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THE ILLUSTRATED JOURNAL of AGRICULTURE

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The ILLUSTRATED JOURNAL OF AGRICULTURE is the official organ of the Council of agriculture of the Province of Quebec. It is issued Monthly and is designed to include not in name but in fact anything concerned with agriculture, as Stock-Raising, Horticulture, &c., &c.

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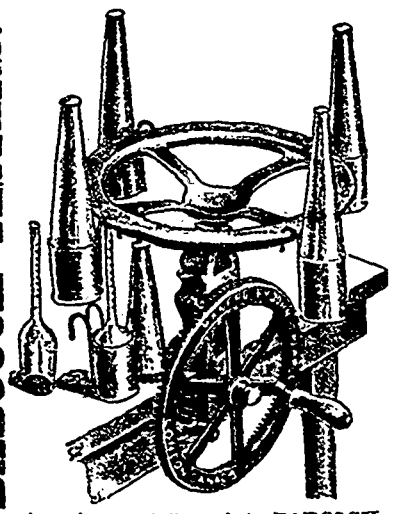

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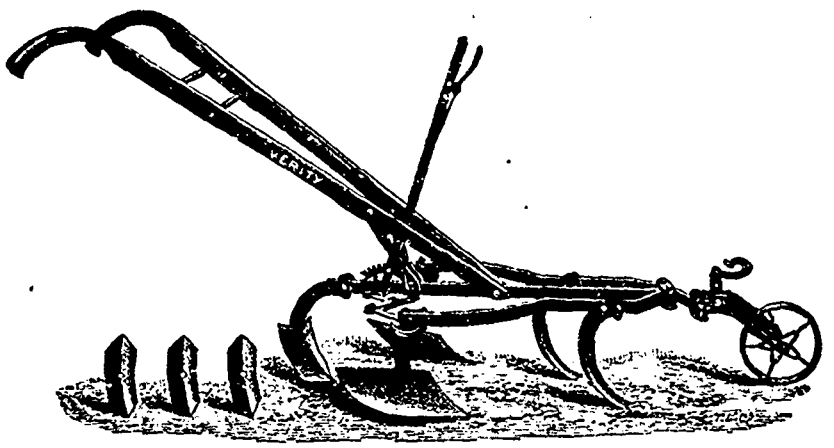

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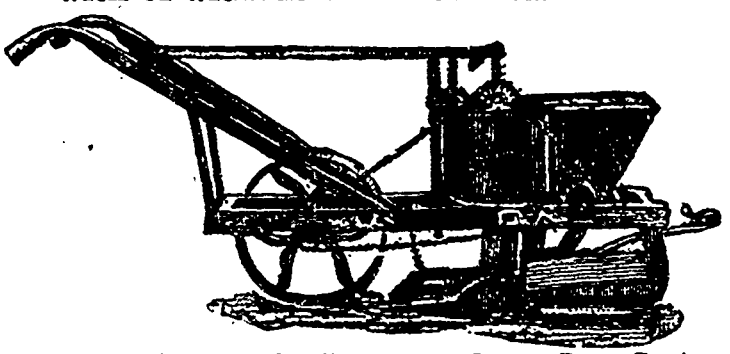

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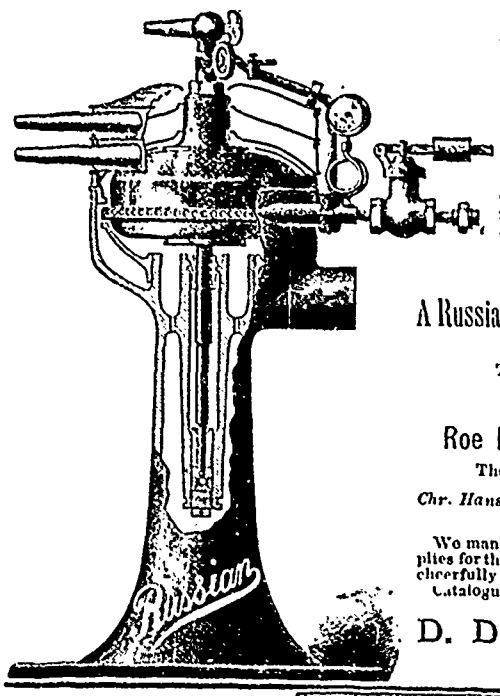

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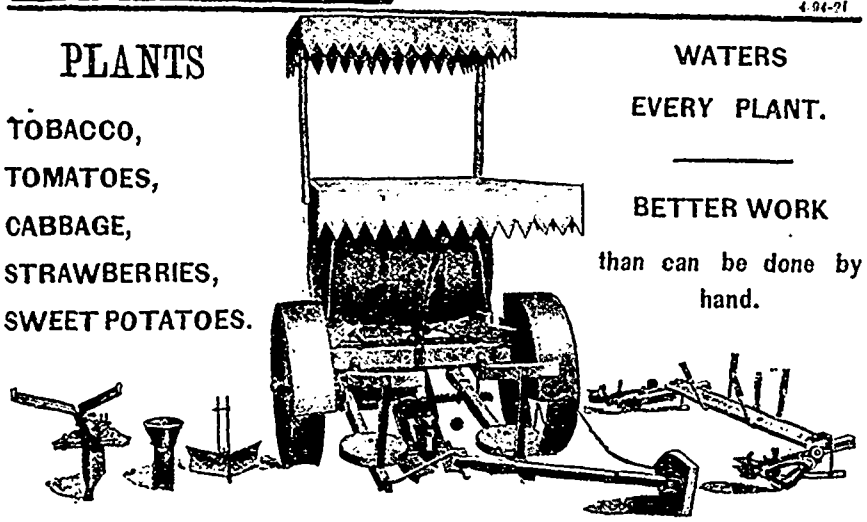

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The above cut shows the Planter A driver and two boys plant 3 to 6 acres per day. Waters every plant. Much better work than hand planting, and can plant whether wet or dry. No journals to wear out or packing wheels to ball up. Very simple, strong an durable. Will last a life time. No tobacco grower can afford to plant by hand when a machine can be had.

Agents Wanted where there are none already at work,

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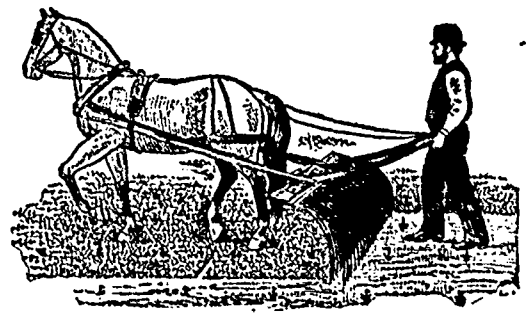
THE ZEPHANIAH BREED WEEDER AND CULTIVATOR



We to-day present to our readers an illustration of one style of **The Zephaniah Breed Weeders and Cultivators,** which are creating so much interest in the minds of the farming world. They are the result of eight years of experiments by Mr. Breed, who is a well-known farmer among the hills of New Hampshire, and it seems as near perfect in its work as a machine can be. We are assured not only by the manufacturers of these tools, but by those who used them last year (which was their first upon the market) that by using them according to directions the owner has no need to hand-hoe his crops at all, but that the crops are finer than those grown in any other way, and the fields are kept *entirely free from weeds, or so nearly so* that a single handful cannot be found on an acre late in the season.

One reliable gentleman informs us that with one of these he took the *entire* care of two acres of corn planted on *sod land in just eight hours'* time between planting and cutting time And he adds that he had a fine crop and scarcely a weed could be found the last of the season.

That they are a perfect success is shown by the fact that they met with a large sale last year in every state east of the Mississippi river, and north of Mason and Dixon's line, also in eight other states and in Canada. They were warranted in every case to give perfect satisfaction or the purchase money would be refunded, but as yet the Company has not been asked to refund one cent for any reason whatever.

They are adapted for the cultivation of all farm hoed crops, including all the vegetables. This statement may sound strange, but the circular gives ample proof of its correctness.

We believe that in the use of this tool every farmer will find that which he has so long wished but hardly hoped for, entire relief from the drudgery and hard work consequent upon growing hoed crops. The manufacturers, **The Zephaniah Breed Weeders and Cultivators Co., No. 26, Merchants Row, Boston, Mass.,** issue a copiously illustrated and *very interesting circular, which they will be pleased to* send to all those who will send them their names. In it are found strong testimonials from gentlemen with a reputation in their own states if not throughout the nation All speak of this implement in the highest terms of praise as follows:—

"Wouldn't part with if for $50, if we couldn't get another." ADAMS BROS., Jaffrey, N H

"It has been a prize to me Saved at least $50 this year." F. L. WARREN, Dalton, Mass.

"Would not be without one if had to pay $5?0 for it" C. P FARNSWORTH, So. Lincoln, Mass.

"Am enabled to raise twice the amount of field crops with less help than formely"
A. B. PIERPONT, Waterbury, Conn.

"It paid for itself in one day cultivating beans."
CLARK ALLIS, Medina, N Y

"It did away entirely with hand-hoeing when used in time." N. E. DIAMENT, Cedarville, N J.

"For destroying weeds and stirring the soil your Weeder is the most valuable tool I have ever seen. It *will do the work of 20 men and do it better It is the best tool made*"
D. E. McINTYRE, Cadillac, Mich.

In conclusion we feel like urging upon our readers to avail themselves of the use of this implement and thus rid themselves of such a vast amount of hard work as has heretofore been exceeded upon hoed crops and which is now rendered entirely unnecessary. These tools are made in a variety of Sulky, walking and Hand Machines, and the prices are very reasonable when compare with the great good they accomplish

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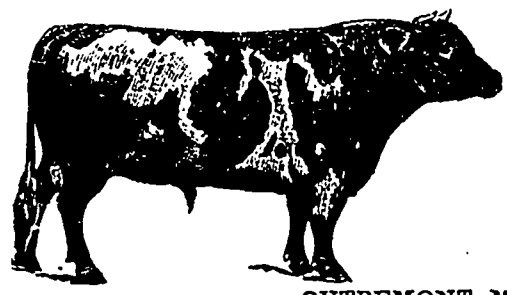

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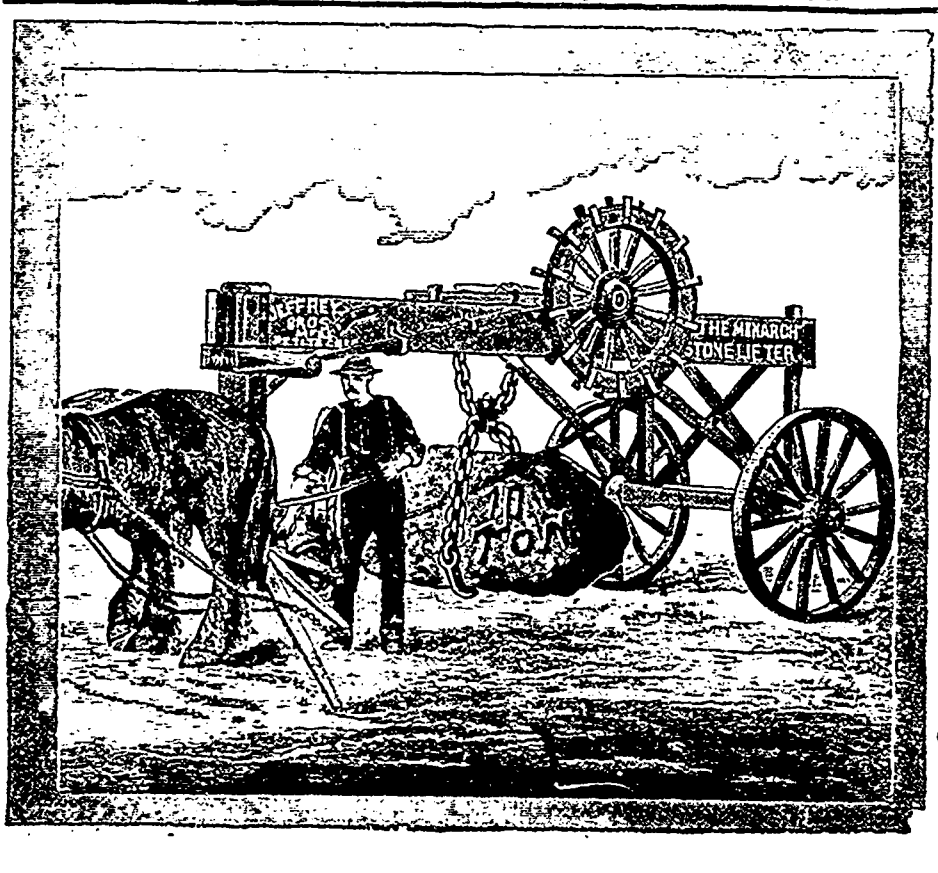

"MONARCH"

STONE LIFTER.

—o—

The Monarch Stone Lifter and Stump Extractor is a new and improved machine, and is much superior to anything that has been in use heretofore, the work of lifting being done entirely by the horses. The machine is used to carry the stone off the field. It is made very strong, with five inches wide tires, and will lift a stone of ten tons weight, or more than four horses could draw.

It is very simple to operate; the horses being unhooked from the pole and hooked to the end of the large rope which goes with it The rope is first wound round the large wheel, and as the horses move along, the rope is unwound, and the weight is lifted. Should the horses stop, the levers take the weight at once, not allowing the machine to run down It has been tried, and we have nine working in the same district, which is proof that the machine is all we claim for it.

JEFFREY BROS.,

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Engines, Boilers, Pumps,
Improved Gang Presses,
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"Stafford" Patent Fawcets, Screws,
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Dairymen should write for prices before refitting factories for the coming season.

WILLIAM STAFFORD

LANCASTER. ONT. **Prop.**

4-94-3i

To our Patrons and the Public.—As we have decided to raise this year *Twenty Pure Bred Ayrshire Heifer Calves* Sired, by our imported Bull *Baron Renfrew*, we offer for sale at reasonable prices a few of our mature *Ayrshire Cows*, ranging from four to eight years old of *Choice Breeding*, comprising representative animals from the Herds of Ex-Alderman Roddon, President of the Canada Ayrshire Breeders Association, Robert Robertson, Esq., Howick, and the late *Thos. Brown, of Petite Côte, Montreal*, besides those of our own breeding, some of which are already served, by our young Bull *Derby*, a Son of the celebrated sweepstakes bull at Chicago "*Silver King*."

We will also have for sale about the 1st of May three litters of *Pure Bred Berkshire Pigs from Stock of such* noted Breeders as Messrs Snell, of Edmonton, and Yuill & Sons, of Carlton Place, Ontario. Correspondence solicited. Visitors welcome. **A. McCALLUM & SON, Danville, Que.**

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From the best Studs of Scotland.

English and French carriage horses, Shetland Ponies and Ayrshire Cattle.

4-94-12i Woodside Farm, **Howick, P.Q.,** *Quebec*

THE ILLUSTRATED

Journal of Agriculture

Montreal, June 1, 1894.

Table of Contents

Notes by the Way.

FARM-WORK FOR JUNE.

As the season is such an early one and the weather has been so propitious for the carrying on of all sorts of farm-work, it is fair to suppose that all the grain has been sown. Oats, by the bye, were well out of the ground at the Priests' farm, Sherbrooke St. West, on Monday, April 30th.

If any grain remains to be sown, it would be well to remember that, as late-sown grain has no time to tiller, more seed should be given to the acre than if it were sown earlier In our own case, if we had any pieces intended for, say, oats, unsown by the first of June, we should put them in *rape* instead, and feed it off with sheep. Even if the rape did not come to a great crop, the treading of the sheep would do the land a marvellous deal of good. One reason why the white-straw crops go down so easily in this part of the world is that the land never gets the valuable presure of the sheep's foot; consequently, the hold of the roots of the grain on the land is precarious, and it takes but little wind and rain to scrawl the standing crop all abroad. No roller, however heavy, will compress the land like the pointed hoof of the sheep. We cannot too often repeat what that good farmer, Wm. Rigden, told us in 1852: "If I sow wheat after vetches mown for green-meat, I get but a poor yield; but where the vetches come off in time to sow turnips or rape, even if the crop is only a moderate one, and I can get the sheep hurdled on to them, I am sure of a good crop of wheat afterwards."

Buckwheat is generally omitted on our best farms. It makes the land foul for many a day after. We suppose we have a prejudice against it as, in England, we never sow it except under the covert-sides, as food for pheasants. If this grain is grown, the new sorts, Japan, and Silverskin (?) should be sown instead of the old kind.

It is probable that a good deal of the clovers put in last year will prove faulty in plant. Now, if anything tends to make land foul it is allowing a bad plant of seeds to stand; mow it as soon as the majority of heads are in bloom, break up the land, harrow and work it till fine, and sow ¾ of a bushel of *Hungarian grass*, and cover in with light harrows, or, if you have one, with a chain-harrow, finishing with the roller. If sown by the 25th of June, it will be fit to cut for hay by the middle of August. Mow early, as Hungarian grass soon runs through its stages and becomes hard and woody.

By the 12th of June the *red-clover* ought to be fit to cut for green meat. Your horses will be glad of it, and what they throw out of the cribs will delight the pigs. If you have provided a piece of oats, pease and vetches, this will succeed the clover, and when the former is gone the second-cut clover will be ready to take its place, and so on.

Potatoes, in such an early season as this, have of course been horse- and hand-hoed. All that remains to do is to keep the horse-hoe going as long as it does not injure the plants, to earth up very slightly, though as broadly as possible, and to keep the crop free from the *beetle*. Should a very heavy storm of rain occur after the young tubers are formed, look sharply after your water-furrows and ditches. There should be a furrow ploughed inside each headland of the piece, when the horse-hoeing is finished, and an access *dug*, every 20 or 30 feet, from this furrow to the ditch.

The *swedes* should be sown as soon as the land, manure, &c., are ready. For marketing, late-sown swedes are the best, though by no means the greatest yielders.

As fast as the vetches, &c., are consumed, break up the land and sow something else. The second growth may come if the weather proves showery, but its quality is poor, and besides the good the land will derive from the stirring and cleaning an acre of fresh-sown rape will be worth thrice what the second-growth of the other is worth.

Clover will be fit to mow for hay about the 24th of the month. We do hope to see more second-crops this year than were saved last year. If some of the heads are rather later than the rest, do not wait for them, but mow, turn the second day, put into cock as soon as fit, and be careful in opening the cocks to do it gently, so as not to shake the leaf off It is treating clover, for hay, like timothy, that makes our clover-hay so inferior. It may be laid down as an axiom that, if clover put into cock *the same day it is cut* does not heat and rot within 24 hours, that clover has been allowed to stand too long. If cut, as we say, about the 24th of June, the second crop should be fit by the middle of August. By the bye, in our diary for 1893, we find the following:

August 15th; Grier mowed clover-2nd cut and put it in cock the same afternoon!!!

August 16th; Clover in cock heated and mildewed. Had to turn it out as soon as dew off; turned again after noon; all leaf off!

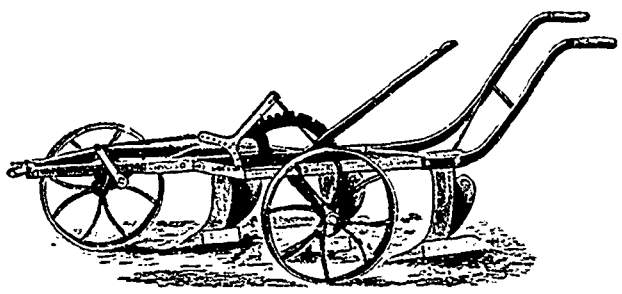
The *horses* will have had pretty hard work for the last six weeks, and it is not over yet. As long as there is any work to do, they should be well fed, and when is there not work to do on a properly managed farm? A few pease added to their oats, with clover or vetches, when the latter are in bloom, will be good for them; and on Sundays, a run in a good pasture will freshen them up wonderfully. At all events they should never be allowed to fall away in condition before they are wanted for the mowing-machine and the harvester.

Mares, with their foals, should do but little work, and that light work. Never let the foal to the mare when she comes in hot from her duty until she has had time to cool off.

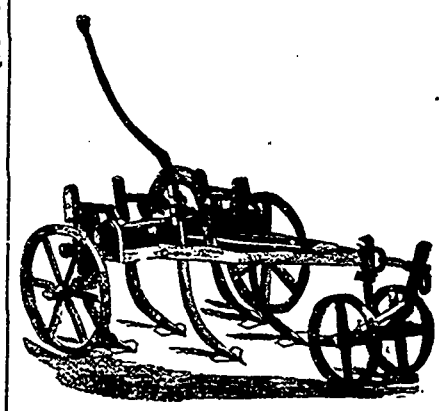
Cows are now in full milk, and should be kept up to it. Plenty of extra food in the form of maize, clover, vetches, &c., should be ready for them in case of the pasture getting bare.

The weaned *calves* need great attention this month. The milk—skim-milk with a little linseed crushed and steeped in boiling water—should not be too hastily taken from them, and a nice, fresh pasture, divided in two, must be provided for them. How often do we see pot-bellied, big-ribbed, scare-crows of calves gnawing away at the stubs of an old worn-out timothy meadow! That is not the way to bring up the future mothers of the herd.

Swine.—The young pigs, now, we suppose, from 2 to 3 months old, will be grateful for all the whey and skim-milk the calves do not need. Clover and vetches, supplemented by a few pease, which they will soon learn to crack up readily, with the dairy-refuse, brought back by every farmer from the factory, we trust, will push them along nicely till "shacking" begins: i. e., the run of the stubbles after harvest. Of course no progressive farmer keeps any of last year's pigs over. The sows are, we suppose, in pig again, due to farrow at the latter end of September probably, though the earlier in the month the better. These should be kept in fair condition, but by no means allowed to get too fat, for an over-fat sow rarely brings fine pigs.



THREE-SOCK PLOUGH.



COLEMAN'S DRAG-HARROW.

This terribly hot day—May 2nd, 80°, F. in the shade—makes us fear the sheep are suffering, those that still have their jackets on. It is a difficult business to decide upon in this country whether to wash the sheep before shearing or not. It is hardly safe to wash yet, for the water is icy cold, and, even if the flock is small, it takes a good deal of trouble and fuel to warm water enough for over a score of sheep. We are sure, from long experience, that sheep do better if washed before shearing, but in this country, the first spell of fine weather is often succeeded by a forthnight of chilly winds, and a wet fleece, with a brisk N. E. wind blowing through, it is not conducive to the sheep's health.

At all events, if washed, the sheep ought to remain unshorn, for a week or ten days, in a clean pasture; and, after shearing, should be dipped in one of the liquids sold for that purpose: Betts' is as good a composition as we know of. Both ewes and lambs should be dipped again in September.

If you are really intending to keep sheep as they are kept in England and as some wise people in the States and in Manitoba are purposing to do, you will find that the *short-wools* will be your best bargain. South downs, Hampshire-downs, or Shropshires: you cannot go far wrong with either of

these. The old English weaned their lambs on August 12th (*New style*), hence called Lammas-day; but if your ewes have lambed, as they ought to do, by the middle of April, they might be separated from their young by the middle of July, and got into good condition with *rape* by the 1st of September, when, if the ram is introduced to them, they would lamb at the end of January or the beginning of February. What pulled down the price of early lamb this last spring was the scores of mean little cats, weighing some 3 lbs. the quarter, that were sent up to Montreal in March. Every little "cag mag" butcher had one hanging up in what he is pleased to call his *market*, and a wretched sight it was. A lamb should weigh, if properly done by, from 32 to 40 lbs. of carcase at 12 or 13 weeks old, and should not be slaughtered before that age; then, if he and his dam have been well fed, pease not having been omitted in the lamb's ration, and the ewe having had a fair allowance of cake and oats, the lamb will be a credit to his feeder, as well as to the butcher who kills him and to the cook who dresses him, and the ewe, in a fortnight or three weeks from the time the lamb goes to market, will be ready to follow in its footsteps.

