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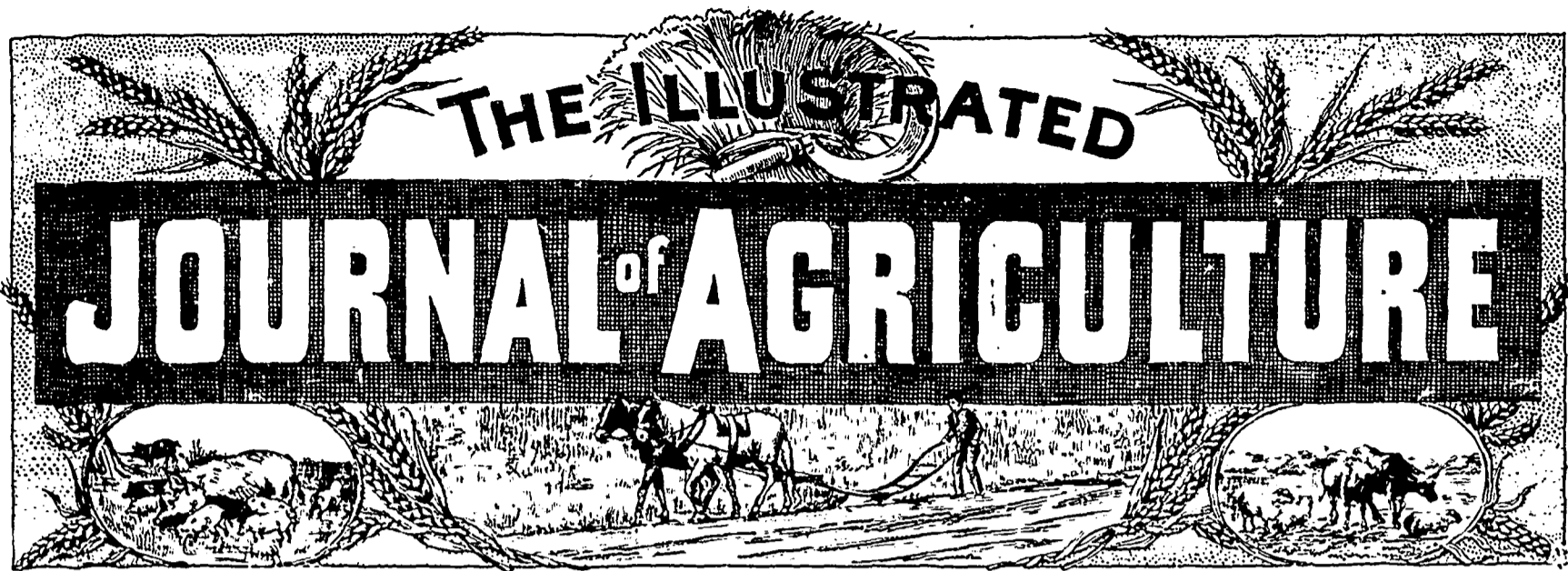
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The ILLUSTRATED JOURNAL OF AGRICULTURE is the official organ of the Council of agriculture of the Province of Quebec. It is issued Monthly and is designed to include not in name but in fact anything concerned with agriculture, as Stock-Raising, Horticulture,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

All matters relating to the reading columns of the Journal must be addressed to Arthur R. Jenner Esq., Editor of the JOURNAL OF AGRICULTURE, 4 Lincoln Avenue, Montreal. For subscriptions and advertisements address the Publishers.

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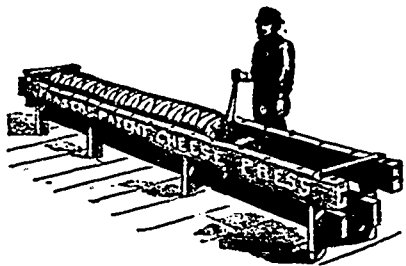
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For information about the price and other details please correspond with Mr. N. F. Bédard at the above mentioned address.

