to harvesting to perfect themselves. In 1888, on the Messrs. Dawes' farm at Lachine, barley was sown in a field close to the Lachine bank station, on Friday, April 27th, and on Monday, July 30th, as I was leaving for Little Métis, I saw the waggons drawing the crop into the barn at the Willows farm! Some advantage in keeping a diary, after all; it makes one sure of one's facts.

Now there is a great difference between six months, and three months and three days: an almost incredible difference of time for the sprouting, growing, ripening, &c., of any grain, and I think that this slowness of growing may have a good deal to do with the acknowledged superiority of the English barley as regards its malting properties.

**Georgia farming.**—In the Supplemental Crop Report of the Province of Georgia, I see a remarkable statement in the part addressed to farmers: "A crop may be made and the land left no poorer by producing it." Does the writer seriously mean that, by any known system of cultivation, a crop can be grown and removed from the land without the

soil being deprived of elements carried off by that crop? If not, what does he mean?

Again: "We should give our land *absolute rest* once in every three years. By *rest*, we do not mean to sow it down simply, unless the crop sown is turned down and thus returned to the land. But, after sowing, and gathering the crop sowed (*sic*), not only turn under that crop of grass (*which?*), but let it rest the year following, and then turn under all that grows upon it, and you are ready to get the full benefit of *rest*." Really, a more incomprehensible passage I never read. I have turned it this way and that, and can make nothing of it. If the writer means that the land should be allowed to be fallow for a year, and that all the weeds that grow upon it are to be turned under as green-manure, he must have forgotten that old saying: one year's seeding makes seven year's weeding. And, fancy if he paid rent for his land! It would be bad enough if the farm had one fifth in fallow, but one-third!

**Wheat-average.**—The average yield of wheat in those fertile States of the West does not appear to ever exceed 13 bushels of 60 lb. to the imperial acre. Lawes of Rothamsted, has just measured up his 38th consecutive crop of wheat, grown on land that has been continuously unmanured ever since 1862, and had been previous to that year expressly scourged to death by the growth of the usual four crops of roots, barley, seeds, wheat. The yield proves to be within a fraction of 20 bushels an acre! But, then, it is fair to suppose that Sir John knows how to put his wheat in, and it is certain he keeps his land free from weeds.

**Root-pruning corn.**—I thought it had been a settled point long ago that deep cultivation of maize, after it has attained a certain stage of growth, was injurious to the crop. I wrote, in this periodical, as long ago as 1884, that, after an experiment I had made in 1867, I would never hoe corn deeply after it had attained a height of 14 or 15 inches. "The roots meet in the middle of three-foot drills, and I, though I know Nature would do her best to supply the loss by multiplying the filamentous roots, should be afraid of deferring the ripening season were I to cut them off after they had once made so much progress as to *shake hands* across the rows."

The Minnesota Experiment Station has just arrived at the same conclusion, but the difference between the yield of the root-pruned and the unpruned is so trifling—only three bushels an acre—that I cannot think the result of the experiment conclusive, I do not often prefer the deductive to the inductive process of ratiocination—in briefer terms, theory to practice—but in this case I do, particularly as both tend herein to the same conclusion.

**Early Puritan Potatoes.**—Have any of my readers tried this potato? Mr. Smith, gardener to Baron Rothschild, at Mentmore, speaks of it as the best early potato he has ever grown, both as regards yield and quality, and as to earliness, he says it is a week forwarder than the Early-rose, and very superior to it in flavour, as it may well be, for the rose is not good till it is ripe; whereas a true early potato, like the ashleaf kidney should be at its best when large enough to cook.

Mr. Steele, seedman at Toronto, says of the Early Puritan in his catalogue for this year:

**Early-Puritan**—Early Puritan far exceeds the Beauty of Hebron in productiveness and quality. This variety has come to stay, is really excellent, and is worthy of a trial. The shape is well shown in our illustration, the skin and flesh is very white, it cooks dry and mealy even when half grown. It ripens with the Early Rose, greatly exceeds it in productive-

(1) At a farmers' meeting in New-York "one of the best dairyman in the country said: At no time do I get more profit from grain fed than in summer."

ness, the vines grow strong, fast and vigorous, standing up firm as a tree. One lb., 25c. ; 5 lbs., \$1.00, post paid, peck, carriage extra, 75c. ; bushel, \$2.50 ; bbl., \$5.50.

The opinion of the Mentmore gardener may be trusted.

The following letter, from Mr. Gilbert Murray, of Elvaston, Derbyshire, Eng., one of the best practical authorities on dairy-husbandry, I print, although every sentiment in it I have laid before the readers of this periodical over and over again. As to mowing pastures "being injurious to them," so strong is this idea held in England that our own tenants in Gloucestershire are subject to a fine of \$50 an acre if they commit such a break of covenant.

*Pastures*—I am much indebted to and interested in the instructive article in the "Agricultural Gazette Almanac," by Sir J. B. Lawes, on the subject of pastures. There is an ancient though suggestive adage, to the effect, "Better breast plough a good feeding pasture than mow it." The craze of a few years ago for indiscriminately laying down to pasture has considerably abated. Few dispute the utility of resting the land by allowing it to remain two or three years in grass. We have frequently read glowing accounts of inferior tillage land being successfully converted into fine feeding pastures, but in all my wanderings I have failed to meet with such cases. By the judicious application of well-selected manures, a large quantity of grass may be produced. By no management with which I am acquainted can such be converted into bullock pastures. (1) Traverse the length and breadth of England and you will find the best feeding pastures on the Lias and Oxford clays. Closely grazed and well-managed, they have gone on for generations without any artificial dressings. Note how careful the best managers are in having the droppings spread or collected daily to prevent the growth of rank unpalatable bunches which the cattle refuse. To the close observer this affords a useful lesson as to the inutility of dressing fattening pastures with farmyard manure. The effect of farmyard manure on such pasture is to induce the growth of a rank fleshy habit in the grasses of a more watery and less nutritive character. Some experience of the use of Thomas' powder or finely ground basic slag show that they may be profitably employed on the best feeding pastures by strengthening the root development, and encouraging the growth of clovers and the finer varieties of permanent grasses. The finest feeding pastures on the best soil can soon be injured by bad management. All pastures should be kept closely grazed down, at any rate until after mid-summer ; any surplus growth after that date can easily be cleared off. If the grasses are allowed to form seed-culms during the early part of the season, the pasture is permanently injured for years. The skillful manager watches his pastures, and constantly shifts his cattle, in order to keep them evenly grazed down, and in a growing time frequently purchases more stock than the land will fatten during the summer, and calculates the loss to be less than if he allowed the pasture grasses to run to seed. There is no department of farm management on which the word dilapidation can be more justly applied than in the case of bad grazing on feeding pastures. The effect of the character of the soil on the fattening is clearly exemplified by the productive though weak feeding pastures on the alluvial deposits of the river valleys and apparently soanty pastures on the Lias and Oxford clays. The former though well adapted for the production of milk, will fail in producing the quantity of meat many would expect.

If the Government were to supply to each school models or diagrams of the principal breeds of cattle, horses, and sheep, models and diagrams of agricultural machinery, geological

cabinets containing the principal minerals and soils, chemical cabinets containing specimens of the chief chemical constituents of manures, entomological cabinets, with specimens of injurious insects, and, last, but not least, botanical cabinets containing dried plants and seeds of the principal agricultural grasses, cereals, forage, and root crops, with the most common weeds found in those crops, together with coloured diagrams showing the appearance of those plants in growth, then we may hope for a generation of agricultural labourers more fit than the present race to meet the altered conditions under which British agriculture will in future be carried on.

Such instruction might not be theoretically perfect, or meet the approval of doctrinaires or educational purists, but would, I believe, suffice, if obtainable throughout the country districts, and if at least one such school were within the reach of every town, so that urban children intended for rural life might attend and qualify at it.

The name of Sir Thomas Dyke Acland is a very familiar one in the West of England. From an early age he devoted much time and study to the management of his late father's estate, and some forty-five years ago, he won the R. A. Society's prize for the best essay on the farming of Somersetshire. In those days, that county was one of the most backward in England, and one sentence in the essay I have never forgotten it is one that many a farmer in this province would do well to lay to heart : "And I am afraid I often annoy my neighbours in the autumn by asking them : 'How much will this bullock lose before May ?'"

Please observe that Sir Thomas proposes that the experiment stations should be managed by a committee of practical farmers with competent scientific guidance. I am also glad to see my own views confirmed by such an authority : "The art of farming can only be taught, as in other industries, by apprenticeship to one who is engaged in it as a business."