In weaning lambs, always let lamb and dam run for a few days in a good piece of pasture, and then remove the ewes out of hearing of the lambs. the lambs, being accustomed to the place, will get quiet much sooner than when they are taken from their dams and put into a strange pasture. Always castrate your lambs, and shorten their tails; the former operation should be done a week after birth.

Some people, who ought to know better, I have seen look for teeth in the upper jaw of a sheep: of course they did not find any! Nothing so easy as to tell the age of sheep, up to four years old. In the sheep districts of the South of England they are called, by the number of teeth, "two-tooth, four-tooth, six-tooth, and *full*-mouth sheep:" ungrammatical, but sufficiently descriptive. A weaned lamb, with us, becomes a *tey*, and a ewe that has lost some of her teeth from age is a *crone*, hence the impolite name of an old woman, but *crones* are seldom seen now a days, though they were plentiful some 40 years ago in Cambridgeshire though, at the same time, unknown in Kent.

In a regular breeding flock, the ewes are never kept till old; when full-mouthed — 8-tooth — they are either fattened off (*lamb and* dam as mentioned above), or if, as in Sussex, no mutton is made but the wether-lambs are sold at the autumn fairs, the full-mouthed ewes are sent to auction-sales, got rid of somehow, and their places supplied by the 2-tooth ewes. We never put a ewe to ram until she is in her second year: it stunts their growth, and the lamb of a tog is seldom good for much.

The Sussex breeders keep large flocks of ewes, sell all their wether lambs and full-mouth ewes to the upland graziers of Kent, Surrey, &c. who fatten them; they send their ewe-tegs out to keep on the grass-lands at so much a score for the winter, which fully accounts for the small size of the Sussex-downs, as they return half-starved. Our old friend, Rigden, who kept 300 breeding ewes, never fattened a single sheep, except the superb dozen or so of 20 month's old wethers he used to send to the Smithfield Club show at Christmas, carrying off many a prize.

Last crop of rotation.—M. Dallaire, in his essay read before the Dairymen's Association last winter, starts with the proposition, that the "hoed-crops should follow the grass." This is quite a novel idea to us, and one we cannot at all agree with. Mangels, swedes, &c., require a finely pulverised condition of the land to be at all successful, and that can hardly be obtained on a piece of ploughed up pasture, for there would be no time to plough, grub, and harrow the furrow before giving the autumn-ploughing, and in the spring, there is plenty to do without cleaning land, which, in this country, and everywhere else indeed, should be done immediately after the grain is carried. Besides, the rossing roots of the clovers and grasses are the best possible food for the oat-plant; wherefore, in practice, oats invariably follow leys except where, as in England, wheat follows clover, which, in that country, only stands one summer.

No; let the oat, follow grass, clean the stubble thoroughly after harvest, plough it deeply in the fall, and make it the last crop of the rotation.

Weeds.—Again: M. Dallaire, in the same essay, says, that weeds cover the whole of the province of Quebec. "Start from Pontiac and travel down to the Baie des Chaleurs. and you will be convinced of this, &c," v. p 118 Rep. D. Ass. 1893. Why, in the report of the judges of *Agricultural Merit*, 1892, farm after farm is described as being "free from weeds;" "very few weeds to be found"; "we deducted $\frac{25}{100}$ of a mark as there were some sow thistles among the wheat;" "the meadows and pastures are good and there are no weeds," and so on Such clean farming I never heard of, and yet M Dallaire, who, I believe, has gone right through the province, for M Chapais says he has, declares that the province is full of weeds from one end to the other! Surely, this being so, the farmers, whose occupations border on the lands described by the judges as being free from weeds, must learn by the example of the latter to abolish these parasites and thereby fulfil the intention of the Minister of agriculture · "that the farms of the laureates of the Mérite Agricole shall be so many model-farms, spreading a knowledge of, and and a taste for, good husbandry throughout the province."

Ploughing. M. l'Abbé Chartier, of the Seminary of St. Hyacinthe, does not mince matters. When he thinks a thing is bad, he says so, and often adds a forcible adverb to the depreciatory adjective, to emphasise his meaning! For instance at the Dairymen's Association meeting at St-Hyacinthe, M. Chartier, not having the fear of his audience of farmers before his eyes, boldly declared that "the ploughing in this province is bad, excessively bad"; the French being, if possible, a little stronger.

It is bad, is the ploughing, and will continue to be so until farmers, as a body, are brought to believe that the difference of crop between a well ploughed and a badly ploughed acre of land amounts to several bushels.

It is really shocking to see the great, wide, shallow furrows turned over in the spring, "to make haste and get the seed in."

Nitrate of soda.—Very sad, indeed, is it to see the price of this useful manure going up in price daily; it is now worth, at Liverpool, £11.5 a gross ton, equal to about $50.00 per 2,000 lbs., which, allowing it to contain 16% of nitrogen, makes that constituent cost *over there* 15 cents a pound! What it will cost here, after going through the hands of two or three middlemen, brokers, &c., goodness only knows! This will be a sad blow to the intending growers of sugar-beets. By last mail, price $7 lower!

Drain-pipes.—It is not our business to meddle with politics, but might we venture a hint that 20% *ad valorem* duty is rather against the prospect of increased drainage of the country? It is upward of $2.40 a thousand, if as I am told, pipes are *sold for* $12.00, and as a thousand pipes are generally required to drain an acre, it makes a considerable difference to those intending to drain forty or fifty acres.

Canada's Ayrshires.—The Editor of the *Farmer's Advocate* will be pleased to accept our hearty thanks for the superb engraving of the Prize-winning Ayrshires at the Chicago show. Two or three of them we easily recognised, and doubtless the portraits of the rest are equally like the originals. The whole arrangement of the picture is charming, and the landscape characteristically Canadian We should have noticed this engraving last month, but unfortunately it arrived too late.

Cow pock.—Fourteen Jerseys have been suffering from cow-pock at St-Stephen, N. B., of which one of them has already died. The farm has been quarantined by Dr Frink, V. S., who pronounces the disease to be "highly contagious, though not so bad as pleuro-pneumonia," — no, we should hope not What ferocious behaviour on the part of a, generally speaking, mild distemper. Is this another instance of the effects of continued in-and-in breeding and "forcing for records"?

The Experiment-stations.—The editor of "Garden & Forest" publishes an interesting article on the work of experiment stations. He gives credit for what the stations have already done in the six short years of their existence. At their origin, there were hardly a score of men in the country who had sufficient experience to carry on with efficiency the work of the stations, and yet a strong pressure was kept upon them for immediate and tangible results. There are now 54 stations, occupying 500 persons in them, receiving more than a million dollars yearly from the government. With so much to do, and so brief a time to do it in, some mistakes would of course be made. Some of them have occupied their time in matters which should not have consumed their continued attention. A hundred bulletins in various States have given test of different strawberries, but in cultivating, comparing, recording, and publishing the results, no practical or scientific end is reached for such an outlay on products which are almost as easily obtained as every pistillate seedling. Skilled and scientific workmen can devote their time and labor more profitably, and if all the information thus obtained were entirely blotted out of existence, the world would scarcely suffer any loss. In making these strictures, it must be borne in mind that at least some of the stations have occupied their attention and labors in an eminently useful and noble series of investigations.

Feeding cows.—They are still, we see, feeding cows in the States only twice a day: night and morning. How many times a day does a cow get up to feed while at grass?

Q.—How many times during the day should cows be fed in the stable?

Mr. Cook—We feed twice a day, morning and night. What the cow most needs is quiet. If she is fed regularly night and morning, she will lie down and not get up every time a person enters the stable; but, remember, she is an early riser and should be fed early in the morning. She is also a creature of habit, and if she has a habit of having her meals at stated hours she will eat them, lie down, digest her food and secrete her milk. Every time she is disturbed unnecessarily the flow of milk will be affected and a loss occur.

Mr. Van Alstyne—I feed my cows three times a day, the dinner being the hay ration. I think the cows are thus brought more nearly to their normal summer conditions. (1) —*Hoard.*

Fat in milk increased by food?—Q—Will extra feeding increase the flow of a cow's milk and also its richness?

Mr. Van Alstyne—That is a mooted question. Some writers say it will not, others that it will. I think much depends on the cow. We certainly cannot take a poor cow and accomplish it, but with a good cow that is running below her normal proportion of butter fat, with proper care and foods, not only can the flow but the per cent of fat be increased up to her normal standard. Hundreds of dairymen report these results. But I do not believe that the cow which has been well cared for and fed from her calfhood, that is, fed up to her full capacity, will make any perceptible increase in the per cent of her butter fat. Every cow has a maximum limit, which, by carefully feeding her with proper foods, can be reached. Beyond that point I do not believe she can go.

Mr. Cook—There is too much guessing on this question, by dairymen. Often there is a seeming increase of fat when there is not. One day we get all the fat from the milk and cream through the creamery and churn; the next day we do not. Our experience, however, has been, in careful feeding, an increase of both milk and fat for the year, but the increase is light and gradual, not spasmodic. The process is a slow one; we cannot raise 3 5. milk to 5 o/o very easily. What we most need in this northern climate is better care and food. I believe they are the most essential factors with us."

Mr. Van Alstyne expresses himself on the question, whether cows should be continually kept in doors, as follows, and, in our opinion very sensibly:

Q—Is it advisable to keep cows in the stable all winter without turning them out?

M. Van Alstyne—I am in favor of turning out the cows when the weather is warm and sunny. On such day as this, with the mercury marking 8° below zero, they should not be allowed to go out. Not one of us here can go out this morning, from this warm room, and remain five minutes without an overcoat, overshoes and mittens, and then, even, we cannot remain out of doors long unless we keep moving about at a brisk pace. Then why should we turn a cow out on a day we cannot remain out comfortably ourselves? She has no extra covering or protection to keep her warm. In saying this I do not wish it understood that I recommend the confining of cows from fall till spring, in the stables. Every noted veterinarian is on record as

(1) So do we.—ED.

decidedly in favor of allowing dairy cows to go out when the weather is warm and pleasant. The coming progeny, as well as the mothers, will be made stronger, healthier and more hearty thereby."

Only, in the Province of Quebec, we fear very few days, from November to April, are warm and pleasant enough to indulge our cows with out-door exercise. Still, as Mr. Van Alstyne says; if they could have it without an accompanying decrease in their milk, the coming calves would be all the better for it.

Cost of growing wheat. - In the different divisions of the States of the Union, the following is computed, by the Department of Agriculture at Washington, to be the cost of growing corn and wheat per acre:

	Wheat	Corn.
New-England.....	$20.22	$28.03
Middle-States.....	18 18	21.53
Western do	10 89	11.08
Pacific coast.....	13.98	18.36
Average of the whole country.	11.69	11.71

By the report of the Statistician in December, the average value of wheat per acre was $6.16, and of corn, $8.21; showing a loss of $5.53 for wheat and of $3 50 for corn; Now, this is a wonderful thing, and when Mr. Van Horne told the people that in eighteen months he expected to see wheat at $2.00 a bushel, it was, perhaps, on this extraordinary state of thing that he was basing his opinion. But he evidently does not know what hopeful, though grumbling beings, farmers are.

Mixing of melons, squashes, &c.— It has been proved by exhaustive experiments, at the Iowa station, that the belief that has been so long held, that pumpkins and melons will mix, is erroneous: this was partly caused by the confusion of the species in the popular nomenclature.

The winter squash is *Cucurbita maxima*, represented by the Hubbard, Mammoth, Chili, Marblehead, Turban and other varieties. The pumpkin and the summer squash are the same species *Cucurbita pepo*, represented by the Cow, Sugar, Vegetable Marrow, Long, Warted, Summer Crookneck, Bush Scalloped, and other varieties. The watermelon, citron and pie melon are the same species, *Citrullus vulgaris*. The musk melon and cantelupes are *Cucumis melo*.(1)The attempted cross-pollenizing experiments show that pumpkins *Cucurbita pepo*, will not hybridize with the true squashes, *Cucurbita maxima*. Pumpkins will not mix with watermelons, *Citrullus vulgaris*, nor will squashes and melons mix. Cucumbers, *Cucumis sativus*, and musk-melons will not mix with each other, nor with pumpkins. The different forms of the true squash, *Cucurbita maxima*, will readily cross with each other. The forms of *Cucurbita pepo*, which include the various pumpkins and summer squashes, will readily mix with each other. The hermaphrodite flowers of musk-melons are self-impotent, and this is true also of some squashes. Certain varieties are prepotent, as shown in character of fruit, vine and leaf. It is however, often not well defined, both parents equally transmitting the qualities.

GROWING ROOTS; BY THE EDITOR.

(Continued.)

Leaving land idle, that is, growing nothing, or lying neglected, that is, unstirred, can never be good farming. If we want plenty of weeds to cover our farms, no better plan can be pursued than to sow a piece of land in tares or vetches, mow them for stock in July, and then leave the piece to produce what it can during the remainder of the summer. A few shoots from the old roots may sprout again, but a second crop of tares we never saw that was worth mowing.

A far better plan of treatment is the following:

As fast as the tares are mown for the stock and a half-day's work is cleared for the plough, take a shallow furrow and continue to do so until the whole piece is done. Then; use the grubber across the ploughing, and harrow till the root-weeds are all pulled up to the surface; collect these with the horse-rake and burn them.

This first ploughing might be saved if there were a good scarifier handy. Coleman's drag-harrow (see fig. 1.), or a triple-plough (see fig. 2.), would do the work as well, or better, and thrice as fast. The great object is, to keep the root-weeds as near the surface as possible, while, at the same time, the couch grass and other travelling plants are thoroughly eradicated. It will easily be seen that the plough must necessarily cut the vagrant roots of couch—our great enemy here as elsewhere—into pieces, thereby rendering their ultimate perfect extraction much more uncertain. Still, rather than trust to the imperfect work of the grubbers or scarifiers generally to be met with here, we must recommend the employment of the plough.

Having cleared the rubbish off the land, a moderately deep furrow may be given say, 6 inches. Then, more grubbing, harrowing, and rolling if required and the land is quite dry, must follow, as some couch-grass will probably have been left after the first cleaning operations This will prepare the piece for seeding.

We have now to consider two things: what shall we sow and what manure shall we use? In the generality of farms, farmyard dung is out of the question, for two reasons: first, because there is none to use, and secondly, because there is neither time nor labour available for its application. Some sort of fertiliser must be used, and for this purpose, viz., growing a fair crop of white turnips or rape, we prefer superphosphate or dissolved bones. Nitrogen, in some form is desirable, but it is so high in price that we can hardly afford it. Let us, then take 300 lbs. of plain Capelton superphosphate and 200 lbs. of E. Indian bone meal of the best quality, containing, we believe about 4 o/o of nitrogen. To this, if they, can be had add a dozen bushels of wood-ashes, and you will have a cheap fertiliser that, if all other things are attended to, will furnish food enough to supply the wants of an acre of turnips that ought to yield some 500 or 600 bushels.

Of white-turnips we have grown many kinds, but, for quality and quantity combined, we prefer the *green-round*. This turnip keeps well, in fact, if stored, it is sound in February, and it may be sown up to the 20th of July with fair prospects of a crop. For later sowings, though, after August the 10th, we should prefer rape, as turnips *must* be thinned and rape need never be, for later sowings, we say, the Norfolk *stubble*-turnip is a vastly expeditious root, as we have had it on our table 44 days after sowing.

The mixed fertiliser of ashes, bone-meal, and superphosphate may now be sown broadcast and lightly harrowed in; the roller follows, and after it any garden-drill, fitted with a marker to indicate the next track, will deposit the seed with sufficient nicety. As turnip-seed is so much smaller than swede-seed a little over 2 lbs. to the acre will be enough. The distance between the rows, as the horse-hoe will be used, should be from 18 to 24 inches; but that depends upon the horse-hoe's construction; a good one, like the hoe figured in the last number of the Journal, p. 89, if the side-hoes are set at the proper angle, will work well between 20-inch rows without driving the earth before it and thereby burying the plants. Of course, if the land after tares is left full of couch and of ragged bits of the stalks of the tares, no horse-hoe, drill-grubber, or any other kind of horse-implement will work satisfactorily.

Singling.—When the turnips are up and in the rough leaf, they must be singled, and as you do not want big, spongy roots, but sound, smallish ones, they must be left pretty close together: 7 inches is quite far enough. Being on the flat, the first operation may be harrowing across the rows. This will stir the land and separate the turnips for the singlers, who, using a 4 inch hoe, will chop out and single the bunches as before described in treating of swedes and mangels.

If *rape* is chosen to follow the green-fodder crop, its cultivation is still simpler: sow on the surface, manured as above, 5 lbs. to 6 lbs. of *colza* or rape-seed broadcast, cover it in with a light harrow, and, as usual, finish with the roller. *No hoeing of any sort is required.*

We have grown acres of rape ourselves, and we have seen thousands of acres grown by others, but we never in all our experience saw rape hoed. We have always held it to be the green-crop for this country on account of its great yield and its trifling cost for cultivation. In France, &c., where it is grown for seed, the cultivation is quite a different thing, there they want stout, branching stems, that will carry a large head of seed the second year; here, we want tender stems and plenty of leaves at a small outlay for labour. Ask the sheep which they prefer, and if they could speak they would choose the latter crop.

Queer pronunciation.—In Sussex 40 years ago, *Heathfield* was pronounced *Heffel*, and *Hayward's Heath*, the station next to Brighton—which is really Brighthelmstone — was pronounced *Harrard's Haught*.

Price of oats in England:

English.....	18s	" 27s
Foreign.....	16	" 23
New-Zealand.	25	" 29

Why New-Zealand oats should be so valuable, we do not know, as we never saw any.

Smollett's observation.—Fancy the author of "Peregrine Pickle," &c., having remarked that "the perpetual rains of the west of Scotland are more prejudicial to sheep than the greatest extremity of cold weather." It is quite true, too.

We have often spoken of the superiority of Scotch turnips to those grown in Southern England, and Smollett, in "Humphrey Clinker," says "the Scotch turnips are as superior to the English, in sweetness, delicacy, and flavour, as a musk-melon is to a cabbage-stump"!

Chambers does not often talk nonsense; only occasionally: "The New-Zealand sheep weighs on an average 68 lbs, twice the weight of the home-sheep:" which is nonsense.

The following is probably one of the coolest assertions that any respectable paper ever admitted into its advertising columns. Ed.

FERTILIZERS.

SALT FOR FERTILIZER.

Best Thing to Use on

WHEAT, BARLEY, OATS, HAY, AND POTATOES.

Nature's restorer for worn-out land. Increases yield from 15 to 50 per cent. After long experience, we are preparing a grade exactly suited to the purpose. Write for price delivered.

THE LE ROY SALT CO., Le Roy, N. Y.

The Dairy.

VEAL CALVES ON SKIM-MILK.

Ed. Hoard's Dairyman:— For three years past we have raised good calves, selling for veal such as we did not wish to keep, feeding only skim and flax seed. In summer, calves were on grass as soon as old enough and in winter had good hay as soon as they would begin to eat it. At first we bought flax seed meal and boiled it; afterwards flax seed and boiled it. Quantity used, one tablespoon heaping full for each calf. Boil well with five to ten times its bulk of water and divide while it is boiling or stir well while dividing, so each calf will get its share of the oil. Don't let stand after cooking or it will get thick. Feed all the skim milk the calves will drink if we have it. Calves are taught to drink from the third to the fifth day and get no whole milk after the cow's milk is fit to use for butter. Milk is set in deep cans in spring water 45o to 48o F., and stands 24 hours. Should be afraid of separator milk from factory or shallow setting milk kept at usual temperature. Calves make good growth, seldom scour, but are not as fat as calves that suck the cow. Sometimes the butchers find fault with them but seldom make any difference in the price per pound paid. If we could not raise veal calves on skim milk we should not raise them They are not worth what it costs to raise them on whole milk. Perhaps the flax seed might be increased to advantage as the calves grow. (1) They will begin to eat grass or hay when they are three to four weeks old and from that time the quantity of milk fed is not increased much, if any. It takes a good cow to give as much milk as a calf will drink at three weeks old.

W. H. Smith

Dakota Co., Minn.

TURNIPS.

Now, I feed all the turnips I can raise, having sowed 5 pounds of seed last year and preparing to sow more this, and have no trouble from tainted milk; and our milk, fall and winter, goes to New-York city for the retail trade and a part of it is put up in bottles and sealed and goes direct to the consumer at a fancy price.

(1) *Always crush it.*—Ed.

(1) Lord *Cantelupe*, ought to know how to spell his own title.—Ed.

As for butter, I have a friend that keeps some twenty thoroughbred Jersey cows and makes a fancy butter for a particular market, and he told me not long since that he raised and fed last fall and winter 1,700 bushels of turnips and should try and raise more this year. Now, perhaps we are those unskilled cow keepers that our friend, on page 28, had reference to But think we shall keep on raising them the same if they do contain a large per cent of water, for I can see no material difference whether we feed the cow food that contains a per cent of water or feed her dry food and she goes to the brook and drinks the water, for 87 per cent of pure milk is water. (1)

NORMAN BROWN.

Hoard.

FEEDING TURNIPS.

ED. HOARD'S DAIRYMAN:—On page 80 I see a controversy between H. W C. and Mr. Hyatt about feed ng turnips I have fed large quantities and can say that if fed properly they will not taint milk. They should not be fed until after the cows are milked. If fed before, they will undoubtedly taint the milk; and garlic will not taint milk if the cow is taken out of the pasture where it is before noon.

FAT AND FOOD.

The nearest approach to a definite modern opinion on this subject may be found in Mr. John Speir's article in the last volume of the Journal of the British Dairy Farmers' Association, wherein it is stated "that the only food which seems to have had any material effect on the percentage of butter in the milk is *an excess* of brewers' grains." In the cases which led to this conclusion, than was a *marked* decrease in the fat o/o. *Hoard*

PRICKLY COMFREY.

ED. HOARD'S DAIRYMAN.—Regarding prickly comfrey. It is a rank grower, starts up early in the spring, and its big leaves soon cover the ground and will kill out all other kinds of vegetation. It can be cut three or four times a year. It cannot be made into hay, as its leaves will wilt down flat, one upon another, and will rot before they will cure. It will grow on any kind of soil and make a yield according to its richness. It is propagated by planting root cuttings (small pieces of root) where the hills are wanted. For the first year it should be cultivated each way a couple of times and hoed. After that if it be cultivated each way once, it will take care of itself, as once well established it will stay as long as wanted, for every bit of root however small, will grow and the roots are so large and fleshy, that were a plant to be shaken free of dirt and laid on a fence corner for three months in summer, it would still grow when returned to the soil.(2)

A friend and neighbor has a patch of about one acre, which he has had for as much as twelve years. For five or six years he tried all kinds of plans to make his stock fond of it. It starved to it, they would eat it, but were never fond of it, and now for a long time he has given up all attempts to make them eat it, and has been trying to eradicate it. If any one wishes to try it and will write me, I will get them all the roots they want at $1.00 per 1,000, as that will pay a boy for digging and packing, and I am sure my friend would be glad to give them away in car load lots or less. I don't know of but one fault with prickly comfrey. It ain't worth a continental after you get it.

J. S. WOODWARD.

Lockport, N. Y.