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Please address

J. G. TELMOSSÉ,  
244 St. Paul St., Montreal.



The only one on the market, which the horses can run without their work being hindered.

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It affords us great pleasure to have it known that the improvements brought to our hay press "La Canadienne" have made it superior to all other horizontal presses working in the shape of half a circle. The fuller's course is 33 inches, that is from 6 to 9 inches longer than in any other horizontal press, which gives a wider opening to put the hay in and more speediness. Three men will do more work with our press "La Canadienne" than with any other press in the shape of a half circle, while it is much less tiresome for the horses. The materials employed are of the first quality, with the exception of two pieces of chilled cast iron, all the other parts are of steel and malleable cast iron.

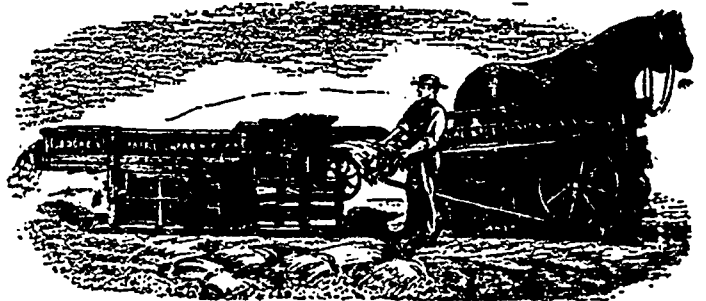
We guarantee our press to work at the rate of 10 to 13 tons of hay every day without the horses being tired.

We manufacture four sizes of presses:

14 x 18      16 x 18      16 x 20      16 x 22

We will send this press for trial to any responsible party.

Write for our Catalogue and list of prices.



The thrashing machine represented in the above engraving is our vibrating machine. It has a run of 28 inches long with teeth in steel guaranteed so that they can bend without breaking as the norway.

The iron work that support the drills is all in wrought iron which is very advantageous and economical as any blacksmith can make it, so that all long delays are avoided.

The sieve of our vibrating machine is longer and wider than all the other machines of the same kind manufactured in Canada. This new shape facilitates the cleaning of the grain and the sieve is less exposed to spread its contents outside. We give seven passes with this sieve.

The horse power runs on cast iron rails, all the shafts of the bridge are in steel and measure 3/4 of an inch which represents half a line of a larger size than those employed by the other manufacturers. All the shafts in the separator, the sieve and the horse power are in steel. We never use any iron shaft. Our machine is acknowledged to be the easiest to run and the one which lasts the longest.

Write for a catalogue and list of prices. We also manufacture a Canvas Separator with improved Railroad Horse Power, Railroad Upright Hay Press, Rod Upright Hay Press, Straw Cutter No. 9, 11, 13, Spring Harrows, 10 teeth; a Washing Machine patented May 1892.

We want active and responsible agents in all the localities where we have none yet. Any farmer shall find it an economy and be certain to have the most improved machine in applying to us. We allow a special discount for orders sent by mail.

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THE ILLUSTRATED  
Journal of Agriculture

Montreal, July 1, 1893.