The letter mentioned in the first paragraph, or rather an extract from it, will be found at p. —.

*Kidmore Grange (Roschall),  
Caversham Oxon December 30th.*

I venture to ask for space for one or two remarks suggested by the letter upon agricultural education in your issue of Wednesday last, 24th Dec., by Sir Richard Paget, M. P.

If I differ from him on one or two points I would not be understood to disparage in any way the assiduous efforts that he has made to promote the education of those who are engaged in agriculture.

It may be admitted that we stand in need of well-trained men of science who are thoroughly conversant with the detail of agricultural practice.

Such men, if, and when, we can get them, will be of great use, and will have a large field to work in.

But their function will not be to teach farming, but to teach thoroughly the sciences bearing upon agriculture. And no men but those who are most thoroughly trained in science, and still more in the art of teaching will be able to achieve success in imparting a real comprehension of scientific principles to practical farmers.

There is no doubt that experimental stations conducted for scientific investigation of practical points in agriculture may be of great use if they are carried on by committees of practical farmers with competent scientific guidance.

There is reason to believe that some of the science-masters of secondary schools and grammar schools in country towns may be found willing to give their services in the surrounding villages.

As the demand grows (and assuredly it will rapidly), the universities may probably be counted upon to supply men to

(1) i. e. pastures that will fatten a bullock.

cover the ground. And only from the universities can we hope to get men of adequate general culture and sufficiently high scientific capacity to undertake to grapple with the very complicated problems, both scientific and practical, involved in agriculture.

As far as I know, the great majority of our leading farmers are convinced that the art of farming can only be taught as in other industries, by apprenticeship to one who is engaged in it as a business.

Killerton Exter.

THOMAS DYKE AGLAND.

*Phosphatic manures*—I do not know that I can find anything very new to say upon this subject, but as the time will soon arrive for the employment of artificial manures, or fertilisers, as they are called here, I may as well remind my friends that there are several preparations of phosphates, not always equal in value in spite of the assertions of certain interested parties. These preparations may be roughly divided into two classes—crude ground phosphates, and dissolved phosphates, or, as they are commonly called, superphosphates. Of the former class, crude ground phosphates, bone-dust, Carolina-rock, and phosphatic guano, I cannot recommend the use, unless with a mixture of dissolved or superphosphate, except in the case of finely ground bones, carefully prepared. Our *apatite*, I need not repeat, unless dissolved, is absolutely inert in the soil, however finely it may be ground, as the organic acids have no effect upon it. Carolina-rock is not so refractory: added to a moderate dressing of superphosphate it is, from all accounts, so far soluble that, after a couple of months residence in the land, it is capable of sustaining and promoting the growth of plants that have been started into vigorous life by the more quickly acting dissolved phosphate. The more recently discovered *basic cinder* is being largely used in Great Britain. It is a by-product of the iron-industry, as thus: Almost all English iron-ores are contaminated with phosphorus, and this must be got rid of somehow or other before good tough iron can be made. The slag, which previous to 1836 was thrown aside for road-making, is now ground to an impalpable powder, and used for manure: it is said to contain as much as 15% of phosphoric acid. I hope to obtain some of this *basic cinder* for experimental purposes this spring.

But concerning the two chief forms in which phosphoric acid is administered, there is one point chiefly to be considered: is the land on which it is proposed to use it calcareous or not? From seriously conducted experiments in England, it seems probable, nay even certain, that when the soil contains a fairly abundant proportion of lime, the dissolved form of phosphate, commonly called superphosphate, is the most economical; but, when lime is wanting, or present in very small proportions, bone-dust, Carolina rock, or this *basic cinder* will answer equally well and be less expensive; always, be it understood, that they be reduced to a very fine powder. Still, seeing the immense advantage of using a manure for such crops as turnips that shall go to work at once and push the young plant out of the way of the fly, I should prefer mixing a proportion of dissolved phosphate with the other.

On such soils as the Sorel sand, on peaty land, I should use for swedes or turnips half a dressing of dung and a mixture of 200 lbs. of bone-dust or Carolina rock, and 200 lbs. of superphosphate containing 15% of available phosphoric acid, and, as farmyard dung here is not often too rich, I should add about 100 lbs. of sulphate of ammonia, taking care to get the artificials as near as possible to, but not in contact with, the seed.

*The Question Box.*—"Which is best to feed when cows are on pasture—cottonseed meal or wheat bran?"

W. H. Hallock—I prefer wheat bran.

Mr. Van Alstyne—It has been stated by the experimenter at Cornell that it will not pay to feed anything. This must be where the pasture is very rich. I prefer cottonseed meal, as it will enrich the ground faster than bran. Linseed meal will do the same thing.

I should prefer a mixture of pease, corn, and linseed, ground together and given dry for butter, or in a mash for milk.

Mr. Van Alstyne has hit the right nail on the head. As is too often the case, the experiment at Cornell was vitiated by the fact that the grazing was too rich, and the cows could get all they were able to employ from it.—(see p. 84.)

*Horses bearing to one side.*—A question was asked in one of the Montreal papers last month as to a cure for horses that persistently bore to one side of the road. Dr. McEachran, in reply, recommended, very properly, driving the delinquent with another horse as a pair. But, if this is inconvenient, I advise the use of a port bit and driving the horse with the rein down to the lowest bar on the side he is given to bore to. He will soon find it easier to his mouth to give up the trick. I had, years ago, two very fine dog-cart horses that were dreadfully tiresome to drive on this account, but treated as above, they were soon cured. The fault arises, of course, from not watching the colt when on the *mouthy-bit*.

*English riders.*—Joaquin Miller, the American humourist, is good enough to say that no Englishman knows how to ride, and that there never will be one who can ride. This is what Mrs. Gamp calls "laying down the law pretty positive"! As I was put on horse-back, or rather pony-back, before I was four years old, and sent out with the foxhounds before I was eight—without stirrups, too—I really used to think that I was not a bad horseman by the time I was grown up. The common opinion in Europe is, that we Englishmen are the best riders across country in the world.

*Agricultural education.*—Professor Shaw is reported to have said at Dundee, Ont., that only one Ontario farmer in five thousand sends a son to Guelph agricultural college!

*Grain after silo-maize.*—It is now generally allowed that all the valuable matters are present in the maize-plant when it is harvested for the silo in the state of glazed-ears. Now taking this to be the case, and comparing a crop of 20 tons an acre of corn with a crop of 20 tons an acre of swedes, is it wonderful that the grain-crop after the corn should be much inferior to that after the roots? The remedy would seem to be to sow 100 lbs. or 125 lbs. of sulphate of ammonia on the crop succeeding the maize. A. R. J. F.

#### Beet-pulp for Cows.

#### THE OTHER SIDE OF THE STORY.

Mr. H. Trudeau, agent, of St. Laurent, says the statements recently made that the beet root pulp furnished to milkmen in the vicinity of Cote des Neiges is in a state of decomposition and emits a bad odor, and that the residents of the place from which it is sent have complained of the nuisance is incorrect. The pulp, which is brought to Cote des Neiges by railway, "is perfectly sound, makes clean food for milkmen's cattle and furnishes milk of first class quality. More than thirty milkmen are ready to make affidavits that the pulp is so good that since they have had the advantage of getting it, none of their customers have complained that their



milk was bad. The reason why the pulp was sold so cheap is to encourage the farmers who receive it to raise beetroots for sugar making and to make its importance known. The total quantity sold at Cote des Neiges not 700 tons, but nearly 1,600 tons, and it can be sold in the fall for \$1.25 a ton to all farmers who will raise beetroots for the sugar refinery in question, and that delivered at all railway stations within sixty miles."