Have raised and used prickly comfrey for sixteen years and about the only thing that I would recommend it for, is to utilize some rich waste corners about the yard or lots, where a hardy perennial may grow and survive the rough usage of poultry or stock during winter and early spring. For feed culture or truck patches for green soiling, most any other forage plant will do better, with same treatment. As for hay I would as soon think of making hay of cabbage leaves as of comfrey. J. C. S.

Pendleton, S C,

Prickly comfrey does best on a deep mellow soil and responds promptly to heavy manuring. It should be set in "hills," 2x3 feet, or perhaps 1½ by 3. The usual way is to plant a single crown of the root in a place. Cultivate as often as the ground may need until the plants get large and strong, and top dress frequently, with good, thorough cultivation thereafter, only when the plants have recently been cut down.

This plant is used exclusively for soiling, except that its root is reported to have some medicinal properties, one of which, or for which it has been used is to "cure!" (cover up?) heaves in horses.

Made into hay the leaves are brittle and repulsives because of the prickles, which seem to have hardened.

Silage made from prickly comfrey at the New York State Experiment Station was disagreable to all who approached it and the cows seemed highly disgusted by an offering of it, This was very noticable as they were eager for food, but one smell of comfrey silage caused them to try to pull out of their stanchions.

FRANK E. EMERY.

FAT AND FOOD.

A New York Dairyman on this Subject—Has made the Experiment and Gives the Figures—Per cent of Fat Increased more than One-Third.

ED. HOARD'S DAIRYMAN.—Of late I have read with considerable interest in your most valuable paper the pros and cons on the subject of feeding butter fat into the milk.

Now, if you, or any of your many readers, think it cannot be done, please just take one good average cow, that has been milked four or five months and put her on to full feed of common marsh hay and about a half bushel of potatoes per day, for a period of forty days, then test her milk with the Babcock test. After this gradually change her feed to early cut and nice clover hay, with one and one-half bushels of good matured corn ensilage, four pounds cotton seed meal the same of old process oil meal, eight quarts corn meal and eight quarts shorts mixed and in two feeds, one morning and one evening, for four weeks. Then, test her milk, and if it don't change the per cent of butter fats in her milk, I will agree to eat the cow, hide, hair, tallow and all.

About the 1st of February last, I tested the milk of a farrow cow that had been milked ten months (on purpose to satisfy myself on the subject.) Said cow was being fed morning and evening one-half bushel good corn ensilage, with four quarts shorts and bran mixed, with all the nice, early cut clover hay she would eat, and watered twice each day. After being on this feed four weeks, her milk tested, with the Babcock test, three and two tenths butter fat. Then, with some care, I added gradually two pounds cotton seed meal, two pounds old process oil meal and four quarts corn meal, twice per day, (which makes a heavy feed) and in four weeks her milk tested four and five-tenths butter fats. There was no change in the feed of ensilage, clover hay, shorts or bran Said cow is ten years old this spring, and of common size, and a good, fair, average milker.

Now, Mr. Editor, this was a fair test and I have explained it as well as I know how, and claim, and always have, that the better the feed the better the milk.

J. B. SHATTUCK

Chautauqua Co., N. Y.

NEW-YORK FARMERS' INSTITUTES DAIRY NOTES.

ED. HOARD'S DAIRYMAN—Herewith is the more important portion of the dairy discussions at the Phaladelphia Institute.

Q—When shall we water our cows?

A voice—When we get round to do it. Another one—water them at a proper time. The third one—Let them have constant access to it, and it should not be ice water either.

Mr. Converse—Some device should be put into the stable that will give the cows constant access to water. Our stables have a trough 6x9 inches, running the full length of them with running water at all times, at a temperature of about 50 degrees, and we find the cows drinking from fifteen to twenty times a day. Our cows were put into the stables about Nov. 1st and will be kept there till warm weather. We have so kept them in winter during the last seven years. They know nothing of winds and storms and are contented and healthy. Give the cow water when she wants it Not one of us would want to go out in the morning and drink enough ice water to last us twenty-four hours.

Mr. Woodward—And have to slide down the hill to get it! I am thoroughly in favor of watering my cows in the stable and would not turn them out in winter except in case of fire. Have kept them so housed in winter during the last ten years, and would not change to the old way under any consideration. I also find my cows prefer well, to running water, so I elevate it with a wind mill from a deep well and have it constantly before them, pure and fresh.

Q.—What is the best device for fastening the cows in the stables?

Mr. Converse—Almost any device except the old rigid stanchion There are several of the improved fasteners and all are good in some respects.

Mr. Woodward—How many of you are using the old stanchions?

The show of hands disclosed an almost unanimous vote. A few were using the swing stanchions; others were using chain fasteners.

Mr. Woodward—The cow will give at least 5 o/o more profit when put in comfortable stalls than when confined in the stationary stanchions. You will find, all things considered, the Bidwell stall the best.

He then described it, told what it cost, and said: "Comfort given the cow will put hundreds of thousands of dollars in the pockets of the dairymen of this state, and I want her to have it. In short, I can't afford to deprive her of it."

Q.—Do you advise the dehorning of cows?

A Farmer—Yes. Take them off at any season, but begin with the calf if you can. A cow is worth $5 00 more with her horns off than on. Half a dozen farmers present said they had dehorned their cows and would never again keep cows that wear horns.

Mr. Converse gave directions for using caustic potash on the calf's head to stop the growth of the horn, and said: "Apply it when the calf is a week or ten days old."

Q.—Should full cream cheese be branded? If so, why?

Mr. Woodward—I am the great American cheese eater. If only good full cream cheese were made, and every man ate as much of it as I do, there would not enough of it be made for home consumption; but I don't like skim cheese. If I cannot detect it when I buy it or eat, I very soon can after I eat it. When we consumers get it we curse it and the men who made it. I would have a law compelling, not only the putting of a brand on every pound of skim cheese made, but one on full creams as well, and both should give the analysis, viz, the per cent of fat, caseine and moisture in them. When we have such a law and it is enforced, we will know what we are buying, and not till then. It don't make any difference to me whether the fat in the milk gets away in the skimmer in the hands of the farmer, or through a separator, or if the cow skimmed it, or it gets away through the ignorance of the maker and slips into the whey vat Either system makes a skim cheese, which I will not buy if I can help it.

Q.—Is butter made from separator cream as good as that from the creamery?

Mr. Van Alstyne—Yes I don't believe there was ever any better butter than that which comes from separator cream. In fact, I know there is not, having used all devices for raising cream. This is also the verdict of the man who buys the butter in the market.

Q—Does it require an expert to run a Babcock machine?

Mr. Converse—No Anyone who has seen one operated, if he is intelligent and has a good nerve and eye, and will be cautious, can easily learn to operate it.

When the discussions were closed Mr. R. P. Grant, of Clayton, made one of the best addresses of the season his subject being, "The Relation of the farmer to the Watertown Produce Exchange." He said his profession was that of a banker, but he had some side issues, among which was the business of exporting cheese as well as manufacturing it, handling the product of eleven factories and managing six others. There are 114 American cheese factories in the county to-day, and we have the best Produce Exchange in the state, our cheese out selling that of Central New York by a good margin, and we are now making

(1) *Very good.*—ED

(2) As the Aberdeenshire man said to the Editor some 50 years ago "The *docken* plock is hard to kill lay it on a sclate steen for a twalmo' and it will be na muckle to uppen to *then.*

the best cheese made on this side of the Atlantic, Canada not excepted. He spoke of the difficulties that surround the maker, one of which is poor milk, there being one or more patrons in every factory who persist in illy caring for it, by exposing it to the odors from stable, cesspools and pig pens, and strongly urged reform in this direction, as it is these tainted, impure milk patrons, not the makers, who make the poor, low grade cheese. The maker should be fully competent to determine whether milk is pure or tainted, and when he find a can of the latter brand he should promptly reject it. If the patron gets mad and goes somewhere else let him go and carry his tainted milk with him. He referred to the admirable address of Dr Van Slyke at the Watertown meeting and said, there are, at least 3,000 farmers in Jefferson county who are taking their milk to the 114 factories making American cheese of it, and I only wish that every one of them could have listened to that address. He was glad that the experts of the department has been among the factories and taught the makers how to make a better cheese. He also said the Watertown Board of Trade had been selling 6,000 to 7,000 boxes of cheese a week, and that all differences are settled by arbitration.

An address "The Manurial Value of Cattle Foods" was given by Mr. J. S Woodward, and one having for a text, "The Silo in Connection with the Dairy," by Mr. Edward Van Alstyne, both of which drew out the usual grist of questions, one of which was: Do you recommend the use of commercial fertilizers?

Mr. Converse — No; if you have stock enough to furnish a supply of good manure. To profitably use commercial fertilizers one should know their market value, cost of their plant food elements, also the needs of his soil for the crops he intends to grow.

Mr. Van Alstyne—It will not answer for a man to a rely wholly on stable manure who has the liquids all drained out of it. Those liquids contain 60 o/o of the value voided and contain nearly all the nitrogen in it. Now, when it is known that some farmers actually try to get rid of their liquids by boring holes in their stable floors, and will pitch the solids out of their stable windows and leave them under the eaves exposed to storms till spring, thus losing 40 o/o of their value, it is very evident such farmers must use commercial fertilizers or content themselves with growing constantly decreasing crops. If a farmer has stock enough, and will feed liberally of nitrogenous fooe, then save all the manure and properly apply it, he may get along without commercial fertilizers, but not otherways. C. W. JENNINGS.

Belleville, N. Y.

NOTES ON JUNE CHEESE MAKING.

Examine everything and see that they are clean, such as weigh-can, faucet, milk-spouts or conductors strainer, curd knives, curdmills vats, weighing stand, floors, pails, scoops, dippers, &c., &c., and see if there be no chance for dirt to have a lodging place. In order that you may have cheese of perfect flavor, see that the drainage around the factory is in perfect order, wash your whey-tank out at last once a week, so that your patrons will see that everything is in perfect shape, then and not until then can you start to preach to your patrons about cleanliness, aeration of milk &c., give them line upon line, precept upon precept, and they will at once observe that you mean yourself to practise what you preach. You will then convince them that the factory is something and the whey is good, and not rotten or sour and good for very little as feed.

Inspect your milk carefully, reject all cans that have bad odours or inclined to be sour, try and convince your patrons you are working for their interests as well as your own; heat your milk to 84° or 86° F.; try it with the rennet test as given in the notes on April and May; use rennet enough to coagulate in from 30 to 40 minutes with good milk; when the milk is advanced use the same quantity of rennet and it will be ready to cut much sooner, in which case cut very fine to expel the whey, stir gently at first heat to 100° F., as soon as possible run off the greater part of the whey immediately, stir well and get your curd as firm as possible in the whey, draw the whey at ⅛ of an inch acid where the milk is not rich in butter-fat to a ¼ of an inch with rich milk; should your curd not be quite firm enough, stir your curd well until firm.

When your milk is good or of fair quality use as I said before rennet enough to coagulate in from 30 to 40 minutes, cut when it will break clean before the finger when inserted into the curd and lifting it upwards, cut with the horizontal knife first, the long way of the vat, then across and lengthways of the vat with the perpendicular knife, leaving it in cubes about ½ inch square, remove the curd from the sides and bottom of the vat with the hands very gently and stir for a few minutes before turning on the steam, heat gradually at first taking at least half an hour to raise it to 98° F. never past 100° F. Stir the curd constantly when in the whey, running off part of it very soon after the cooking is done, keep well ahead of your work. Draw the whey at an ⅛ to ¼ of an inch, except when signs of gas are apparent, in wh ch case give slightly more acid, if you have done your duty well when the curd was in the whey, you will not require a great deal of stirring after. Pack in the vat on each side or in the curd sink if you have one, piling it pretty high: in 30 minutes cut into strips, piling it double. Turn every 20 minutes adding every time until you get it 4 or 5 blocks deep. Keep at a temperature of 94° to 96° F., never beyond 98° F. Home makers are afraid of letting it remain too long in the pack before grinding, afraid of it getting too much acid, there is no danger at this point; allow it to get nice and rubbery, glossy, and if you have lots of gas into it keep it in the block until it has nearly all disappeared before grinding. Allow it to cool down a little before passing through the curd mill; as soon as the gas has disappeared salt with 2½ lbs. of salt. Stir for 15 minutes before putting to press. Try and make your cheese as large and even as possible; see that they are pressing even and square, do not allow too much bandage to cover the ends of the cheese, press very gently at first, turn them in about ¾ of an hour, using hot water to dip the end-cloths into, press well leaving them in at least 20 hours; use round end-cloths, or if not, grease well with hot grease immediately, do not leave the surface exposed or they will crack, turn them every day, do not sell too soon, 10 days at the very least, on the other hand, do not keep them too long: loss in weight and perhaps in flavor also. Brand them "Canadian" marking them neatly, the weights stencilled right at the end of the lap, see that your shelves are then washed well before putting on a new lot. Should the weather be very warm and dry, sprinkle the curing room occasionally with cold water: it will also help to purify the room and help your cheese. Fight dirt as your greatest enemy, and with care you are bound to succeed.

PETER MACFARLANE,
Inspector General.

St-Hyacinthe,
25 April 1894.

EXTRACTS RFOM THE

DELIBERATIONS OF THE COUNCIL OF AGRICULTURE.

March 7th, 1894.

The president presented the following report of the committee on programmes, which was read, amended, and carried as follows:

2nd. resolution: — That the 15th resolution, past at the last meeting of the Council, be cancelled and replaced by the following:

Seeing that the agricultural societies of the counties of Missiesiquoi, Shefford, Huntingdon, Compton, Richmond, Argenteuil, St-John's, Sherbrooke, Stanstead, Brome, Beauharnois, Chateauguay, Ottawa, No 1, Div. A, and Pontiac, have permanent exhibition buildings, or on account of the peculiar circumstances in which they stand, it is resolved that these societies be allowed to hold exhibitions yearly, on condition of their holding the other competitions ordered by the Council, and of their organising, every other year, the competition of standing-crops, fodder-crops and ploughing-matches (Carried.)

3rd. resolution: — That the 16th resolution be also cancelled and replaced by the following:

That the other societies not mentioned in the proceeding resolution must only hold an exhibition every other year, and must organise in the alternate years competitions on standing-crops and ploughing-matches. And during the year in which these competitions take place, the society shall hold no exhibition, but, with the consent of the Commissioner, it may devote part of its funds to any other agricultural improvement recommended by the Council. There is nothing to hinder these societies from holding a competition of the best cultivated farms at the same time as are held the competitions of standing-crops or the exhibitions in the years when these take place. In the year that the competition of standing-crops takes place, at least one-fourth of the grant is to devoted to the encouragement, by special premiums, of the crops or operations calculated to develop the dairy-industry.

In the year (the societies' year) that follows the approbation of this resolution by the Lieutenant-Governor in Council, these societies shall be obliged to prepare their programme in conformity with the spirit of that resolution as far as the alternation of the exhibitions, competitions, etc., is concerned, that is, for that year, to hold a competition if there has been an exhibition the previous year, or an exhibition if there has been a competition the proceding year. (Carried.)

4th. resolution: — Seeing that the agricultural societies of Huntingdon, Chateauguay, Beauharnois and St. John's hold this year a regional exhibition; that these societies be exempted from holding any other competition this year. (Carried.)

5th resolution: — The Commissioner may exempt one or more societies from holding an exhibition of agricultural products, in order to allow them to devote their funds to the purchase of breeding stock, or to any other agricultural improvement contemplated by the law. (Carried.)

6th. resolution: — The articles 111 and 112 chap. VI, of the Regulations of the Council of Agriculture are cancelled and replaced by the following articles:

Art. 111.—In order to increase the number of model-farms, in the province, to bring them to the knowledge of the public, and thus to prepare the members of the agricultural societies for taking part in the provincial competition of agricultural merit, every agricultural society shall be obliged to establish in its region, a competition for the best cultivated farms at least once in five years. This competition to be one of parishes or townships. Nevertheless, the societies may hold, in addition, a general competition of the best cultivated farms of their region, in accordance with the rules of the Council.

Art. 112.—The society shall hold this competition simultaneou-ly in all the parishes of its region in one year, or successively, so as to complete the whole region in five years. But, in the latter case, the society shall divide its region into territorial subdivisions, and shall indicate, beforehand, from the first year, the year in which shall be held the competition for each subdivision and decide upon the amount to be assigned to each subdivision, so as to expend, during the five years, the total sum that is to be devoted to the competition of the best cultivated farms. (Carried.)

7th. resolution: — Article 113 was amended so as to read thus:

Art. 113.—Farms o. 50 arpents and more, under the plough, are admitted to the county competitions; those of 20 arpents and more are admitted to the parish and township competitions. The prizes offered for farms shall only be paid to practical farmers, i. e., to those whose chief occupation is farming, and who make most of their living from it. As to those whose chief occupation is not farming, but who deserve a recompense, they shall receive a diploma, if the judges think they are worthy of one, and no competitor, in county, parish or township competitions, shall receive a money-prize, unless he obtain at least 60 o/o of the given maximum marks. (Carried).

8th. resolution: — Article 114 is thus amended:

Art. 114.—In county competitions, the societies must offer not less than five prizes, that is: 1st prize, $100 00; 2nd. prize, $60.00; 3rd. prize, $40.00; 4th. prize, $30.00; 5th. prize, $20.00; except in those counties where there is more than one agricultural society. In subdivisions of counties, the total of prizes offered is to be proportionate to the total of the annual grant to which these subdivided societies are entitled. The societies entitled to a maximum of $440 net, must offer prizes to the amount of $156, or more; those entitled to a maximum of $352 net, must offer prizes amounting to $125 or upwards; and, lastly, those entitled to a maximum of $220 net, must offer prizes to the value of at least $78. (Carried.)

9th. resolution:—The following replaces article 115, which is cancelled:

Art. 115.—In the parochial or township competition of the best cultivated farms, the total of the prizes offered for all the parishes or townships shall

be raised to the amount fixed for each society by the preceding article. (Carried.)

10th. resolution :— Articles 116 and 117 *are thus amended :*

Art. 116.—To be entitled to take part in these competitions, every member of an agricultural society must, before May 1st, pay his subscription of one dollar, and a special additional entrance-fee of $2 00, for county competitions, or, for parochial competitions, such smaller sum as the *board of* directors shall fix upon ; and if he shall win a prize in this competition, *he shall also have a right* to gratuitous entry to the provincial agricultural competition of agricultural merit, on conforming to the rules concerning this last competition.

Art. 117.—For the competition of the best cultivated farms, the society shall select, as far as possible, from among the laureates of the Mérite *Agricole, one or more judges of impartial* and enlightened character, who shall *give their decision in accordance* with the programme of the Mérite Agricole mentioned in the following chapter. (Carried.)

11th resolution. — Article 122 is amended by omitting the words "are obliged to hold" in the second line, and substituting for them the words "may hold." (Carried).

12th. resolution : — In future the Council will strictly enforce its decision not to permit any prizes in the exhibitions to be awarded to cross bred males. (Carried).

The following resolution, proposed by Mr. Foster and seconded by Mr. McDonald, was read and carried as follows :

14th. resolution :—Seeing the importance of maintaining the reputation acquired by the products of our dairy-industry at the Chicago Fair, the Council recommends the appointment of a Dairy-Commissioner. (Carried.)

18th. resolution :—That the agricultural society of the county of Hochelaga be repaid the sum of $47.50, which was retained from it, provided it can show that that sum was paid for the hotel expenses of the judges at the *Stallion-show in the spring*, at the exhibition in the fall, or at the ploughing-match. (Carried).

19th. resolution :—The Council recommends that 3 lbs. or 4 lbs. of the Improved wood vetch (flat pea) (gesse des bois), (Lathyrus Silvestris Wagneri) *be imported*, and distributed to those persons who are in a position to make a persistent *trial of it*, and will engage to report on it to the Council after harvest (Carried)

20th. resolution :—In reply to the prayer of the agricultural society of *Verchères, it is* resolved. that it is important that members of the Council alone be chosen as representatives of the Council in the agricultural societies, and that Mr. Timothée Brodeur continue to be one of the directors of that society. and that, in future, he be notified of the meetings of the board of directors, like the other directors. (Carried.)

21st. resolution : — That MrBasile Lamarre represent the Council in the agricultural society of Chambly county, as one of the directors instead of Mr. Nap. Daigneault, and that the society be obliged to notify him beforehand of each of the meetings of the board of directors. (Carried.)

22nd. *resolution* :—That Mr. Andrew J. Dawes represent the Council in the agricultural society of Jacques-Cartier county, as one of the directors, instead of Mr. Avila Legault, and that the society be obliged to notify him beforehand of the meetings of the board of directors. (Carried.)

23rd. resolution :—That fresh notice be given to each of the agricultural societies informing them that they will have to give notice to the director for their society chosen by the Council, as they do to the other directors of their societies. (Carried.)

24th resolution : — At the request of those interested, the Council recommends that a regional exhibition of the counties of Berthier, Joliette, L'Assomption and Montcalm be held this year. (Carried.)

26th. resolution :—In view of the great difficulty of putting into execution the 2nd paragraph of article 1615j, relating to the gold medal of the Mérite Agricole, the Council recommends that the law be amended by cancelling this 2nd paragraph. (Carried.)

27th. resolution :—That the attention of the government be drawn to the need of immediate measures for the protection of our cattle against the imminent danger of tuberculosis, and that an understanding be at once arrived at, if possible, with the Ottawa government, in order that our cattle be guarded against the attacks of this disastrous disease. (Carried.)

28th resolution :—Seeing the danger incurred by our town population through the use of milk from cows suffering from tuberculosis, that the municipal authorities of our cities and towns be invited to take all steps necessary to abolish a plague that may sweep off whole populations. (Carried.)

29th. resolution :—That a law should be passed to enable all cities and municipalities to adopt regulations by which they may have milch-cows examined by veterinary-surgeons in order to ascertain, by means of tuberculin, or otherwise, if these cows are tuberculous or not. (Carried).

31st resolution :—The agricultural societies may establish parochial or township competition for the best specimens of fall-ploughing of not less than five arpents in superficies. To settle the merit of each competitor, the judges will have to judge the whole of the ploughing done by him in the fall of the year in which the competition is held. (Carried.)

33rd. resolution : That no amendment to the regulations of the Council of Agriculture be passed unless a draft of this amendment be previously sent to the Secretary of the Council of Agriculture, in order that he may send a copy of it to the members of the Council, with a notice of the meeting of the session at which this amendment is to be submitted to their discussion. The Council, however, may suspend the application of this rule, with the unanimous consent of its members.

34th. resolution : — That a committee for revising the regulations of the Council be appointed, composed of the Hons. President and Vice-President of the Council, and of Messrs. Dawes, Tremblay, McDonald, Marsan, Grignon and Taché, and that this committee be also the committee on legislation of the Council for the current year. (Carried.)

35th. resolution :—That the Secretary of the Council of Agriculture be enjoined to add, in manuscript, to the pamphlet entitled "Laws (of agriculture) and Rules of the Council", all the amendments to these laws and rules that have been made since this pamphlet was drawn up, and to send a copy of it, thus corrected, to each of the members of the Council. (Carried.)

COMPETITION OF AGRICULTURAL MERIT 1893.

List of prizes.