Table of Contents

DELIBERATIONS OF THE COUNCIL OF AGRICULTURE.....		125
Official notice.....		125
NOTES BY THE WAY:		
Cheese.....	125	
Wheat-crop in the States.....	125	
Green-manuring.....	125	
Clipping-horses.....	125	
Creamery-floors.....	125	
Cows and cows.....	125	
Agricultural science.....	125	
The Drought in England.....	125	
Fat lambs.....	125	
Barley for malting.....	125	
Nitrogen for potatoes.....	125	
Nightsoil.....	125	
Wheat as cow-food.....	156	
The St. Hyacinthe Dairy-school.....	126	
Food and fat in milk.....	126	
Cooked food.....	126	
Much to learn.....	126	
Cotton-seed.....	126	
Permanent pasture.....	126	
"Hans Buchner" and his grasses.....	126	
Lower-provinces harvest prospects.....	126	
Oats and pease; III.....	126	
Potatoes.....	126	
Loss of manure constituents.....	126	
Tomatoes.....	126	
English crops.....	127	
Stacking pease.....	127	
Roots.....	127	
Potatoes.....	127	
The Bordeaux mixture.....	127	
Hood-crops.....	127	
The turnip-fly.....	127	
OPERATIONS ON THE FARM-JULY:		
The hay-crop.....	128	
Hood-crops.....	128	
Making cows.....	128	
Fences.....	128	
Second crops.....	128	
P. Flock.....	128	
Swine.....	128	
Foals.....	128	
Implements.....	128	
Prickly-comfrey.....	128	
Canadian-Jerseys.....	129	
Gardens.....	129	
SCIENCE:		
The food of plants.....	129	
Central Syndicate of Farmers of Canada.....	129	
THE FARM:		
Thick or thin seeding.....	129	
Root-crop cultivation.....	130	
Cultivation of hold roots.....	131	
Rape-growing.....	131	
Corn-culture.....	131	
Roots.....	132	
Parsnips.....	132	
Silage.....	132	
Ensilage and clover.....	132	
Drains and fences.....	131	
Potatoes.....	122	
Green-peas.....	133	
Silage spoiling at the sides.....	133	
Loss of rolling.....	133	
Oh!.....	133	
Illinois experience with ensilage.....	133	
That big corn-crop.....	134	
Experiments on roots and corn.....	134	
COMPETITION OF AGRICULTURAL MERIT.....		
THE HOUSEHOLD:		
Cooking fish.....	136	
Going to the World's Fair.....	137	
THE DAIRY:		
Fat and milk.....	137	
Butter-food and feeding calves.....	137	
"Fifty years a Dairyman".....	137	
Acidizing milk.....	138	
Chose notes for July.....	138	
POULTRY DEPARTMENT:		
Letter by Mr. A. G. Gilbert.....	139	
THE FLOCK:		
Hot-house lambs.....	139	
Notes on sheep-breeding.....	140	
Rape for sheep.....	140	
Abortion in sheep.....	140	
HORTICULTURE:		
Its prospects in Quebec.....	140	

Deliberations of the Council of Agriculture.

(11th and 12th April, 1893.)

All the deliberations of the 11th and 12th April last, published in this Journal—May number—, have been approved by order in Council, dated 5th June last, except the matters reserved by the Council of Agriculture for subsequent consideration, to wit:

1. The report of the committee appointed to study the programmes of the agricultural societies.
2. The 23rd resolution, on the subject of Jersey-Canadian cattle at the Provincial Exhibition at Montreal.
3. The 26th resolution, on the report to be made concerning 2-rowed barley.

OFFICIAL NOTICE.

The Agricultural Societies and Farmers' Clubs, are bound, in virtue of the rules of the Council of Agriculture, to acquaint themselves with the deliberations of the Council of Agriculture, and to conform thereto, in all things that concern them, and that without any further notice from the Department of Agriculture or from the Council of Agriculture.

Notes by the Way.

June 2nd, 1893.

**CHEESE.**—The first market for cheese, this year, was opened at Prescott, Ont., on the 6th May. The average price was 10½ cents a pound = \$11.20 a cwt. Now, as the best September and October Canada cheese was then fetching in England 52 shillings the cwt., 112 lbs., this only leaves 72 cents for cost, freight, and insurance, to say nothing of brokers' charges.

**WHEAT CROP IN THE STATES.**—Mr Wood Davis, a frequent correspondent of the "Country Gentleman," thinks it would be highly advantageous to his fellow-countrymen if they could manage to have a succession of bad wheat-crops for the next three or four years. As the average crop of that cereal in the States is only about 12 imperial bushels to the acre, we should like to know what Mr Davis' idea of a bad crop is.

