

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured covers/
Couverture de couleur
- Covers damaged/
Couverture endommagée
- Covers restored and/or laminated/
Couverture restaurée et/ou pelliculée
- Cover title missing/
Le titre de couverture manque
- Coloured maps/
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black)/
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations/
Planches et/ou illustrations en couleur
- Bound with other material/
Relié avec d'autres documents
- Tight binding may cause shadows or distortion along interior margin/
La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/
Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

- Coloured pages/
Pages de couleur
- Pages damaged/
Pages endommagées
- Pages restored and/or laminated/
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached/
Pages détachées
- Showthrough/
Transparence
- Quality of print varies/
Qualité inégale de l'impression
- Continuous pagination/
Pagination continue
- Includes index(es)/
Comprend un (des) index

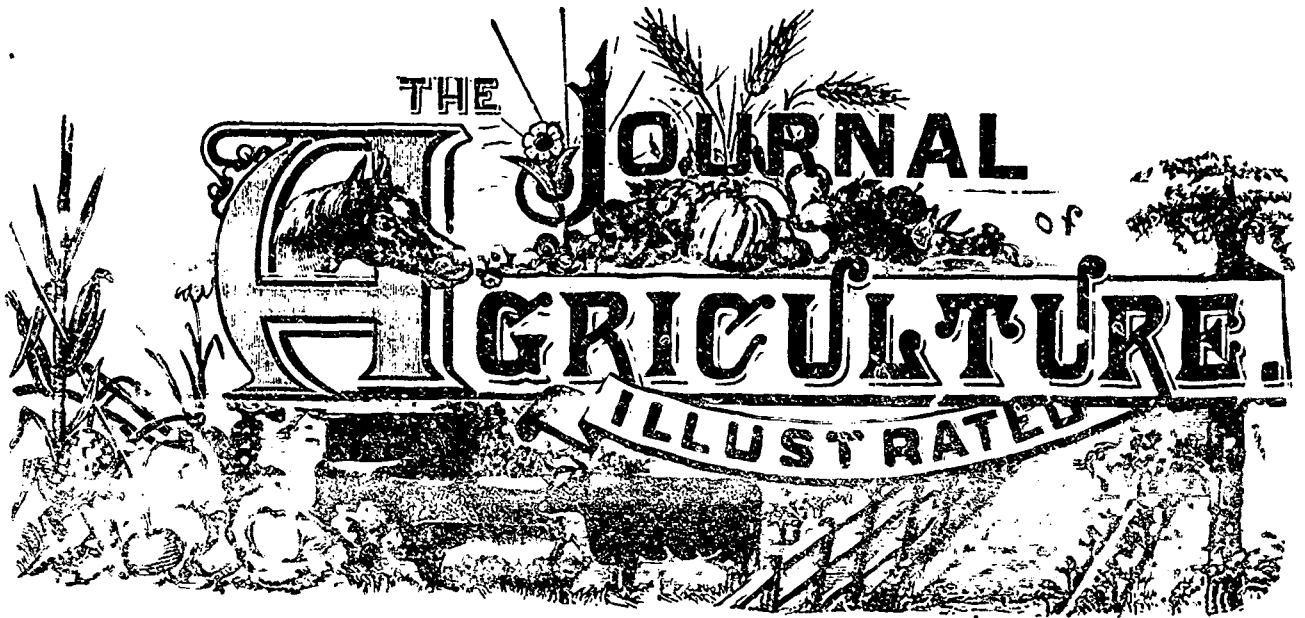
Title on header taken from: /
Le titre de l'en-tête provient:

- Title page of issue/
Page de titre de la livraison
- Caption of issue/
Titre de départ de la livraison
- Masthead/
Générique (périodiques) de la livraison

Additional comments: /
Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below /
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	14X	18X	22X	26X	30X
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12X	16X	20X	24X	28X	32X



Published for the Department of Agriculture for the Province of Quebec, (official part) by
EUSEBE SENECAI & FILS, 20, St. Vincent St. Montreal.

Vol. VII. No. 10.

MONTREAL, OCTOBER 1885.

\$1.00 per annum, in advance.

OFFICIAL PART.

Table of Contents.

Beans.....	145
Advance Report The Ontario Experimental Farm—Midsummer 1885	147
De Omnibus Rebus	149
Our Engravings.....	150
Competition of Milch-cows—Observations.....	152
The Planet Jr Garden Drill	153
Guernsey Cattle.....	153
Rearing calves	154
The Creamery System	155
Poultry as a Food Production	155
Treating Young Chicks.....	156
Tillage and Evaporation	157
Feeding Cottonseed Meal	157
The Veterinary.....	159

BEANS.

Sorel, Sept, 14th 1885.

By beans, in this country, we generally mean what is called in Europe the *haricot*: eaten green in the pod, or the seeds boiled and served with a white sauce. In England, we understand by beans the *feve de marais*, provincially, *cafe du pays*, of which there are several kinds, whereof some are for the table, and some for horses and cattle. I will first treat of the *haricot* or French bean.

The American *haricot* is grown in large numbers for soup or for baking. It is a plant of easy culture, and, if the land is in fair condition a plentiful yield may be expected. As a rule it is grown on the poorest land on the farm; hence, the crop is usually very small, but if we consider the high price to be obtained for a good sample of white beans, and the short time they occupy the land, it will be evident that few

crops pay better for attention. Beans are invariably worth from 15 0/10 to 25 0/10 more than wheat, and, fairly dealt by, they will give from 20 to 30 bushels greater return per acre. Not, though, as they are sown here: hills 30 inches apart each way, and 3 plants in a hill, won't do much; but in drills 26 inches apart, and pretty thickly sown, they will pay well. The heaviest crop I ever grew was at Joliette, in 1870, when on one-fourth of an acre of the poorest sand, with water permanent at 40 inches below the surface, I raised 15 bushels of a red and white bean, called, I think *the China*.

Cultivation of beans.—Beans do best on light lands, preferring a gravelly soil, if it can be had. The season of sowing begins about the 20th May, but in sheltered spots and in early Spring, a week before that date will not be too soon. In fact, I generally risk sowing rather early, as, if successful, the yield is so greatly enhanced; and beans are not like corn, which is subject to rot if the ground is not of a congenial temperature when that grain is sown.

Land intended for beans should be as carefully prepared as land intended for potatoes or turnips. The bean-crop is a fallow or cleansing-crop, and is to be treated accordingly. I always manure for beans, and I find it pays. Beans, then, follow a white-straw crop, and the land will of course be ploughed in the fall just as deep as the usual team can manage it. When the land is dry after the departure of the snow, it should be grubbed across the furrows, harrowed, rolled if necessary, and set up in drills from 24 to 27 inches apart. Half a dressing of rotten dung, say, 20 of the usual cartloads—about 8 tons—to the acre, may be carefully spread in the drills, the drills split, and the seed sown at the rate of about 3 bushels to the acre. The quantity, however, depends entirely on the size of the seed. I always roll the drills down after sowing, I never saw any one else do it, but then I roll after all seed, except fall-wheat: that, at least, I have learned from Mr. Peter Henderson. When up, the plants should stand from three to four inches apart, and it will answer to pull up any superfluous ones where, in hoeing, they may seem too thick. Any of the modern seed-drills will sow them regularly enough, but care should be taken that enough

seed is deposited, as, though beans will take if transplanted in a moist soil, transplantation never pays, as the *subjects* do not ripen with the main crop.

Horse-hoeing the moment the beans begin to show will let them through the ground easily. If you have a chain-harrow—if you have not you ought have—pass it along the drills just before the plants show, a finer finish to the land cannot be, the smallest weed-seed *must* sprout. The horse-hoe—not what the Scotch call a drill-grubber—will pare down the sides of the drills and raise the earth between them, so that after the hand-hoe has been passed *along* the drills, the whole field will seem as if the crop had been planted on the flat surface.

The question here arises: why sow on drills at all? It is a question I have been often asked this summer, and the answer is simple: to economize dung. In cases, like market-gardens near towns, where dung is abundant, no one thinks of drilling up land, but with us country-people, where manure is so difficult to come by, we must use drill-husbandry if we are to grow any roots at all.

Beans rejoice in plaster, which should be dusted over them, when about half-grown, on a dewy morning; I say on a dewy morning, because, though the plant can feed on the plaster by its roots, it imbibes it more easily through the stomata of the leaves.

As for harvesting beans, nothing is easier. What on earth people want to hang them on a pole for, I can't conceive. Pull them, lay them on the ground between the drills—not in bunches—turn them once or, perhaps, twice, and in a few days they will be dry enough to cart into the barn. They will pay for hand-picking after they are threshed.

It is a very queer thing, but nothing keeps the bowels in such perfect order as a soup made of beans or pease. The most obstinate case of costiveness will often yield to the effects of a legumen-diet—beans, pease, or lentils—taken like medicine at regular intervals of eight or ten hours; the second or third dose of soup will prove as effective as a moderate dose of salts. But, unlike the effects of the latter remedy, the cure will be followed by no astringent reaction.

The best beans for field-culture are:

- The White Marrow,
- The Pea Bean,
- The China Bean.

As to special manures for the crop, it is well to remember that no special manure, except plaster, and that only for this Continent, can be recommended for any pod-bearing plant.

Broad Beans. Fève de Marais.—I am very fond of broad beans, Windsor or Mazagan. They should be sown early, in good strong land abundantly manured, kept clean by hoeing, and, when well grown, the top should be broken off to hasten the setting of the pods. They are at their best when about the size of the little-finger nail. When older they become mealy, and lose their delicate flavour. To be eaten with Lucca oil; the olive-oil generally sold in this country is horrid rancid Marseilles stuff, only fit for machinery. My friend the Italian Consul tells me that M. Gravel, grocer, at the corner of Craig and St. Lawrence Main Streets, has oil that may be depended on.

Horse-beans.—I observe in "How the Farm pays," by Messrs. Crozier and Henderson, a statement that "the English bean, as you are aware, is used for feeding horses only." I am aware of nothing of the sort. They are given to horses, to cattle, and to sheep, and a most valuable food they are. They weigh very heavy—as much as 70 lbs. a bushel—particularly the Russian or winter bean. I don't think that sort would do in this climate, though I have known it stand a temperature of -4° F. in England. I should like to try it though, as if sown in October with us it usually ripens early

in August, whereas, our spring-beans are rarely ripe before the 20th September, and if winter-wheat stands Canadian cold, why, should not winter-beans?

Horse-beans demand strong land, and will gratefully accept all the dung you can spare them. They are grown every year on the Island of Montreal, and, if properly horse-hoed and cultivated, seldom fail of yielding well. A fair crop may be put down as 32 bushels, but I have seen 80 bushels an acre. I can tell you that towards the end of a long day with the hounds, it is a pleasant sensation to reflect that your horse has been eating half a bushel of beans a week for the preceding two months. One feels comfortable, in such a case; knowing that, at any rate, his lasting powers are sure to be as good as well-judged feeding can make them. They are generally, and ought be always, cracked before being given to horses, and are mixed with the oats and two or three double handfuls of clover-chaff.

Sheep receive their beans, whole or cracked, at the rate of a pint a day per head. Lambs of six months old thrive amazingly on them, and nothing enables them to resist the cold like this food. According to the analysis, pea-c ought to answer the same purposes as beans, but practically it is not so:

PEASE.

Water.....	14.3
Ash	2.4
Albuminoids.....	22.4
Fibre	6.4
Other Carbohydrates.....	52.5
Fat.....	2.0
	100.0

BEANS.

Water.....	14.5
Ash	3.1
Albuminoids.....	25.5
Fibre.....	9.4
Other Carbohydrates.....	45.9
Fat.....	1.6
	100.0

Thus, you see, though pease contain 6½ per cent more other carbohydrates (starch gum, sugar, &c.) than beans, this is more than made up for by the extra 2½ per cent. of the valuable albuminoids contained by beans. The water is about equal in both kinds of pulse.