No.	NAMES.	RESIDENCE.	COUNTIES.	MARKS.
1	E. B. Eddy,	Hull,	Ottawa,	96.30
2	Wm Allan,	Hull,	Ottawa,	93.75
3	Henri Bourassa,	Monte Bello,	Ottawa,	92.50
4	Wm. C. Edwards,	North Station Mill,	Ottawa,	88.20
5	R. H. Wright,	Aylmer,	Ottawa,	87.90
6	Adolphe Turenne,	St. Paul l'Ermite,	L'Assomption,	87.75
7	Andrew Waterston,	Lochaber,	Ottawa,	87 70
8	Pierre Gervais,	St-Cuthbert,	Berthier,	87.45
9	F. O. Lachapelle,	St-Paul l'Ermite,	L'Assomption,	87.25
10	Ovide Marion,	St-Jacques l'Achigan,	Montcalm,	87.20
11	Adélard Barette,	St-Mélanie d'Aillebout,	Joliette,	86.65
12	Luc Charette,	Ste-Marguerite du Lac Masson,	Terrebonne	86.45
13	John A. Cameron,	Thurso,	Ottawa,	86.10
14	Louis Deschamps,	St-Paul l'Ermite,	L'Assomption,	86.05
15	Ménard Rivet,	St-Paul de Joliette,	Joliette,	86 05
16	Roch Simard,	L'Assomption,	L'Assomption,	85.95
17	Jos. R. Généreux,	L'Assomption,	L'Assomption,	85.95
18	James H. Lloyd,	St-Lin,	L'Assomption,	85.85
19	Arsène Denis,	St-Norbert,	Berthier,	85.85
20	Horace Lamarche,	St-Esprit,	Montcalm,	85.45
21	Rob. & Wm. Conroy,	Aylmer,	Ottawa,	85 40
22	Jos Ant. Lalonde,	St-Ignace de Mominingue,	Ottawa,	85 35
23	Albert Routliff,	Aylmer East,	Ottawa,	85 35
24	Joseph Coulombe,	St-Norbert,	Berthier,	85.30
25	Théophile Trudel,	St-Prosper,	Champlain,	85.20
26	Eusèbe Lajeunesse,	Ste-Marguerite du Lac Masson,	Terrebonne,	85 15
27	J. B. A. Richard,	Joliette,	Joliette,	85.07
28	Daniel Pink,	Hull,	Ottawa,	85.05
29	Edwy Kanny,	Aylmer East,	Ottawa,	85 05
30	Dr Wilfrid Grignon,	Ste-Adèle,	Terrebonne,	85.05
31	Nap Lachapelle,	St-Paul l'Ermite,	L'Assomption,	85 00
32	Edward Graham,	Elmside,	Pontiac,	82.70
33	Augustin Clément,	St-Maurice,	Champlain,	80.30
34	Philippe Garceau,	Pointe du Lac,	St-Maurice,	80.25
35	Thadée Belleville,	St-Jean de Matha,	Joliette,	79.50
36	François Marcotte,	Thurso,	Ottawa,	79.10
37	Alphonse Raby,	Thurso,	Ottawa,	78.50
38	James Cuthbertson,	Clarendon,	Pontiac,	78.00
39	Cyrille Grenier,	Ste-Agathe,	Terrebonne,	77.90
40	André Aubry,	St Maurice,	Champlain,	76.70
41	Miss M. McLachlan,	Lochaber Bay,	Ottawa,	75.85
42	T. S. Mackay,	Papineauville,	Ottawa,	75.65
43	Joseph St. Amour,	Ste-Agathe,	Terrebonne,	75.55
44	Henri Bettez,	Côte Ste-Marguerite,	Trois-Rivières,	75.40
45	Elie Desrochers,	St Sauveur,	Terrebonne,	75.40
46	Sévère Marcoullier,	St Sévère,	St-Maurice,	75 40
47	Alfred Roch,	St-Norbert,	Berthier,	75.30
48	Casimir Latour,	St-Sauveur des Montagnes,	Terrebonne,	75 30
49	Del. Tessier,	Ste-Anne de la Pérade,	Champlain,	72.55
50	Joseph St-Pierre,	Banlieue,	Trois-Rivières,	72.40
51	Hen. T. McDowell,	Clarendon,	Pontiac,	72.25
52	Hormidas Renaud,	MonteBello,	Ottawa,	71.60
53	Michel Bourassa,	St-Barnabé,	St-Maurice,	71.40
54	David Racicot,	St-Barnabé,	St-Maurice,	70.75
55	Sévère Panneton,	Banlieue,	Trois-Rivières,	70.75
56	Ant. Ol. Montreuil,	Ste-Anne de la Pérade,	Champlain,	70 75
57	Isaac Charette,	Ste-Marguerite du Lac Masson,	Terrebonne,	70 65
58	François Latour,	Ste-Adèle,	Terrebonne,	70 50
59	Henry Garçon,	North Station Mill,	Ottawa,	70 35
60	Joseph Meloche,	MonteBello,	Ottawa,	69.60
61	Lambert Bélanger,	St-Sauveur des Montagnes,	Terrebonne,	69 35
62	Louis Neveu,	Ripon,	Ottawa,	68.65
63	Elzéar Ricard,	Ste-Anne de la Pérade,	Champlain,	68.65
64	Joseph Forget,	Ste-Agathe,	Terrebonne,	68 00
65	Damase Thibodeau,	Ste Marguerite du Lac Mas,	Ottawa,	67.75
66	Joseph Brisebois,	St-Amédée,	Terrebonne,	67.55
67	Edouard Couillard,	St-André Avellin,	Ottawa,	67.10
68	J. & G. Black,	Thurso,	Ottawa,	66.80
69	Joseph Plouffe,	St-Sauveur des Montagnes,	Terrebonne,	66.70
70	Pierre Giroux,	St André Avellin,	Ottawa,	66 60
71	Magloire Louizeize,	Ripen,	Ottawa,	66.60
72	Benjamin Lacasse,	St-André Avellin,	Ottawa.	66.55
73	Auguste Lallier,	Ste-Agathe,	Terrebonne,	66.15
74	Joseph Gregher,	Ripon,	Ottawa,	66 45
75	Jos. Panneton,	Ste-Marguerite,	Trois-Rivières,	66.35
76	Maxime Grenier,	St-Barnabé,	St-Maurice,	65 90
77	Edward McClusky,	St-Amédée,	Ottawa,	65 70
78	Adélard Forget,	St-Sauveur,	Terrebonne,	65.70
79	James Craig,	Thurso,	Ottawa,	65.55
80	J.-Bte. Goyer,	St-Sauveur des Montagnes,	Terrebonne,	65.05
81	Henri Bettez,	Ste-Marguerite,	Trois-Rivières,	65.05
82	Hilaire Garceau,	Ste-André Avellin,	Ottawa,	59.35
83	Napoléon Gauthier,	Ripon,	Ottawa,	53.30

(Signed) E. CASGRAIN,
GEO. BUCHANAN,
Judges of Agricultural Merit.

L'Islet, 11 November 1893.

Speech of the Hon. John McIntosh at the banquet tendered to him at Montreal by his friends, the 3d April 1894.

MR. CHAIRMAN AND GENTLEMEN,

There are times in a man's life, especially in his political life, when he is apt to feel that his friends forsake him; there are times when a man fails to comply with his friends' wishes, either by assisting them in some way or another; or by being unable to redress some real or imaginary wrong: first because he is unable, and secondly, at other times when it would not be in the general interest for him to do so; and when these circumstances occur, it is very often attributed to him that he is ungrateful and forgetful of the many favors which he has received from time to time at their hands. No one ought to be more grateful than the one who has chosen a political life; one who has given himself over to the service of his country, and when in his power and in the general interests he ought to be the first to acknowledge his postion of trust by being generous towards them. But this evening, Mr. Chairman, I find that you have not laid heavily to my charge the sin of political ingratitude, for I find myself at this grand and beautiful demonstration, surrounded by a great many of my friends, not only of those who believe as I do politically, but by many who differ from me politically.

I have had the occasion in the past to contend on the hustings from county to county with those gentlemen; I, believing that I could serve my country better by being a Conservative, on the other hand, they believing they could do so by working with the Liberal Party. They have as good a right to their opinion as I claim I had to mine, and to-night I am proud to see my Liberal friends, here at this national gathering, and I hope we shall make it an enjoyable feast for every one present. This gathering, Mr. Chairman, is a truly representative one from the City of Montreal, as well as from the rural districts of this province, and while I feel greatly pleased with the character of this banquet, I should fail in my duty, were I not to say that, while you have the honor to preside over such a gathering of gentlemen, it is also an honor for us to have you act in the capacity, as Chairman, not especially because you are the chief magistrate of the greatest city in the Dominion, but because you have an untarnished name For many years you have taken a deep interest in the civic matters of this city, you have also taken an active part in our provincial matters, and yet there is no stain on your public life? I said a few moments ago, Mr. Chairman, that we were a truly representative body of men assembled, here to-night, not only from the City of Montreal, but from the rural parts of this province. It is well that it should be so, for, I believe, that the interests of both ought to be blended together. I believe it is impossible to have so prosperous a city if the agricultural interests are not in a prosperous condition, and *vice versâ*. I believe that the agricultural interests are more prosperous when our commercial centres are in a flourishing condition. If I am right on this point, then I believe it necessary that both should work together for the common welfare of all. I believe a new era has begun in this Province and in the Dominion which I believe will tend to make this a more prosperous country and more remunerative for the farmers; namely, developing our dairy industry. This work was begun some years ago, under former Governments, but I believe no Government has ever done so much as what is being done at the present time. Great credit ought to be given to the present Minister of Agriculture, the Hon. Ls. Beaubien, for the energetic and practical way in which he is pushing this work forward. There are now in the Province over four hundred & fifty (450) Farmers' Clubs, all well organised and doing a good work, holding meetings weekly or every two weeks, as the case may be, discussing amongst themselves the best mode to be adopted in farming, which is to them a veritable school for the farmers and their sons; where they can exchange thoughts and ideas with one and other. We have come to realise this fact, that we must work more intelligently than we have in the past, if we want to keep pace with other countries, which are strong competitors in the same market where we have to dispose of our products. These clubs tend to assist us in learning how to cheapen the production and maintain a good quality of such articles as we have to find a market for. These clubs also tend to bring farmers closer together and as it were concentrate their ideas together. We also have a few public lecturers in the Province, whose duty it is to occasionally give a lecture on farming under the auspices of these clubs. We also have a great many men in our country who have the interests of the Agriculturists at heart; who devote a great deal of their time, without any remuneration whatever, to attending those farmers meetings and give a lecture or read a paper on different subjects pertaining to farming We have an opportunity at these gatherings to tell the farmers that it pays better to go largely into butter-and cheese-making than any other branch of farming. The reason, Mr. Chairman, is this: Providence has favored us with a favorable climate, good grazing, well watered land, and we have already demonstrated, as I will show you in a very few moments, that have all the intelligence required to we manufacture an excellent article of both butter and cheese, so that we we are able to compete successfully with any country in the world as to quality. We also have an opportunity at those Farmers' Clubs to say that a man who does not milk his cows ten months a year is not farming with as much intelligence as he might do. We can also say that the man who does not get a revenue of $50.00 a year from each cow, has either got the wrong breed of cows or he is not raising on his farm the proper kinds of succulent food to enable that cow to produce the right quantity and quality of milk. We can also take the advantage at those meetings of saying that the farmer who only keeps fifteen or twenty head of cattle the year round on a farm of one hundred acres does not prove himself to be a benefactor to his race, for we teach him an object lesson right there, and point out to him many who succeed in keeping nearly double that quantity on the same number of acres. An object lesson is what is wanted, Mr. Chairman, in dealing with the Agricultural Class, and a few practical farmers do an immense good in the surrounding localities, where they are situated. I believe, Mr. Chairman, that the day is not far distant when this Province alone will export more butter and cheese than has been exported by the whole Dominion in 1893.

There is such a movement now going on which cannot fail to reach that proportion which I have just stated, and if ever there was a time that we needed the co-operation of the commercial people in the city of Montreal, it is the present time, and that is to assist us in maintaining quality and having our goods reach the consumer in the different markets where our goods are sold in as fresh and acceptable a condition as possible. The question of inspection of butter and cheese has often been under consideration in the Legislature at Quebec but as yet no action has been taken; I mean this inspection to be one made when goods are shipped and these goods branded under the inspector's brand. How far we can go in this direction I am unable to say, or whether it would be of any advantage to us, but I believe if we can produce fine goods there ought to be some way in which those goods can be protected, and thereby encourage the manufacturer to keep quality uppermost in his mind. I do not think, gentlemen, that I have over estimated the amount of pounds of butter and cheese this province is able to produce, and I am sure I have not exaggerated as to the quality. I propose now, Mr. Chairman, to strengthen some of my remarks by referring to the World's Columbian Exposition at Chicago and then show what success we have obtained by putting our exhibits from this province, composed of all products of the soil, horses and cattle; comparing them with other countries who were there, and showing the resources of their country to the best advantage. Before doing so, let me say that this province, as well as the Dominion of Canada, were well treated by our neighboring Republic, the United States, sharing the same advantages as other countries and with the same facilities as to space and position as any State in the Union; and, personally, I had the hearty co-operation of colleagues in the Cabinet and especially of the Minister of Agriculture, whose department was more immediately concerned. I had also an Advisory Board, composed of men who had large experience in exhibition matters; therefore, with a Government who had confidence in my work, and an Advisory Board such as I have mentioned, success was almost sure to follow. Time would fail me were I to mention particularly the different courts occupied by the Province of Quebec: our fruit exhibit, our minerals, our agricultural products, our educational exhibit, and our forestry. I would only say that no Canadian visiting the Exhibition would be ashamed to acknowledge, while viewing those different exhibits, that he came from the same country where those were produced. For horses and cattle, especially our cattle, we were very successful. Taking the Ayrshire breed alone, prizes in money to the amount of ten hundred and thirty dollars; in all, on cattle, we succeeded in taking twenty-seven prizes, many of them being first prizes, and two sweepstakes. Great credit is due to those who contributed by sending their cattle and horses, as it required many months in getting those cattle prepared and fitted so that they would appear to as good advantage as possible. I believe, Mr. Chairman, that they have got their reward, besides doing a vast amount of good to the Province. To-day the demand for dairy-breeds of cattle and the success so obtained with our Ayrshires has, I believe, doubled the value and increased the demand of the young male animals of either Ayrshires or Jerseys.

Mr. Chairman I will now confine my address to butter and cheese. Our first competition took place in the month of June, and although our exhibit of cheese was not large, in numbers, we were very successful. Out of seventy cheese we took fifty-two medals. Such marked success as that was a great surprise to many, but I knew those cheeses had been carefully selected by my friend, Mr. H. S. Foster, of Knowlton; not only selected, but he had supervised the manufacture of those cheeses, and his untiring efforts I felt would prove successful. I might say here, Mr. Chairman, that our exhibit of cheese and butter were under the charge of Col. O. P. Patton while on Exhibition; and I assure you when those cheeses were presented to the judges, they appeared to as good advantage as possible. When the awards were made public, the Chicago Press commented very strongly on the position Canada had taken, and some newspapers went so far as to say that this was a snapped verdict, as the cheese had been judged by two Canadians and one American, wondering at the same time why Quebec had taken so many medals. While reading these comments in the newspapers one would be led to think: where is the Province of Quebec situated? That alone Mr. Chairman taught me a lesson, and that is, that we here in this Province do not talk enough about our own country. Why, Sir, I found that the people of each State of the Union were always talking about themselves, and when they found nothing more to say about their own State, they talked about the Union as a whole. It was stated in the daily press of that city what they would do when the fall competition took place, (which would be in October) and how they would show Canadians who were entitled to have the name of making fine cheese. Our answer to their disappointment a challenge was that the Dominion of Canada had come to the World's Fair with their products on the first of May, and we intended to stay six months, and when the month of October came round we would again be there with an exhibit of cheese ready to meet them.

The month of October soon came, Mr. Chairman, and the Province of Quebec was there with one hundred and thirteen cheese from one hundred and thirteen exhibitors.

The judges selected to do the work at this competition were two American and one Canadian judge and out of the one hundred and thirteen cheese, from the Province of Quebec, we were awarded one hundred and five medals, only eight of this lot did not score points enough to entitle them to a medal. I might add that out of this test, five of our cheese scored 99½ points, out of a possible one hundred points: almost perfect cheese Mr. Chairman. Three of these were exhibited from French parishes in this Province. We had another test of cheese made in 1892, which was over one year old. Out of forty-five cheese, which we had on exhibition, forty-one scored high enough to be entitled to a medal. Putting those figures altogether, you will find that at the different times of competition we had in all on exhibition 228 cheeses and we took 198 medals.

In butter we did not do as well. It had been shipped in refrigerator cars from Montreal to Chicago, but previously having to come from different parts of the Province, and taking in all the time it was in transit, we are confident it lost somewhat in flavour. But notwithstanding the distance we had to ship this perishable article, we were

compensated by receiving a fair share of medals, some of the samples coring very high in number of points.

Now having gained the reputation of being able to manufacture fine cheese and butter, I think we should watch very closely that in the future we maintain well the position we have attained and, if possible, strive to improve in quality as well as in quantity and thereby aid in making our Dominion prosperous.

Mr. Chairman, the different Provinces in this Dominion vied one with the other as to which should show their Provincial products to the best advantage; that seemed to be right and just, but when it came to a question of Canada as a whole, we, who were representing the different provinces, joined as one man and worked for the interest of the Dominion.

This to my mind is the only way in which we can make our country a prosperous one, by laying aside sectional interest and sectional feelings and prejudices, and work and legislate with one end only in view, and that to make a country noble and great, a country prosperous and a possession for our children to live in, a veritable and worthy inheritance.

Lancaster, Ont., April 24 1894.

HON. LOUIS BEAUBIEN
Minister of Agriculture
Province of Quebec

My Dear Sir,

I have your letter of last month *re* report of "farm work", as you desired of me. I apologise to you for the delay, which is owing to my not having yet sold my fat stock on hand. I am unable to give you a statement of my past year's work which would be satisfactory, i. e., on my own farm, and shall not be able to do so until some time in June, more particularly so as I have been for the past two years raising young cattle, as an experiment for *milk and beef.*

So far as I am able to judge the experiment of raising young cattle for beef production will not prove profitable or satisfactory, but the raising of choice heifer calves from pure bred Jersey or Guernsey bulls, to build up milking herds, is highly successful, and I strongly advise *all* dairymen to provide themselves with a pure-bred Jersey or Guernsey bull to cross with the ordinary native cattle, and with such, my experiments and experience go to prove most conclusively it is the most reliable and profitable means to build up the herds of our county. Too much encouragement cannot be gone into to popularise and encourage this important departure.

I shall with pleasure now relate to you in detail the circumstances and results of my assistance rendered to Patrick Lee, of Lee's Corners Kilbain P. O. Co. of Huntingdon. Two years ago last fall, I assisted Mr. Lee to complete a stable for 32 head of cattle, silo for 200 tons corn, windmill, water-tank-pipes and water-trough all complete, on a 50 acre farm. This farm had been completely run out, from grain-cropping, for 40 to 50 years. The land is rough and sandy, one half being *fairly good soil, when* first cleared of the forest, the other half is a sandy loam. To build the stable, silo, and stock this farm. it cost $1,800.00 of a cash outlay. The main product sold is milk. This year, the close of the third—will no doubt see the entire outlay of $1,800.00 paid off. Last year's sales and expenses—were as follows. Milk: cash received $1300.00, pork: do $65.00; calves $15.00, total $1380.00. Expenses. purchased food, Bran, pea meal and oil cake $270 00, rented day pasture for cows $70.00, labour paid out, $100.00, repairs. $50 00; total, $190.00, leaving a balance of cash of $890.00 for the year 1893. Other articles were produced for family use such as eggs, pork and butter—besides a colt raised This coming year, Mr. Lee expects to do *something* better than last year, as his land is improving very fast from the increased manure made from all purchased food. Mr Lee fully feels that he will be more than two thousand dollars ahead, at the end of the 3rd year. While he is now making money and laying a foundation for future prosperity increasing from year to year, his neighbours are following the old plan of work, some of whom are barely living and many falling behind each year, and laying a foundation for future ruin. Mr Lee, three years ago, was yearly going into debt with a prospect of losing his only home in a few years, and no prospect of being able to educate and do well for his children. He can now say with confidence and gratified assurance, that he will save his home, lay by money, and educate his family to the extent that duty and the times demand. I am about starting two more farms in the county of Glengarry on similar methods, and shall watch with interest a comparison of results in the future.

I am strongly inclined to believe that a scheme and plan can be devised whereby many farmers could take advantage of similar opportunities, so as to enable them to make the most out of their environments and chances. I hope, in the near future, to fully mature such a scheme in all its details, that it can be made, general and universal and which I am sure will mark the begining of an era of rapid studies to improve the profitable methods of farm work. I hope to have the cooperation of the Provincial and Federal Governments to attain this, as well as of the municipalities and people. If the farmers are made prosperous, they will buy more requirements of all kinds and thereby stimulate trade. The people can pay the expenses of the Federal—with ease — the Provincial can secure their necessary requirements readily, and the municipalities can raise more for public local improvements, such as roads, &c., &c, to a much larger extent, all of which will be a common advantage to farmer, artisan, professional man, politician county, province and Dominion.

Yours very truly,

D. M. MACPHERSON.

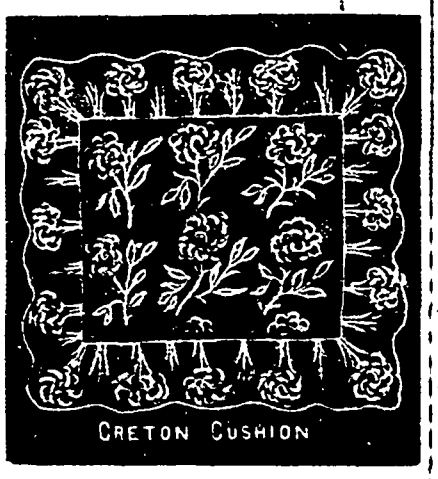
P. S.—I have written this letter some what of a private nature, and the facts or matter you can use as you think best. If there is anything more which you would desire to have I shall, most cheerfully, accord to you my best opinion. I am striving after new methods to better our condition, and should I hit on anything which is useful, I will gladly give it to the public *free* and *gratis.*

The high opinion I have of your private and public motives for the public good prompt me to be more free and frank with you in your high and honourable position in thus expressing my opinions and aims, than it is perhaps, becoming for me to do.

Hoping you may be long spared with good health and opportunity to carry on the good work you are so *nobly prosecuting.* D. M. M.

Household-Matters.

There seems to be a great stir just now about the hard worked farmer's wife, and I have not yet found any person who can say just how it can be altered If the daughter will not stay at home and work, how can the question be solved. I know cases in which the girls have worked during the summer and either the father or mother have taken their earnings, buying them a trifle, and keeping the rest. It seems to me a girl should be trusted to take what she earns, and if



she has been well brought up, surely she would give a share at home if it were needed, and feel a pride in doing so The daughter goes to town and very soon gets high wages, which she does not know how to spend. It goes, and at the end of a year, she has learnt to spend, and to want more. She has never had any money of her own, so she does not know the value of it, and when she goes home, after a year or so, empty handed, they wonder what she has done with her earnings. I know a case in which the father on meeting his daughter said: "I do hope you have brought us some money?" the answer was: "not a cent," and she had frittered away $120 since they parted: with the exception of a little trashy jewellery, and a few clothes, she had nothing to show. Of course there are girls, who think of those at home when they get their wages, but the extravagance of the present day seldom leads to saving. I really think if girls could be compelled to stay at home as long as they are wanted, it would be better for them. I am speaking of girls that are useless as servants, even. They have led such an idle life at home, *that people are* afraid to undertake their training. So the very best place for them is the farm-life. I could give many instances, of girls who have done fairly well, but as a rule it is the big wages they want, your work, and the way it is done, is a matter of indifference to them. *How this is to be* alter d, without better teaching at home, I fail to see. I speak of girls from the lower St. Lawrence, and as people are fighting shy of even bringing them to town, this may work its own cure in time.