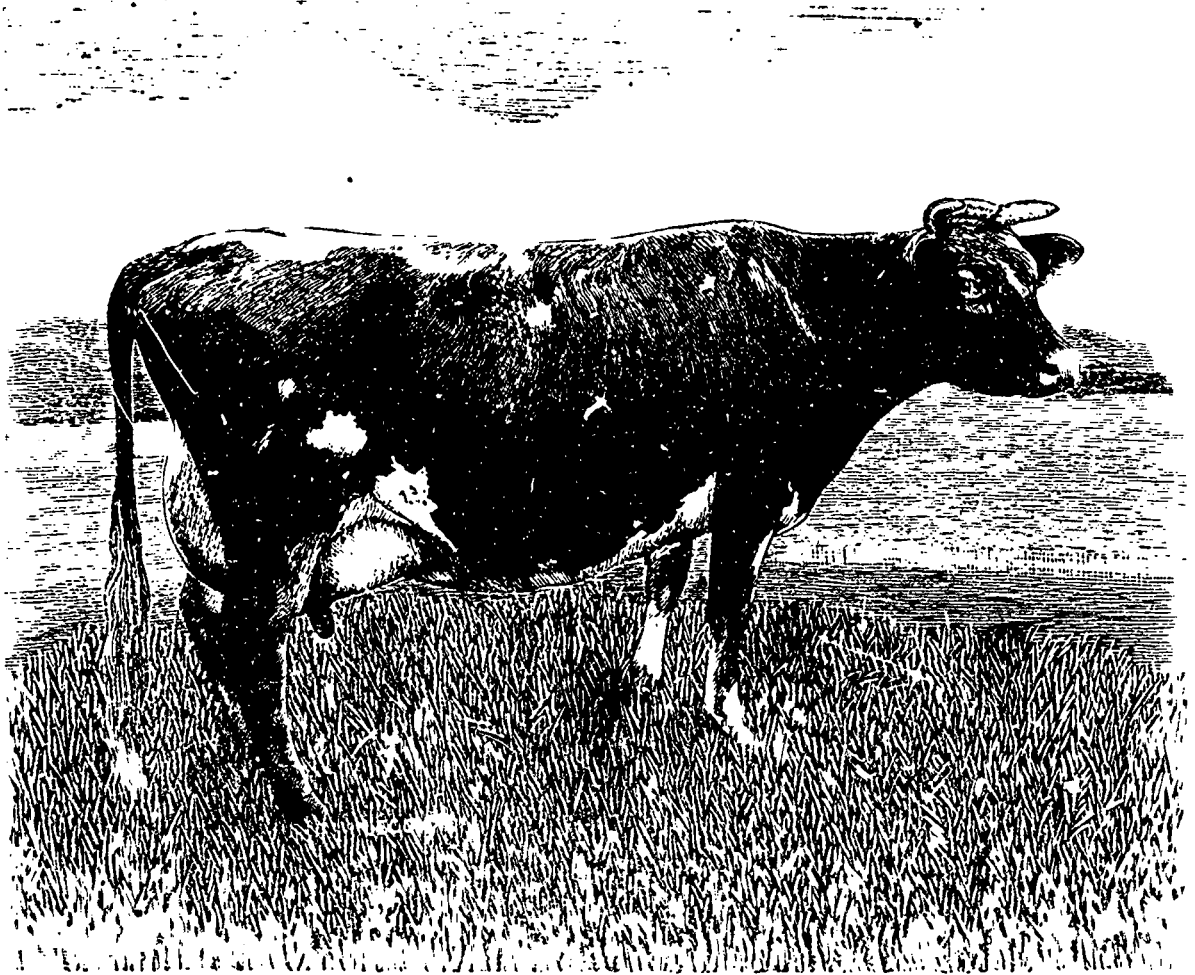
*Sugar beet pulp.*—At Sketh's woodyard, Montreal, the pulp of the beet used up in the factory, at Berthier is for sale at \$2.50 a ton! Mr. Buchanan, a Montreal milkman, tells me he has tried it but, barring giving the cows a smooth coat, it did not answer. A. R. J. F.

In one trial with cows soiled on fresh grass we have received an increased milk and butter production and in saving of grass consumed barely enough to pay for the cost of the grain ration added.

In neither case has any allowance been made for increased value of manure when grain is fed, which would be considerable in amount, but exceedingly difficult to estimate with exactness.

We are still of the opinion that several repetitions of this experiment will be needed before the matter can be considered conclusively settled.

The failure of this experiment to prove anything is clearly to be derived from the fact that the grass on the pasture



GUERNSEY COW.—The Property of the Express Dairy Co., College Farm, Finchley.

#### OUR ENGRAVINGS.

*Arab mare and foal.*—See Mr. Huntington's article.

*Guernsey and Jersey cows.*—See Prof. Sheldon's article.

*The Lord Mayor's prize milk-cart.*—See description attached. (Two first crowded out. A. R. J. F.)

The experiments at the experiment-station of Cornell University mentioned above as to the value of supplementary food given to cows on pasture have resulted as follows.

*Cornell University—Conclusions.*—In two trials in two seasons we have received no return in milk and butter from feeding a grain ration to cows on good pasture

tenanted by the cows was so good and plentiful that no amount of additional food could increase the production of milk or add to its richness. But a repetition of such an experiment on such land, say, as the upper part of my friend M. Séraphin Guèvremont's farm at Sorel, would tell a very different tale. The practical advantage of extra food or heavily stocked second-rate pastures, has been too often proved in England by both dealers in milk and grazing-farmers, to need further confirmation.

Experiments, to do any good, must be tried under certain well considered conditions; and, unfortunately, these conditions are too often ignored.

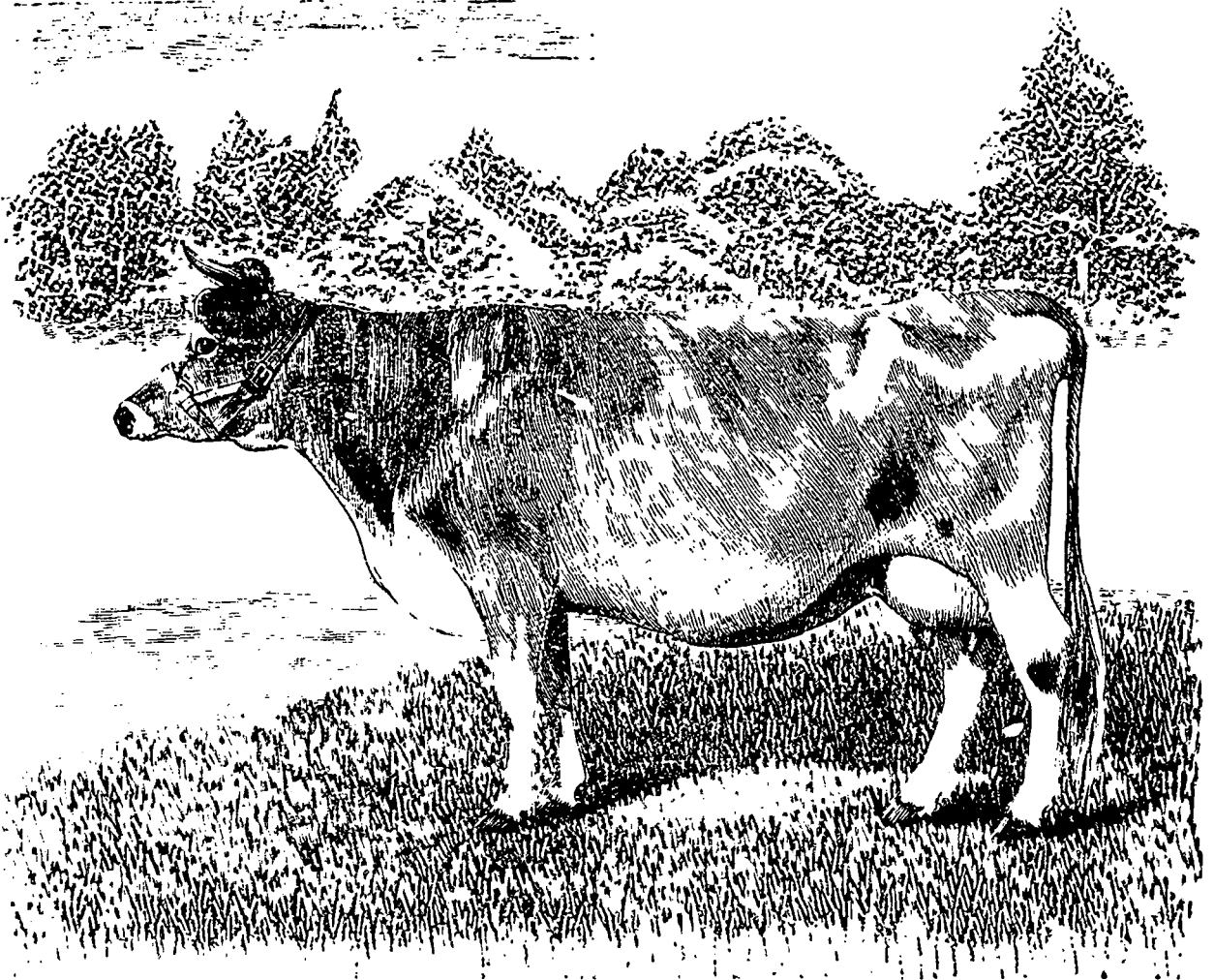
*Selection of seed.*—As my readers may have seen in this

periodical a dozen times, the best farmers in the Eastern counties of England, sell their fine, bold malting Chevalier barley to the brewers, and, buy long-grown, thin stuff, of the same order, however, for seed. This they do, or used to do in my time, every spring, and of course it paid them. In Illinois, I believe it was, but I have lost the reference, experiments were made in 1888 and 1889 on the effect of using large or small seed for sowing, with the following results :

*Large vs. small seed*—Seeds which passed through the seed screen of a fanning-mill were classed as "small", those which did not pass through, as "large." Tabulated data are given for experiments in 1888 and 1889. The results slightly favor the use of large seed.