Large quantities of Egyptian beans are imported into England for cattle-food. They come over in a filthy state, and have to be washed and dried before being used. Mixed with linseed, at the rate of 2½ lbs. of beans to 1 lb. of linseed, they are before all cattle-foods. In this country, beans are hardly ever purchasable, except a few bushels for seed in Spring, but mixed with maize and linseed, they would make the very finest meal for feeding both milch-cows and fattening bullocks; in fact, no dairyman ever dreams of refusing bean-meal to, at any rate, his heavier milking cows. The difference of condition in a cow before and after bean meal, soon proves its value.

Cultivation of horse-beans.—A fallow or cleansing-crop, again, and therefore it is unnecessary for me to go over the old ground. In England, where or all heavy land beans invariably form part of the rotation, they take up part of the seed-shift, and thus in a farm of 400 acres there would be:

First year.....	Roots,	100 acres
Second year....	Barley,	100 aorc.
Third year.....	Red clover,	33 $\frac{1}{2}$ acres
" "	Hop clover or Trefoil,	33 $\frac{1}{2}$ acres
" "	Beans,	33 $\frac{1}{2}$ acres
Fourth year....	Wheat,	100 acres
		400 acres

This avoids the too frequent repetition of the red-clover crop, and when tail-wheat, barley, and clovers are consumed on the farm, as is almost invariably the case except in the neighbourhood of towns, it will be seen that, only the best of wheat and barley being exported, the farm must be in a state of gradual improvement.

Here the bean will, of course, follow the grain crop where there are no grass seeds sown. Cross-ploughing, or cross-grubbing, being finished as early as possible—I would never sow beans after the 8th May—the drills drawn, and the dung spread, I would sow the beans on the dung, and cover with a shallow splitting. In Scotland, I have seen them covered with the harrows, but I prefer splitting the drills, as beans will soon come up through five or six inches of moved earth, and the land gets more justice done to it. Just before the plants appear use the chain harrow as before, or, if you have none, a common pair of light harrows will do. Horse- and hand-hoe as usual, and don't be afraid of going too deep. If the "Nigger," or black-fly, makes its appearance, cut off the tops of the plants with a smooth reaping-hook—what we call a *bagging-hook* in England; the nigger is a bad hand at climbing, and though he has wing he can't fly much, so he perishes miserably on the ground when he has finished eating the leaves of the detached top.

In Scotland they sow beans and pease together, and bind the beans into sheaves with the pease-straw. Economical enough, if pease and beans would ripen together; but they don't, and I have many a time seen the pease shelling out while waiting for the maturing of the beans.

Quantity of Seed.—At 26 inches between the drills, about 3 bushels of seed will be required per acre; that is, of beans as usually grown on the Island of Montreal. They should stand pretty thick in the rows, or else a wind-storm when they are full-grown sorawls them about terribly. We generally at home sow rape between the rows for sheep feed, and it would do here very well: the seed, about one pound to the acre, is drilled in after the last horse-hoeing, and, if the land is in fair heart, will give a lot of feed after the beans are harvested.

One thing must be observed: when cut or pulled, beans must be tied up into sheaves and set up at once. If they are allowed to lie and receive the dews, they shell out very quickly. Owing to their thick straw, beans will take a great deal of "field room," as we call it: that is, they take a long time to dry enough to carry.

Threshing beans is a dirtier job than threshing pease, and that is saying a good deal. Just try it if you don't believe me. Don't forget plaster.

Advance Report—The Ontario Experimental Farm—Midsummer 1885.

It is utterly needless to say that this report is a painstaking piece of work, as every one knows that nothing negligent or slovenly ever leaves the hands of Professor Brown. I do not know which to envy him most: his energy or his patience. I have seen a good deal of the carping spirit in which anything out of the ordinary routine is regarded, and I well know the amount of patience required to bear with the constant repetition of the sneer it is so fond of displaying. And as for energy, it takes a pretty resolute man to cope with one hun-

dred and fifty students; most of them drawn from a very insubordinate class of young men, too, unless the Upper Canadian youths have very much improved since I had the pleasure of knowing them.

The work involved in the dairy experiments alone conducted at the Experimental Farm amounts to 2,700 separate tests, and in order to arrive at due conclusions, the yield of no less than eighteen cows, embracing twelve different breeds, has been kept under constant supervision. The breeds are: Aberdeen Poll, Ayrshire, Devon, Galloway, Guernsey, Hereford, Holstein, Jersey, Shorthorn—thoroughbreds; Ontario Grade, Quebec Grade, and Shorthorn Grade—cross-breeds. Five of these cows, unfortunately, slipped their calves before the full time of pregnancy expired.

In the trial of winter milking, the class of prominent dairy breeds stood this:

BREED.		
Ayrshire, daily mean.....	20 lbs.
Holstein " "	22 lbs.
Jersey " "	18 lbs.

But in the examination of milk products, the following results were arrived at:

BREED.	Cream % Deep setting at 40° F.	Butter from 100 lbs. cream. lbs.	Cheese curd from 100 lbs. milk, less 10 %.
Ayrshire	12.81	37 $\frac{1}{2}$	13 $\frac{1}{2}$
Holstein	11.68	30 $\frac{1}{2}$	10 $\frac{1}{2}$
Jersey.....	18.52	43 $\frac{1}{2}$	14

As to summer work, the return (condensed) was:

BREED.	Milk average per day lbs.	p. ct. cream	Butter from 100 lbs. cream.	Cheese as above.
Ayrshire	15	14.2	49.3	15.7
Holstein.	21	8.8	31.0	12.3
Jersey.....	22	14.2	61.0	17.3

It is evident, then, from these trials that winter milk is not richer than summer milk, though showing nearly two 0/10 more cream by bulk. Why the Guernsey, described by Mr. Brown as "actually yellow from hoof to horn, with all the surface-mirroring" (whatever that may mean) "and irregular outline that delights the dairyman," was not tested among the "prominent dairy breeds," I do not quite see.

The comparison of milk products from ensilage and from turnips gives almost equal results. Ensilage, during an experiment lasting during the four winter months of November, December, January, and February, gives an average of 23 pounds of milk a day, and 41 pounds of butter per 100 pounds of cream; turnips give 29 pounds of milk and 39 $\frac{1}{2}$ pounds of butter. But the quantities of both roots and ensilage were small—30 pounds of each, with 9 pounds of hay and 13 pounds of bran. The strangest result of this experiment, to me at least, is the following:

**WEIGHT OF COWS UNDER THE EXPERIMENT
ROOTS VS. ENSILAGE.**

	Average weight on Entry.	Average weight at Finis.	Difference
Ensilage.	1187	1207	20
Roots.	1185	1192	7

This is to me astonishing, for there were four cows tested, and they were alternated month by month. I must confess that I should have expected the turnips to have beaten the ensilage out of the field. There is one point Mr. Brown makes, in which I perfectly agree with him:

"Much of the object of a green fodder in winter is to keep the animals in a natural condition, not necessarily for much feeding value, but if feeding value can be combined with the green condition, then two objects are attained. Now, while I am an unflinching advocate of a root division in the rotation of every farm, for objects absolutely indispensable to first-class agriculture, I am prepared to accept ensilage if, as a crop, it can do the same thing." Mr. Brown then goes on to compare the two foods, ensilage and roots, and he comes to the decision that, "with reference to food value, it cannot be shown that ensilaged corn fodder is either so natural, so palatable, or really of more value for any class of animals, as turnips or mangolds; animals will not eat so much of the one as of the other, nor can corn-stalks and leaves be possibly kept sweet; there is no such thing as sweet ensilage, and the writer has within the last three years visited silos in the States, in Canada, and in England. Then also, ensilage cannot be fed alone, as roots can, nor even as hay—it must be treated with some form of grain, or mixed with dry fodder, such as hay." And the professor adds the following most important statement: "I therefore respectfully submit to the farmers of Ontario that unless a majority of them desire to prosecute the enquiry in a different line to what we have done here, or should the Government desire to keep it up as a matter of interest, we do not propose continuing "Ensilage Experimentation."

Something like ringing the knell of the ensilage business, at Guelph, is it not?

In the experiments on "Cream as obtained by deep-setting under two temperatures, Mr. Brown shows the following table:

Sources.	At 40° F.	At 60° F.	Difference.
Jersey	19.2	11.2	8.0
Ayrshire	18.7	9.5	9.2
Shorthorn	17.8	11.4	6.4
Shorthorn Grade	15.6	12.8	2.8
Aberdeen Poll	12.7	8.4	4.3
Galloway	11.8	6.2	5.6
Holstein	10.0	1.9	8.1
Means	15.1	8.8	6.3

The dairy was kept at a uniform temperature of 60° F., and the milk stood twenty-four hours before skimming. The proof that deep-setting at the ordinary temperature was futile was not needed. Every one who has paid any attention to dairy-work, knew that without artificial means of cooling, the only way of obtaining the whole of the cream was to set the milk as shallow as possible; but there is one point cleared up which the makers of "milk cabinets, creamers, &c.," have fogged for a long time: milk will not throw up its cream in twelve hours at any temperature. The experiment was conducted in winter, and the room was warmed by a stove with hot water radiators.

Centrifugal trials.—By deep-setting milk at 40° F., the result was 18.8 per cent of cream; the same milk, from the same cow, a shorthorn, gave 15 per cent of cream by the centrifugal; in other words, the cold deep-setting beat the centrifugal by 2.8 per cent! But—and here I would call your particular attention to the immense danger of drawing a general conclusion from a few experiments—in the case of

milk from a Guernsey cow, 5 per cent of cream was given from deep-setting at 40° F., and 7 per cent by the centrifugal, while in the case of the Jersey this was the product: deep-setting at 40° F., 19.2 per cent; centrifugal, 13.0 per cent; a difference of more than 6 per cent against the instrument! What can we say? That the experiments are not worth a rush? Hardly; but that many a hundred more trials must be made before we can arrive at any definite conclusion.

I am of opinion that, if the centrifugal machine can be reduced in price to about \$100, and a one-horse power be sufficient, that there is a very near place for it in the future, at any farm that has not less than twelve or fifteen cows contributing to a butter factory, or even making on the farm. The minimum of 280 lbs. of milk thus got, could be separated from its cream in one hour—no waiting for cream gatherer, no setting at a certain depth and temperature, less risks from bad management, no possible sour milk for calves, no necessity whatever for ice or water, nor a specially constructed dairy, and no "heavy" milk losses.

NOTE TO CHAPTER ON "THE POSSIBILITIES OF THE CENTRIFUGAL SEPARATOR."—Since writing the above, *Bell's Weekly Messenger and Farmers' Journal*, of England, has come to hand, in which appears an excellent article by James Long, entitled, "Is the Centrifugal Separator adapted to the requirements of the British dairy farmer?" It is full of facts in favour of the machine. In addition to the points given by me as above, he says the Separator can be economically used on any farm having from ten to twenty cows, that it costs £28, is driven by one horse, will separate twenty gallons per hour at a speed of 3,000, and as small a quantity as five gallons can be handled.