—Frank R. Stockton in *Home Journal*: "If house service could be looked upon the proper way it wouldn't take long for American girls who have to work for their living to find out that it's a lot better to live with nice people, and cook and wait on the table, and do all those things which come natural to women the world over, than to stand all day behind a counter under the thumb of a floor-walker, or grind their lives out like *slaves among a lot of steam engines* and machinery."—*R. N.-Yorker.*

If girls were taught from their childhood, never to be idle, and whatever they did to do it well, there would be laid up for them a far happier future; as a rule they lounge about and do very little. If some of them could only be made to mend and make their clothes? No they spend, and as one of them told me, she never mended stockings, but, when the feet were quite gone, bought others, "that is what the girls I know do," she said; so what answer was there to this? One could only say it was sad. When hard times come to such people one is inclined to say *their punishment is deserved.*

STAINING FLOORS.

How to make the sitting room look nice. Stain the floor a nice pale oak-*colour. To do this get raw oil, and* mix with burnt umber. It takes about a teaspoonful to one quart of oil, mix the two very carefully before you begain to stain. Try it on a bit of board, to see if you have the shade you like. If you want it darker, add more umber, but the pale shade, I have always found the prettier. Now lay it on with your paint brush. If you have a square of carpet, and paint round it, you will find it look well. It dries very quickly, and only wants wiping over with a damp cloth now and then. Varnishing over when quite dry adds a good deal to the expense, but looks nicer.

Now take the chairs If they are the common country chairs, never mind, you will be the prouder of them, when you see them finished. *Take two,* paint them white; two thin coats, mind, are better than one thick one; paint two red, and stain a couple the same tint you have used for the floor. Make a cushion for each chair; turkey-red *makes up and looks well,* with a frill of the same, and, certainly is not expensive. It really matters very little what the covering is, even if it is patch work, but a frill adds so much to the appearance of the cushion. To make it look nice, you must put the frill quite full, and more so at each corner. If you buy new material and tear the frilling from the selvage sides of the same, it will save the trouble of hemming. To save time, I will give the proportion of material to make one. For the cushion, half a yard square of almost anything you have, filled with whatever you have at hand.

For the cover, one yard of goods 36 inches wide. Tear the yard in two, take one half and double cut in two, *thus giving two exact squares.*

Now cut up the remaining half yard into four for the frill; join the pieces, and hem one side, gather up the bottom and tack it to one of the squares, being careful to divide it, so

that an equal quality of fulness shall be on either side. Take the remaining square, tack and sew it, with care, to the other with the frill turning inwards between each square. I find it a good plan to just sew the pillow before turning in two corners of the cover, not the side of the opening but the opposite side. Turn your cover over the cushion, taking care not to burst the opening, sew up the opening, and the cushion is finished. A green frill for the white chairs, red for the stained, and blue or any fancy colour for the others, look well. Ornaments for the sitting room will be talked about in a future article.

THE SMALL WHITE BEANS.

My reason for writing about them now is to induce people to sow plenty for next winter's consumption. Few people dislike them, when well cooked, and they are such a strength-giving nourisher of the whole system, as witness the shanty men in the back-woods, who cannot do without them. If you have more than you want, you can get a good price for them, as they are always in demand among sensible people who know their value. I should be very glad to know where to get a bushel next autumn, as we seldom get them very good in town; I fear the new is mixed with the last year's crop, so they do not cook evenly. We will talk about cooking them next winter, but *do* grow plenty. And I might add, if your soil is suitable, sandy that is, grow your peas for pea-soup, to which I shall do my best to convert you next fall.

BLOUSE AND KNICKERBOCKERS.

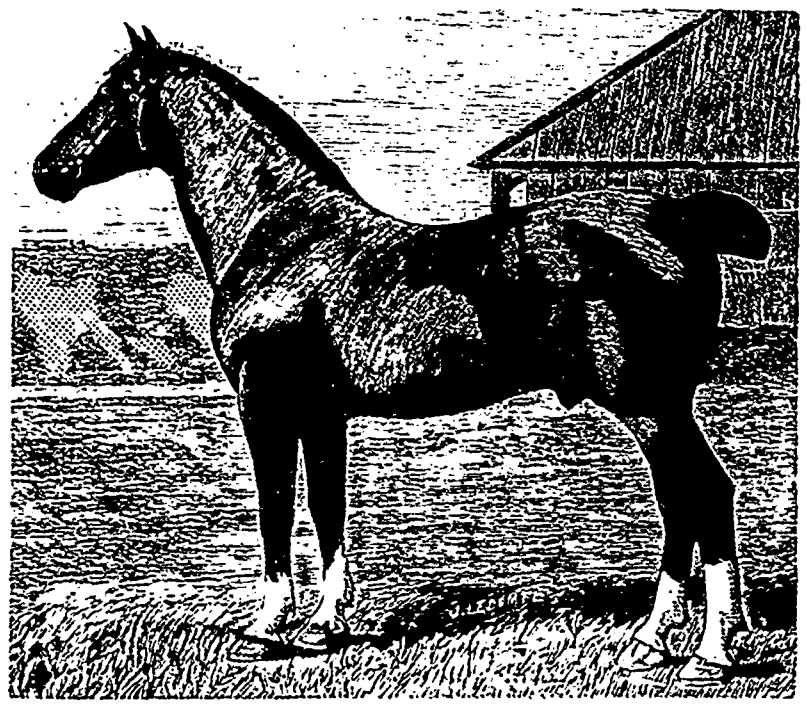
For a small boy, this is nice cool dress for summer wear, and not very troublesome to make. It takes, for a 5 year old boy, about 2½ yards of some very strong material Serge makes up, and looks well but is not strong enough for the average boy who is so fond of sliding down stairs, &c., so one might as well get a good strong tweed, which will last a long time. Let him have freedom, and give just a waist to button the knickerbockers to: the usual braces must be very uncomfortable to the little fellow, and not give him the free use of his arms. This, with a very thin flannel shirt without sleeves will make about as cool a dress as can be found.

For the blouse, choose some good, strong washing stuff. It will take one yard to make it, and if of one colour will look well Trimmed with a braid, 4 buttons and holes, a good elastic run in the hem round the bottom, with the usual sailor collar, and the suit is finished.

Manures.

THE MOST ECONOMICAL TURNIP MANURE.

As the turnip sowing season is not by any means finished, it will be seasonable to call attention to the results of experiments carried out during the last two seasons in Scotland, under the superintendence of the Highland Society, in order to ascertain what is the best and cheapest manure, or mixture of manures, for turnips. Sixty trials were reported in 1890, and seventy in 1891, the results being recorded in the Society's "Transactions." It is rather strange that Dr. Aitken, the Society's Chemist, and the writer of the report, should not have deemed it necessary to state what kind of turnips was selected for the trial, or whether several kinds were grown. The plan of the experiment was to try various phosphatic manures with nitrate of soda, a mixture of phosphates with different quantities of nitrate and without any, and the additional application of 18 loads of farmyard manure to duplicates of all the plots to which the dressings mentioned above were applied. To simplify matters we may at once state that the experience of both seasons ruled farmyard manure "out of court" as an economical manure for turnips. In summing up the results, Dr Aitken says that when a manure consisting of 3½ *cwt. of phosphates and* ½ *cwt. of nitrate of soda per acre was applied, at a cost of about* 15s., *it increased the turnip crop as much as about eighteen loads of farmyard manure*; and when, in addition to the phosphates and nitrate, eighteen loads of farmyard manure were applied the increase was less than 4 tons of roots per acre. "It may therefore be inferred," the writer adds, "that a turnip manure of double strength, consisting of cwt. phosphates and 1 cwt. nitrate of soda, will produce a larger crop of turnips at a cost of 30s. per acre than can be produced by heavy dunging at four times the cost." The question, therefore, is narrowed to that of the most economical mixture of phosphate and nitrate.



THE NOTED ENGLISH HACKNEY STALLION DANEGELT.

In earlier years various experiments had shown that there was no advantage in the use of the more expensive phosphates, and it was therefore decided to try only steamed bone flour, superphosphate, and basic slag. The dressings are described as follows, the cost being that of 1891:—

Plot.	Manure per acre.	Cwt.	Cost per acre. s.	d.	s	d
1	Steamed bone flour	2	12	0	14	6
	Nitrate of soda	½	2	6		
2	Superphosphate	3½	10	0	14	6
	Nitrate of soda	½	4	6		
3	Basic slag	5	10	0	14	6
	Nitrate of soda	½	4	6		
4	Mixed phosphates	3½	10	0	14	6
	Nitrate of soda	½	4	6		
5	Mixed phosphate	3½	10	0	16	9
	Nitrate of soda	¾	6	9		
6	Mixed phosphates	3½	10	0	19	0
	Nitrate of soda	1	9	0		
7	Mixed phosphates	3½	10	0	10	0
8	Nothing	—	—		—	

The mixed phosphate are made up of 2 cwt. bone flour, 3½ cwt. superphosphate, and 5 cwt. basic slag, together making 10½ cwt., to be divided by three for the quantity applicable to one acre.

Now, the most important conclusions derived by Dr. Aitken from the results of using these various manures during the two seasons on a great variety of soils are in brief as follows:—That there is no decided difference in the efficacy of the different phosphatic manures which can be generally stated. On light soils the advantage lies with the bone flour, while the other two are more satisfactory on heavy land. During wet seasons the bone flour and slag are at their best, while superphosphate does best of all in dry seasons. A mixture of the three is recommended. The quantity of nitrate which can be profitably used with 3½ cwt. of mixed phosphates is "not much more than ½ cwt." The addition of potash is to be recommended when no farmyard manure is used.

It is a pity that there is no summary showing the average results of all the trials for each season. There are averages of the results of trials by some of the agricultural associations which conducted them, and we give the mean of these averages for each season, with the explanation that the turnip crop did very badly last year, and that we cannot tell from the report whether the weight of the tops was included or not:—

		1890. Tons	cwt	1891. Tons	cwt
Mean of averages.	1 lot	1 21	11	12	19
" "	2	21	6	13	12
" "	3	21	11	13	0
" "	4	21	18	12	15
" "	5	22	5	14	9
" "	6	22	15	13	17
" "	7	20	17	11	17
" "	8	13	8	6	8

Three associations, with sixteen farms, are included for 1890; and four associations, with twenty-two farms, for 1891. The soil comprise a great number of varieties. So far as these figures go, they show that superphosphate produced a smaller quantity of roots than the mixture or than slag, and the same as bone meal, in 1890; while it produced considerably more than any other phosphatic dressing in 1891. But the difference in the mean figures is not as much as a ton in any case. On the whole, the advantage lies with the superphosphate, though it does not follow that this manure should be chosen for all soil, but only that it has given the best averages in mixed classes of soils together. The application of an extra ¼ cwt of nitrate to plot 5, as compared with the dressing on plot 4, gave better result in both season. The advantage shown in the mean of the averages noticed above is to the extent of 7 cwt. of roots in 1890, and 1 ton 14 cwt in 1891, the extra cost being only half-a-crown. It appears therefore, that ¾ cwt of nitrate of soda paid considerably better that ½ cwt. On the other hand, a further increase to 1 cwt, while it just about paid in 1890, led to a loss in 1891, so far as our table show.

So far as the experiments under notice, then, enable us to judge, we should say that, if a mixture of turnip manures for all soils must be named, they show that one of 3½ cwt of superphosphate and ¾ cwt of nitrate of soda is the most economical. Nevertheless, when any particular soil is in question, Dr. Aitken's advise as to the phosphate to use may be considered. The use of the mixture of three phosphatic manures does not appear to be attended with sufficient advantage to pay for the extra trouble involved. Unfortunately, the experiments do not afford any evidence as to the most economical quantities of the manures after all; for although Dr. Aitken recommends the double dose of 7 cwt of phosphates and 1 cwt. of nitrate, with some potash in addition, this dressing was not tried against the other applications. That the doubled quantities would increase the yield may be taken for granted, but whether sufficiently to yield a profit remains to be proved. Therefore the Highland Society may well be asked to go on for another year with the inquiry as the most economical prescription for a turnip manure.—*Agricultural Gazette.*

Basic Slag.—Dr. E. C. Caldwell as chairman of the committee on chemistry, said that nitrogen, the most important because costliest element of plant-food has usually been the subject of his reports. This time he called attention chiefly to a new source of phosphoric acid another important plant-food. Basic slag, or "odorless phosphate," under which name it is introduced by the American manufacturer, is a waste product of the iron and steel industry. Most of the American iron ores, and many of the ores elsewhere, are very rich in phosphoric acid. This in the newer process of steel manufacture, is separated from the ore, and all goes into the slag or waste. Some of these slags have as much as 30 per cent of phosphoric acid. The slag containing much iron, however, is heavy and unsuited to be mixed with ordinary commercial fertilizers, but it is a valuable source of plant-food, nevertheless. True, the phosphoric acid is not soluble in water, but it is far more readily available than the rock phosphate (raw), and nearly as good as reverted phosphoric acid, which has a trade value of seven cents per pound. Its action is somewhat slow, and the slag meal should be applied as much ahead of the growing crops as practicable—for spring crops, for instance, in the fall before. The value of the article also depends somewhat on its degree of fineness, like that of bone. On the whole, Dr. Caldwell recommends this fertilizer quite highly. It sells in Germany, where large qualities are now being used by farmers, at from $:8 to $20 per ton.

A lively discussion followed this paper. Some members had tested it, partially with good and partially with indifferent results. Most of them thought that further trials were needed before the article should be recommended without reserve.

S. D. Willard warned against the excessive use of nitrogenous fertilizers for fruit crops. They are not needed. We want a healthy fruit bud, and we can get it by the free use of potash and phosphoric acid. Phosphate slag may be a good thing to supply the latter.

Much depends on the price of the article. The manufacturers in Pennsylvania used to ask $22 per ton for an article analyzing about 20 per cent. phosphoric acid. The imported slag of equal value used to cost only about $16 or $18. One member stated that the slag meal could now be had for $14 per ton.—*Cultivator.*

PHOSPHATE OF BASIC SLAG.

Prof. G. C. Caldwell, of Cornell University, in his report on chemistry, had singled out the subject of "basic slag" for his text. He thinks it is coming to the front as an important source of phosphoric acid, which in this form is nearly as readily available as reverted phosphoric acid, which again is worth nearly as much as the soluble acid. Basic slag is a waste product of the manufacture of steel. Most of the iron ores in this country are too rich in phosphoric acid to be worked up by the old process. The phosphoric acid all goes into the slag, and some of this waste contains as much as 30 per cent of phosphoric acid. The fertiliser men cannot make use of it because it contains too much iron. Its use, however, is rapidly increasing. No trade value has as yet been placed upon phosphoric acid in slag, but Dr. Caldwell evidently thinks it ought to be rated nearly as high as the reverted, namely at seven cents a pound.

A member present also spoke in high terms of basic slag, glibly giving the whole process of manufacture, etc.; but soon, and amid great general merriment, gave himself away as a party formerly (and possible still) interested in the sale of the article. Dr. Caldwell's standing, of course, protected him against any suspicion of being in any way interested in the article otherwise than from the standpoint of an agricultural chemist, but while it was found that the article had given good results in some cases, many of the experimenting fruit-growers, among them Mr. J. H. Hale, who also had given the basic slag a trial—seemed to think that Dr. Caldwell's paper rather unduly boomed the new and little tested fertilizer. They thought that it should not be recommended in such general way until after its value has been proved by further tests. The writer is rather inclined to take Dr. Caldwell's side of the question. In his (the writer's) field experiments, in which acid phosphate and basic slag were used side by side, the results were no less wonderful and immediate from the slag than they were from the acid phosphate, and it seems quite safe to say that the phosphoric acid in slag is at least in a reasonably available form. Dr. Caldwell conceded that it was rather slow of action, and, if possible, should be applied for spring crops in the fall. It might be applied in large doses, to be drawn upon by plants, according to their needs, covering a period of years.

R. N. Yorker.

WOOD ASHES.

Wood ashes are one of our most convenient and cheapest fertilisers, yet how often are they one of our most neglected, and either allowed to go to waste or bartered away to pedlars for a bar of common soap per bushel.

Our cousins across the line evidently understand the value of this fertiliser better than we do, and buy enormous quantities of what we yearly throw away as almost useless, as is shown by their agricultural papers, in one of which no less than five different firms advertise "Canadian unleached ashes for sale." As early as 1885, ashes were exported from Ontario and Quebec to the amount of $179,700.

Among the fruit-growing farms of the Eastern States the use of Canadian ashes has steadily increased; the cost is about 24c. to 25c. per bushel of 45 to 50 lbs. These prices are by the carload at Amherst and vicinity."

The prices in the Eastern States are based on a standard of 6 per cent, potash, and 1½ or 2 per cent, phosphoric acid. Fresh ashes will often exceed the above value.

In view of the above exportation and the great waste of ashes in Ontario, it is worth while for the farmers to consider whether it pays to neglect or to sell for five or ten cents per bushel in cash, or barter a bushel of ashes which the New England farmer finds worth to him 25c. per bushel by the carload.

A sample of fresh ashes from London, which were analyzed, gave:—

Water	2.07	per cent.
Insoluble matter	7.65	"
Potash	7.15	"
Phosphoric Acid	1.89	"
Lime	37.33	"
Magnesia	3.02	"
Iron and Alumnia	1.53	"

The value of ashes lies in the amount of potash, phosphoric acid and lime which they contain. At the current price of 5c. per lb. for the first two, and ¼c. for the latter, the above sample is worth 54½c. per 100 lbs.

Leached ashes will contain from one to two per cent. of potash, the other ingredients being about the same therefore they will be worth from 20c. to 30c. per 100 lbs., according as to how thorough the leaching process has been. Coal ashes contain little or no plant food, but have a mechanical effect on some soils

Samples of ashes will vary greatly in value, owing to impurities and the care which has been taken to keep them off the earth and in a dry place: also the kind of wood from which they are obtained. Branches and top wood give an ash much richer in potash than the body wood. Ashes from soft wood are not worth as much as those from hard wood. They are usually estimated at about 4-5 the value of hard wood ashes. As a general rule, we are quite safe in putting the value of ashes at 20c. per bushel for hard wood, and one-half that amount for leached ashes.

Wood ashes are a potash (1) manure, and have a lasting influence. the good effect can generally be seen for a number of years. The gain to be derived from their use will depend upon the amount of available potash in the soil, but few of our farms are so rich in this manure but that an application of ashes would do good. They are helpful on all impoverished soils, and especially to sandy land, but their action does not depend entirely on the potash and phosphoric acid; the alkaline nature of the lime renders them very valuable to soils containing organic matter, as they act as a liberator of fertility.

Ashes which are exported are used chiefly by the gardeners and fruit growers of the New England and the Eastern States; some have found their way as far as the orange groves of Florida. Surely it will pay a farmer to keep on his farm a fertilizer which is valued so highly in other countries. Ashes are of the greatest value to plants of a woody nature, hence they furnish one of the best, as well as the cheapest manures for orchards, gardens and grape vines.

(1 And phosphoric acid manure too.—ED.

The leguminous crops, as peas, beans and clover, are much helped by a dressing, especially if they are applied in conjunction with a phosphoric manure, as bone meal. On corn, pastures and meadows, they give good results, and among the cereals they will probably give better results when applied to fall wheat than spring grain, because the season of growth is longer.

The mode of application will depend upon the crop. For fruit trees they may be applied in the fall or in the spring after the frost has left the ground, spreading evenly around the tree as far as the branches extend. For grass lands they are better applied in the spring, For fall wheat apply after the ground is prepared and before sowing. It is better to harrow the land, so as to incorporate this fertilizer with the soil before sowing the grain, for if a large amount is applied the corrosive action of the ashes might be injurious to the young plants. The quantity to apply will depend upon their freshness and strength, the particular crop, and the condition of the land. Light and impoverished soils require heavy application. Fruit trees will also require a liberal amount. For general crops apply from one-half to a ton of fresh ashes. and two or three times as much leached ashes.

Farmer's Advocate.

SOILS AND MANURES SUITABLE

FOR TOBACCO CULTURE.

SOIL.

A soil which is deep, friable, rich, dry and warm, and one which may be easily traversed by the numerous tender fibrous roots of this plant, is advisable in this climate in order to hasten early maturity. A sheltered situation is also very desirable. Tobacco is peculiarly a farmer's crop inasmuch as there are few farms which do not afford an acre or half an acre of the above description.

MANURES.

Analyses of the stems and leaves of tobacco reveal the fact that this plant draws heavily on the potash of the soil, so that in growing it a proper rotation of crops is desirable, and a careful return to the soil of those elements of fertility which have been withdrawn is of course necessary.

The following analyses are taken from the Report of the Massachusetts Experiment Station for 1892.

Substance Analysed.	Nitrogen	Average.	Potash.	Average.	Phos. Acid	Average	Lime.	Magnesia.
Tobacco leaf	2.75		7.24		1.43		4.17	2.17
Tobacco stems	2.29	2.52	6.64	6.44	.60	.51	3.89	1.23

The above figures show the principal elements extracted from the soil in growing this crop, and indicate the desirability of returning them if the best results are looked for.

It should not be forgotten that the fertilizing constituents are nearly equally divided between the stalk and the leafy matter, and therefore, the utilization of the stalks for fertilizing purposes is an important feature in the economical culture of this plant. It has been estimated by Mr. Loomis of the Connecticut Experiment Station (Report for 1887), p. 84), that "the stalks contain about as much nitrogen and potash as would be furnished by an application of 70 pounds muriate of potash and 300 pounds of cotton-seed meal per acre. The latter would, however, contain nearly twice as much phosphoric acid In other words, about four tons of barn-yard manure would be needed, from which to obtain an equal amount of potash, as is contained in the stalks from an acre, but one and a half tons of barn-yard manure will furnish an equal amount of nitrogen.

It will be seen then that potash and lime are specially required, and soils in which these elements are present in large quantities produce a leaf of superior burning qualities.

Horticulturist Report for 1893.

Experimental Farm, Ottawa.

Science.

Are the Carbo-hydrates sources of fat in the Animal Economy, or are they solely productive of Heat and Force.

"As to the theory still supported by many physiologists, who attribute the formation of animal fats also to the saccharine and starchy matters of vegetation,—it seems to me wholly inadmissible; for from what source can the animal get the enormous quantity of heat necessary to decompose the sugar, for example, driving out eight-ninths of its oxygen and then making from it an amount of fat which will represent a sum of accumulated work, of latent heat almost double what is contained in that quantity of sugar? The animal does not have in itself this power of decomposing the water in order to store up work under the form of organic hydrogen; the plant alone can do that, by condensing the sun's heat. Electricity itself, though a powerful source of heat, cannot produce more than half of the work, for even if it could decompose the water and set the hydrogen free, it could not organize it.

Some have referred, in order to support the hypothesis of the formation of fat by means of the hydrocarbons, to the slight amount of wax produced by bees fed for a short time with sugar; without seeing that this wax originated from the protein in circulation in the bodies of the bees themselves. This production of wax is soon arrested if the experiment is prolonged; while it continues very active when proteinic material, such as the white of eggs, is added to the solution of sugar. Others have cited the slight formation of glycerine which accompanies the alcoholic fermentation of sugar; but this results simply from the vegetation of the organized ferment. In short, we see that animal fat has no other origin than the fatty element in the forages and the protein of the food, which may form about half of its weight.