A trial of Mr. Nicholson's (of Bombie, Kirkcudbright) new milking machine, described in our columns a fortnight ago, was held the other day on the inventor's farm. The trial appears to have given entire satisfaction to a number of experienced dairy farmers who witnessed it, the cows having been milked quite clean in from three to four minutes each.

*Weight of sheep*.—The old rule in England used to be that 1½ lbs of live-weight would give 8 lbs of carcase : in other words a horseman's stone would give a butcher's stone. But this will only hold good in the case of well-fattened young sheep.



**JERSEY COW BARON'S PROGRESS.**—The Property of Mr. Joseph Brutton, Yeovil.

Another proof of what I always have held, that the quality of grain depends upon the quality of the land, and not upon the selection of seed.

*Milking machine*.—When I lived at Sorel, I was often consulted in spring about the cause of one or more of the teats of various cows being stopped up. The cause was almost invariably found to be the carelessness with which the poor things had been dried off the previous autumn. If Mr. Nicholson's invention turns out practically successful it will indeed prove a boon to the private owner of one or two cows as well as to the dairyman with his hundred.

*Sale of butter*.—All the authorities on this point seem to agree in the position that the farmer ought to sell his butter as soon as it is made ; the dealers having generally proper premises, icehouses, &c., in which it can be preserved in better condition than in the farmer's cellar. The farmer ought not to be a speculator in any kind of produce, but especially in such a perishable article as butter. Cheese stands on a different platform, and judging from the prices in February and March of the past few years, I could hardly blame a farmer or factory-man for keeping his full-cheese till early spring. Well made cheese, of the Cheddar style, is never better than at 18 months old.

Mr. Gilbert Murray's "lingering suspicion that the colour of the females' associates and surroundings at the time of conception had a greater influence on the colour of the progeny than is generally supposed," is probably the effect of what is called by scientists, "unconscious cerebration," and refers to Jacob and his dealings with the owes of his employer's flock. I have a "lingering" recollection that the great Charolais breeders will not allow the entrance of any coloured animals of any kind into their farms, and paint all their buildings white, to prevent any stain infecting the colour of the pure white coats of their cattle.

#### Prepotency or Reversion

For several years I had the management of a small herd of West Highland cows. These cows and heifers, twenty-five in number, were selected with great care and judgment from the best fold in Argyllshire, the prevailing colour of which is black. Some of the animals had been prize winners, both at the local and Highland Society's meeting. The whole of those on which the experiment, was carried out were reds and duns. Several had bred to bulls of pure Highland descent. When landed in the South the bulls used were pure Shorthorns, full of Knightley, Bates, and Booth blood. The cows were regular breeders. The prevailing colours of the calves were white, red, and roan. Several of the white calves had red or tawny ears. During the whole six years of my experience not a single black calf was dropped nor even one with a black nose. The first crosses were magnificent animals, both for the grazer and butcher, the meat being of prime quality, with the fat and lean well mixed. The succeeding crosses were less satisfactory, and, although equally pure bulls were used, the produce were less uniform in type, and showed greater tendency to variation. Through the border counties and others in the far north, pure Shorthorn bulls are used on the Polled Galloway and Angus for the production of a popular and profitable variety of commercial cattle. The cross is generally hornless, and the prevailing colours black and blue-greys. They attain to great weight at an early age. Throughout the dairy districts of the south-west of Scotland, Polled Galloway bulls are now largely used on the Ayrshire dairy cows, and the produce are prepared for the butchers at an early age. The adaptability of the soil and climate to the growth of roots and cultivated grasses favours the breeding and feeding of cattle whilst the low price of cereals enables the farmer to conduct his business independently of purchased food. The Polled Galloway and Ayrshire cross results in a variety of colours, red, brindled, sheeted, black, and blue-greys, for the most part hornless, or if horned, of a loose rudimentary character only. I have a lingering suspicion that the colour of the females' associates and surroundings at the time of conception had a greater influence on the colour of the progeny than is generally supposed.

GILBERT MURRAY.

*Notes on the dairy-industry.*—The meeting of the Dairy men's Association, 1890, the report of the proceedings at which I have just had the honour of translating, seems to have been very successful, though the Belgian visitors appears to have taken up more than their share of the time. In future, I hope the sessions of this admirable society will extend over at least three days, instead of, as at present, only two.

*Clover-silage.* Mr. Fisher, M. P., who reported, in the absence of M. Chartier, on the samples of ensilage, says of M. Damien Leclair's clover-silage: It is perfect; we found that it contained much more nutriment than the other samples, all

of which were of corn. Its only defect is that it was not chaffed before being ensiled.

I hope M. Choquette, the analyst at the St. Hyacinthe experiment-station, will let us know, shortly, the difference in feeding value between the best sample of corn-silage—M. Dumas', of Dorchester—and this clover-silage. Clover, when not sown too often on the same land, grows so luxuriantly here on almost all soils, that I should not be afraid of getting from 15 to 20 tons an acre of silage from an acre, at three cuttings, provided it were mown each time as soon as the flower was well out. My own opinion is that, taking into consideration, the effect of the two crops, corn and clover, on the succeeding crop of grain, an acre of clover, manured as heavily as corn is usually treated, would yield much more nutriment than a larger extent of land in corn, and would, moreover, give at least ten bushels more of the following crop of oats or barley.

A silo costs, to build, 50 cents the cubic foot, if erected in the barn, a dollar if put up as a separate building.

M. Baubien, who was, as usual, very amusing, covers his silage with a foot of straw and, then puts a foot of fresh horse dung on the top of that. It answers perfectly.

M. Moreau wanted to know if the thermometer could not, in the dairy, be dispensed with! At whom Dr Bruneau, rather maliciously, smiled. But the question was not so absurd as it seems to be at first sight, seeing that one of the inspectors reports that, in his circuit, he found more than one cheese-maker that could not read the indications of the instrument!

*Aeration.* A grand fight as to whether milk should be aired or not. Belgium against, Mr. MacCarthy and the Canadians in favour of it.—Mr. MacCarthy's article on it appeared in the Journal for February, and M. Dellicour's reply, in the May number.

*Milk.*—I regret to say that the complaint is universal—from M. Chapais, the Assistant Commissioner of the Dairy-industry, down to the youngest of the cheese-makers—that *the milk bought to the factories is too often, shamefully lowered by the addition of water.* The makers will not refuse it, for fear of the consequences, and although a few patrons (save the mark!), have been fined, the practice still continues. M. Bernatchez, the President, with laudable courage—a quality he asserts, and not without reason, he is possessed of—called the attention of the clergy, to this, really the meanest of tricks: he trusted they would use their influence to lessen the number of these frauds, even if they could not be entirely got rid of. It is positively shocking to see a neighbour cheating his neighbour in this fashion, and it won't do to use the "à la quoque" style of argument. Oh! they are just as bad in Ontario. We have all had experience, in former days, of the little dodges resorted to in order to make  $\frac{3}{4}$  of a cord of wood measure a whole cord, but that was a mere trifle compared with the present—I had almost said systematic—mode of victimising the proprietors, makers, and the butter-patrons, of the factories, that is now being carried on throughout the province.

And another complaint is, that the milk-cans are not properly cleaned, and consequently, the cheese won't work properly. One patron, M. Plamondon, showed the maker at the factory to which his milk was sent, two solid inches of lard at the bottom of one of the cans! If such practices are continued, to the seven millions pounds and upwards of export-cheese will soon be found to diminish. M. Chapais' essay will shortly appear in this Journal, and will be found to be worthy of study by all who are interested in the subject.