**GREEN-MANURING.**—Mr Blacknall, another correspondent of the above paper, shows that, in several instances, green-manuring has injured, rather than benefited land. It seems, from this statement, that green-crops tend to make the land sour, whatever that may mean. If so, a dressing of 40 or 50 bushels an acre of lime would soon cure the fault. We do not think green-manuring would injure land, but we must regard it as a wasteful way of utilising valuable food. (1)

**CLIPPING HORSES.**—Mr J. Smith, the chief of the English Army staff of veterinary surgeons, is an earnest advocate of clipping horses. Taking into consideration the loss of tissue by sweat, he is of opinion that a clipped horse requires one pound a day less oats than a horse with all his coat on. In this climate, horses that are kept standing about in the streets should never be clipped; but carriage-horses, hacks, &c., under the care of a good stableman, would be all the better for

(1) See Mr. Stewart on this subject, page 132.—Ed.

being clipped in October, and regularly singed once a month throughout the winter.

**CREAMERY FLOORS.**—The inspectors of our factories often observe, in their reports to the Dairymen's Association, that the floors of both creameries and cheese-rooms are not kept so clean as they might be—this, we beg to observe, is a very mild way of putting it. A good pine floor well dressed two or three times with boiled linseed oil, and finished off with shell-lac varnish, will be found easy to clean with a common mop, and need not take much time to be kept tidy.

**COWS AND COWS.**—Why the editor of that well conducted paper, "Hoard's Dairyman," should be so hostile to shorthorn and other large breeds of cattle we do not see. Surely, we should not condemn a cow because, after having given for four or five years a large yield of good milk, she will furnish a heavy body of fair if not superior beef. If the "Dairy-shorthorn" were so contemptible an animal, would not the practical English farmer, and the still more practical English cow-keeper, have discarded her long ago? We do not condemn a Jersey, if she is a good one, because her carcass is of little value when her last lactation is finished. The fact is, the true English dairy-cow has yet to be seen on this side of the Atlantic. When she makes her appearance here, the prejudice against her will soon disappear.

**AGRICULTURAL SCIENCE.**—Scientific agriculturists, both at home and abroad, will be glad to have their attention called to a very valuable paper on "Home Produce, Imports, Consumption, and the Price of Wheat over Forty Harvest Years, 1852-3 to 1891-2." It appears in the Royal Agricultural Society's Journal for March 31st. It is written by Sir John Bennet Lawes and Joseph Henry Gilbert, and gives details as to the results of the very careful experiments in crop-raising which have been conducted during these years at Rothamsted.

It is very much to be regretted that the very valuable articles contained in the above Journal should be a sealed book to most of us. Mr. Stevenson, the secretary of the Board of Arts and Science, at our request, wrote to the secretary of the R. Ag. Society some two or three months ago, requesting him to send the periodical in question to the Board. The answer was that it was impossible, as the circulation was confined to members of the society.

**THE DROUGHT IN ENGLAND.**—No appreciable quantity of rain fell in the southern half of England from March 2nd to May 17th. Hunting was brought to a sudden close in March, neither horses nor hounds being able to stand the heat! However, that does not matter much; what is a great deal more serious is, that there will be no hay. The cattle and other stock have been over the meadows as well as the pastures, and an early fed meadow never produces much for the scythe to cut. Now, here is a chance for our people. Hay, both clover and timothy-hay, if properly made, must be worth money in England next winter. We say, "if properly made;" that is, if the timothy is green, and the clover has its leaf on. Good clover-hay must be worth at least \$40.00 a gross ton next December in any of the English sea-ports.

**FAT LAMBS.**—Pease and oats make good fat lambs; corn, and no pease, makes soft, flabby stuff.

**BARLEY FOR MALTING.**—Mr. Tyico tells us that the idea of growing 2-rowed barley; for exportation to England, is now given up at the Ottawa Experiment-Farm. Just as we always predicted. A great mistake is commonly committed in supposing that malting-barley is the better for being sown on very rich land. On the contrary, providing the soil be "barley-land," for the malting-quality depends entirely on that, a moderately rich condition will answer. As we have remarked before, better malting-barley is grown when a crop of wheat intervenes between sheep-fed turnips and the barley than when the latter grain follows the turnips. The fine Bavarian and Saale barleys, so popular with the English brewer, are grown on land not so rich, naturally or artificially, as are the fine loams of Kent and Hereford.