In the following table—to my mind a most valuable one, inasmuch as it shows with what remarkable industry the experiments at Guelph have been followed out to their last conclusions—we find a synopsis of the dairy value of different breeds of cattle, per 100 lbs. of milk:

BREED.	CREAM.		BUTTER.		CHEESE.		MEAN, PER SEASON OF 210 DAYS.	
	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
	\$	\$	\$	\$	\$	\$	\$	\$
Jersey	0 77 0	80 1 03 0	71 1 42 1	90 54 00	57 00			
Short Horn	0 7 0	67 0 88 0	56 1 25 1	76 47 00	50 00			
Ayrshire	0 75 0	75 0 83 0	68 1 20 1	52 46 00	50 00			
Shorthorn Grade	0 62 0	72 0 70 0	56 1 45 1	70 46 00	50 00			
Quebec Grade	0 2 0	56 0 75 0	58 1 40 1	62 44 00	46 00			
Devon	0 60 0	47 0 80 0	46 1 37 1	18 48 00	35 00			
Holstein	0 40 0	53 0 40 0	38 1 00 1	18 30 00	36 00			
Guernsey	0 65 0	0 42 0	1 10	36 00	36 00			
Galloway	0 47 0	0 39 0	1 30	36 00	36 00			
Aberdeen Poll	0 50 0	0 59 0	1 10	36 00	36 00			
Mean	0 60 0	65 0	71 0	55 1	29 1	48	43 00	45 00

Now, from the table we learn three things:

If we want cream, the Jersey, Ayrshire, Shorthorn, and Shorthorn-grade, make a close competition, taking winter and summer together, and are far away beyond comparison with the others; but, if butter is wanted it would not do to follow the cream-test; were this the case, some that are high would stand second only to the Jersey, but they do not, the Ayrshire now ranks with the Jersey and Shorthorn in first-class butter-value from the 100 lbs. of milk.

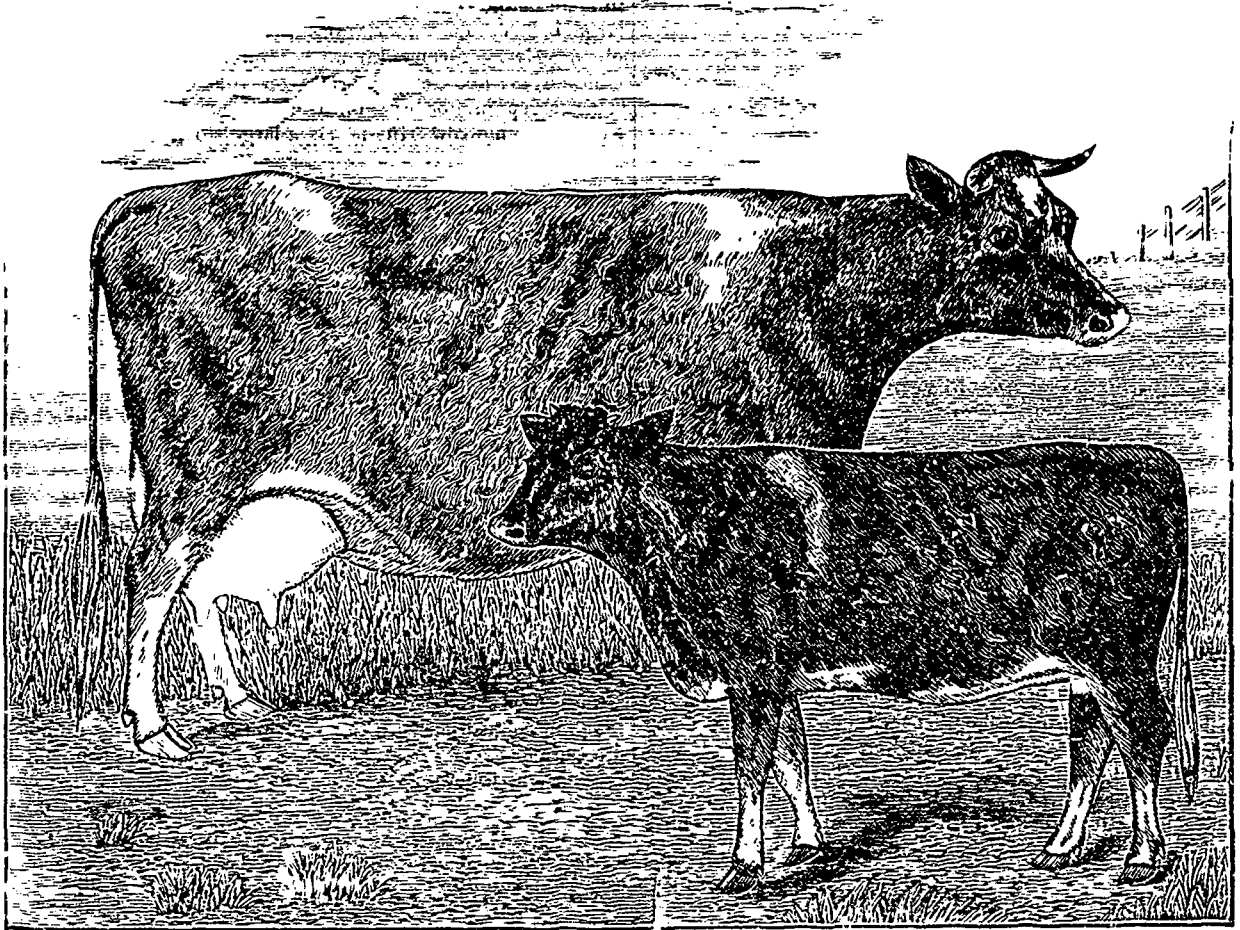
And, again, if we are in search of cheese, we find the yield of the different breeds of that product much more equally balanced than their respective yields of cream or butter. The Jersey and Shorthorn-Grade are about equal in value of cheese per 100 lbs. of milk; the Galloway, Ayrshire, and Quebec-Grade are an average, and the rest below an average. I don't at all understand the terribly mean appearance of the Guernsey and Devon in these tables. Has the professor been unfortunate in his purchases of the *subjects* experimented on?

After due consideration of the qualities of the cattle of the fourteen different breeds and grades in the possession of the College, Mr. Brown enters upon the interesting ques-

more area, but a little more interest and a little more care; the result being fully double that of the rotation pasture.

De Omnibus Rebus.

Among the illustrations of this number of the Journal, will be found some of the "Planet Jr. Farm and Garden Implements." Until this season, I never saw any of them at work, and having previously pinned my faith on the "Mathews" seed-drill I was loath to change my opinion. This year, however, I have had several opportunities of inspecting the



IMPORTED GUERNSEY COW, POLLY OF KENOSHA 849, AND HEIFER CALF.

tion: "What cattle, taking a general view of the matter, are best suited to Ontario," and therefore, I beg to add, to the Eastern Townships and other parts of the province of Quebec, where the land is sufficiently rich to carry full-sized cattle? His answer is, as I was sure it must be: "The special beef and the conjoint beef and dairy wants of Ontario can be best upheld by the use of that stamp of Shorthorn so easy to select and so often met with. Why, then, the need of more discussion."

The production of the best and cheapest can only be consummated, in addition to the education of the farmer, and the particular breed of cattle, by the establishment of permanent pasture, which our experiments have again and again shown can be so well done in Ontario: no more money, no

Planet Jr. (what a name!) in operation, both in sowing and in hoeing, and, as regards the former on all kinds of work, and, as regards the latter operation on flat work, I pronounce it to be perfect. A great deal for me to say, I know, but I mean it. As a drill for all sorts of seed from the turnip to the bean, the regularity of the quantity of seed deposited and of the depth at which it is deposited, leaves nothing to be desired; while, as a cleaning tool for all kinds of plants on the flat, the closeness with which it works on each side of the row makes hand-hoeing almost, if not quite, superfluous. Between raised drills, I doubt its efficacy, as I see no curved hoes attached, and without them it is impossible to properly pare down the sides of the drills. And this reminds that, in my walks round the farms in this district, I

invariably find the drills left at their original height. Now, this is quite wrong, all drills, whether for root crops, pease, or corn, should be pulled down with the hoe until the middle between the drills is filled up quite level, the horse hoe will equalize the ground, and the roots &c appear as if sown on the flat. Without this treatment, the greatest possible quantity of crop cannot be grown, neither will the land received the full benefit which the system aims at securing. As a grubber, the implement is a failure, and naturally so, as no grubber can stick to its work without having a certain solidity which can only be afforded by weight; and the tool in

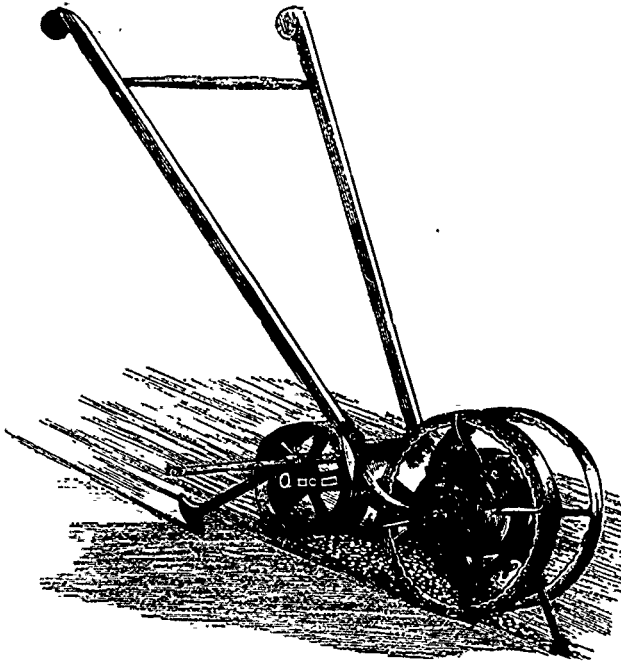


Fig. 1:

question is a mere plaything, jiggling and jogging about at the slightest provocation. The seed-drum is beautifully arranged. One thing in it should be attended too: the usual practice in the States to sow about half as much swede and turnip seed as is required; for instance they sow one pound and a half of swede seed, whereas three pounds are necessary—Mr. James Drummond of the Island of Montreal, about the best farmer I know, sows four pounds, about which he and I fight—consequently I should use one or two holes of greater distribution than those marked on the index.

Steam boiler explosion.—I remark that last month the steam-boiler of a threshing machine, at Plympton, Ont., exploded, killing the engineer and severely wounding one or two of the assistants. I had three steam-threshing machines at work constantly (on hire), and though my engineers were the common farm labourers, I never had one explosion happen. One man, drunk I regret to say, let the water in the boiler get too low three times in one day, but the boiler did not burst. Why? because there was in the boiler side a plug composed of lead and bismuth, the melting point of which mixture is considerably below the melting point of either lead or bismuth, and the moment the water sank below the proper level, the plug melted, the water and steam rushed into the fire-box, and extinguished the fire. A bore, certainly, but, troublesome as it is, it is better than blowing off the head of the engineer.

Price of wheat.—I don't know who Mr. Rufus Hatch may be, but I presume he is "short on wheat." He has taken the trouble to send me a copy of *The Sun*, a New York paper, in which he proves, to his own satisfaction, that the real value of wheat is one dollar fifty cents a bushel.—Winchester measure, I presume—and advises all farmers to hold their wheat for that price. As a rule, I don't think it wise for a grower to speculate in his own grain or in any body else's. His best plan is to thresh steadily on, as fresh straw is required for his cattle, and to sell his grain in the market as soon as it is out of the straw. All the world knows that there is a short crop of wheat in the States, but there is over an average crop in England, in France, and in Southern Germany. The greater part of Russia is well off, and India, in spite of the report of famine lately sent about, will have a large balance for exportation after her own wants are supplied. Every farmer knows, or ought to know, that the Chicago market govern prices on this continent, but the smartest speculator can form no idea of how that market will rule to morrow. Russia has a large stock in hand.



Fig. 2.

OUR ENGRAVINGS.

Guernsey cow.—Polly of Kenosha, 849: v. article on.
Planet Jr.—Seed drill: v. article on.