To the same conclusion we are brought by the experience of all practical farmers, who have very well understood that the most favorable foods for fattening animals are those rich in protein and the fatty elements; while the foods poor in these principles have very little value for that purpose, even if rich in sugar or starch. This is proved every day with swine, which

fatten rapidly on pea meal, or on the oil cake of nuts or of meat; but very slowly on potatoes, artichokes, or beets, though the latter are much richer in starch and sugar, but less so in protein or in fat.

Still further, all observations upon our domestic animals accord in showing that the fat and the protein of forages suffice to explain the formation of the fat found in the animal or its products, without any help from the hydrocarbons. Some sweet or starchy foods may, it is true, in certain cases, appear greatly to favor the accumulation of fat; but this is in the case of a ration insufficient in respiratory principles; or in which a great part of the the fat and the protein of the food is compelled to serve for warmth, instead of being assimilated."

JULES CREVAT. (1)

Many years ago, when I had gained a considerable degree of proficiency in the practical part of farming, I was naturally inclined to turn my mind to the study of its theoretical side. At that time, about 1847-'48, the great authority on the theory of farming was the illustrious Baron Liebig, the great German chemist. From a careful study of his works, I gained a vast fund of information; some of this I have no doubt forgotten, but the larger part remains by me to this day.

Among the various lessons taught me by the great scientist was one, connected with the nutrition of animals; in effect, it showed that the chief source of fat is *non*-nitrogenous matter, such as starch, sugar, &c. These are not the exact words of the Baron's statement, but they convey his idea, as I recollect it.

"There is another constituent of the animal body, namely, fat, the production of which deserves notice. It is not an organised tissue, but is formed and collected in the cellular tissue under certain circumstances. These are, rest and confinement,—that is, a deficiency of oxygen, and an abundance of food containing a considerable proportion of *non*-azotised matter, such as starch, sugar, &c. . . . . Now the chief source of fat is sugar, the composition of which is such, that when deprived of oxygen fat remains. . . . It is obvious, therefore, that fat can only be formed by a process of deoxidation. But it is produced when oxygen is deficient; and it appears, as Liebig has pointed out, that, when there is a deficient supply of oxygen, the production of fat, which is the consequence of the deficiency, yields a supply of that element, and thus serves to keep up the animal heat and the vital functions, which would otherwise be arrested. This is another beautiful instance of contrivance equally simple and wonderful That fat must be formed by the deoxidising process is proved by the phenomena of the fattening of animals. A goose tied up, and fed with farinaceous food, altogether destitute of fat, acquires in a short time an increase of weight of several pounds, the whole of which is fat. Again, the bee produces wax, a species of fat, from pure sugar."

Turner's Elements of Chemistry.

I am told, by those whose ought to know, that this position of the great German is now disputed by some of his own countrymen. In England, however, and in this country, all the leading men whom I have consulted take Liebig's side of the question, just as, in practice, the goose and the bee in the passage just quoted do.

For instance: Dr. Girdwood, Professor of chemistry at McGill college, Montreal, and a practical farmer too, told me, the other day, that he had not the slightest doubt about the truth of the principle that the carbo-hydrates, or non-azotised parts of the food, are sources of fat in the animal economy.

Dr. Baker Edwards, the well known analytical chemist, who has been so successful in his dealings with the milk-vendors of our fair town, holds the same position most strongly, and Mr. Penhallow, professor of Botany at McGill, has no doubts on the subject.

What says Mr. E. W. Stewart, the author of "Feeding animals," whose answers to enquirers on that subject are so well known to all the readers of *The Country Gentleman*?

"*Carbo-hydrates* are composed simply of carbon and the elements of water—hydrogen and oxygen, non-nitrogenous compounds. The principal of these are woody fibre, starch, gum, and the various kinds of sugar. This is the food that keeps up animal heat, *and the surplus goes to lay on fat in animals.*

Mr. Henry Gray, a member of the Sanitary Board, and a man thoroughly acquainted with farming as well as a practical chemist, writes to me as follows:

Dear Sir,

I cannot understand how the people you speak of can lay down the dogmatic assertion that the *Carbo-hydrates cannot be transformed into fat.*

Stewart on feeding &c., no mean authority, tells us that "Lawes and Gilbert carried out a thorough series of experiments on pigs that fully corroborated Liebig's views and proved quite decisively that carbo hydrates *were* transformed into fat"; and he furthermore tells us that it has been stated that Pettenkofer, Wolff and other German chemists who had held different views have recently acknowledged the correctness of the Lawes and Gilbert experiments.

One of the first rules laid down by medical specialists in treating corpulency is not to eat food containing starch, sugar, or gum Even the little negroes on the Southern plantations used to wax fat as the sugar cane ripened, especially if they were big enough to run about with a piece of well sucked cane in their hands.

To say the least, the assertion is entirely in opposition to a fact which it appears to me has only recently been well established and I should much like to hear the opinions of men better posted than myself on this important subject. Truly yours,

HENRY R. GRAY.

Mr. Thomas Macfarlane, the Chief Government analyst, of Ottawa, has been kind enough to send me his opinion; it reads thus:

Laboratory of the Inland Revenue
Ottawa

A. R JENNER FUST, ESQ.,
Editor *Journal of Agriculture*,
Montreal.

Dear Sir,

I am in receipt of your favour of yesterday and in reply would state that I have always been under the same impression as yourself and Dr. Girdwood regarding the formation of fat from the carbo-hydrates, I must add however that I have no experience of my own on the subject. Among the authorities I observe that Stewart in his book "Feeding Animals"; (p. 38), asserts that animals "are also able to store up fat from the carbo-hydrates." On the other hand König, in his "Narungs und Genussmittel," says the matter is still in doubt. He writes: "according to new experiments it appears that a production of fat from the carbo-hydrates is more than probable in the case of graminivorous animals and the pig, but it is denied that this takes place in the case of flesh eaters." Yours truly,

THOMAS MACFARLANE.

Mr. E. W. Stewart mentioned above, says in his "Feeding Animals," when treating of the formation of flesh and and fat:

"The popular idea had been that all animals, except the fattest, contained more flesh than fat; but Lawes' tables refute this idea most conclusively. The fat ox and fat lamb contain about *three times* as much fat as lean flesh."

"Mean of six *fat* and *very fat* animals; carcase:

Lean flesh, 12.30%—Fat, 39.70%."

Therefore, I conclude that the comparatively small percentage of *fatty* matters and albuminoids contained in the food cannot be the source whence all this fat is derived.

Again, Mr Stewart says:

"Oil has a great effect in the rapid fattening of animals, *but they are also* able to stow up fat from the carbo-hydrates.

"The animal possesses the power of preparing fat from starchy food when there is not fat enough ready formed for its wants.

"Almost all fodder contains fat, but not in quantity sufficient to account for all the fat laid up by the fattening animal, or *the fat in the milk of the cow.*" Please observe the last words of the above sentence.

"Voit, Pettenkofer, and other German chemists were inclined to doubt if the carbo-hydrates were ever used to produce fat, as Liebig had held many years before; but Lawes and Gilbert in their experiments on "Pig-feeding" *fully and decisively* proved that carbo hydrates are transformed into fat. The pigs were fed upon barley-meal, *and the fat and albuminoid matter in the barley-meal* were wholly insufficient to account for the fat formed in the bodies."

And now comes Mr. Stewart's expression of the opinion of practical feeders as confirmed by practical experiments conducted by skilled experimenters, thoroughly familiarised with the management of tests:

"The practical common sense of feeders has taught them *that foods having a large proportion of starch are particularly adapted to produce fat, or milk rich in butter*, and these impressions, derived from general practice, have withstood all the doubts of scientific investigators based upon inadequate experiments."

"We saw one case of three pigs fed upon *corn-meal*, prepared in the best way to induce them to eat largely of it with the expectation of producing a large growth at an early age. The result was, that at 130 days old, these pigs were mere squabs of fat.

"The sugar of milk is very soluble and will lay on fat rapidly if the other constituents are added."

Lastly, the Professors of Chemistry at the Central Experimental Farm, at Ottawa, have kindly sent me the following expression of their opinion on this matter:

Ottawa, Nov. 6th. 1893.

This is a question regarding which there is still much difference of opinion among physiologists, and towards the solution of which there are many experiments now in progress by German and other scientists.

Of late years the results of experiments carried on in Germany have corroborated the results obtained by Messrs Lawes and Gilbert, of England, who, I think, have clearly shown that fat in the animal may be, and often is, formed from the carbo-hydrates. This was predicted years ago by the celebrated chemist, Liebig; but later was discredited by his own countrymen, who held that their experiments proved that fats were produced in the animal economy exclusively from fats and albuminoids in the food, and, further, that the sole function of the carbo-hydrates was to produce heat and energy.

Although there can be no doubt that the greater part of the fats in the body are produced from fats and albuminoids of the food, it is also doubtless true that a part of such often is formed from the carbo-hydrates.

It should not be lost sight of that very important function of the carbo-hydrates in the animal is to preserve or protect the fats formed from undue waste.

Yours faithfully,
FRANK T. SHUTT, M. A.
Chemist.

Carbo-hydrates, in a food, are not only productive of heat and energy in the animal, but also serve as sources of fat. As they contain no nitrogen, they cannot act as flesh producers.

Sugar is a well known fattening agent, and, as starch is converted into sugar by the digestive juices it must also act in the same manner.

P. H. ROSSIGNOL,
Asst. Chemist.

So much for the authorities on this side of the Atlantic; now, turn we to the English writers on this subject.

Mr. F. J. Lloyd, Fellow of the Chemical Society, and one of the leading Professors of Agricultural Chemistry, holds, as you will see, very strong opinions as to the power animals have of appropriating the non-nitrogenous constituents of their food and converting it into fat.

Some time ago I wrote to him to know if he had any knowledge of a theory that I had heard bruited abroad here, viz, that in no case are the carbo-hydrates of food converted into fat in the animal economy." Warington," said my letter, "Claude Bernard, Lawes and Gilbert, Dumas, Milne Edwards, E. W. Stewart, an American writer, and Liebig, all, as far as I recollect, hold that starch, sugar, &c, are sources of fat. *Practically*, I am sure that the carbo-hydrates *are* converted into fat, but I should like to know the last decision of *science* on the subject." To this Mr. Lloyd replied as follows:

"I cannot understand how the views stated by Mr. Jenner Fust, can be promulgated by any scientific man without very remarkable evidence to support them, *in which case they would probably be better known.* Our present view is as stated in the letter—(i. e. that the carbo-hydrates *are* convertible into fat.)

(Signed) F. J. LLOYD.

Some of you may have met with a little book named. "The Chemistry of the Farm, by another Fellow of the Chemical Society, Mr. R. Warington. This gentlemen was selected to con-

(1) For this translation of M. Crevat's work I am indebted to Dr. Hoskins, formerly Agricultural editor of the *Vermont Watchman.*

tribute this opuscule to the series of "Handbooks of the Farm," by the late John Chalmers Morton, Editor of the English *Agricultural Gazette*, and of many other valuable agricultural compilations. In treating of "Animal Nutrition," Mr. Warington says:

"The carbo hydrates (non nitrogenous parts) of the food include starch, sugar, and cellulose; these substances consist of carbon, hydrogen, and oxygen, the last two elements being in the proportion to form water—hence the name." (In fact, carbo hydrates are water + carbon)". Carbo-hydrates form the largest part of all vegetable foods. They are capable, when consumed in excess of immediate requirements, of conversion into fat.

P. 100.—"For the body to increase in weight it is clear that the food supplied must be in excess of the quantity demanded for mere renovation of tissue, and for the production of heat and work. When such an excess of food is given, a part of the albuminoids and ash constituents is converted into new tissue, while a part of the fat, *carbo-hydrates*, and albuminoids is stored up in the form of *fat*.

P. 102.—"In calculating the amount of food consumed for the production of heat and work, it has been assumed that the *fat* in the increase has been derived from the fat *and carbo-hydrates* supplied by the food."

Mr (Wrightson, Principal of the College of Agriculture, Downton, near Salisbury, England, combines great scientific acquirements with a thorough practical knowledge of farming The college-farm, which he manages himself, contains between 500 and 600 acres, and his usual stock consists of 500 breeding ewes, and 12 to 15 milch cows, besides a number of pigs and fatting beasts. His expression of opinion is concise but emphatic:

"*Sugar is a fatting food, and so is starch.*"

Again, Monsieur Grandeau, a most important figure in the agricultural instruction department of France, has a good deal to say on this question. M. Grandeau is: Director of the "Station agronomique" of the East; Inspector-general of the "Stations agronomiques"; Professor at the National Conservatory of arts and trades. and Member of the Higher Council of Agriculture of France; so, I suppose he may be taken as an authority.

M. Grandeau's first volume on the "Feeding of animals and men" was published in 1893: (the second volume is not out yet). From it I extract the following paragraphs:

(Pages 151.)—'*Liebig's conclusions.*—In 1842, Liebig's opinion on the production of animal fat may be abridged thus:

1. He holds that fat is formed in the body of the animal from the *starchy matters* (fécule, amidon) from the sugar and nitrogenous matter (fibrin, albumen, vegetable casein.)

2. Fat is produced every time there is a disproportion between the carbon produced by the food and the oxygen absorbed. (When the quantity of the latter is insufficient to burn all the carbon). The oxygen of the food separates itself by the metamorphosis of certain substances, and escapes under the form of carbonic acid and water.

3. The animal economy in making fat obtains the means of making up for the want of oxygen and heat, both indispensable to the accomplishment of vital action.

4. Rest and housing increase the production of fat."

(P. 175.)—"Liebig had stated that:

1. The fat in food is insufficient to explain the fattening of animals;

2. *Fat comes from the transformation of starch and sugar;*

3. Nitrogenous matter concurs in the formation of fat.

Now, Boussingault, in his work on "The fattening of pigs," definitively confirms these statements of Liebig."

(P. 178.) "III—General conclusions on the origin of fat. The general conclusions that this retrospective review enables us to establish are briefly these:

1. Plants contain fatty matters.

2. The quantity of fat contained in the food is too trifling to represent the fat found in the animal.

3. Animals have the power of transforming sugar into fat (bees' wax)

4 Animals have the power of transforming starch into fat (pigs, geese, ducks.)

5. Nitrogenous matter plays a considerable part in the fattening of animals.

Such, in a few words, is the state of the question in 1893; we shall see later that the experiments of Lawes and Gilbert, as well as the numerous experiments of the German school, confirm in all essentials the fundamental hypothesis of Liebig on the origin of animal fat.

(P. 361) "In practice as well as in theory, fat and the starch-series may be considered, say Lawes and Gilbert, as replacing one another in our foods."

(P. 312) "*Conclusion.*—"In short, the masterly essay of Lawes and Gilbert places at the disposal of farmers, chemists and economists *the only complete document we possess on the probable composition of the live beast and on the composition of the increased growth of animals submitted to different kinds of feeding.*"

And now we arrive at our last but most valuable evidence: the experiment on "Pig-feeding," conducted by Lawes and Gilbert, at the Rothamsted farm, near St Albans, Hertfordshire, England. Any one who will take the trouble to glance at the pages (85 closely printed pages in-8vo.) of this series of patient investigations must see at once that they were drawn up by men thoroughly accustomed to the management of experiments and not likely to be biassed one way or another as are those who, in making tests, have some ulterior object to gain. However, I need say no more as to the perfect trustworthiness of any investigation conducted by Lawes and Gilbert, as their names stand too high throughout the whole civilised world to need my weak support. And now, for a few extracts from the "Experiments on Pig-feeding."

The *highly nitrogenous* food—a mixture of equal weights of *horse-beans* and *lentils*, was employed.

As the comparatively *non*-nitrogenous food: *Indian-corn meal.*

For the purpose of the experiments, 100 pigs, from 9 to 10 months old were bought, as nearly as possible of the same stamp, and the test was not begun until the pens of 3 pigs each had, by a judicious application of the whip, been taught the wisdom of living peaceably together.

NOTE! "The grains, as compared with the leguminous seeds, contain scarcely half the quantity of the nitrogenous compounds, but they abound much more in starch and other *non*-nitrogenous compounds which are believed to provide the chief of the respiratory and *fat-forming food of the animal.*"

NOTE 2.—'Indian-corn meal, compared with beans and lentils, contains little nitrogen, but a comparatively large amount of the *non*-nitrogenous substances of the starch-series (the carbo-hydrate and also more fatty matter. It is these various *non*-nitrogenous substances that are supposed more peculiarly to serve for the respiratory process, *and for the formation of fat in the animal body.*"

NOTE 3.—"We find that, beyond a somewhat narrow limit, which is attained with almost any of our current *fatting-food*, any defect is much more likely to be connected *with a deficiency of the important non-nitrogenous constituents than of the nitrogenous ones.*"

NOTE 4—"As these two pigs ripened (i. e. got fat), they naturally selected less of the nitrogenous and *more of the starchy and fatty food.*"

NOTE 5—"*No one practically acquainted with pig-feeding* will doubt that the pigs in pens 5 to 8, where the food consisted, in such a very large proportion, of barley-meal, would progress more favourably as to the quality of their increase, or that *they would contain a larger proportion of fat*, and consequently of dry substance, than those upon the bean and lentil dietaries of pens 1 to 4."

Just so: in England, we fatten upon barley-meal and make the flesh firm by a dietary of pease during the last 3 weeks of the fatting period.

"NOTE 6.—'* * * The difficulty of determining whether the *gross* increase obtained be composed of *fat formed from the starch* and oily series of compounds, or whether of flesh from the nitrogenous ones."

"NOTE 7—The larger the proportion of nitrogenous compounds in the food, the greater the tendency to increase in *frame and flesh*; but the maturing or ripening of the animal—in fact, its 'fattening—depends very much on the amount in the food of certain *non*-nitrogenous constituents."

NOTE 8.—"*All our feeding results consistently show, that the theory that assigns to the different substances used as fattening foods, a value in proportion to their per centage of nitrogenous compounds*, IS FALLACIOUS."

There are a dozen other notes, to the same effect, to be found in the essay I have been quoting from, but I think I have brought forward enough, and that I may fairly lay claim to have established my point, that THE CARBO-HYDRATES OF THE FOOD ARE SOURCES OF FAT IN THE ANIMAL ECONOMY. ARTHUR R. JENNER FUST.

(*For the Dairyman Ass* 1893.)

Garden and Orchard.

TULIPS.

The beautiful display of these bright harbingers of summer, now in bloom suggests that a brief notice of their history may be acceptable.

Perhaps, next to the rose, the family of plants to which the tulips belong lays claim to our admiration.

It is said that in one instance at least tulips were ahead.

The story goes that a young gallant upon being asked by a lady which he preferred Roses or Tulips; replied, "Your Ladysip's *Tu*-lips before all the roses in the world."

Liliaceæ and Tulipaceæ, the two great natural orders, of which the Tulip is one type, comprise also many familiar and interesting species, such as, the Lilies, Yuccas or Adam's needle, Fertiblanci or Crown Imperial, and the pretty little Dog tooth violet, Erythronemo dens canis which has just been so beautifully embellishing our way- and shadowy hill-sides.

The name Tulip is derived from a Persian word signifying a turban and it was no doubt a favourite flower in the East in past ages.

Some critics consider that the whole Liliaceous family was alluded to in the words of Divine wisdom: "Consider the Lilies of the field how they grow, they toil not, neither do they spin, and yet I say unto you that Solomon; in all his glory, was not arrayed like one of these."

There are only about 30 species of the genus Tulipa but the varieties are innumerable, the different species having afforded unusual facilities for their production.

Tulipa Sylvestris.—The tulip of the woods or wild tulip, is the type of the family and grows where chalk abounds in Great Britain, France, Switzerland, Italy and Southern Germany. It has the advantage of being sweet-scented and blooms in April and May.

Gesner's Tulip (*Tulipa Gesneriana*) was no doubt the first garden species, and probably no flower, except the the rose, has been such a favourite object of the florist's attention. It has been grown in nearly every garden in Europe for centuries.

There are five very distinct varieties or family groups, and from these are produced numerous subvarieties.

The first is the normal *Gesneriana*, 2 feet high with striped flower; 2nd Gluten bright yellow; 3rd *G.plena* double, 10 to 15 inches high with variegated flowers; 4th G. *versicolor*, party- coloured, and lastly *laciniata*, tall growing with variegated petals.

The first Garden Tulip was found growing wild in Syria and was cultivated by the Turks. It came from Constantinople to Western Europe in 1554 and was systematically described by Conrad Gesner, the great German botanist, a few years later. In 1577 it had begun to make a sensation as a favourite, and in 1603, its finer forms began to appear as the results of careful hybridization.

This aptitude of the Tulip to assume so many beautiful characters of form or colour, led to evil results in that little [illegible] of Holland. In that country so profound an impression did it make as to lead to what has been called the *tulipomania*, which was evinced by a desire on the part of Dutchmen of all ranks to possess the newest and finest varieties at whatever cost.

In 1663, and four succeeding years, the mania had assumed such proportions, as a gambling speculation, as to endanger the credit of the republic.

It was followed not only by merchants, but every one who could speculate, from the nobleman in his palace to the chimney-sweep or old clothes pedlar.

A variety, called Semper Augustus brought the highest price, being often sold for 2000 florins, (about $500), and on one occasion about $1000. A pair of valuable horses, a new carriage, and harness, were given for a single root. "Mariage de ma fille", it is said was so named because one bulb brought enough to enable its owner to give his daughter an ample marriage portion. "What fools these mortals be", as Puck says. When this mania had passed its day another set in. All floriculture, especially that of tulips, was derided as undignified and foolish and thus the gifts of Heaven were first made instruments to minister to man's meanness and cupidity, and then treated with contempt, as being suitable only to the uneducated and vulgar, and the flower more *gorgeous than* "Solomon in all his glory," challenging the admiration of all, and directing the burning thought of man to Heaven, was neglected and despised.

Happily this insane prejudice also died out and tulips he again resumed

their place to the estimation of people of taste every where; while in Holland, they have become an important legitimate means by which the Dutch can make a living, many acres being occupied with their culture together with Hyacinths, Narcissi &c.

Tulips are divided into classes according to their colour and markings: (*a self*) as the term implies, is all one colour without distinct markings—(*a bizarre*) has a yellow ground-colour with distinct markings of different shades of purple or scarlet. The term (bizarre) is derived from the French adjective—(Odd or fanciful).

A (byblomen) has a white ground with markings of crimson purple or violet; (rose), has a white ground with distinct markings, of all the shades of *carmine* or rose colour.

All these may be, what is termed, feathered, or flamed, according to the way the markings appear on the petal. If these have a broad central stripe, with pencillings toward the margin, they are called *feathered*; or if the broad stripes only are seen, they are *flamed*. *Tricolors* do not constitute a separate class, but are all such as have three separate colours.

Another method of classification, and an important one, when tulips are used for massing, is their season of blooming, namely: Early, middle, and late bloomers. And yet another method of classing them is, by the height of their flower stems, so that, in planting a bed, the planter would known whether he was using a first, second, or third row root.

Florists, who are tulip fanciers, have very arbitrary rules as to judging the quality of the flowers when competing for prizes. The form must be that of a cup with a round bottom, rather wider at the top. The flower must possess 3 exterior and 3 interior petals, the former being a little the larger. These should be quite smooth at the edges and the markings distinct and regular, and above all, the bottom of the inside of the cup must be pure white, or yellow, as the case may be.

When tulips are raised from seed they are always self colored, and may be from five to nine years before the variegation develops, or in other words the flower breaks into a feathered or flamed byblomen, or bizarre

This part of the culture of the tulip, while it tasks the patience of the amateur is very interesting, and it will be seen that none but an enthusiast could enjoy it. The processes by which this breaking or developing of the variegation is effected are too intricate to be described here. The Dutch have been the most successful in the practice. Mr. Groom, of Walworth, near London, was, for many years the most celebrated English grower of show tulips. Mr. Groom's beds were visited by fanciers from all parts and his collection was valuable and extensive.