Another point to be attended to in growing barley for malting is one that is, we may say, universally neglected in this continent: the sweating in the stack. As there are no stacks built here, but all the grain is stored in barns, we do not see what is to be done to obviate this defect. With us, in England, at least 6 weeks are allowed after stacking before any barley is threshed. In close barns, we should fear the grain would be *mow-burnt* if it were carried in so fresh a state as we carry it in the old country. Still, this is worth attending to, for the one great reason why the fine sun-ripe barleys of Algeria, Chili, and California make such harsh, steely malt as they do, is because they have never sweated in the stack.

**NITROGEN FOR POTATOES.**—In spite of the denunciations of the theoretical objectors to the use of nitrogen for the potato-crop, and in full agreement with the practical English farmer, the Rural New-Yorker, whose innumerable experiments on the growth of that esculent are noteworthy, recommends the practice of adding nitrate of soda, as a top-dressing, to the manure used for potatoes:

"WHERE potash and phosphate or even 'complete' fertilisers are used upon potatoes, it is our advice to sow a small quantity of nitrate of soda just as the vines are breaking through the soil and to give another application in about three weeks thereafter. The amount need not exceed at the rate of 75 or 100 pounds to the acre for each dressing. It is not necessary that the soda should be harrowed in. It is so soluble that the first rain will dissolve and carry it into the soil, so that the plant may feed upon it."

**NIGHTSOIL.**—We saw hundreds of tons of nightsoil used on the farm of our old friend and agricultural tutor, Wm. Rigden; but before we left him, he had made up his mind that its collection—4 men and 3 horses being employed every night—cost more than it was worth. It is a nice thing if, as was the case at the Ottawa Experiment-farm in 1888, the stuff is brought on the land free of expense; but to run about from pit to pit, some of them half-full of water, and weary out horses and men, is a job fit only for professional scavengers. We notice an attempt at depreciating the value of this manure because it contains a very large portion of nitrogen, as compared with potash and phosphoric acid. Well, so it does, but so does nitrate of soda and nothing else. If a general fertiliser is wanted, it is easily



prepared by adding kaimit and super-phosphate in proper proportion to the nightsoil.

**WHEAT AS COW-FOOD.**—All sorts of sensible answers are daily making their appearance in the columns of our agricultural exchanges. *Practice*, it seems, is re-instated in its original position as the main stay of agriculture, and *theory* is relegated to its proper post, that of explainer of successful practice. For instance; here is a question put to the editor of one of the leading farm-papers of the States:

#### WHEAT AS COW-FEED.

Mr. Hebonstreet of Macon Co., Ill., asks in another column, whether he can afford to feed 53-cent wheat to his cows in place of bran at \$16 and shorts at \$19.

"At the figures the chemists give us, wheat does not appear to have as high a feeding value as either bran or shorts, but it does sometimes happen that a cow can beat a chemist in extracting nutriment from food."

In no case is the observation that "a cow can beat a chemist in extracting nutriment from food" truer than in the case of roots. The chemist can find but the merest trifle of difference between the nutriment contained in the swede grown in the county of Kent and the same root grown in the county of Aberdeen; and, yet, the Kent swede, with straw-chaff, will barely keep sheep going, while the Aberdeenshire swede, with straw, will fatten a heavy bullock.

**THE ST-HYACINTHE DAIRY-SCHOOL.**—M. Emile Castel, who was good enough to pay us a visit this month, tells us that the attendance this spring at the valuable institution of which he is the secretary, far exceeded expectation. The publication of the 11th Report of the Dairymen's Association, in French, took place last week, and, this week we hope the English translation will make its appearance. The discussions in the Report will be found to be full of interest to both patrons and makers, and the renowned confidence expressed in the *Babcock-test* will we trust cause its universal application in, at least, all cases where doubts are entertained of the purity of the milk delivered either at the cheese-ry or the creamery.