Potatoes.—If a man in hard work has nothing but potatoes to eat, I find that he will have to consume ten and a half pounds of them and three pounds of butter-milk to get along. No wonder the Irish preferred them cooked "with a bone in the middle!" What did William Cobbett say? "I wish I could with a stamp of my foot destroy every potato in the world!" Strong language, if you like, but then Cobbett always used strong language, and what he said had to be taken in connection with the occasion it referred to. Potatoes are the most familiar of our starch-foods, and the component parts are as follows:

Water.....	75.00
Starch.....	18.80
Albuminoids.....	2.00
Sugar.....	3.00
Fat.....	0.20
Salts.....	1.00
	100.00

In boiling potatoes, the change effected is a breaking of the granules of starch, and a conversion of the albuminoids into some more soluble form in a way which I don't pretend to understand. The great mistake in cooking *ripe* potatoes in this country is the depraved habit of peeling them before boiling, and taken only in an alimentative point of view a very few words will show the absurdity of this mode of preparing them. From 53 to 56 per cent of the above-stated saline constituents of the potato is potash, and potash is an important constituent of the blood; so important is it, that in Norway, where formerly scurvy used to prevail to a very serious extent, this fell disease has been nearly, if not entirely banished since the introduction of the potato, and, according

to Lang (v. his travels in Norway), it is owing to the use of this vegetable by a people who formerly were insufficiently supplied with saline vegetable food.

Now, potash salts are freely soluble in water, for analysis proves that water in which potatoes have been boiled contains potash. It is clear that the skin of the potato must resist the passage of the potash into the water, and the bursting of the skin only occurs during the latter part of the process. No one ever saw a potato peeled before boiling in Ireland, and if they don't know how to cook, what at one time was their only food, who does? Therefore, I say again, don't propeel your potatoes.

Negundo.—This tree has had its run of fashion, and is, apparently, in deep disgrace. There is a plantation of the *érable à Giguères* close to Sorci, a beautiful sight, indeed! All the trees are sorawled about north, east, south, and west, and look as if they never would recover.

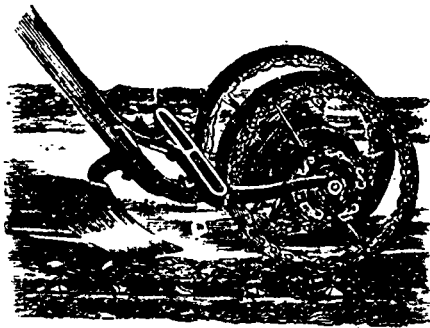


Fig. 3.

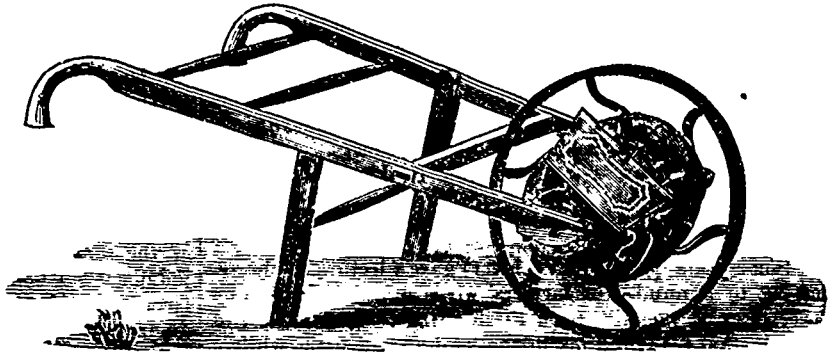


Fig. 4.

Yield of crops.—I fear the lateness of the seedtime, together with the extraordinarily cold month of August, has had a serious effect upon the crops in this province. Here, the larger proportion of the pease has done nothing as to ripening for the last three weeks, they keep on blooming and growing, and in those fields where *gabourage* or *goudriole* is sown, the oats have been long ripe and the pease are still green. If mown now, they would, together, make good fodder, but the farmers seem inclined to let them stand on the chance of fine weather. Many hundred acres of oats are as green as grass, the buckwheat is frozen, and some fields of wheat have not begun to turn colour! Hay is worth eight dollars a hundred—ten dollars and sixty cents a ton—and the quality inferior. September 12th was a really genial day, so was the 14th, but last week we had sharp frost, which played mischief with the beans, and destroyed the fodder-corn as far as the leaves are concerned. I don't think there is any chance of the Indian corn ripening its seed, even in the gardens, the grain is still quite soft. The sweet-corn is only just fit to boil, in many places—in fact things are very backward indeed. What must they be below Quebec? Potatoes, owing, I suppose to the cold nights, do not swell—there won't be more than half a crop,—and in the heavy lands, I hear they are rotting. Prices are as low as they well can be.

Paris-green.—Last year there were great complaints of the inferior quality of the Paris-green. It is strong enough this year, as an inspection of the potatoes round here would show. The same quantity of the powder used as last year—a dessert-spoonful to a pail of water—has burned off the leaves of the plants and left the stem perfectly bare. This must have checked the growth of the tubers considerably.

Grapes.—The Champions (Beaconsfield) are just colouring. If there is no frost, they may be ripe in about three weeks. People here are greedy; my friend M. Mongeau, the gaoler (I like to keep on good terms with the authorities), has a magnificent crop of grapes, as far as the number of bunches goes, but would have done better to have taken off half of them. That, however, would have been a sacrifice too great to expect from a young vinyardist. Well, they'll learn some day, if we keep on at them. I see the so-called Beaconsfield is selling in the States at 2 cts. a plant. Mr. Gallagher used to charge 50 cts.

Tobacco.—The Canadian farmer seems to have given up growing the *petit tabac canadien*. I am sorry for it, as with their treatment it was the only sort sure to ripen. The large kinds, Connecticut, which is only fit for cigar wrappers, the Virginia, and the Havana, all demand both hot beds and transplantation into cold frames before their final exposure to the open air. I think I have cured most of my neighbours of piling the green leaves previous to hanging. Sweating is all right after drying, but not before.

Age of horses.—Mr. Sheppard, proprietor of the brick-fields and sawmills on the Richelieu river, has a marvellous horse. Mr. Sheppard bought him of the breeder at five years old in the year 1857, so he is now thirty-three years old, as lively as a colt, and draws from six to eight loads of bricks into Sorci—1½ mile—every day of the week, *har fêtes*.

Prize wheat crop.—M. le docteur Bruneau, who won the prize for the best wheat-crop in the parish of Sorci, tells me that the yield will probably be forty bushels, a pretty fair return on a little over an imperial acre! Quantity of seed sown about two bushels, ploughed in. M. Bruneau is farming poor land, and seems to take great interest in the work. His potatoes last year were really magnificent, 750 bushels on two and a quarter acres of land; say, seven and a half tons to the imperial acre, which we should call a right-down good crop on our English soils.

Thistles.—There is in the neighbourhood a Madame Sauvcur Rajotte, who has a small farm. Her principal business seems to be growing thistles. The cultivation is perfectly successful, a finer crop I never saw, and, I doubt not, all her neighbours are uncommonly obliged to her. In fact, they tell me so. When Mde intends to begin her harvest, I do not know, but I fear, if she mows her thistles down now, the rain will get into the hollow stems, rot the root, and hinder the chance of an equally good crop next year.

Insects in House plants.—Is there any way of getting rid of *pyrethrum*? What I have tried is perfectly useless, and smoking the plants is a bother, unless they are small. My plan is to put them into a box, with a hole bored in the

side to admit the stem of a pipe, and I blow the smoke out of the bowl into the box. This way prevents much injury from heat. I see Messrs. Ellwanger and Barry recommend covering the earth with tobacco stems, which being moistened with the syringing would create a vapour destructive to insect life. It may be so, but I doubt the green-fly (*aphis*) taking much notice of it. I wanted some roses this year, but I find that plants cannot be sent by mail to Canada from the States on account of Canadian Custom-laws.

Gridiron vs. Frying-pan.—We certainly don't eat well in the country parts of this province. Broiling is a very simple thing, if properly done and a few rules observed. First, a clear fire, second a hot-gridiron, third a well-greased gridiron, fourth, constant turning of the meat, and lastly, salt sprinkled on the fire to prevent a sulphurous flavour from the coals. Never mind the fat dropping and burning, that won't spoil the taste of the meat. Chops or steaks should be an inch and a half thick, or else they won't retain the gravy.

Where so much frying is done, it is well to know that the best, as well as the most economical way of doing it, is to use a deep pan and to use enough fat to admit of the thing to be cooked being covered by it. Strain after each frying, and the same fat may be used over and over again. Greasing the bottom of a shallow pan is not frying, at all; when meat, fish, or anything else is done in this fashion, one side is necessarily cooling, and the fat settles down into the *subject*, while the other side is being heated from below.

ARTHUR R. JENNER FUST.

"Some years ago I (Dr. Voelcker) gave a lecture on cheese-making to a number of farmers' wives and dairymen on the estates of the late Lord Fitzhardinge. At the close of my remarks I invited discussion, and after a little while a lady got up and said, "Well, doctor, what you have to tell us is all very well, but can you make cheese?" "Yes, I think I can," I answered; "but at any rate I will try, if I have a fair chance, and see the thing done from beginning to end. The produce of a great many cheese dairies is spoilt by the cows being milked with dirty hands, and so forth." "Very well," said she, "if you will come I will send for you." I was then residing in the neighbourhood. A date was agreed upon, and at half-past 5 on a cold morning she sent her trap, and I drove five miles to see the cows milked. When the rennet was about to be put in I asked her whether the temperature was right. So she dipped in her hands, and said, "Yes, I think that will do." On inserting the thermometer, however, I found it was just 10° lower than it ought to be. At this, her husband, a smock-frocked farmer, who was standing by, said, "Ah! Sally, I tell you you have spoilt many a cheese for me by feeling the milk with your hands instead of testing it with the instrument." Well, at last a large cheese was made and marked, and when sold it fetched more money than she had been in the habit of getting. After this nearly all the farmers in the neighbourhood presented their wives with a thermometer apiece."

Competition of Milch-cows—Observations.

Sir, I request to be allowed a small space in the "Journal of Agriculture, for the purpose of making a few suggestions as to the prizes offered by the Dairymen's association, now the second time. Before going any further, I beg to say that I am entirely in favour of these prizes.

When this competition was first proposed, I asked myself why prizes of \$100.00 and \$50.00 were offered for Canadian

cows alone. I see, by the report, that your wish was to leave the field open (1); but M. Couture at last gained his end, the majority, I presume, being in his favour. In my humble opinion, you were right in leaving the competition open; I am sure you would have had greater numbers. Then, you offered \$100.00 as a prize for any Canadian cow which would give twelve pounds of butter in seven days. For my part, before the experiment was tried, I was satisfied that no Canadian cow would be found which could give such a number of pounds (2); and even if such a one had been found, you would have had no right to say that the Canadian cows are the best milch-cows in the world, since Mr. Jas. Drummond has made from an Ayrshire eighteen pounds, and I myself, without extra feeding, have had from one of that breed twelve and a quarter pounds, from another, thirteen and a half pounds, and from my best, 14 pounds, in seven days (4).

This year, you offer the same prizes again, but the quantity per seven days is lowered to ten pounds a cow. You may find several which will do thus much, but still they won't be numerous. I remark with pleasure that you have succeeded in getting prizes offered for crossed Jersey-Canadian cows, and from this I presume, next year all descriptions of cows will be admitted to the competition (5).

And, now, suppose for a moment, that you succeed in collecting some fifteen cows, here and there, in the province, which will give ten or twelve pounds of butter a week; suppose that each owner of these cows has only his one cow of this valuable kind, or of a little inferior milking power; do you think that whoever wants such a cow can go and buy one of the said owner without danger of being mistaken in his judgment? I don't think so; for I know that most Canadian farmers would sell their best cow for \$5.00 more than the ordinary price, and as for selection of males, nothing is less thought of amongst them (6). Since the public think that the Canadian cow is the best and most profitable cow for our farmers, it would seem absolutely necessary that Government should present to each of our Agricultural Schools at least six cows and a bull, chosen from the competitors, to be selected by a man who thoroughly understands what he is about. This would be a practical solution of the question.