The exhibition varieties about which our forefathers used to rave, argue, quarrel, aye, almost fight, were after all not so brilliant or effective as garden ornaments, as the self colours, white, scarlet, yellow and crimson, which, for decoration at this season, are being more extensively used every year. Tulip-culture is simple and easy.

A compost made of well rotted cow manure 1 part rich, fresh sandy, loam, 2 parts, well mixed should replace the common garden soil to the depth of 18 to 20 inches. In this, the bulbs should be planted in November, about 4 inches deep and 7 inches apart; a little sand being placed round each to prevent the rich compost adhering to the bulk and causing premature decay.

Tulips are not very liable to the attacks of insects or disease, but should never be watered artificially. If so, the foliage will rust and the flowers be seriously affected.

As soon as the petals fall, the incipient seed-vessel should be cut away, and when the leaves begin to turn yellow and wither, the bulbs may be dug, placed in a dry situation as they are, until September, when they may be cleaned of their roots and dead leaves, and placed in boxes until planting time.

The beauty of the tulip is of a different order to that of the rose, the stiffness of its flower stem and the rigidity and metallic appearance of its foliage render it less attractive and graceful. But the brilliancy of the colour of some varieties and the delicacy of others, cannot fail to charm even the most casual observer—while the delicate tracery of the feathered and flamed varieties make the more ardent admirer exclaim with the Poet.

"Who can paint like nature?
Can imagination boast in all her gay [creation.
Hues like hers!

GEO. MOORE.

SOMETHING ABOUT THE HARDINESS OF "CANADA RED"

(Red Canada.)

R. W. Shepherd Jr. Montreal.

In a paper read by me at the Farmer's Congress held in the City of Quebec, January 1893, I asserted that Canada Red, an old and well known variety which has been cultivated for many years in the states of New-York, Ohio, and Michigan, as well as in the province of Ontario, was a hardy tree and worthy of cultivation in the favorable apple-growing regions of the province.

I have had an opportunity of judging of the hardiness of Canada Red, because the orchard at Hudson, where these trees are growing and have been growing for upwards of thirty-four years, is situated within two miles of my orchard at Como; and when we take into consideration the great disadvantages under which they have been growing, it is really extraordinary and fortunate at the same time.

Fortunate because we have thus added to our very scanty list of late keeping apples for this province, a very valuable acquisition, and an apple well known to be a good keeper as well as a good shipper.

There are several trees of the variety in the Mount Victoria orchard, Hudson, Que. This orchard was planted nearly thirty five-years ago by the late Mr. George Matthews, he procured many of his trees (as I have heard him say) from Rochester N. Y.

To day, the best trees, by far, in this orchard, (of some twelve hundred trees, originally,) are the Canada Red, surviving ill-treatment, neglect and severe exposure through so many winters, and surpassing, in respect of present condition, healthiness, size and productiveness, the other varieties planted out at the same time, viz. Fameuse, St Lawrence, Pomme Grise, Bourrassa, Talman Sweet &c.

Since the death of the late Mr. Matthews, the farm and orchard at Mount Victoria have been leased, from year to year, to several different tenants, not one of whom has ever taken the slightest trouble to prune or cultivate the orchard properly.

Some four years ago I was particularly struck with the fine appearance of an apple from that orchard which the then tenant sold in the Montreal market under the name of 'Red Spitz.' The fruit was a fine bright red color, free from spot and uniform in size, which was medium or above, and evidently a good keeper. Knowing that the name 'Red Spitz' could not be correct, also that the late Mr. Matthews had procured many trees from Rochester, I was certain this apple was well known there and in Ontario. I therefore took pains to ascertain the true name by sending specimens to well known pomologists and fruit dealers, who pronounced the apple to be 'Canada Red,' which is described in Chs. Downing's book (page 324) under name of Red Canada as follows:

"An old fruit, formerly much "grown in Connecticut and Massa- "chusetts, but is not now much "planted, on account of its small size "and poor fruit; succeeds well in "Western New-York, Ohio, and Mi- "chigan. Tree thrifty, but of slender "growth; very productive, &c.

"Flesh white, tender, crisp, abound- "ing with a brisk refreshing juice, "and retaining its fine, delicate flavor "to the last, very good to best. Season "January to May."

This is a good description of a fine old apple.

If it has been discarded in Connecticut and Massachusetts on account of its small size, we can safely say that it succeeds well in some portions of this province as well as in Michigan and New-York States, and under very unfavorable conditions, too.

The orchard at Mount Victoria is situated, as the name implies, on high table-land. The soil is poor, light sand, and exposed to the sweep of winds from West, North-West and North, but somewhat protected by high trees on N.-East and Eastern sides. The trees have had no care for twenty years, but have suffered much from neglect and mutilation. While such varieties as Fameuse and St Lawrence have been blown down in high winds, or have succumbed to neglect, the Canada Reds have come through the ordeal the best of all, and they are to day in fair condition. The tree is a heavy bearer and the present tenant has assured me that frequently he has gathered six barrels of marketable fruit, per tree, from the Canada Red row.

It would seem therefore that neglect poor soil and severe exposure have not killed them, and we may safely infer that, in this climate at least, it would be better to plant them in light elevated land and not to manure heavily.

As a nursery tree I am not, after some five years experience, so satisfied with the hardiness of Canada Red. Its growth as Downing says, is slender but thrifty, so thrifty in fact that I find the tips of the branches often (like the Fameuse in the nursery) not thoroughly ripened, and sometimes injured by the winter. The Golden Russet too is another tree that is unsatisfactory in the nursery, but once established in the orchard, in favorable situations, becomes really a profitable tree here, and in these respects "Canada Red" seems to be similar to it.

However the fact remains, that Canada Red is a *hardy* tree when once established in the orchard, and on high dry land is very profitable to grow, therefore it is a great acquisition to our list of late keeping apples.

R. W. SHEPHERD, JR.

Kitchen Garden.—It is now time to prepare grounds for sowing the main crop of onions. To ensure a good crop, the ground should have been well manured early in the autumn, and deeply dug up, and left in as rough a form as possible on the surface. Where this has been done the ground will now be in good order for sowing the seed. An open piece of ground should always be selected for this crop, so that the sun may ripen them off well in the autumn, for unless this is done they never keep sound during the winter. The end of the present month, or the first week of March, is a very suitable time for sowing this crop. Whenever the ground is dry enough on the surface it should be gone over, and raked level on the surface with a wooden rake, and then tramped down very firm all over. Then sow a good, heavy dressing of soot and salt on the surface, all over the ground; rake this in thoroughly, mixing it with the soil. The seed may be sown in beds 4 feet wide, four drills on each bed, or on the flat 1 foot apart. The drills should only be deep enough to cover the seeds. When this is done, tramp the beds over firmly again. Strong, heavy loam need not be so firmly pressed down, but light, sandy soil can hardly be made too firm. This important crop often proves a failure through neglect of this simple process. I have often been asked: why are my onions all going off? On looking over the bed I have found the soil very loose, and the young plants falling out of the soil. In order to produce extra large bulbs, special culture is required. At the same time, medium-sized ones, as a rule, keep much better than very large bulbs. Where extra large onions are desired, the following plan may be adopted:—First mark out a bed 4 ft. wide; dig the soil out of this about 1 ft. deep, and replace this soil with rotted manure; tramp this down as firm as possible, then replace half of this soil on the surface of the dung, make this solid, and then draw the drills and sow the seed. It is most important that about 6 in. of soil should be placed on the surface of the dung, and also that the young plants should have ample space to grow; if too much crowded they are very apt to become what are termed "thick-necked", and these never keep well. During the summer the rows between the plants should be frequently dressed with salt and soot, the best time to apply this is immediately after rain, and then it should be hoed into the soil. Like most popular vegetables, there are a great many different kinds, and most seedsmen have a special kind that they recommend—as for instance, that well-known kind the White Spanish. There are many kinds grown under a different name, but they are only good stock of this variety. For pickling, the "Silver Skinned" is one of the best, owing to its small size and bright colour. These should always be sown very thick in the rows. "The Queen" is another silver skinned variety, well worth growing, as it has a very small top and ripens off very early. The following are all excellent kinds to grow:—"Veitch Main Crop," "Brown Globe," "Danvers Yellow," "James' Keeping," and "Reading." For autumn sowing, "Tripoli Giant Rocca" and "Tripoli White Naples" are two of the best. For a very early supply there is nothing better than a good strain of White Spanish.—*Ag. Gazette.* J. SMITH.

The Farm.

ROTATION OF CROPS.

Husbandry, without a rotation of crops, has been termed, "barbarous."

Until the latter part of the last century, farmers had formed no concep-

tion of the necessity of alternating the crops with a view of maintaining the fertility of the soil; and even now there are some to be found, who show by their practice, that they are in profound ignorance of the reasons why such alternation is so desirable.

When the English landlords inserted clauses in their tenants' leases that not more than two straw crops should be grown in succession, the said tenants objected to such arbitrary restrictions; and yet the rule protected them, eventually, from the evil results of their own short sightedness. It is a pity that some farmers here could not be similarly coerced for their own good.

It will scarcely be credited that such is the fact, but I will relate a little incident to prove the truth of my assertion. Last summer, I was travelling in a certain district with a farmer, and I remarked to him that a field of oats we were passing was bearing a light crop. "Yes," said he, "it is, but I have had oats on that piece seven years running, so I must try another kind of crop next season."

To show the absolute obligation we are under to rotate our crops, we must remember that, while all plants exhaust the soil, all do not do so in the same degree, or in the same manner; that some crops return to the soil certain elements which are necessary to the growth of a succeeding crop; also that some plants are the means of encouraging the growth of noxious weeds, while others smother and destroy them.

So that we have two classes of crops, that is to say, exhaustive and ameliorating, or some which may be cultivated on their own account, and some which are mainly useful in preparing the land for their successors.

If we trace the action of Nature, we shall see that some plants are provided with what may be called a migratory apparatus, as the down of the Thistle and Dandelion, the awn on the barley, corn, and the like. The esculent fruits bear their seeds in the centre and they are then disseminated by man, or the animals that consume the fruit All this shows that Nature has provided a means for all plants to find new land of the fertility suitable to them, and that if we are to have abundant crops we must imitate her and follow her teachings.

Migration is also effected by runners of some plants, as in the strawb rry, or by the roots of the potato, that is to so say, the fibrous or radical roots which produce tubers at a considerable distance from the parent plant

The lowest order of vegetables possesses this power of migration in a remarkable degree. Mushrooms never rise in successive seasons on the same spot. But enough has been said to show that the arguments in favour of rotation are most conclusive.

Now, we shall notice which plants are those which are exhaustive, and which are ameliorating. The cereal plants and most of the grasses are those which exhaust the soil the most, because their structure is chiefly of a fibrous nature, and their leaves are not suitable to absorb air or moisture to any great extent, so that they must drain their nourishment direct from the soil, and their roots are dried up and drained of all their juices in the process of forming the plant, and maturing the seed.

On the other hand, plants, well furnished with thick, porous, green leaves, absorb from the atmosphere carbonic acid and oxygen: these are given back to the soil by being deposited in the roots. The leguminous plants, such as pease, beans, tares, clover, the long fleshy perpendicular roots of which retain the plant food which their leaves and toms obtain from the air, and leave them in the soil—and by this means a good crop of cereals can be raised, without the application of any other manure.

It must be noted here that all plants do not return to the soil the same quantity or quality of manure they have taken out, but have changed it by a peculiar process of elaboration into elements best suited to the following crop of plants of an opposite nature.

We have said that some crops are apt to smother or otherwise discourage the growth of weeds, and some encourage their growth and permanence. All plants, the leaves of which overshadow the ground during the summer months, are inimical to the growth, and development to full maturity, of weeds—all crops that we can hoe during the growing season have this quality, but none are so effective as plants which entirely cover the ground such as corn, tares, tobacco, rape, &c., because they completely keep away the sunlight, and the worst weed, couch-grass, for instance, cannot exist without it.

Therefore a rotation of crops is necessary, if only to give us a chance to free them from weeds, periodically at least.

There may be differences of opinion as to exactly what crops should succeed each other but we observe on broad principles that gramineous, grass, &c cereal—or grain-crops never should; but either roots or legumes should be made to alternate with them, and that a cleaning crop should be planted as often as possible.

It has been said—quaintly—that the farmer's bank is his manure pile, and rotation his wheel of fortune.

The wise farmer does not want to increase his acreage, because by doing so he increases his labour and his other responsibilities, but he wants to increase the fertility of that which he already possesses.

That is true: honest successful husbandry. not *barbarous* depletion of fertility.

G MOORE.

HINTS FROM ENGLISH FARMING.

EDS. COUNTRY GENTLEMAN. — It it generally conceded that, taking one season with another, the American farmer's net returns exceed those of his English cousin. Several causes contribute to this. The price of land in England, the major part of which is rented, is higher than in the States; the growing season here, although shorther, is more favorable to many crops, while some very profitable to us cannot be raised there at all. On the other hand, British tillers of the soil attain to greater perfection in the quality of most of what they do produce, which is principally owing to suitability of climate and length of season allowing crops to manure gradually. Notwithstanding that labor is more plentiful and cheaper in England, the system of farming there is so thorough and the methods employed are so slow and primitive—consequently increasing the cost—that I fancy after all there is not so much difference in the farm labor bills of the two countries as is supposed.

Among the drawbacks to larger profits on the part of the American farmer, is the amount of work which must be done in a short time, often resulting in a hurried and imperfect performance. By employing additional labor this could be, to a great extent, remedied, and the better cultivation thereby obtained would in most cases prove it to have been a profitable investment in England it is considered that the greater the pains taken, the greater and better will be the crop, while the minutest detail in the treatment of the different crops is never omitted. Where the same conscientious cultivation in universal use here, our farmers net profits would still further exceed those realised on the other side of the Atlantic. It is only by slow degrees that the leaven of agriculture, so carefully prepared by experiment stations, colleges and leading agricultural papers, is spreading through the whole lump, and until a complete leavening does takes place, we must not expect to far outstrip our rival in Great Britain, where most of the land is owned or rented by the same families, and tilled by the same laborers, or their descendants, generation after generation; where, too, if the performance is not speedy, or under improved systems, it is at least complete.

In a recent English (Gloucestershire) newspaper, containing a report of the Root, Fruit and Grain Society's show of field crops in that county. there appears the following: "The crop (mangold wurzel) is the best I have weighed since I have judged for your society. Mr. J. Griffiths (Berwick Farm) is first, with the heaviest I ever weighed, viz., 59 tons, 2 cwt. 3 qrs., 12 lb. per acre," which is more than 66 tons American weight. Due allowance being made for difference in climate and season, how often do we hear of a proportional crop of mangolds being grown here? The swede crop was reported as below those of previous years, the first prize being captured by the grower of 24 tons, 17 cwt., 1 qr., 20 lbs to the acre—27½ tons American weight, At 25 cents a bushel this would amount to $229. Mr. Crozier, one of the best authorities on root-growing, in "How the Farm Pays," gives the average of mangolds as 30 tons or over per acre, and that of swedes as 25 tons, and considers the average value of the former for feeding live-stock to be $4 per ton, and of the latter $5, as compared with hay at $15 per ton. This would seem to show that swedes (ruta bagas) are the most profitable, as certainly they are the most salable crop of the two for us, while mangolds, on the same basis, appear to twice as well as swedes in England, supposing that the cost of cultivation of swedes and mangolds is about the same. These crops are mentioned to show what English cultivation is capable of doing, and I should much like to see some such crops reported as having been grown here. But before it can be generally done, we must have more intelligent, careful and systematic farming.

A neighbor of mine, whose specialty is carrots and rutabagas, says of the latter that when once his land is fitted for them, it does not cost him more than two cents a bushel to raise them; he gets an average of 600 bushels, which, at 25 cents a bushel gives him $150 an acre. His carrots yield abou the same average quantity and bring the same price, and are disposed of to gentlemen in Rochester for their driving horses, the rutabagas being sold at butchers' and grocers' stores. Turnips and carrots are not always in demand, but rutabagas never fail to find a market.

J. H. C.

Munroe County, N. Y.

ORCHARD OR TIMOTHY GRASS FOR HAY.

When cut in the blossom, orchard grass is fully as nutritious and good for cattle and horses as timothy, as the following table of analysis of the N. Y., experiment station shows:

	Ash.	Protein.	Fiber.	Starch, etc.	Fats.
Orchard grass,	7.4	9.6	30.4	49 3	3.3
Timothy,	5.7	7.9	29.9	53.6	2.9

Director Collier writes us: "From the per cent of protein or flesh forming elements in the grasses it would appear that orchard grass should be more generally introduced into pasture and mowings wherever the catch is permanent. Orchard grass grows in tufts owing to the manner of growth of the roots, but in this respect timothy is hardly an improvement over orchard grass." The trouble with orchard grass is that unless cut early it is very woody.

Farm and Home.

Poultry-Yard.

FOWLS FOR PROFIT.

Table Fowls—The Dorking.

The Dorking is the English ideal of what a table fowl should be, and the Colored—or, as it is there frequently called, the Dark—Dorking is the ideal variety, not perhaps *because its flesh* is better or its shape more perfect or its plumage more beautiful, but because with equal quality and beauty it has the largest size.

The Dorking is a very old breed—how old, no one knows. A passage from Columella is often quoted to show that it is older than the English nation, and that it perhaps was introduced into England (1) along with the conquering cohorts of Cæsar. Although this passage gives a brief description of *five-toed breed, with not a few* Dorking characteristics, no one pretends to take it quite seriously, and it is believed that it is perhaps not older than 100 or 150. But even a century is a pretty good age for a breed, when we consider that many of our modern favorites are less than 25 years old.

At one time the Colored Dorking was losing ground, or at least it did not hold the place it now does. It was a smaller fowl than it now is, and less vigorous in constitution. And then an outcross *was made with a large, vigo*rous fowl, possibly of Malay blood, though its breeding is very uncertain, with astonishing results. The Colored Dorking became a bigger, a stronger, more vigorous fowl. The birds having this blood in them astonished the poultry-admiring public. Nothing like them had been seen before. The success was sudden, great, and, best of all permanent.

There are two characteristics of the Dorking that deserve especial mention —*its five toes* on each foot, and its parallelopiped body. The first is a very good evidence of its breeding, the second enables it to carry the immense quantity of meat that has given it high rank as a table fowl. But the five toes are not always produced even on well-bred specimens. I remember selling some eggs once from a fine pen of this variety to *a customer, and*

(1, *Britain* if you please, Cæsar never saw *England.*—ED.

received in the report of the hatching the statement that among the chickens were two that did not have the regulation number of toes, one having four upon each foot and the other six. The average, however, was correct.

The Dorking is not exactly suited to the requirements of the American market. Its shanks are white, and we prefer fowls with yellow shanks. Its skin is white, sometimes a pale yellow and we wish a rich golden-yellow skin. But we do like the plump breast, the long keels and the rounded thighs of the Dorking, and he is difficult to suit who complains of either the amount or quality of its flesh.

As a layer, the Dorking is not a success. I have had hens that were excellent layers, but they were the exception rather than the rule of the breed. Such eggs as they produce are excellent, but they produce too few of them. One does not expect, however, or if he expects does not get everything in a single breed. If the table qualities are superb, the laying qualities will be deficient, for the two do not exist together in the highest degree in the same fowl. No reasonable man expects a Percheron horse to make a mile in 2 05¼, or a Directum to haul the heavy loads of a Percheron. No reasonable man expects a Jersey cow to make the quantity and quality of beef that a Hereford will, nor a Hereford to make the percentage of butter that a Jersey will, and no reasonable man ought to expect a superb table fowl like the Dorking to lay as many eggs as a Leghorn. It might be possible to breed a strain of great laying Dorkings, just as there are strains of dairy Short-Horns, but it would compel the sacrifice of much of the table properties of the fowl.

The greatest difficulty with raising Dorkings in this country is their delicacy. The chickens are delicate, difficult to rear, though fairly hardy as adults. The climate or the soil or both in many parts of the United States does not seem to agree with them. It is said that in England they thrive best in a limited area, and outside of it are not nearly so thrifty as within it, and when transplanted to this country they certainly do not do as well as could be wished. Possibly one reason is that they are here too much inbred, for one of the great secrets of breeding this fowl is fresh blood. So few are kept that it is not always easy, without going to considerable expense, to procure fresh blood. To use a Hibernianism, the best Dorkings bred in the United States are bred in Canada, and it is possible that this is in part due to the close connection between Canada and England, and the more frequent introduction of new Dorkings from the mother country by which inbreedings is prevented. It is very certain that the Canadians do breed some very fine Dorkings.

Dorkings, especially heavy cocks, frequently suffer from abscesses on the bottom of the feet, the trouble being known as bumble-foot. This is believed to be due, to some extent at least, to the peculiar conformation of the foot. Though it sometimes readily yields to treatment—a cruciform incision by which the pus is released and the use of some emollient to promote healing—it often proves very persistent, and sometimes incurable. The best Colored Dorking I owned, and one of the best I ever saw, was rendered worthless by this trouble.

Dampness, while injurious to all fowls, is fatal to Dorkings, leading to a complication of diseases affecting the respiratory organs. Those portions of our country where there is a sandy or gravelly subsoil, and where the surface quickly dries off after a rain, would seem to be the best adapted to rearing Dorkings. From such sections we should expect to obtain the healthiest and best specimens. And this expectation has been realized in a limited way by such birds as we have seen that were reared in New-Jersey and vicinity. Some really good Colored Dorkings are bred in that State, and in the eastern part of the State of Pennsylvania

It is my opinion that the best use to which the Dorking can be put is the production of cross-bred fowls for the table. Mated to some breed that has hardiness to recommend it, the chickens lose their delicacy, and when grown, show something of the table properties of the Dorking. In order to make such matings possible, some must raise the pure-bred Dorkings, but that work is best left to the fancier who has the patience and will take the time and pains required to preserve any breed, however delicate, which strikes his fancy.

Country Gentleman.

Breeder and Grazier.

TUBERCULOSIS.

ED. HOARD'S DAIRYMAN:—A leading editorial in *Hoard's Dairyman* of the 30th ult. on tuberculosis calls attention to a subject the importance of which is being more fully appreciated day by day. The editor seems to think that we need a great deal more knowledge than we yet possess before we condemn as positively dangerous, all milk coming from tuberculous cows.

If I may venture to trench upon your valuable space, perhaps the presentation of some experimental data upon this subject, may not be uninteresting to your readers.

I think no intelligent person, who has taken any pains to study the question, can but agree that we have in tuberculin the best means of diagnosis for bovine tuberculosis, that has as yet been used.

A summary of statistics indicates that from 85 to 88 o/o of tuberculous animals show the reaction fever upon inoculation, while 90 o/o of the animals that were declared free from disease on account of the absence of fever did not show on autopsy any signs of tuberculosis.

Unfortunately, the reaction fever that follows when tuberculin is injected into a tuberculous animal does not in any sense indicate the extent of the disease. We have killed a cow at our station recently in which the only sign of tuberculosis was a single bronchial gland in which the bacilli were demonstrated, and yet the animal reacted nearly as much as did another in which there was a wide spread tuberculosis of the lungs, the adjoining lymphatic glands, and the membranes covering the intestines.

The question now at issue is, should all animals that show the least evidence of the disease by the Koch test, be sacrificed? Is there positive evidence that the milk from these animals is infectious, and able to transmit the disease to the human subject?