**FOOD AND FAT IN MILK.**—Dr. Hy. Nathorst is a celebrated Swedish scientist, his opinion evidently is the same as the opinion of every English farmer we ever met, and agrees perfectly with our own by no means limited experience:

The varying fat content in the milk from different cows, Dr. Nathorst says, is partly due to the feed—only inexperienced persons will say anything to the contrary—and partly to the breed, but it varies greatly within the same breed and is therefore often an individual quality. Watery foods and such as are poor in protein make thin milk, while short nutritious pasture makes milk rich in fat. (1)

**COOKED FOOD.**—As to scalding feed opinions differ, but, if anything, the weight of opinion is that it does not pay.

**MUCH TO LEARN.**—Farming is very largely conducted by rule of thumb. Experienced, thoughtful, labouring men are very often as well acquainted with the management of

(1) The spring-grass this year, will, we fear, lower the condition of cows all through the summer. Too much rain.—Ed.

the land on which they have worked for a number of years as the men who employ them, and their knowledge is frequently of considerable use to their employers. Old farmers, like old labourers, are able to discriminate with wonderful accuracy, and their advice is not to be rejected offhand. The fact is, that experience and observation have taught them during the course of years to a large extent what science, which is based upon observation, teaches the student. Ex.

**COTTON-SEED.**—Mr. Horne, though he writes M. D. and V. S. after his name, is not likely to convince many people that "cotton-seed-meal in no possible form is fit for a well-bred cow." The universal, so to speak, practice of farmers, both here and in Britain, of giving from 2½ lbs. to 4 lbs. of this meal to all kinds of milch-cows is against him.

But, at the same time it must not be forgotten that the British farmer gives his cows *laxative* food of some kind with the cotton-cake: turnips or mangels in winter; grass and greenment, such as rye, vetches, &c., in summer. Besides; cows, in most part of England get mixed cake: half linseed, half cotton-seed-cake, and the laxative power of the one counteracts the constipating effect of the other. No one should give cotton-seed-cake or meal to calves on milk: that is clear enough. But why use cotton-seed at all, when we can grow linseed to perfection? That has always puzzled us!

#### COTTON SEED

**ED. HOARD'S DAIRYMAN:**—I have many times given my views about cotton seed, in any form, as food for cows, especially breeding animals. When practising my profession in Mobile, Alabama, I had all the proof positive I needed as to the disastrous results of feeding cotton seed to cows, above all to the high bred animals. The piney-woods cow seemed to be much freer than well-bred animals from the bad effects of feeding cotton hulls, or cotton seed in any form.

I gave a good deal of offence to some of the high-minded Southern Jersey breeders from the fact I dared to be professionally honest, and combat the strong and deep settled prejudice in favor of feeding cotton seed to bovines. No one of intelligence doubts the strong feeding quality of cotton seed meal, none doubts for a moment its nutrient qualities. Still, I again affirm, cotton seed in no possible form is fit for a well-bred cow, above all, a finely bred Jersey cow.

WM. HORNE, M. D. V. S.

#### PERMANENT PASTURE

The following letter, from "Hoards Dairymen," is wisely composed, but we take exception, not to the quantity of grass sown, but their great variety. Some of them are sure to die out very quickly, and those the most costly. Double the quantity of orchard-grass, add five pounds of timothy, two pounds of red-clover, and one pound of white clover, as there is no cow-grass to be had, and we think the tall meadow, and the fowl-meadow grasses might be left out. Two or three pounds of lucerne would do no harm.

#### HANS BUSCHBAUER AND HIS GRASSES.

Last winter we gave our readers an illustration of the beautiful farm home of ex-Governor Francis A. Hoffmann, of this county, better known to his thousands of readers as "Hans Busch-

bauer," the agricultural editor of the *Germania*, the most widely circulated German newspaper of the Northwest. In a recent letter to Prof. A. Henry, Director of the Wis. Experiment Station, he makes the following interesting statement:

Let me request you most earnestly to take into consideration the propriety of making, the coming season, an experiment in this direction. In case you think half as well of me as I am vain enough to believe you do, you will this season devote about one acre of good soil of fair quality, neither too wet nor too dry, to grass culture. Let me tell you in which way I have succeeded in planting a pasture, one acre of which suffices to furnish succulent and sufficient food to a cow throughout the pasturing season.