*Butter.*—Only one sample of butter was sent for competition, and that was from the dairy of Mr. Sydney Fisher, of Knowlton, Mr. MacCarthy says of it: "This butter is in very

pretty little pats, carefully moulded. It is from the milk of two breeds of cows; from Guernseys and Guernsey-Jersey crosses, each milk, or rather each cream, churned separately. It is perfect in colour; that from the pure Guernsey being a trifle the deeper; well flavoured, perfectly equal in texture, and we beg to congratulate the maker on his success."

M. Aimé Lorl says that cream, immediately after skimming, should be cooled down to 45°, and kept at that temperature up to the time of churning if the intention is to make fresh butter from sweet cream.

M. Côté, one of the inspectors appointed by the Department of Agriculture, visited 174 factories, 146 of which were cheeseeries, and the other 28 creameries, during the season 1890. As his season seems to have ended at the end of September, on account of the funds devoted to the purpose being then all expended, it would seem that the time devoted to each factory could not have been more than a few hours, a very few, for, supposing he began his travels on the 20th May, and finished on the 30th September, he had only 110 working days at his command; and as his circuit comprised the districts lying between Three-Rivers and Chicoutimi on the north-bank of the St. Lawrence, and between Belleschasse and Arthabaska on the south bank, his travelling, unless he was disinterested enough to travel at night, must have taken up a considerable portion of his time. However, the institution of syndicates, so wisely brought out by the indefatigable M. Taché, the, as M. Bernatchez very properly and truly said, "real motive power of the Association," will speedily change this state of things. Twenty-five or thirty factories may well be looked after by one inspector, while to expect him to do any good by a casual glance at 174 of them in 110 days is absurd on the very face of it.

*Green-meal.*—Not necessary to say anything about the essay on this subject as an English translation of it was published in the December number of the Journal.

M. Dellicour, a Belgian farm-engineer, sent a long work on dairying, only a part of which could be read, though the whole is printed in an appendix to the report. M. Chartier's intended lecture on ensilage, too, was crowded out.

M. Séraphin Guèvremont, in his address, still sticks to his point that roots are a profitable crop on a farm, and that all farmers should grow them. In two years after the purchase of a farm for \$6,000, he in partnership with his brother, has met all his payments, and paid off \$500 of the capital sum; and this, in spite of having to pay for all the labour, which with 18 acres in roots can be no trifle, employed on the land. He concludes in these words: "I assure you that if you adopt this system"—namely, of growing roots "your success is certain."

M. Casavant. Again assures the farmer that growing root- and green-crops for milch-cows and pigs, is one of the most certain roads to success in farming.

Competition of Canadian registered cows, 1890.

For the competition of cows eligible to entry in the Herd-book of Canadian cattle, there were only 3 contestants, and, strange to say, the owners were all of the same family name, and live in the same parish: Cie MM. Philibert, of St. Justin de Maskinongé.

In the yield of these cows, there were some curious discrepancies.

				lbs oz.
La Bruce,	from 250 lbs of milk	gave 45 lbs of cream	and 13-11 of butter.	
Corne d'Or,	" 293 "	" " 57 "	" " 11-10 "	
La Caille,	" 271 "	" " 49 "	" " 10-11 "	

Thus: La Bruce's milk gave 5.30% of butter;  
 Corne d'Or ..... 3.96% " ;  
 La Caille ..... 3.93% " ;  
 Twice the milk of La Bruce's milk 18.85 lbs,  
 La Corne d'Or " 25.23 "  
 La Caille " 25.43 "

to make a pound of butter. "These cows will be rewarded in the order of their yields as soon as, upon examination, they are found to be eligible in the Canadian Herd-book!"

ARTHUR R. JENNNER FUST.

ARBOR DAY!

The following may not reach our readers in time for the day fixed by Proclamation but the information given by the Honorable M. Joly de Lotbinière is of great utility and can be used during the whole season of planting.—We therefore hope it will be carefully studied.

By his Proclamation His Honor the Lieutenant-Governor has appointed the following days for the celebration of Arbor Day:—

WEDNESDAY, the SIXTH DAY of MAY NEXT, FOR THE WESTERN DIVISION OF THE PROVINCE, comprising the following Counties:—Argenteuil, Bagot, Beauharnois, Berthier, Brome, Chambly, Chateauguay, Compton, Drummond, Hochelaga, Huntingdon, Iberville, Jacques Cartier, Joliette, Laprairie, L'Assomption, Laval, Maskinongé, Missisquoi, Montcalm, Montreal, Napierville, Ottawa, Pontiac, Richelieu, Richmond, Rouville, Shefford, Sherbrooke, Soulanges, Stanstead, Saint Hyacinthe, Saint John's Saint Maurice, Terrebonne, Two Mountains, Three Rivers, Vaudreuil, Vercheres and Yamaska; and

MONDAY THE ELEVENTH DAY OF THE SAME MONTH, FOR THE EASTERN DIVISION, comprising the Counties of Beauce, Belleschasse, Bonaventure, Champlain, Charlevoix, Chicoutimi, Saguenay, Lake Saint John, Dorchester, Arthabaska, Gaspé, Kamouraska, Lévis, L'Islet, Lotbinière, Matane, Mégantic, Montmagny, Montmorency, Nicolet, Portneuf, Quebec (city), Quebec county, Saint Sauveur, Wolfe, Rimouski and Temiscouata.

And His Honor concluded His Proclamation, as follows: "And by these presents, We do urgently recommend to all the inhabitants of Our said Province to set apart the above mentioned day for the plantation of forest trees, and We beg all municipal, religious and school corporations to cooperate towards the success of this undertaking, which promises, in the near future, important results for the Province."

Directions for Forest-tree planting and growing.

1. If you wish to procure trees from the woods, take them near the edge of the forest, where they do not grow too thickly, they will suffer less from the change and want of their accustomed shelter. Many tree planters take the precaution of tying a string around the tree before digging it up, with the knot tied to the north, so as to be able when they replant it, to place it in the ground facing the same direction. (1)
2. Do not take up trees, for transplanting, over eight or ten feet in height; if you do they will require much extra care

(1) This precaution is omitted by all nurserymen, as far as we know, without the least injurious effect. E. A. B.

and trouble, more than would be compensated by their extra height.

When it is proposed to take up large trees it will considerably increase the chances of success if they are prepared beforehand, by cutting the roots with a sharp spade all around the tree, without disturbing it, the *previous spring*, and severing the tap root with a slanting cut.

3. Take up the trees very carefully, do not hurry and tear and split the roots and do not attempt to get them in their whole length, better have them short and sound, dress them carefully, removing the wounded parts, and cut off the broken ends with a *slanting undercut*, so that the new roots forming round the cut, between the wood and the bark, will at once strike a downward course.

4. Be careful not to let the roots dry, keep them in damp moss or straw and replant as soon as possible.

5. Having considerably shortened the roots, you will have to shorten the branches and the stem, as there ought to be a reasonable proportion between the two.

6. Plant your tree on mellow ground, packing carefully the loose earth between the roots; water before filling up the hole completely, and when filled press the ground firmly.

7. Be careful not to plant the tree any deeper than you found it growing.

8. Stake it at once; the taller the tree the more strongly it must be staked to resist the wind; surround it with a bay rope or rags to prevent it from getting torn. Where stakes are not available place stones round the tree, not too near the foot, so as to anchor it by keeping down the roots with their weight.

9. The more you remove the weeds and work the ground near the tree, provided you do not go down too deep, the better. Mulching the straw, leaves, etc., will preserve the necessary moisture in the ground.

10. No use planting trees if they are not fenced carefully, so as to protect them from the cattle.

11. Select with judgment the kind of tree that will suit your soil. In rich deep soil, plant black walnut, butternut, oak, elm, maple, basswood, etc. The ash tree will grow in cold compact soil where the maple would perish. Tamarack will thrive in light wet soil. Keep pine and spruce for dry sandy soil.

N. B.—Remember that there is no greater waste of time and money than in planting a tree badly.

The time appointed for Arbor Day has been fixed so as to suit deciduous trees (such as drop their leaves in the fall).

As for evergreens, in this Province transplant them early in June, before the opening of their buds, on a rainy day if possible, or at least a cloudy day, or after sunset if the weather is too bright.

The cheapest and safest mode of raising forest trees is from seed, especially when a great number are required, and in the long run, experience will show that there is no time lost, as compared with digging up trees and replanting them. (1)

If the ground is ready sow the seed where the tree is destined to grow thickly, to make up for failures. If ground not ready sow in seed beds, transplant after one year in nursery rows and when sufficiently advanced, transplant where the young trees are to remain permanently.