Had the competition taken place, and were any one of your readers desirous of buying one of the cows, he would know where to look for it; while, to-day, even if a person from below Quebec, another from Montreal, and another from Sherbrooke, had won a prize, if these winners were *curés*, very few people could profit by the fact; for these gentlemen rarely have more than one or two cows; and if the winners were farmers, it might very probably turn out to be the case that the cow which won the prize was the only good one in their respective herds.

For my part, I am of opinion that the Government ought to take the initiative in this project, at least if it is desired to preserve the Canadian cow (7) such as she is cried up to be by several people. Many a man is deceived when he exclaims "I have a Canadian cow which gives 50 lbs. of milk a day," when, all the time, the cow is a cross bred. Some two or three years ago, if you remember, you invited me to go and see a Canadian cow, belonging to M. Ed. Béland, St. Barthélemy, which, so you had been told, gave more than 50 lbs. of milk a day. I intended to go, but when I heard that the cow in question had been bought of M. Arsenault, Louiseville, I stayed at home, as I knew very well that she was no more a Canadian than I am a Scotchman—she is a nothing more than a large cross-bred (8).

As to the conditions of the competition, I should prefer the competitors being obliged to make oath as to the truth of their statements, rather than that they should have to run

about after their neighbours night and morning for a week. Did they, the neighbours, live always close to the competitor, it would not be so troublesome, but as they are often at a distance, the thing would become tiresome.

Before closing this, I should like to know the opinion of M. B. Deschênes, Saint-Alexandre, whom you know very well, as to the rival merits of Canadians and Ayrshires, both of which breeds he has on his farm, although the latter are very young. I fancy that if he would take the trouble to accept my invitation to express his ideas on the subject, he would interest many of your readers; I should like to know from M. Deschênes, if the Canadians are kept at less expense than the Ayrshires, and if they give more milk at the same distance of time after calving. I have the honour to be &c.,

AT. MOUSSEAU.

Berthier, July 12th, 1885.

(1) Our correspondent does not seem to have grasped the idea which governed the establishment of the competition he mentions. The aim of the society is to commence a herd-book of the Canadian breed of cattle with reference to their milking qualities, and a "livre d'or" of the same race, as regards best milkers of the race. (1)

As, on the other hand, the Jerseys spring, in the opinion of all well-informed breeders, from the same stock as the Canadians, and as the superiority of the former is entirely due to the judicious system of breeding, rearing, and selection, pursued by their owners, which has tended to preserve and improve their milking powers, we thought it right at the opening of the meeting to leave the competition free, not as our correspondent seems to think, to all breeds, but to half-bred Canadian-Jerseys; and we are happy to see that at the second meeting our opinion prevailed.

(2) The assertion of our correspondent seems rather bold. To be sure that no such cows exist, we must be intimately acquainted with all the herds in the country, and we ourselves know of Canadian cows which would probably astonish our correspondent. If, then, at the first meeting, no cows were found capable of giving the maximum of 12 lbs., it was not so much owing to there being none of that capacity, but because people were rather taken by surprise, and the conditions of the contest frightened some of them.

(3) Again, the ruling idea of the meeting does not seem to have struck our correspondent. The object is not to find the best cow in the world amongst the Canadians, but to show that the Canadians can produce as good a result as the other races, while at the same time, on account of the degree of acclimation they have received in our country, they endure the rigour of the climate better, and demand less care than those of other races to enable them to give an average satisfactory profit. On these points, our own experience has proved perfectly convincing.

(4) To establish a just comparison between these cows and a Canadian giving 10 lbs. and 12 lbs. of butter, we must ascertain how much food they have each cost their individual owners to produce such results.

(5) In our opinion, if such a thing were to happen, the competition would have no reason to exist, seeing that the idea which led to its establishment, namely, the improvement of the Canadian race of cattle, would be absolutely put aside.

(6) Our correspondent will, doubtless, admit that the result of the competition would always be the furnishing to one intending purchaser of a prize cow an opportunity of buying one with certainty. And more, if this purchaser, who is willing to pay a high price for this extraordinary cow, would preserve

the increase from her by a good Canadian bull, the offspring of good milch-cow, he would be certain to perpetuate the good qualities of the prize-cow in question. That is the result at which the Dairymen's Association aims, and not that of enabling every farmer to purchase a cow which won the prize at the last competition. There never will be enough of them for that.

(7) The idea of the intervention of Government may, possibly, be good. But in order to be able to intervene with success, the competition already in existence is absolutely necessary, and it must be continued for several years in order to bring before us those good milkers which, according to our correspondent, the agricultural schools should purchase.

(8) With conditions like those which govern the competitions, such errors are impossible.

(9) The condition, against which our correspondent claims, is absolutely necessary to prevent the opponents of the Canadian race of cattle from saying that the owner of the cow has made a mistake in his statement, even if they should not go so far as to say that he has perjured himself. The prospect of winning a prize of \$100.00 or \$50.00 is sufficient to induce a man to take the trouble to insure the aid of two of his neighbours twice a day for seven days. In this sublimary sphere (1), nothing can be had without trouble. —(R.E.D.)

(From the French.)

THE PLANET JR. GARDEN DRILL. Fig. 1.

Twenty years ago hand seed drills were little used or appreciated except by large market gardeners, but they have now come into general use among farmers and those having small gardens, and are considered indispensable by their owners. Many, however still remain ignorant of their value, though few can economically conduct their farms and gardens without them. The importance of raising root crops for feeding stock is now well understood, and competition among market gardeners compels them to own the most labor-saving tools they can find, while family vegetable gardens are much larger and better, than twenty years ago. Sowing seed by hand is at best, a very laborious, slow and uncertain process and wasteful of the seed, and the result such as to increase the labor and attention required in cultivation, while when seed is put in with a good drill, the same work is accomplished many times as fast, and far more perfectly in every part of the operation, even with unskilled labor.

But there are some important qualities which a seed drill must possess to insure good work.

It should drop with regularity all kinds of seeds.

The distributing devices should discharge the seeds without injuring them.

The discharge should be easily regulated.

The seed index should be reliable and permanent.

The drill should deposit the seed in a straight and narrow line.

It should cover with the greatest regularity and at any exact depth desired.

It should not clog in foul ground.

It should roll down lightly or heavily at will.

GUERNSEY CATTLE.

It is doubtful if any breed of cattle in the world deserves to rank higher as butter producers than the Guernsey, Although not so numerous, in the United States, nor so well known as the more graceful, delicate and deerlike Jersey, yet they have, to say the very least, equal rank as butter pro-

(1) Can't translate "livre d'or," except into Italian, "libro d'oro," the register kept at Venice of all the noble families &c. Trs.

ducers, along with decided superiority in point of size and average yield of milk. It is claimed, too, by the breeders of Guernsey cattle, that the milk of these cows will produce butter of a higher color, on any given food, than that of the Jersey, and that the average per cent of cream is greater.

REARING CALVES.

EDS. COUNTRY GENTLEMAN—The practice of rearing calves on the cow is wasteful, unless it is made a special business as a branch of dairying and for selling the veals fat; in which case a cow that can be made to fatten 5 or 6 calves in the season will pay more profit than if the milk were made into butter. The business of rearing calves for the butcher is quite different from that of raising them for cows or steers, but both of them are subject to some special provisions, which may be profitably considered.

Veal calves are a special product that can best be raised near large markets, to which the veals can be shipped, either alive or "hog dressed." A fat veal cannot be shipped very far without much loss, as the flesh is soft, and the animal loses weight very rapidly under the worry and excitement of traveling, and besides, the meat becomes deteriorated in quality and soon spoils. Two hundred miles is about as far as it is safe to ship veals to a market, and then only by express and at night, so that they may arrive early in the morning comparatively fresh and in good condition. Within that distance of large markets, such as New-York, Philadelphia, Baltimore, Buffalo, Chicago, St. Louis, and any reasonably fair market to a smaller extent, the production of fat veals may be made a specially profitable dairy business.

The method of rearing them is as follows: Young calves five days old, at which time they are taken from the dams in ordinary dairies, are sought out and purchased, and usually can be procured for 50 cents to a dollar as "deacons," or calves that are slaughtered for their skins. They are then put on cows that are used to nurse them twice a day in the usual manner, and a good cow will often rear two calves at one time, when in full flush of milk. A 16-quart cow will easily rear a pair of calves, and with the help of some extra feed will bring them into excellent condition in four weeks, when they are ready for sale and others are put on. A cow will thus rear a calf every month, and will easily pay \$5 or \$6 a month at least to her owner for six months. There are no doubt many instances in which this business might be followed with profitable results.

The rearing of calves for dairy cows is another special business that might be made a profitable addition to a butter dairy. I have made a study of this for the past few years, both with the calves of my own cows and with purchased calves, and am satisfied that rearing good calves on the skimmed milk, will pay better than feeding pigs. It is necessary that the milk shall be skimmed sweet, but this is an advantage, as it obliges the dairyman to keep his milk in the best manner for making the best butter, that is, by deep setting in a deep pool, either a cold spring, or a tank with ice, as in the Cooley and other similar methods. The milk is then skimmed 48 hours after it is set, all the cream is raised, and the milk is perfectly sweet. This is warmed to 90 degrees and fed to the calves as soon as the cow's milk is fit for use.

No calf is permitted to suck, but as soon as it is dropped and dry, it is removed to a pen by itself in a warm shed, and with a soft, dry bed, and is taught to drink at once. After this plan has been pursued for a few years there is no trouble. I have calves of this season that are the fourth generation in succession that have been reared in this manner;

none of the cows have suckled their dams, and this year's calves have learned to drink the milk the first day without trouble, and some of them drank at once the first time the milk was presented to them. This method of training calves makes both cows and bulls very docile and gentle, and there is never any trouble when a cow comes in after the first time, in respect of nervousness or excitement in regard to the calf, or any holding up of the milk for the calf.

After the eighth milking, the young calf for its next meal has the regular skimmed milk from the dairy, and her dam's milk is put away with the rest. Attention must be paid to the proper warming of the milk, as if it is given too hot or much colder than usual, diarrhea will be produced very easily. The right temperature I find to be from 80 to 90 degrees. If a calf becomes scoured, a meal or two of new milk will bring it right again, but as this is equivalent to the loss of a pound of butter, it acts as a penalty on the owner for his carelessness. I have reared this season all my heifer calves and two bulls without the slightest drawback or accident. They should be fed milk for four months, and will begin eating a little nice hay in the winter at two weeks old, when I give them a tablespoonful of mixed bran and oats, and corn meal, in a little feed trough in a corner of the pen.



Fig. 1.—Plan of Pen.

A yard is provided for them adjoining the pens, in which they can run during the day, and fresh water is there provided, of which they will drink considerably at times. They need no salt while getting the milk. In the summer these calves should have a run in a grass lot, and will thrive finely upon it, and with the milk. The best time to begin feeding calves in this way is early in the spring, so that they may be

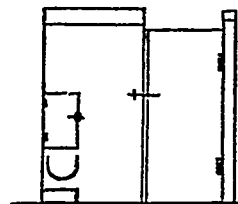


Fig. 2.—Front of Pen.

two months old when the grass is ready. As one calf is out of the way, another may be purchased, if the home stock is not sufficient. I have two young cows, now with their first calves, for which I have refused \$100 each, and which cost me when they were three weeks old \$6 each, being pure-bred Jerseys but without any recorded pedigrees. In these cases the pedigrees would have cost me perhaps \$50 or \$100, and certainly the cows would have been no better for them.

A very important point is in selecting the calves, because, it costs no more to rear a heifer that will be worth \$50 or \$75 than one worth half as much. The calf of a good cow will generally make a good cow; but I once paid \$40 for a week old calf with a pedigree, and whose dam was sold for \$750, that I was glad to get rid of for \$25 when 30 months old, as she gave no promise of ever being worth any more. These disappointments will happen oftener in this way than

in the contrary way, for it is rare indeed that the calf of a poor cow is any better than her dam, and may be worse. The points of a promising calf are a fine head, thin and long, broad between the eyes, and with the smooth hair; thin, soft skin; deep sides; straight back; broad across the loins; and well formed teats, set well apart. The legs should be thin, and not too long; the eyes large and prominent. The color is not very significant, although I do not like a solid red, even in a pure Ayrshire, and would much sooner choose one of this kind nearly all white than nearly all red; with Jerseys, fawn and white, or dark squirrel gray and white, or solid fawn, or mulberry fawn, are the most promising colors; mouse color or bluish gray I would not choose, or a calf with coarse features and limbs, or coarse, thick hair, or a short, thick neck.