It is not necessary to prove that every animal delivers tuberculous milk in order to condemn the use of milk from such sources. If it can be proved that there is a strong possibility that such might be the case, it seems to me that that suffices to put such milk under suspicion, and it should be treated as such.

When the tuberculous condition is localized in the udder, or has extended from other organs to the udder, it goes without saying that such milk should be regarded as dangerous for human consumption. MacFadyean proved that in 14 cases out of 19, where tuberculosis of the udder was recognized, the milk was infectious to the extent of communicating the disease to animals.

Very often the udder may be affected and still give no physical signs that will enable the veterinarian to accurately diagnose the disease as present in this gland, so that an autopsy of the animal often discloses the first evidence of the diseased condition of the udder. That such milk may be contaminated with tubercle bacilli is highly probable. Then too, numerous experiments have also shown that the milk contains bacilli of tubercle even when the disease is not evident in the udder at all. True it is, that the percentage is very much less, but Chauveau, Bang, Bollinger, Nocard, and many others have shown that in a considerable percentage of cases, often as high as 20 o/o or more, where tuberculosis of the animal (aside from udder) had been demonstrated, the milk contained virulent bacilli.

Lack of space forbids citing cases in detail to prove this, but abundant evidence is already at hand to show that tubercle bacilli are often demonstrable in the milk of tuberculous cows, even when the disease does not affect the udder.

This might seem sufficient to condemn, without any further consideration, milk coming from such sources, but two other points must be taken into consideration in this connection.

1. The actual number of germs that must be introduced to call forth a tuberculous condition in man.

2. The susceptibility of the human subject to intestinal tuberculosis.

Here it is that our knowledge is as yet deficient. Experimental evidence can not be secured with reference to man himself, and we must, for the present, rely upon facts observed with experimental animals. Rabbits are the most susceptible animals that we know of, and yet it requires, according to the investigations of Wyssokowitsch, the introduction of 20-30 bacilli directly into the veins before the disease is produced. Gebhardt found that if we took milk from tuberculous cows that was able to infect rabbits and diluted with eight times its volume of healthy milk, the virulence was lost. Now, supposing that man is as susceptible to the disease as are rabbits, it would require the introduction of a goodly number of germs before the disease would be produced. Especially true would this be with reference to the intestinal tuberculosis, for it must of necessity require a far larger number to be taken in by the way of the stomach than it would require if the germs were introduced directly into the blood circulation.

Now, as to point No. 2. Is the danger of infection by the way of intestines as great as it is along other channels?

Mortality statistics show that one-seventh of the annual death rate of the human race is due to tuberculosis in its various forms, but of these, pulmonary tuberculosis, or consumption, is by far the most common. A tuberculous condition of the intestines is often to be observed, but no less an authority than the eminent physiologist of England, Burdon Sanderson, is authority for the statement that this condition in adults, is always the result of secondary infection, usually from the lungs.

When we study the death statistics of children, the question assumes a different phase. Nearly one-third of the deaths of children recorded in hospitals, are from tuberculous diseases, and with this class the intestinal form of the disease is much more common. While, in the absence of experimental data on this point in question, we cannot say exactly what percentage of cases acquire the diseases primarily from the entrance of germs through feeding, still the large percentage of cases that show primary infection to have occurred in this way must naturally be explained by the ingestion of tuberculous bacilli in the food.

It will be evident from the above discussion that there may exist a causal relation between the ingestion of milk containing tuberculous germs and the prevalence of this form of the disease in children.

We are justified in regarding the intestinal tract of children as possibly more susceptible than adults, and as milk is a much larger factor in their diet than in the case of the adults, the possibilities of introducing increased numbers of germs are consequently greater.

Enough has been said already to show that there is an element of danger in the consumption of milk that may contain tubercle bacilli, and if the discussion that is now so active does nothing more, it will awaken the people to the fact that we are dealing with a question that is fraught with utmost importance to the human race. While there is no occasion for spreading alarm, for certainly the future will not be much worse than the immediate past has been, yet it is time that the people at large awoke to the danger that might result in the use of milk that contains the elements of disease.

The use of tuberculin in the hands of competent persons will enable any dairyman to prove to his own satisfaction whether the dread disease is in his dairy herd or not, and speaking from the stand point of a consumer, it would seem that we as consumers, have a perfect right to demand proof that there is no possibility of contamination from this source.

Even if dairymen are not disposed to accede to these demands, we have a means of rendering milk free from infection by the process of pasteurization, for the tubercle bacilli loose their infective properties when heated to the temperature of 158° F.; but this is an inconvenient method of procedure for the individual consumer and could be accomplished more satisfactorily by the dairyman himself.

Lack of space forbids any mention of the relation that tuberculous milk holds to the butter and cheese industries, although the importance of this should by no means be overlooked.

Swine.

HOG RAISING.

By Frank Hill, Hartney.

I have been in this country now about six years and it has always been my opinion that growing wheat would not pay alone, and I find that a little mixture of some stock of all kinds is what helps a farmer out in this country as well as other countries. We can try horse raising though there is not so much money in horses at present as there was a few years ago. If we raised a pair of colts every year, which most farmers can do if they feel

so disposed, as we are getting most of our breaking done around here and after seeding are able to give the mares a rest for a short time to give the colts a start and they will soon grow into money and at four years old are worth from $200 to $250, and we don't much miss what they cost to get at that figure and we find when we get that amount for them, it will pay quite a store bill or keep the Massey-Harris Co. quiet for a time. We will now take cattle. Of course there is not much money in oxen at present, but if our president gets his scheme through no doubt there will be a demand for some cows, and I find I have never had any trouble in selling them at a good round figure, and generally get the cash at the same time. And if we had a good fat steer to sell in the summer when we have no wheat it comes in very useful and there is no danger of getting them frosted in August and have to sell for less than one-half price.

Hogs. This is the industry I have the most faith in. I have been breeding more or less ever since I have been in the country and I think make the most ready cash of any stock at the least expense. In 1890 I was feedind a lot and I had to buy corn in Deloraine and paid as high as sixty cents per bushel for some and I don't think I lost any money by doing so, and I certainly think it will pay better now when pork is just as good a price as at that time and these last two years I have been buying my feed from ten to thirty cents and even less than that. Now I have built a log house that cost between $400 and $500 and I have something over 100 porkers in it at present. I bought three from Mr. Barter and put them up by themselves and have kept them on crushed wheat fed dry. When I got them home and weighed them, the first of November, the three weighed 540 lbs. and I fed them thirty days and weighed them again on December first and the three weighed 736 lbs., a gain of 196 lbs. I weighed them again this morning after sixteen days feeding and three weighed again, 863 lbs., a gain of 127 lbs., which shows a gain of 323 lbs. The cost of feeding them, taking wheat at forty cents, would only be about twenty one cents per day, as it only takes a trifle over half a bushel per day to feed them, which in my estimation would make wheat fed in this manner worth about seventy or seventy-five cents at the least, should frost come, when we have a lot of hogs to feed, if the grain is not too badly frozen, it makes almost as good feed if not quite so strong. Again, barley is as good hog feed as we want and I think better for young pigs than wheat and we are almost sure of a crop of that if we put it in good order; and I think the manure from the hogs will more than pay the labor of looking after, to go back on the land again for that is the best dressing we can get. I find wherever I put manure I can see it for the next two or three years and get the best results from it; and I find the more manure I get on the land the more wheat I get. But we want good farming to make it pan out good and I have heard the remark made that manure makes too many weeds, but for my part I will put up with the weeds if I can get the manure.—*N. W. Farmer.*

Our old friend, Professor Sanborn, once of New Hampshire, but now of Utah, is still doing good work as the head of the Utah Experiment Station. By recent feeding tests he has recently found that, on the average, a certain amount of food being required to make a pound of gain on pigs weighing thirty-five pounds, three and three-tenths per cent more food was required to make the same grain on pigs weighing seventy pounds, fourteen per cent more on pigs weighing 125 pounds, nineteen per cent more on pigs weighing 175 pounds, twenty-two per cent more on hogs weighing 225 pounds, and so on up, until seventy-one per cent more feed was required on hogs weighing 325 pounds. So that it is apparent that a hog fed at a fair profit until it reached 200 pounds would be fed at a loss shortly after it had passed that weight, and if fed up to 350 to 400 pounds, all profit would be destroyed.

Ex.

The Flock.

IDEAS CULLED FROM SHEEP BREEDERS' ANNUAL REPORT 1893.

When the fields are covered with snow, they should be well seen to and fed, so as to keep them in good health and vigor. For the first few months of winter, plenty of turnips cut or pulped, nice, well cured pea-straw, with a feed of clover-hay now and again, will be found amply sufficient, with salt and pure water at all times within reach. Towards lambing time, a little grain should be added—oats fed whole are best—and the turnips should be reduced or the lambs may come weakly and some may be lost through this cause. (1) We should watch the flock, and render any help if *needed* in lambing. And some of they lambs may require a little assistance to their first feed, especially if a young ewe is the mother; but the least one works with them, if not really needed, the better. The ewes as the lamb should be put in a pen by themselves, where they can be fed better; a little bran added to their oats will help the flow of milk greatly, and the lambs will run less risk of getting hurt. They should be turned out to grass as soon as possible after lambing, as nothing starts off the lambs so well, and it is important that there should be no stunting of their growth at this, or indeed at any time. The oats and bran should be fed until the grass is abundant.

Most of the writers have a word to say on the

CARE OF LAMBS AT AND AFTER BIRTH.

"When early lambs are expected' the pen should be made warmer than it is necessary to have it before this period, so that we may not lose an unnecessary number from chilling. Especially is this latter danger increased in the case of some of the favorite breeds whose lambs come so frequently weak. (The Downs may be favorably mentioned as producing strong, vigorous lambs even under adverse circumstances., But we should be prepared, as even under the best of management lambs will occasionally come weak and limberlegged, to furnish help to such, as the loss of a few such lambs may turn a prospective profit into a decided loss. Never give up a lamb until it is dead. Hold the ewe firmly but gently, and support the weak lambs in their endeavors to procure their natural food for a few times. A teasponful or two of warm diluted whiskey will frequently reanimate an apparently helpless lamb. In such cases, and with those ewes which we often find refusing to own their progeny, we should isolate ewe and lamb for a few days and use every available effort to remedy matters. In case of a ewe losing her lamb it may be wise to take one of the twins from a less thrifty ewe, and by isolation and persevering care she may adopt it. But do not adopt the plan of separating ewes and overfeeding immediately after lambing, as we so often find the case.

They may now be fed on all the good clover-hay they will eat up clean. The turnip ration may be considerably increased, and the grain ration may be doubled until the ewes go out to grass, when it may be stopped.

During the winter months the sheep should have a field in which to exercise, except in case of storms; this will do away to a considerable extent with the frequent complaint of weak lambs.

The lambs should be induced to eat as soon as possible. Clover, roots and oats should be placed out of reach of the ewes, and from which the lambs will soon eat freely. This grain ration should be supplied to them all through the summer, and we shall find no more profitable way of disposing of our grain than feeding it to the growing lambs.

During these months, unlike other stock, sheep require little care, except an occasional change of pasture, renewal of salt in the trough and of oats for the lambs, and care that they have access to water. It is wise also to take the precaution of seeing that they have shade during the extremely hot weather."

"At the age of three weeks (1) the lambs should have their tails docked and be castrated. This is very important—important at all times, but more especially if the lambs are to be fed through the fall and winter months. There is nothing looks so untidy as a long-tailed lamb, and, if they are to be fed on rape, it is an absolute necessity to have them docked. And the same of castrating. It is nothing less than carelessness to let them run uncut, and the farmer who neglects this should be made to feel it through his pocket."

"When the lambs are about a month o'd they should be induced to eat a little grain. A small enclosure should be penned off at one end of the sheep-house, leaving an opening through which the lambs can run in and out at will. In this pen a trough should be placed having a little bran or ground oats in, and the lambs will soon learn to nibble at it, and although they will not eat very much they will pay their owner handsomely for what they do consume.

This is the time a shepherd should be very attentive, as each loss detracts from the aggregate profit Get them out on a little pasture as early as possible, and continue to feed oats and bran and a little oil-cake, (2) if you want to make good lambs.

Now, as washing time has come, I prefer to wash the ewes and lambs, as it cleans their skin from the dirt and dandruff accumulated through the long winter, although some farmers think it cruel. Take care not to clip them until the yolk or grease is well up in the wool again, which will depend upon the temperature. Three days after you clip the ewes the ticks will be all upon the lambs, which, if dipped, will completely destroy them, if well done. There are many good preparations for dipping. Sometimes you will find a sheep very lame; examine the feet, and you will invariably find a wedge of dirt between the sections of the foot, or the hoof so overgrown as to cause the trouble.

Towards the end of August they should be weaned and put on nice second crop clover.

In the treatment of lambs after weaning, Jas. Bowman says: "Let them on as good succulent pasture as possible, and also try and keep them at a good distance from the ewes so they may not hear each other bleat, and give them a little grain once a day: oats, two parts; peas, one part, is a good mixture. They will keep growing straight along in this way, and about first of October should be turned into rape, and grain still continued. They will only take very little, perhaps one-half pound per day, until cold, weather comes on, when they will take more. We are strongly of the opinion that grain fed to lambs that are pasturing on rape and grass *pays*. In proof of this, last year one hundred and thirty-five lambs fed in this way, from twentieth of October until December second, gained twenty two hundred and seventy five pounds; they ate about $35 worth of grain. And this year the best three ewes and best three wethers under one year at *Provincial Fat Stock Show* were taken out of a flock receiving this treatment on the twenty-fifth of November, and show was held on fourteenth and *fifteenth of December*. This year a flock of one hundred and sixty-two, from October fourteenth to January tenth gained four thousand and twelve pounds. *From about tenth of December* they were fed mostly in pens, getting about three-fourths of a pound of grain per day, what turnips they would eat up clean, *and hay: also pea-straw* to pick through. If prices are good when rape and outside feed is done, we would advise to sell them. *But if prices are low and there is a* good prospect of getting one-half cent per pound advance in price by holding them a month, if properly attended to in the way referred *to above*, they will pay. The pens need to be kept dry and plenty of fresh air allowed into them. Also salt to get to at will, both in fields and in *pens*.

Ewe lambs intended for breeding may run along with other lambs in rape."

Farmers Advocate.

(1) At no time should pregnant ewes have many turnips.—ED.

(1) Ten days.—ED.
(2) And do not omit pease.—ED.

PRODUCING WOOL AND MUTTON.

The arid region of the United States and the great areas on other continents are sufficient to produce all the wool the world needs, at a lower cost than is possible on our cultivated farms, each of small area, says Prof. Henry in the ninth annual report of the *Wisconsin experiment station*. Why should our farmers then give their attention to fine wool production, while we have home markets constantly enlarging for fine mutton? But mutton of excellent quality can be produced with sheep that grow a fleece entirely satisfactory, whether the quality of the wool or the price per pound for the same is considered. Medium wool and good mutton can be produced from the same animal, and it is this sort of a sheep that will prove *the most profitable on our farms.*

Farm and Home.

A New Departure in Canadian Art Manufacture.

It has heretofore been usual with Canadians who wished to possess a piano of undeniable excellence to choose an instrument of one of the eminent American makers, even at the high prices necessitated by duty, freight, etc. This will, however, be no longer necessary, as, thanks to the enterprise of Mr. L. E. N. Pratte, of this city, a Canadian instrument can now be obtained fully equal, and in some respects superior, to the highest class of foreign manufacture.

Mr. Pratte has been quietly and steadily working and experimenting for the past eight years with the object of obtaining the highest possible degree of perfection before he ventured to place a single instrument on the market with the result that many improvements, for several of which patents have been granted, have been incorporated in his new piano. Every part of the Pratte piano is made on the most improved principles under personal supervision, and is thoroughly tested and adapted to withstand the variations of the Canadian climate. A solidity and finish is thus obtained impossible to expect in large factories where thousands of instruments are turned out annually.

As to the high position which the "Pratte Piano" has attained in the musical world, the numerous congratulatory letters from well known European and Canadian virtuosi, which Mr. Pratte has in his possession, speak for themselves; and any connaisseur who may still feel sceptical can easily judge for themselves by trying the instruments, that these praises are not merely empty words, but that the "Pratte" piano is really a credit to Canadian art and enterprise.

NOTES AND NOTICES.

—The Leader Churn Manufactured by Dowswell Bros, with improved gas vent is meeting with universal favour with all butter makers. Their agents, Messrs Haldimand & Son, report the sales in excess of any previous season.

—Mr. Anthon Christensen announces that without any doubt whatever he is making the best driving belts in the world for Cream Separators.

He made the first endless belts that were used on the "Reskilde Cream Separators," of Denmark, and since that time has kept on improving them so that at the present time they are incomparable in strength, finish and durability.

His belts are in use all over the world and have proved all his claims for them as can be seen by the hundreds of testimonials in his possession.

For further particulars address him at Suspension Bridge, N.Y., P. O. Box 543.

(From The Farmer's Advocate, May 1st, 1894.)

The Lewis Combination Sprayer.

We have made a careful test of the Lewis Combination Spray Pump which is offered for sale by Mr. W. H. VanTassel, of Belleville. It is all made of brass, excepting three or four feet of strong hose, and the parts all screw together. It is handy, strong, simple and will serve half-a-dozen different purposes. It throws a solid stream twenty-five or thirty feet high, large or small, which can be changed instantly, without stopping, to a fine or coarse spray. There is a special nozzle for spraying low bushes, such as roses, currants, etc., and can be used to apply emulsion to cattle. As a veterinary syringe it is also very useful. Practically, there is nothing about it to get out of order, and Mr. VanTassel will express them to any one cheap. We can heartily recommend the Lewis Sprayer.

—"The Farmer's Hand Book," published by Messrs. John S. Pearce & Co., of London, Ont., will be found quite a boon to Farmers, Dairymen and Breeders, as it gives a very simple yet complete form of keeping accounts for every department, the arrangement is such that a minute or two each day only is required to insert the figures of the days transactions and will serve as a reminder in case of any forgetfulness. Any Farmer that has not kept proper books, can easily keep correct accounts with this Hand-book, while managers of large concerns who keep elaborate account books will find it useful: besides the accounts and registers, there is a lot of useful information, which increases its value. Prof. Dean has written the publishers "The Farmer's Hand Book" received to-day, I believe it will be a valuable help to farmers and dairymen in helping them to acquire business habits also contains valuable information.

Yours sincerely,

H. H. DEAN."

The cost of the book is only 20c. and it is well worth double,

—In the years 1889, I first commenced the breeding of Improved large Yorkshire Pigs having purchased a pair from the wellk nown breeders and importers, Messrs. Ormsby & Chapman, of Ontario. The following year, I made the purchase of another pair from the herd of Green Bros., of Ontario. The demand seemed to increase so fast for this breed that in the year 1892, I decided to import and having made a purchase of a trio from the largest and most noted breeder in England, Mr. Sanders Spencer, of St. Ives, and the sows being bred and having been fortunate with their litters, I soon found myself in possession of one of the best herds on this side of the water as young pigs of my breeding took no less than 1st, 2nd and 3rd prize in one class in Montreal, last year, and also two 1sts in other sections, at the same fair. Some of those were shown by Mr. Wm Tait, of St Laurent, who has purchased largely from this herd.

The demand has kept on increasing for this breed until I find I will have to still largely increase my herd as I have sold out all my boars, and have only a few sows left which I expect will not remain long with me. I also keep a few of the old and well tried Berkshires which I always find customers for.

J. G. MAIR, Howick.

FOR OVER FIFTY YEARS.

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

HARMLESS, UNFAILING and CHEAP

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60,000 IN USE.

THIS OUTFIT makes Three Complete Brass Machines. It is a Spraying Pump, Agricultural Syringe, and Veterinary Syringe combined. Everything screws together and can be easily taken apart and cleaned. Will throw fine or coarse spray or solid stream as desired. Impossible to close nozzle.

Agents wanted.

A valuable illustrated book on Our Insect Foes and How to Destroy Them is given to each purchaser. Goods guaranteed as represented or money refunded.

To introduce, I will deliver one of the above described Spraying Outfits and Illustrated Book to any express station in Canada for $6.50, express paid.

W. H. VANTASSEL,

6-94-3t Belleville, Ont.

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IMPROVED YORKSHIRE.

ASHTON - HERO - IMP.

My **Breeding Stock** are imported from the celebrated Breeder Sanders Spencer, Holywell Manor, England.

All my Young Stock are Sold.

I am now **Booking orders for Fall Litters.** I ship to order and guarantee satisfaction. Personal inspection preferred. WM. TAIT,

3-94-6t St-Laurent (near Montreal.)

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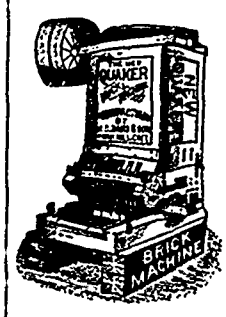

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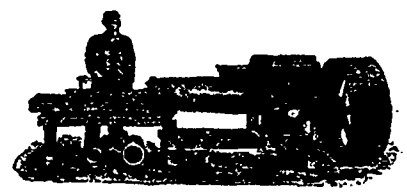

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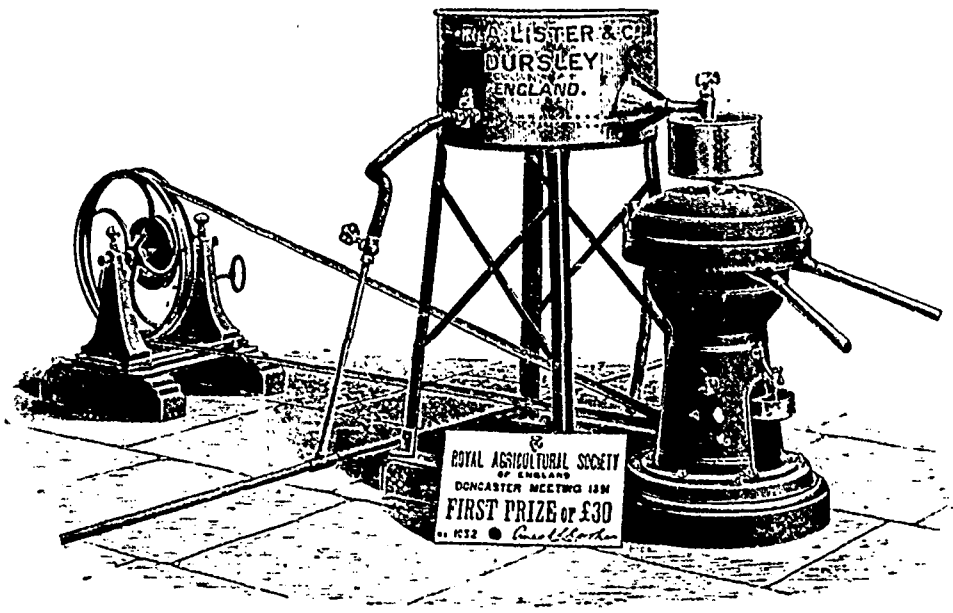

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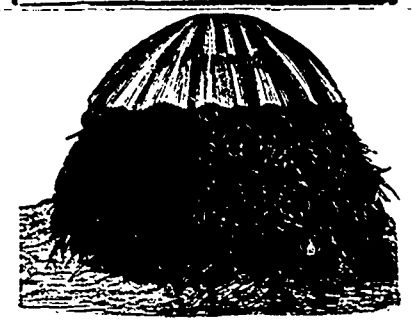

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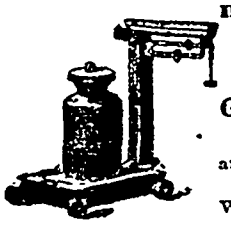

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