(1) This is most important advice, and it is very desirable that parties who intend to plant trees, from year to year, start at once a small nursery in a corner of the garden where they will grow such seedlings as they require. For small plantations, we strongly advise our readers to secure seedling plants from nurserymen and to cultivate them carefully in the garden until they are strong enough to transplant where needed. Good seedlings several inches high are now advertised and can be had for about \$1 a hundred post paid.

ED. A. BARNARD.

Sow seed as soon as possible after it has attained its maturity. In the autumn sow black walnut, butternut, oak, lime tree or basswood, sugar maple, ash, etc.

The seed of the elm and soft maple ripen about the middle of June. sow it at once. Sow the pine and spruce in the spring.

Those who have no nursery of young trees ready for Arbor Day, can get them in the woods by taking proper precautions as above mentioned, or they can procure them at very reasonable rates from nurserymen, but no time must be lost in ordering them.

Quebec, 28th April, 1891.

H. G. JOLY DE LOTBINIÈRE.  
for the Commissioner of Agriculture.

Extract from "The New Dairy" New-York March number, 1891.

Mr. Ed. A. Barnard, of Canada, says in 'Hoard's' Dairy-man; writing about Quebec Canadian cows: "The cows weigh about 750 pounds, live weight. They have given from 7,000 to 8,000 pounds of milk in twelve months, and the milk averaged 5 per cent, butter fat." We saw a statement similar to this a year or so back, relative to (Quebec) Canadian cows. Now, the important point is, is it strictly true, or only an ebullition of enthusiasm? If the (French) Canadians have such a breed of cattle as is herein described, that can make all that milk of such superlative richness, and weigh only seven or eight hundred pounds, then they are the coming cows, and the world should know more about them.

Department of Agriculture and Colonization

Quebec, 14th April 1891.

L. S. HARDIN ESQUIRE,

The New Dairy 7 Murray St. N. Y.

Dear Sir,—My brother, Edmond Barnard, sends me your valuable paper in which I find a short mention of our Canadian Jersey cows. Respecting their yield and richness of milk, there can be no doubt whatever. The herd was exhibited in the Quebec Provincial, Dr. Hoskins of Vt. and Prof. Brown, of Guelph Ont. Agr. College were brought here specially as judges on this question, the test was made chemically at the Laval University here and practically by the Centrifugal Laval tester, under the special care of a Swedish or Danish Gentleman, from New-York, who came here for the Exhibition as representing the Laval Co. in America.

But a still better test was made under my own supervision when the herd was being brought to the show. The whole milk of the herd was separated with the Laval Sep. the cream churned and the result gave one lb. of butter to eighteen pounds of milk.

Now, the following may give you the clue of the whole matter. Some 35 years ago when I began farming, I had a predilection for thoroughbred Ayrshires. Supplying milk for a village market, I had to fill up the stable with some of the country cows. My Ayrshires cost one hundred dollars each and were called cheap at that price. To my astonishment, a young heifer which I purchased in the market for *Eight dollars*, a few weeks before calving, gave an abundance of rich milk on the high feeding I thought best to follow. Without testing, I was convinced that the heifer's milk looked and tasted richer than any of the costly Ayrshires. Each subsequent similar purchase, from a good motherly standpoint gave me similar results, the price of course varying with the demand and supply. This led me to think—and the following

was the result. The original French Canadian cow was selected by Colbert and such eminent French statesmen, who intended to build *La Nouvelle France* on a substantial basis. The best and hardiest motherly cows were shipped from Brittany and Normandy with the famous Canadian Ponies which the American Market soon found out here and nearly exhausted. Our bracing climate and rough usage, made our little cows the hardiest in the world, I suppose, for 40° below zero and 100° in the shade have been often known here in the same year. If the little mother could only find strength enough to reach the woods in the spring, she was all right and her calf came home trotting behind her dam in due time. So much for our motherly little French Canadian cow.

I was at that time intimate with Mr. Sheldon Stevens who imported the stock which later on became celebrated the world over under the name of *St-Lambert*, a stopping place on the St-Lawrence, just opposite Montreal. In 1869, I entered into my present official duties as Editor of the Official Journal of the Council of Agriculture of this Province. And in order to prove the excellency of the Provincial breed of cows, descendant from the original French importations, I purchased in 1879 for from 12 to 18 dollars, young heifers a few months from calving and one at \$18.00 with a fine heifer calf at her side. Knowing as I did the close relation which existed in the anterior breeding of the Jerseys and the Brittany stock—although kept apart for so many centuries, by Custom Laws and International obstacles,—knowing how difficult it is to find in the common breed of a country a male reproducer of the required stamp to reproduce exactly the excellent points aimed at—and those only; and again, being offered by my friend Romeo Stevens Esquire—on very favorable conditions, a thorough bred Jersey, a son of Stoke Pogis III at that time unknown and of Pride of Windsor 483 A J C C. a cow bred by H. R. H. The Prince Consort, at Shaw Farm Windsor England; This bull calf became the at present famous Rioters' Pride of St-L who took the grand Sweepstake Prize against Bulls of all breeds, at Toronto, at the Dominion fair in 1888 or 1889. This was the foundation of my stock.

In 1883, I exchanged Rioters' Pride for Albert Rex Alpha 9711 A J C C. and he is the sire of what you call in your March number "the cowing cows."

If you desire it, I shall send you shortly copy of an official test lately made of this same herd under a Provincial Commission, for entrance into our Provincial Golden Register of milch cows. Yours respectfully,

Signed ED. A. BARNARD.

#### FERTILISERS.

Sherbrooke, April 28th 1891.

Dear Sir,—Are you not rather severe on our phosphate makers when you state on page 34 of the March number of the Journal that the average difference in excess of cost over value is upwards of \$10 00 a ton? First in taking the cost of nitrate of soda as the principal ingredient on which to base the value and cost of manufacture of phosphates, you put it at about two cents a pound, since you wrote this article the price of nitrate of soda has advanced to about three cents a pound so that the manufacturers should be allowed to establish such a price for their goods as will at least insure them against a loss from the result of a fluctuating market. Then even assuming that the \$10.00 is really charged in the difference of cost over value it would seem to me that there would be a very small balance of profit left to the manufacturer after deducting the outlay incidental to the actual making

and selling of the fertilisers. The insurance on the building, the cost and wear of the machinery, the wages of the men and salaries of the superintendents and chemists who needs must constantly test the mixtures in order to guarantee with certainty the standard of analysis, the cost of bags and packing, commission to agents and many more which it would be difficult to estimate or for as to enumerate but which must well nigh consume the apparent profit on the manufactured article. As to compounding our own fertilisers I have tried it but found that the time and expense was more the ready made article could be bought for. I once admired the frugal habits of the young women of the Lower St. Lawrence who spin their own yarn and weave their own cloth, but when I found by careful enquiry that the actual wage earned by these toilers was about ten cents for a long days work, I felt that they might be better employed in earning five days pay in one and then buying their yarn and cloth ready made.

For myself I cannot complain of the prices charged by the Nichols Chemical Co., of Capelton. I find that they compare very favourably with prices of similar products made in the United States being in every case cheaper by the test of analysis, and so long as they continue to be profitable for me to use, so long will I continue to purchase them in increasing quantities. Yours very truly,  
W. A. HALE.

#### On The cultivation of the Potato, and on Richter's Imperator.

For some time past, the scientific reviews, and the agricultural journals and bulletins of France, have been publishing numerous articles on the rational cultivation of the potato, on the preparation and preservation of the tubers intended for seed, and on the very remarkable results obtained from the variety called *Richter's Imperial*. We condense here, in as few words as possible, the practical information derived from the work and experiments of MM. Aimé Girard, H. Desprez, P. Genay, &c., on the cultivation of the potato. The subjoined figures relate especially to the cultivation of "Richter's Imperator," but the method may be applied, in general, to all the varieties in use, with the exception of certain modifications rendered necessary by the influence of climate, the sort grown, &c.

**RICHTER'S IMPERATOR.** (1) It is quite settled, at present, that the variety called Richter's Imperator, a kind principally popularised in France by the energetic labour of M. Girard, is, the most productive of all the sorts, both as regards its richness in starch and its weight in yield. Let us see what its productive power is on the different soils of that country.

**KIND OF SOIL.**—The physical constitution of the soil does not appear to exercise so great an influence on the yield as is commonly supposed; thus, soils so varied in composition as *loam, calcareous-clay, limestone soils*, (rare in this province) (2) and even *clays*, have yielded good crops.