A convenient arrangement for the pens I find to be as follows: The pens are arranged in a shed 12 feet wide, and each is 4 by 8 feet; only one calf is in each pen, and this prevents the sucking of ears, &c., which is a bad habit for them to learn. A passage way runs through the shed, and has a door at each end and one at the middle. There may be two windows in the front, or lights above the doors will be quite sufficient; the doors should be made in upper and lower halves, so that the upper half may be left open in fine weather. Fig. 1 shows the range of pens. Fig. 2 is the arrangement of the door of the pen and the feeding place. Unless prevented the calf will upset its pail, and one cannot take time to hold the pail or to fight the calf from the door, as the pail is taken away. In the front of the pen is a small door, 12 by 8 inches, through which the calf can put its head.

Below the door is a half ring of fence wire, hung in fence staples, into which when it is lifted the pail may be placed, resting on a block under it. As soon as the pail of milk is placed, the door is opened and the calf drinks its milk, and so the whole may be fed without trouble. A separate pail should be kept for each calf, or at least as many as may be required to save time, and the pails should be all washed out and set bottom upward in their places as soon as they have been used, ready for use again. It is necessary to avoid anything that will sour the milk, unless the calves are trained to drink sour milk, which I have never done, although some who raise good calves have done it. But there is risk of scouring and losing a calf now and then when the milk is given sour, and I prefer to take more trouble and avoid the risk. (1)

H. STEWART.

THE CREAMERY SYSTEM.

The rapidity of the development of the American associated dairying system is one of the many morals found in the growth of our agriculture. In many of its features this system is peculiarly American. Twenty years ago the cheese-factory plan was only beginning to attract attention, and was not introduced into the West. Ten years ago butter factories were little known. Five years ago little was thought of the most recent plan—that of collecting the cream for butter-making in a central establishment, leaving the milk to be fed on the farms. While it has attracted less attention, the growth of this gathered cream system has been perhaps as remarkable and as rapid in the West as was that of the cheese factory system. It has been estimated that there are now 1,600 creameries in the West, at least 600 in Iowa alone, and the number is steadily increasing.

(1) Perfectly in accordance with our English practice. I have not a word to add to this most sensible condensation. A. R. J. F.

Bergen County, N. J.

The system is not an ideally perfect one. Objections can be found to it. There are localities for which other plans are better. But it has many advantages. It tends to develop interest in the dairy and in the rearing of calves in regions which would not sustain a cheese or butter factory to which milk must be carried, and which can not engage in milk selling for city consumption. Except home butter making, no other system is so well adapted for allowing the sweet skim milk to be used for rearing calves—a better use, as we think, than making cheese of it.

Cream can be collected from farms twelve or fifteen miles from the creamery, or much greater distances, if brought by rail. It is shown it can be carried such distance with little or no perceptible injury. The farmer, with only a few cows, can sell his cream, avoiding both the labor necessary to make it into butter and the loss of time incident to delivery of small quantities of milk to a factory. The cream, being skimmed and carried by representatives of the manufacturers, gives daily opportunity for noticing the care or cleanliness of the farmer or the opposite qualities. Only a low priced and a simple outfit is necessary for the farmer, and the factory buildings and fixtures need not be so costly as when the milk must be handled. From \$2,000 to \$3,000 is all that is needed to supply the "plant" for a creamery with as much cream as can be raised in most regions.

There is no place so good for the manufacture of the very best butter as the farm or the village or town home where the milk is produced. The owner of one cow may be able to make as good butter as any one in the world. He does not have some difficulties to contend with which meet the operator in a large factory using the milk and cream from many herds. It is the truth, however, that factory or creamery butter ranks much higher than farm dairy butter, that much less of it is of poor quality, while most of it is good. There is no probability that skilful butter makers at home will find their occupation gone. In many cases they would be unwise to make a change from their present system.

We give a hearty endorsement to the creamery or factory system, for many regions in which dairying has now hardly a place, and where what is done in it is done at great disadvantage and little or no profit.—*The Breeder's Gazette.*

POULTRY AS A FOOD PRODUCTION.

EVENING DISCUSSION AT UTICA.

The chairman, on opening the meeting Tuesday evening, spoke of the importance of the subject, and how necessary the products of poultry raising are to the luxuries and comforts of civilized society. He introduced I. K. Felch of Natick, Mass. who had been appointed to lead in the discussion. Mr Felch said that in common with many other interests the improvement of poultry had been very marked in past years, and in the exhibitions during the three years in which he had served as judge at these State Fairs. He had found these exhibitions to exceed those of any other association which he had had an opportunity of witnessing, and they had done eminent credit to the State Society. He pronounced poultry raising as second in importance only to that of the production of corn, wheat and cattle in the country at large. Estimating the number of families at eleven millions, and the eggs and poultry consumed in a year in each family at twenty dollars, the whole amount, and which must be supplied by poultry raisers, would be over two hundred million dollars. Hence the importance of classing it as one of the leading products of farming. The present high prices of eggs indicate both the importance and the profit of the

business. He gave several striking examples of the vast quantities of eggs and poultry consumed at large hotels. He furnished suggestive designs of poultry houses and yards, placing them in orchards, where they would prove doubly valuable by destroying insects and enriching the trees by their droppings. Modes were described by which the diseases of hens might be entirely prevented. The introduction of fancy breeds and their exhibition at fairs, while attended with some mistakes, had led to a great improvement. There had been success and failure, the one from good management and an adaptation of the breeds to their intended purposes, and failure from a neglect of these requisites. What has been done may be done again; and if there had been signal instances of large profits, there was no reason why they could not be repeated. Mr. F. gave a statement of the component parts, of different grains and foods, and suggested the proper amount of each. He said that from \$1.20 to \$1.75 per head could be obtained in each year, varying with prices. He mentioned many instances of success, one of which had been over four dollars per head. The breeds which he would select were Brahmas and Leghorns.

In answer to an inquiry, he said the best food for young chickens is baked Johnny-cake in scalded milk, and no water for the first two weeks. Diseases in poultry are caused by impure food, and keeping too many on the same ground until the soil is tainted. The fowls must be kept separate according to age, and old hens not allowed to tread on chickens. Orchards, in the plans described, may have 150 to 200 per acre, properly separated in yards. Chickens kept clean, warm and well fed will not be affected with the gapes. (1)

An inquiry was made by Mr. Goodwin of Oneida County, who had kept poultry for 15 years. His success was poor. He had bought many fowls, but not sold any, as nobody wanted them. He thought that nine out of ten of those who bought handsome poultry, such as are exhibited at fairs, never keep them in fit condition to be exhibited again, and he inquired the reason. Mr. Felch answered that it was as important to treat the fowls according to intended purposes, whether for eggs or for the poultry, as in intelligent and careful management of cattle and horses. The introduction of the improved breeds had increased the profits at least 25 to 35 per cent, and if kept in flocks of 25 each they might be made eminently profitable; if in flocks of 100 each the profits would be much less, while in numbers of a thousand or more, the hens would not lay ten eggs a year. It is of great importance that these animals be well kept; it is a question of both care and breeds. The food consumed by each animal varies with its weight, but the average fowl may be kept on a bushel and twelve quarts of corn a year. As for exhibition-birds deteriorating in their progeny, he said that the animals reserved for shows were only about five per cent. of those raised, the finest being selected for the purpose, and a slight degree of inferiority is to be expected in their progeny, without affecting the profits.

Treating Young Chicks.

EDS COUNTRY GENTLEMAN—On page 745 of the current volume, H. S. D. speaks of a "singular ailment of fowls." The difficulty is known to the initiated as dropsy, and is a little uncommon among regular poultry keepers, from the fact that their fowls are generally uniformly managed. This ailment is more apt to occur in wet, damp, chilly weather,

(1) The only cure for gapes that I know is to shut the chickens up in a box, pierced with holes, and smoke them with tobacco-smoke. I tried it *de vi* times with chickens badly affected, and succeeded *ten* times.

A. R. J. F.

and is brought on through weakness caused by low condition, following bad management and keep. It also follows the gapes, which of late years have been prevalent with late hatched chicks. I discovered it years ago among my June hatched turkeys, and thought it confined to those birds alone, but the following summer it broke out among the common chicks. Because the young birds do not gape, do not flutter yourself that are for from that disease. It affects them in various ways, and nearly all young birds have it at some time.

If due care is extended as regards exposure to wet and cold, and the condition of the birds is kept up by steady feeding of good strengthening food, the chicks pass over this stage without its being observed by the keeper even. Only when there is a check in the growth and health it is seen. Sudden colds, poor food, or, what is worse, none at all, or at irregular periods, aggravate the trouble, forcing the fowls, through hunger, to seek a repast by wandering in the wet grass and scratching on the damp ground early in the morning, when they should be warmly housed and fed, and not allowed to go abroad until nine or ten o'clock, when the sun is well up and all dampness gone. For this reason it is evident (and poultry raisers have learned the fact), that it is good policy to hatch the chickens as early as the weather will admit, and have them all as near of an age as possible. This expedites matters greatly, since it is no more trouble to take care of 100 chickens than of ten, providing the room is ample, so that crowding is unnecessary.

Although they need air, and good, pure air, too, still they cannot live on that alone. They require substantial food, and when young, require it often. I have never yet found anything so good to feed young chicks as sweet, new milk and eggs manufactured into a custard and baked. It should always be fresh and sweet, and when young, the chicks should be fed several times in a day. On that food alone they may be kept for nearly a week, and be quiet. I generally commence to feed a little cracked corn or buckwheat with the custard when four or five days old, as they begin to exercise, but never entirely take the custard from them until they are two weeks old. I never have any poor or weakly chicks, and always succeed in raising fine fowls, and the very best of layers. I never know what it is to want for fresh eggs or fat fowls. I seldom lose a chick. I have learned, by experience, that all disorders may be mastered by good practical care and substantial food. The inflating of the body or blowing up of wind gathered between the outer and inner skins, comes from weakness. Puncture the outer cuticle, and the air will flow out. Rest and strength give relief, and with good food the fowl will recover.

C. B. DUCHESS COUNTY, N. Y.

L. W. P., MANSFIELD, VT., WRITES: "I notice in your paper you wish for experience with South Carolina phosphate rock in a raw condition. I used one ton last year, and could not see it did a particle of good." Our friend will add greatly to the favor he does us in sending this note if he will kindly send a detailed account of his trial, stating whether the ground rock was used alone, or in combination with other fertilizing materials, how it was applied, and upon what crops, with any other points that may occur to him. The agricultural public are seriously interested in this question, and it is very strange that we have hardly any record of tests in the use of raw rock in this country. In England there have been both favorable and unfavorable reports.

This rainy day (May 8) we have been laying out a series of experiments with the rock, having procured a quantity of "floats" for that purpose. This form of the rock is an almost impalpable powder, and we noticed in opening it that

next the bag, and for an inch or two inward, it had a bright brick dust tint, while in the middle it was brownish. This seems to indicate the presence of considerable oxide of iron, which has changed, by contact with the air, from a black to a red oxide. With a part of it we have made a complete fertilizer, by mixing with seventy-five pounds of the rock one and one-half bushels of pure sifted hard-wood ashes from our own stoves, and twenty pounds of sulphate of ammonia. We shall test it upon potatoes and corn against bone and ashes, and against a complete superphosphate, while on another patch we shall test the floats alone against a plain superphosphate made of the same material, and against fine bone ash. We propose to make lands of eight rows each, and take sections embracing all the rows, across each land, of say two rods each, for each form of fertilizer. This will give bands or stripes across the field, which ought to show distinctly in the growth of the crop whatever differences occur, while, being marked by stakes, these stripes can be easily harvested separately, and the yield of each at maturity ascertained. One experiment, or series of experiments, cannot be expected to give conclusive results, but this will make a beginning in a very important study, for, if we can get a fertilizer, as powerful and enduring as bone dust for half its price; the saving to the country will be immense.

Dr. HOSKINS.

TILLAGE AND EVAPORATION.

EDS. COUNTRY GENTLEMAN—The article of Mr. GEDDES with the above heading, on page 759, discusses a subject that has occasioned me some perplexity, especially during the severe drouths of the last two seasons. As a general thing, take the season through and one season with another, I have found that frequent working of the soil favors moisture, undoubtedly on the principle that it forms a mulch, and the more it is worked the finer it becomes, and the better it serves that purpose. It probably also acquires moisture from the air when that is highly charged with it. But in a time of extreme heat and in drouth, continued for weeks, as was the case the past two seasons, the soil becomes dry to the depth it is worked, while the unworked ground immediately alongside, as in the paths between the beds of the garden, shows considerable moisture, which after a while, however, also disappears, probably from the more tardy evaporation occasioned by greater compactness—the soil being a clay loam.

A distinction must be made as to the fineness of the exposed soil—the finer being more retentive of moisture, as when coal ashes, sawdust or leaf mould is freely mixed with it. Of a similar character is road dust, if anything more effective, being more finely reduced. Though almost constantly kept stirred, the hard earth immediately below it is more or less moist. It is because the moisture escapes slowly through the pulverized covering, even if in a thin coat. I have had occasion to test this in gathering road dust, which I have done more or less every season for years. In times of the greatest drouth and heat (when the most dust was gathered), I have never failed to find the hard earth moist where the dust was removed—moist as compared with the soil of the fields and the garden, the surface dust being much finer. If I can have my surface soil well fined—by reducing the soil, or applying some fine material—I may defy the worst drouth, if the soil is for tile and in good heart, with sufficient depth. The difficulty is that in frequently stirring the soil we are apt sometimes to stir it when too moist, as when the work is done too soon after a rain. This destroys its pulverulent character, and with it goes its property of retaining moisture, and the attempt to reduce this harshness while dry weather continues, is of little

avail, the hurt being more or less persistent even after the soil has been moistened by a shower.

In a severe and long-continued drouth therefore, much working the surface soil, unless finely reduced, has a tendency to dry it, more particularly when exposed directly to the sun and wind. Where the ground is shaded, as with corn and potatoes, and the growth is well advanced before the drouth sets in, I have always found the best success with the most culture. The reverse has sometimes been the case in the garden and among strawberries, necessitating irrigation. In the early part of the season, particularly through June in this latitude, when the growth is at its best, the cultivator should be freely used, for then the effect is greatest, the air holding more moisture and the dew being heaviest. Should there be frequent showers during the season, so as to prevent severely dry weather, and the ground is not worked wet enough to pack it, there is no difficulty in securing a mellow condition of the soil, and with it the requisite degree of moisture, extending through the intervals of dry weather which occur between the rains.

In the severe and long-continued drouth, shall we then discontinue cultivating our hoed crops? By no means. Even should the soil to some extent be made drier, the working, as with the fallow, benefits it and keeps down weeds, the good effect being realized in the succeeding crop. Besides, much improvement can be made on our present manner of treatment, as the exceptional cases of judicious practice have shown. In stirring the soil of our hoed crops, we, in general, work it too deep, thus exposing an increased amount of soil, moist in the first workings, to the dry air and wind, disturbing the roots and depriving them of moisture. Shallow surface culture avoids this. The same effort spent in this way as in the deeper culture will reduce the surface to increased fineness, and, as in the dust of the highway, keep the undersoil, where the roots do their work undisturbed, moist, though the upper soil may be dry. The plowing and preparation of the land may be deep, and should be if the soil admits; too much mellowness cannot be secure; but the after work must be confined to the immediate surface, so as to escape interference with the roots. I cultivated my corn and potatoes the past summer about two and a half inches deep, averaging one working a week. The soil to that depth, after a while, became dry and powdery, but below that was moist, and sufficient to grow a superior crop. The drouth, severe as it was, had little effect in retarding the corn, and apparently none at all upon the potatoes, which were planted six inches deep, in rich, mellow soil, worked, in preparing it, ten inches deep.

Mellowness below and increased fineness at the surface—the latter brought about by frequent stirring—is what is wanted in a dry season for hoed crops, and serves a good purpose also in a wet summer, as the excess of water is more readily carried off. There is no difficulty, therefore, in securing success with hoed crops, irrespective of the seasons which usually occur. It consist in free manuring and thorough, and, where admissible, deep working of the soil. The principle, to some extent, may be extended to the grain crops by the use of the harrow the first few weeks of growth, fining and cleaning the soil, and favoring moisture and growth.—F. G. Fort Plain, N. Y.

F. G. is nearly right, but he seems to be rather puzzled how to express himself. Last year, during the frightful August drouth I kept the horse-hoe going all the time. There were no weeds to kill, but the consequence was that on the Fosbrooke farm this season there was such a crop of Tartarian oats and barley as never was seen before in the district.

FEEDING COTTONSEED MEAL.

EDS. COUNTRY GENTLEMAN—A number of inquiries having reached me in regard to the feeding of cottonseed meal, and

arising out of my recent remarks upon that subject, I beg leave to reply to them in mass through your columns; and to meet all the inquiries it will be necessary to say something upon feeding in general.

Grain food is given to cows and sheep to add to the effect of grass, hay or fodder. It is costly, and it is therefore necessary to know precisely what its effect is upon the product of milk, butter, flesh, fat or wool, before one can determine precisely how beneficial or profitable it may be. To determine this one must know the cost and product from grass, hay or fodder alone, and then the increased cost and increased product from certain rations of grain food of whatever kind it may be. For instance, let us compare the following methods of feeding with the results, as I take them from the memoranda of my dairy. In 1879 I was selling milk, and during that year I found the following results from the feeding. 80 pounds of green fodder, or 20 pounds of hay, worth 10 cents, gave 7 quarts of milk, worth 28 cents; 60 pounds of green fodder, or 15 pounds of hay, worth 7½ cents, and 9 pounds or 9 quarts of mixed corn meal, bran and cottonseed meal, worth 14 cents, total 21½ cents, gave 11 quarts of milk, worth 44 cents, so that 11½ cents of extra food gave 16 cents worth of milk. But I got part of the cost of the feed back in the greater value of the manure. Then I found I was losing money, because the rich feeding increased the cream in greater proportion than it increased the milk, for while on the fodder alone the cream was 15 per cent; on the feed it was 25 per cent. Since then I have been making butter, and I have found the following results: Fodder or hay, worth 10 cents, gave ¾ pound of butter, worth 30 cents; fodder and feed, worth 21½ cents, gave 1½ pounds of butter, worth 60 cents. Then 11½ cents, worth of extra feed returned 30 cents in butter, and in addition added something to the value of the butter.

Increasing the feed to 12 pounds a day gave me no more butter, but a little less milk and the trouble of an attack of garget with one of the cows. I never dare go further in that respect, although one cow, which on that feeding gave 12½ pounds of butter in a week, would, I feel sure, have gone over 14 pounds in the week, but I was not in the testing business and was making butter for profit.

Less feed than the nine pounds, three quarts or three pounds at a feeding, did not pay so well as the full feeding, and from that I have reached this rule, viz: Full feeding gives more profit than partial feeding. By "full feeding" I mean the full ascertained limit of what an animal will consume, with profit, for the largest product. And in my dairy I have some cows that will take a little more, and some must have a little less, than the average ration. This is made up by cutting the hay or fodder, green or dry, into a large box; wetting it and sprinkling the meal over it, mixing it, and then dividing it out with a bushel basket, this being the standard feed; some cows getting a little more and some a little less, as I know they require, for the best results as to yield and thrift. My cows are all kept in good sleek condition.

The noon feeding of meal is given dry, but this is to save labor. I consider the feed is worth at least one-fourth more, and the cows will safely take more of it and do better on it, when it is fed with the cut fodder.

As regards feeding sheep and lambs, I have found the lamb can be much better fed through the ewe than directly. I never gained anything by feeding meal to young lambs, further than giving them a very little mixed corn, oats and bran ground together, and fed in a trough to which the lambs could gain access. Even this I consider dangerous to them, and not so beneficial as to give the extra food to the dams, because while the lambs get the benefit from the richer and more abundant milk, the ewes are improving in condition and getting ready for market soon after the lambs are taken away.

But there is danger in this too without the greatest care. I have lost some of my best ewes by garget, after taking away the lambs, for want of milking them and gradually drying them off. So that great watchfulness must be exercised in this respect. I would give a ewe that is nursing a good lamb and is in good thrift, a pint of the mixed meal—cotton-seed, bran and corn meal, or an equivalent—every day, and some large ewes could safely take twice as much. Of cotton-seed meal alone I should not hesitate to give a pint a day, in two feeds, to a ewe, but I would not give any to a lamb under three months old, excepting under circumstances that would justify it, as for instance if the lamb were to be kept for stock, and were large and thrifty, and of a large breed and from high kept stock. Milking ewes need as much care as milking cows. They are quite as much subject to garget when highly fed, and should therefore be fed with caution, and gradually, until the lamb is sure to take all the milk and dry the udder every time it sucks. This is rarely done with good ewes until the lamb is two weeks old, and not then sometimes; so that the ewes should be watched carefully when on high feed, and if there is more milk, an extra lamb may be given to her, or the feed may be reduced if possible. It will not do to treat a flock kept for market lambs and for mutton in the same off hand manner as one kept for wool or stock and on pasture alone. In the former case the owner should conform to the old shepherd's maxim, "count and examine the flock twice every day." I beg to apologize to those of your readers who have desired a reply to their questions by mail, for giving the information in this way. Doubtless it may serve the purposes of others as well, and I cannot really find the time to write private letters. My will consents, but time forbids.

H. S. Bergen County, N. J.

All lambs that are being prepared for the butcher should have half a pint of white pease a day.

The *London Live Stock Journal* announces the publication of the Herd Book of the National Pig Breeder's Association of England. The volume contains 106 pages, and records the pedigrees of 274 pigs, consisting of Berkshires, Blacks, Large Whites, middle Whites, small Whites and Tamworths, arranged in the above order. From an American stand point this seems like a small number of pedigrees with which to close the first volume of a national record intended to embrace all the useful breeds of pigs in England.

The Council of the Polled Cattle Society, Banff, North Britain, at a late meeting, resolved to offer a gold medal valued at £10 to be competed for at the Chicago Fat Stock Show in November next, and to be awarded to the best steer, cow or heifer of the Aberdeen-Angus breed.

Heber Humfrey, Secretary of the British Berkshire Society, writes that the first volume of the British Berkshire Herd Book is nearly half printed.

The work will be as near uniform in appearance with the American Berkshire Record as can be, only different in color. Breeders on this side of the Atlantic await its issue with much interest.

While the most of the farmers of Central Illinois are rejoicing in the prospect of more than an average corn crop, in some localities more rain seems to be needed to bring the crop forward. And yet along the river in Sangamon Co., hundreds of acres have been overflowed this month, and the growing corn almost wholly destroyed.

The hay and oats harvests are about over. Both have done well and the product generally saved in good condition. All who can afford to do so are stocking and holding their wheat for better prices.

PHIL. THURTON.

THE VETERINARIAN.

SHEEP MANAGEMENT.

[The following is a report, abridged from the *Wills and Gloucester Standard*, of a recent discussion before the Kingscote Farmers' Club, on a lecture by professor Wallace, one of the Professors of Agriculture at the Royal Agricultural College.]