Natural fertility has, of course, great influence: on rich soils, the average yield, *per acre*, has been as high as 550 bushels (33,000 lbs.) of tubers containing 18% of anhydrous (*dry*) starch, equal to 28,000 lbs. or 466 bushels, *per arpent*. And even on poor soils, a very satisfactory crop may be obtained—330 bushels an acre = 20,000 lbs., = 280 bushels, or 16,000 lbs., to the arpent.

(1) We have imported some of this variety. We shall try it side by side with the sorts reckoned to be the best we have, and report the results for our readers' benefit.  
Ed. A. BARNARD.

(2) I take it, by *calcaires* the writer means the chalk-soils of the N. E. of France, a description of land that would surprise a stranger.  
A. R. J. F.

**PLOUGHING.**—The furrow should be as deep as possible. (1) The remarkable yield just mentioned—550 bushels an acre—was grown on land ploughed from 12 to 16 inches deep; on the same soil, with a furrow 4 to 6 inches deep, the yield was only 17,850 lbs., or 297 bushels an acre, less by nearly one-half.

**MANURES.**—The natural fertility of the soil must be largely aided by the addition of dung. Thus, M. Aimé Girard gave his crop = 7½ tons an arpent. But we must remember that farmyard-dung in Europe is much richer than that generally made in this province, the former containing, on an average, per 1000 lbs.:

Nitrogen.....	5.5 lbs.
Phosphoric acid .....	3.0 "
Potash .....	5.5 "

As to the farmyard-dung of this province, we must admit, with Mr. Barnard, that it is 50% poorer, and that instead of 9 tons an acre, as above, about 18 tons would be requisite—15 tons an arpent. With such a dose, the following amount of fertilising elements would be added to the land:

	Per acre.	Per arpent.
Phosphoric acid.....	54 lbs.	45 lbs.
Nitrogen .....	99 "	84 "
Potash .....	99 "	84 "

but in most cases, the dung will have to be complemented by artificial manure.

No fixed formula can be given for these artificials, since they must necessarily vary with the quality of the soil, but we give the following recipe employed by M. Girard in a certain number of cases:

	Per acre.	Per arpent.
Superphosphate = 20% of phosphoric acid.....	450 lbs.	380 lbs.
(2) Nitrate of soda - 15% of nitrogen	180 "	150 "
Sulphate of potash - 45% of potash .....	260 "	230 "

Here, in Canada, sulphate of potash may be easily replaced, in equivalent proportions, by wood-ashes, and nitrate of soda by sulphate of ammonia. (3) We should then have:

	Per acre.	Per arpent.
(4) Superphosphate = 20% phosphoric acid.....	450 lbs.	380 lbs.
Sulphate of ammonia = 20% nitrogen .....	135 "	115 "
Ashes = 10% potash.....	1000 "	845 "

(1) As the readers of this periodical know well, I am a lover of a deep fall-furrow for all manured crops, but I cannot recommend any one to break up the bottom of the old furrow-sole more than, at most, 2 inches in one season. However, there is not much danger of land being ploughed too deep in this country. A. R. J. F.

(2) The nitrate of soda can be had at Mr. Wm. Evans, Montreal, provided not less than a bag = 200 lbs. be taken: price, \$2.25 per 100 lbs. E. A. B.

(3) We must not forget that hard-wood unlixivated ashes contain lots of phosphoric acid; the 1000 lbs. mentioned below would hold, if of *bee h.*, about 56 lbs. (Sprenghel), but on an average, perhaps 26 lbs. would be near the mark. A. R. J. F.

(4) We advise our readers to send to Mr. Wm. Ewing, McGill St., Montreal, for the *Indian bone-meal* imported by Messrs. Lohmer Rohr & Co., Montreal, at \$28 a ton. It has been analysed at Ottawa, (see p. 69, May), and is very rich at the price. Of it, about 800 lbs. would be required to represent the quantities of phosphoric acid and nitrogen in the table, costing about \$11.20 an arpent, in addition to

In short, the fertility of the soil should be kept up by the following additions (approximate):

TABLE OF FERTILISING ELEMENTS TO BE ADDED TO THE SOIL.

		Per acre. lbs.	Per arpent. lbs.
Phos. acid (Ph <sub>2</sub> O <sub>5</sub> )	In the dung.....	54	45
	In the superphosphate.....	90	76
	Total .....	144	121
Nitrogen .....	In the dung.....	99	84
	In the sul. of am.....	27	23
	Total .....	126	107
Potash (K <sub>2</sub> O).....	In the dung.....	99	84
	In the ashes.....	117	100
	Total .....	216	184

**Selection of seed.**—The best tubers for seed, as regards the variety "Richter's Imperators" are those weighing about 3 or 4 ounces, *planted whole*. If there is not enough of such, large potatoes should be cut into *sets* of about 3 oz. each, but none over 10 oz. should be used for seed, as they never yield well. If tubers must be cut, they should be cut lengthwise; but the question of whole- or out-sets is not yet settled. (See Mr. Barnard's notes on potato-growing, p. (1))

If very small tubers must be used, they should be planted in *groups* weighing about 3 oz. per group.

M. Girard insists on the influence of hereditary qualities, and on this point he comes to the conclusion that *the tubers derived from a very productive plant are always very much more productive than those that proceed from a plant that yields badly*.

Ewing, besides, shows that there is a constant relation between the luxuriance of the haulm and the abundance of the tubers, (2) M. Girard furnishes us with an easy and thoroughly practical means of selecting the tubers adapted for seed.

In July, the farmer should mark with a stick those plants that look most luxuriant, these are to be chosen for seed the following year.

In the French Journal, *La Gazette des Campagners*, we also find, on the subject we are considering, some very important practical information, due to the experiments of M. Genay.

the carriage. But we must not forget that the land would be manured for the succeeding crop of grain (*and of grass too*—A. R. J. F.). One might be satisfied with the following:

500 lbs. bone-meal.....	\$7.00
125 " nitrate of soda.....	2.70

\$9.70

The effect would be a good one on the potatoes, but not sufficient for the following crops. Ed. A. F.

(1) Average crop of potatoes in England—year by year, on all sorts of soils, good and bad, light and heavy—is, per acre, 5½ tons = 12,320 lbs.; in the States, the real average is hard to get at, but from the statistics—which Dr. Hoskins says are not to be trusted—it is about 85 bushels = 5,100 lbs. M. Séraphin Guévremont's crop on 8 arpents, last year, was 1520 bushels = 206 bushels = 12,360 lbs. an acre, or 40 lbs. more than the average crop of England! If M. Guévremont were not an old pupil of mine I might be rather jealous of his beating my countrymen. A. R. J. F.

(2) The most luxuriant plants of potatoes I ever grew were planted in a small patch by the side of the Bassin de Ohambly. They were manured with *spent hops* from my brewery, and were magnificent in appearance, but, when the season came to harvest them, there were *literally no tubers at all*. A. R. J. F.

To get good crops of potatoes we must : 1. Avoid planting them too often on the same piece of land.

2. Select the heaviest tubers for planting. For that purpose, the tubers should be tested by putting them into salt water, containing about 10 % of common salt ; those that float should be rejected, and those that sink to the bottom should be used for seed. We must remember that even the best kinds are certain to degenerate, unless their cultivation is carefully attended to, and the selection of sets studiously watched. The creation of a first-rate variety takes many years, its superiority may vanish in a few.

Let us finish M. Girard's account of Richter's Emperor, published in the *Cosmos*, Paris.

*Distance.*—The best distance for planting this kind is 24 x 20 inches. (Our advice is that the germs be out out, provided they have germinated in free air and in the light, and planted 5 or 6 inches deep, and 10 or 12 inches apart, in thoroughly worked and manured soil. E. A. B.)

*Cultivation.*—Plenty of hoeings ; high earthing up. (1) (We prefer planting deep and earthing up very slightly—provided the land be perfectly drained. E. A. B.)

*Disease.*—The potato disease, the rot, &c., are effectively conquered by a *prophylactic* treatment with sulphate of copper, which can be had at the chemists for—cents a pound. This should be used about the 20th June, and is thus prepared :

Water.....	1,000 parts.
Sulphate of copper.....	30 "
Lime .....	30 "

With this the haulm should be liberally sprinkled through a distributor at the rate of about 170 gallons an acre. (2)

*HARVESTING.*—This should be as late as possible : (3) as a rule, in the month of October for "Richter's Emperor," which is a medium-late sort.