DIPPING.

DIPPING is practised to ameliorate or prevent altogether the attack of parasites which infest sheep, the tick, the sheep scab, the maggot, and the scab insect (acarus). The tick is got by sheep from the grass, where it exists independently of the sheep. Cades may be kept very much under. They are always most abundant on sheep in poor condition. The maggot, with good management, should never have an existence. The scab can, as it must of necessity, be cleared out if the sheep are not allowed to go back in condition visibly. After a long drive or railway journey, where sheep are packed close and heated, scab is liable to break out in a few weeks, even although there has been no such thing seen in the flock they came from for years. The rule is to dip Highland sheep about ten days after coming off rail, and then there is not the slightest danger. Tobacco juice and hellebore are most useful, added to the usual dip. All dips are poisonous. The active principle, in the so-called non-poisonous dips, is carbolic acid. This has one great advantage over many of the "poisonous" dips (composed largely of the sulphide and other compounds of arsenic). It is not only able to kill the living forms (as they do), but to destroy the eggs by coagulating their albumen. The system I am about to describe to you is that suited to Scotch sheep. The proportions would have to be increased for larger English sheep.

The ingredients used for 100 sheep are 3 lb. white arsenic, 8 lb. sulphur, 1 gallon light oil of coal, and 30 lb. of lard, butter, or pure oil of various sorts. The "light oil" is one of the products of the destructive distillation of coal tar, and costs about 8d. per gallon. Butter is, perhaps, the best of the greases, only it is usually more expensive, and more difficult to manipulate. The bath has to be kept much warmer, as it ceases to be fluid at a higher temperature than the others.

The tank is built of concrete, 20 feet long and 2 feet wide at the top, narrowing to 1 foot at the bottom. It is 5 feet deep at one end, which depth extends to one-third of its length. The bottom then slants up from this point to the top at the other end. A pen to hold—say, forty sheep, is built at the deep end of the tank, with the floor raised 2 feet, forming a drop into the tank by means of an opening in the side next it, and about the same width. At the other end is another pen, called the dripper, of the same size, but having its floor sloping, so that the water coming off the sheep runs back into the tank.

Preparation of the bath.—The water in the tank is made up at first to a heat at which the grease or oil to be used will remain fluid. The heat of the sheep passing through will keep it up to this temperature. The arsenic is dissolved by boiling in water with a little carbonate of soda. The least quantity of soda should be used that will enable the arsenic to dissolve, as this forms a soap with part of the grease. It is then easily washed out and lost. The dip solution is made to the strength of 3 lb. arsenic to 100 gal. of water. Dry powdered sulphur is thrown into the boiling water, and thoroughly wetted before putting into the tank. The grease, after melting, is reserved to be thrown in as the work goes on enough for three sheep at a time.

The Operation.—The sheep are never lifted (which is an

especial advantage if they are heavy) but pushed forward over the drop. They go right over the head, and swim out the full length, to the dripper. A man with a polo having a cleft at the end prevents them escaping too rapidly. On coming from the dripper, they should be kept for an hour in a fold before turning on to grass. This is not so much to prevent risk of poisoning as to prevent spoiling the grass, which would have a strong smell of carbolic for a time.

Advantages.—This dip is no more expensive than others. It is perfect in its action. The vermin are not only killed at the time of dipping, say September, but the grease nourishes the wool, and prevents the arsenic injuring it. On cooling, it retains sulphur and arsenic, which in spring it again gives up, to do the work of a second dipping, when the sun becomes strong enough to melt it in the wool. Perhaps the greatest advantage is that the sheep are not handled and turned up, struggling and straining, on their backs. They go in very much like a man diving, with mouth and eyes closed, and without the slightest danger of poisoning. Swimming, too, is the best way of getting the skin thoroughly wetted.

FOOT ROT.

It was noticed that dipping with arsenic much improved sheep suffering from foot rot, and from this sprung up the custom for prevention, as well as cure in mild cases, which has had such wonderful success—viz., driving sheep once a fortnight through a box containing a solution of arsenic. The drying and hardening action on the horn is injurious if done oftener. Very bad cases should be dressed at least once, some time before, with a composition manufactured by Ewing, Dumfries, or a mixture of tar, nitric acid, and sulphate of copper. Arsenic is hurtful to large open wounds. The box should be 12 feet long, 1 foot deep, 8 inches wide at the bottom, and 14 inches at the top, but the ends only 3 inches deep. The sheep then easily step in, it being placed level on the surface of the ground, between two rows of hurdles or paling wide enough for them to pass between. The solution (strength, 1 lb. of arsenic dissolved in 5 gal. water) is put into the trough, 1 to 1½ inch deep, not to come above the horny part of the foot, else it would blister the skin, and cause the hair to come off. The sheep, having first had all the loose horn cut away, are driven quietly through to prevent splashing of the liquid against the uncovered skin. Crude carbolic acid is sometimes used instead—strength 3 or 4 parts to 100 of water.

INTERNAL PARASITES.

Sheep are subject to internal parasites to a far greater degree than is usually imagined. One stage of the development of a tape-worm, found in dogs, is passed into the brains of sheep, causing "gid" or "sturdy." The remedies are of more consequence to farmers with lean stock, and ram-breeders, than to those who can send an affected animal at once to the fat market without much loss. The seat of disease is on the surface of the brain, at its base, or, in my experience more frequently in the "lateral cavities." These cavities are situated one on each side of the forward brain, and there, in common language, a "water-bag," containing many young tape-worms, grows. This presses against the brain, causing absorption of that organ, with usually a thinning and softening of the skull in one or other of the hollows on the crown of the head, immediately in front of a line drawn between the ears. There the skull is very thin. Partial paralysis accompanies, and the sheep gets blind on and turns to the opposite side to which the "water bag" inclines. Boring with a "trocar and canula," to extract the *blob* and its contents, is easy in this case. When the disease is far back in the brain the skull is thicker over it, and there is not

sufficient time, until death occurs, for the bone to absorb and become soft. Prof. Williams, Principal of the New Veterinary College, Edinburgh, recommends a very suitable way of getting scientifically at the disease. The skin is bared from the skull immediately over the spot to which the movements of the sheep direct an experienced man. A little circular saw, called a trephine, is used to remove a minute round piece of the bone. All detached pieces are then washed carefully out, the external covering of the brain not yet having been broken. Piercing in the usual way through the brain to reach the bag is then done with comparative safety. In districts much subject to this disease the skulls of dead sheep should be broken up and buried with quicklime in a compost heap. The dogs ought to be dosed regularly with areca nut. This frees them from tape worms, and lessens the risk of sheep picking the embryos up with the grass.

SCOUR OR DIARRHŒA.

In sheep, but more especially in lambs, this is often caused by various parasitic worms attaching themselves to the inner surface of the stomach and bowels. There they live, by absorbing what ought to go to nourish the sheep and set up irritation. As a cure, no better or simpler remedy can be had than turpentine. A sheep is very easily choked, and turpentine is one of the most dangerous drugs to administer, not only from its highly irritating and searbing nature, but from the fact that it will hardly mix with any ordinary drench. The administration must be done with great care. The turpentine ($\frac{1}{4}$ to $\frac{1}{2}$ oz.) should be thoroughly soaked into a little dry meal, and this again mixed in cold gruel, oil, or even water, and may then be given with perfect safety. The turpentine at the same time destroys those long white hairlike worms in the windpipe (*strongylus filaria*) which cause husk or hoose, and which are so very common amongst lambs. Their presence is evinced by a peculiar cough. Although it may not go so far as to cause death, it retards progress.

The above lecture is worthy of the attention of all sheepmasters. Last spring, there were hundreds of sheep in this district (Sorol) suffering from that loathsome disease, the scab, and no attempts were made by their owners to cure them. Sheep, as well as horses, suffer sometimes for weeks from internal parasites without any notice being taken of the complaint, and as for diarrhœa, there is hardly a farmer who does not lose one or two lambs every summer from it. A few men, here, keep more than ten or twelve ewes, the loss of two lambs is, in reality, equal to $\frac{1}{16}$ of the total increase.

A. R. J. F.

NON-OFFICIAL PART.

"O, Lord Hit 'Im Again!"

In the early days of Methodism in Scotland, a certain congregation, where there was but one rich man, desired to build a new chapel. A church meeting was held. The old rich Scotchman rose and said: "Brethren, we dinna need a new chapel: I'll give £5 for repairs."

Just then a bit of plaster falling from the ceiling hit him on the head.

Looking up and seeing how bad it was, he said: "Brethren, its worse than I thought; I'll make it 50 pun'."

"Oh, Lord," exclaimed a devoted brother on a back seat, "hit 'im again!"

There are many human tabernacles which are in sore need of radical building over, but we putter and fuss and repair in spots without satisfactory results. It is only when we are personally alarmed at the real danger that we act independently, and do the right thing. Then it is that we most keenly regret because we did not sooner use our judgement, follow the

advice born of the experience of others and jump away from our perils.

Thousands of persons who will read this paragraph are in abject misery to day when they might be in a satisfactory condition. They are weak, lifeless, full of old aches and pains, and every year they know they are getting worse, even though the best doctors are patching them in spots. The origin of these aches and pains is the kidneys and liver, and if they would build these all over new with Warner's safe cure as millions have done, and cease investing their money in miserably unsuccessful patchwork, they would be well and happy and would bless the day when the Lord "hit 'em" and indicated the common-sense course for them to pursue.

—London Press.

BEEF-SUGAR INDUSTRY.

A gentleman who, for the last 15 years, has been technical manager of large beet sugar factories in Germany, wants a similar position. Being up with the latest contrivances and improvements he is capable of gaining the best results as to productivity. First-class references can be furnished. A letter addressed to 240 B West Chicago Av., Chicago, Ill. will meet with prompt attention from

JULIUS FENNER.

SARGENT'S CELEBRATED LOAD-LIFTER

This labor-saving machine has proved a success for the past three years. The load with the rack can be elevated to any height required. Thousands are in use in various places. This machine has been awarded all first prizes and diplomas. Beware of infringement. The rack can be raised by a man as well as by horse-power. Any party wishing a load-lifter from different parts, who do not know the agent for that district, or any person wishing to buy a "right," will apply to the patentee.

Sargent & Ruddell have combined their respective patents, which will defy competition for the practical use of this celebrated machine. Parties desiring the like would do well to send for circulars before purchasing any rival machines.

WM. SARGENT,

Berkeley P. O., Ont.

KNOW THYSELF, by reading the "SCIENCE OF LIFE," the best medical work ever published, for young and middle-aged men.

Nervous Debilitated Men

You are allowed a free trial of thirty days of the use of Dr. Dye's Celebrated Voltaic Belt with Electric Suspensory Appliances, for the speedy relief and permanent cure of Nervous Debility, loss of Vitality and Manhood, and all kindred troubles. Also, for many other diseases. Complete restoration to health, vigor and manhood guaranteed. No risk is incurred. Illustrated pamphlet, with full information, terms, &c., mailed free by addressing Voltaic Belt Co., Marshall, Mich.

The only Practical Swing Stanchion Invented, and the only one that is connected together at the top when open. C. D. BROOKS, PROP'R., Addison, Steuben County, N. Y.

Manufactured and for sale by FENNEL & ANTHES,

General Agents, Berlin, (Ont.) Canada.

A Liberal Discount to the Trade.

TO BREEDERS AND AGRICULTURAL SOCIETIES.

FOR SALE.

A few choice head of Thorough-bred Ayrshires, male and female, from the undersigned's celebrated stock, so much appreciated for its well known milking properties, and which, as such, obtained, twice, the 1st prize at the Ottawa Dominion Exhibition, also the 1st prize for the best herd at Hochelaga County Exhibition for 1884. For particulars apply to

JAMES DRUMMOND, Petite Côte, Montréal.