"The best time for harvesting this crop, adds M. Girard, is when all the leaves, even those that form the terminal shoot are dead. As long as the terminal shoot is alive, however small it may be, the tubers are still gaining, but as soon as it is completely dead, the gain is ended, and the harvesting should begin." (Unless the cellar be perfect, we prefer putting the potatoes into a heap covered with earth, and ventilated by means of a few holes stopped with straw. The tubers get dry in the heap, and, after sorting, are put into the cellar in the best possible condition for keeping. E. A. B.)

H. NAGANT.

Cultivation of the Potato.

We have just read an interesting account of the experiments conducted for 15 years in the cultivation of the potato, and entitled *The New Potato Culture*, by E. S. Carman, editor of the *Rural New Yorker*. (4) In this work are to be found the principles contained in the summary that our assistant, M. Nagant, has made on the cultivation of the potato. It is a book that should be read. The chapter of the production of new kinds is alone worth the cost of the pamphlet. In

(1) I need hardly say that I entirely disagree with M. Girard as to earthing up. A. R. J. F.

(2) Of course the time of sprinkling depends entirely on the forwardness of the crop. A. R. J. F.

(3) But the harvesting must not be deferred too long, as in the Eastern part of the province the potato-land requires to be cleared before the frosts prevent the plough from giving that important autumn-furrow. A. R. J. F.

(4) Price, stitched, 40 cents. bound, 75 cents. The *Rural New Yorker*, Times Building, New-York.

it it is proved that every intelligent farmer can produce new varieties some of which may turn out to be of the greatest benefit to the whole country. We give here a résumé of the principles which, according to Mr. Carman and all the best practical Europeans, lie at the foundation of success in growing this crop.

1. Deep and thorough drainage—natural or artificial ;
2. Selection of productive seed, possessing the best qualities either for the table, for starch-making, or for cattle feeding.
3. The germination of the sets in dry, well lighted places, so that the eyes may produce firm, healthy buds.
- (4) Deep cultivation of the soil—not less than 12 inches, so that the potatoes may multiply and swell at their ease.
5. Plenty of manure, to enable the soil to yield the largest crop in its power. This point is fully treated in M. Nagant's article.
6. The planting should be neither too close nor too far apart ; the sets strong, sound, and of the best kinds, so that no space be lost from failures in plants. In this way a very abundant crop of large, merchantable tubers will be grown, and the small ones will be few in number. We prefer one eye in a set to more, provided the sets are perfect, but we know that, on this point, opinions are divided. (1)
7. Complete eradication of weeds, and stirrings enough to keep the ground light, all the season if possible. (2)
8. Harvesting and preservation in very dark but cool and well ventilated cellars.

We are convinced that if all these rules were thoroughly observed, the growing of potatoes would be possible in every sort of land that is like those mentioned above, and instead of our crop being, as it is now, rarely more than 75 or 100 bushels, 200 or even 400 bushels would be grown in most places. This last crop may seem exorbitant, but try to grow it with all the precautions mentioned, and report thereon to us in the fall, please. We know a curé in the North who in his garden on ordinary soil, grew at the rate of 900 bushels to the arpent. (3) Come, then my good readers, study the preceding, do the very best you possibly can, and do not fail to give us the results of your work in the fall.

ED. A. BARNARD.

*Imperators*, grown on the warp soils of Yorkshire, Eng., are worth, in the London market, the same price as *Magnum bonum* from the same district, i. e. 145 shillings a ton (2240 lbs). But whereas the *Lincolnshire* *Magnums* are worth 140 shillings a ton, the *Imperators* from that county only command 130 shillings.

A. R. J. F.

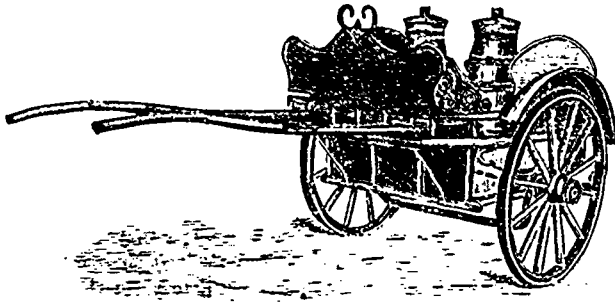
The Lord Mayor's Champion Cup Milk Cart.

It would be difficult to excel in elegance the form and decoration of this milk cart, and Messrs, Vipan and Headly have many others patterns and sizes, from the smallest cans on wheels and milk perambulators to the largest carts for wholesale use. Another speciality in which Messrs. Vipan and Headly have been very successful is that of railway milk

- (1) I confess that I would rather not risk it. A. R. J. F.
- (2) But if the hand-hoe is not to be used, the space between the sets will not be 'kept light' after the harrowing is done. The fact is the *edge-hoeing* as practised in England, &c., is much more efficacious than all the harrowing, and not costly, as any man can get over his acre a day. A. R. J. F.
- (3) Nine hundred bushels to the arpent=1083 to the acre=28 gross tons. !!! Dr. Bain, of the Alberta district of the N. W. says he grew 900 bushels on an acre of specially prepared land. A. R. J. F.



cans, now made of two sheets of steel, the body being composed of one sheet if desired, and the lid made dust proof. Their milk-can elevator is also a very useful invention.



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**AN OLD AND WELL-TRIED REMEDY.**—Mrs. Winslow's Soothing Syrup has been used for over fifty years by millions of mothers for their children while teething, with perfect success. It soothes the child, softens the gums, allays all pain, cures wind colic, and is the best remedy for Diarrhoea. Is pleasant to the taste. Sold by Druggists in every part of the world. Twenty-five cents a bottle. Its value is incalculable. Be sure and ask for Mrs. Winslow's Soothing Syrup, and take no other kind.

### Wanted, Very Choice Butter!

We frequently see this heading in the newspapers, especially during the Winter and Autumn seasons. First class Grocers, and best Hotels always demand the finest grades of Butter, and are willing to pay fancy prices.

When the grass loses its sap and nourishment, the Dairyman and Butter maker if they thoroughly understand the art of Butter making, must know that it is impossible to make Butter of a rich golden tint, such as juicy June grass produces.

This rich golden or June tint produced in the Winter and Autumn adds fully 25% to the market value of good Butter, and so far the demand has been in excess of the supply. For years past the best Butter makers have been using the Wells, Richardson & Co's. Improved Butter Color, which is a purely vegetable preparation. It is the only Coloring that is perfectly free from taste or smell; it possesses perfect keeping qualities, and never becomes rancid, and does not in the slightest degree color the buttermilk. It is the strongest Butter Color made, and therefore the cheapest to use.

Butter makers who have once used the Wells, Richardson & Co's. Improved Butter Color, positively declare its effects to be marvellous; and the market value of the Butter vastly increased. At present, the largest and best equipped Dairies in Canada use Wells, Richardson & Co's Improved Butter Color, as their extended experience has proved it to be the best and only reliable. It is sold by all Druggists and Dealers.

### Sleepless Worry.

Is often occasioned by a harassing, tickling cough which might easily be cured if the right remedy—Hagyard's Pectoral Balsam was made use of. Its soothing, healing and expectorant qualities make it wonderfully useful in every family for coughs and colds.

### TO THE DEAF

A person cured of Deafness and noises in the head of 23 year's standing by a Simple Remedy, will send a description of it FREE to any person who applies to NICHOLSON, 177, MacDougal Street, New York.

### Joy in Jasper.

I can recommend Burdock Blood Bitters as a sure cure for scrofula. I had it for four years, and was so bad at one time that I was almost a solid sore. I commenced taking B. B. B. last summer, have taken three bottles, and am entirely cured now.

Miss ELLEN PIPE, Jasper, Ont.

### CONSUMPTION CURED.

An old physician, retired from practice, had placed in his hands by an East India missionary the formula of a simple vegetable remedy for the speedy and permanent cure of Consumption, Bronchitis, Catarrh, Asthma and all Throat and Lung Affections, also a positive and radical cure for Nervous Debility and all Nervous Complaints. Having tested its wonderful curative powers in thousands of cases, and desiring to relieve human suffering, I will send free of charge to all who wish it, this recipe in German, French or English, with full directions for preparing and using. Sent by mail, by addressing, with stamp, naming this paper, W. A. NOYES.

820 Powers' Block Rochester, N. Y.

### For frost bites.

There is no better remedy for frost bites, chilblains, and similar troubles than Hagyard's Yellow Oil. It also cures rheumatism, lumbago, sore throat, deafness, and lameness, and pain generally. Yellow Oil is used internally and externally.

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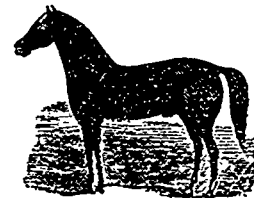
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