Early in the spring I sow oats, not more than six pecks to the acre. After the oats have been sown, I sow my grass seed cross-wise. A very light harrow follows. If the condition of the soil permits it, the roller follows the harrow.

Here is my mixture of grass seeds for pasturage on soils that will produce a good crop of barley or wheat: Six pounds of perennial ryegrass, four pounds of tall meadow oat grass, five pounds orchard grass, three pounds of red top, three pounds tall fescue grass, three pounds fowl meadow, six pounds meadow fescue, two pounds meadow foxtail, two pounds alsike clover, in all, thirty-four pounds to the acre.

Sulzer, of La Crosse, can furnish the seed. I always test grass seed. Alsike will not only flourish on wet soil, but even on ground occasionally submerged. I have raised it on a marshy piece of land temporarily under water. Could not you, and if only as a particular favor to "Old Hans," spare one acre for an experiment like this? I have the interest of the farming community in mind and nothing more.—*Hoard*.

**LOWER PROVINCES HARVEST PROSPECTS.**—We regret to hear, on all sides, that the excessively wet weather we have had all over the country has been highly detrimental to the crops. The heavy storms of the 3rd and 4th of June must have flooded the low-lands, and where potatoes had been planted, we fear they must have rotted. (1) The hay-crop must be large, that is one comfort, but land intended for roots or silage-maize will be unworkable for some time. A strange contrast between our abundant moisture and the long-continued drought in England, where for 71 days, up to the 17th May, not a drop of rain fell. (2)

A. C. P. R. official who has returned from a trip to the Lower Provinces says the outlook for the harvest is very gloomy. The weather has been extraordinarily backward. Heavy rains have swollen the rivers, and these have flooded the low lying lands. In some parts seeding has not commenced yet. In New Brunswick the only blossoms he saw were those of the wild cherry tree. But see New Brunswick in the fall and you at once call it the garden of Canada. Miles of orchards stretch on every hand. It is like a bit of the south of England transplanted to this new world. For the unlovely fence, you have the softness and beauty of hawthorn hedges. On my way up I saw seeding going on as far Montreal as Saint-Constant. (3)

(1) And, we regret to say, we were right. Ed.

(2) And very little fell then—only ½ of an inch.—Ed.

(3) On June 3rd.—Ed.

**OATS AND PEASE.**—A correspondent of the R. New-Yorker wants to know what to do with a crop of pease and oats, and the editor of that paper asks for advice on the subject.

They do not seem to grow pease much in the States, and they seem to think curing the crop a slow and laborious process; but if pease are sown early, as they ought to be, cut with the "pea-harvester", and put up in small bundles or "cocks", they soon cure. Unfortunately, people not accustomed to grow pease get in a hurry, and carry them to the barn before they are thoroughly dry; consequently, they heat, turn mouldy, and threshing them is a filthy job.

We recommend the pease and oats to be ensiled when the pease are in full bloom. The Minnesota Experiment station speaks very highly of pea silage, and the double crop should be better still. Our preference seeding for fodder-crops is one bushel of pease, one bushel of tares, and two bushels of oats. If these are sown early, they should be fit to cut by the 12th. July; the land should then be broken up, thoroughly cultivated with the grubber harrow, &c., and 5 lbs. or 6 lbs. of rape sown to the acre; this will be ready for the sheep by October 1st, and each acre should, if the piece be in good order, afford good keep for 6 sheep for a month. A moderate dose of bone-meal will help the rape amazingly.

**POTATOES.**—Several valuable hints are given in the Reports of the Experiment Stations of the U. S. For instance:

Early varieties planted late are more subject to disease. Large seed is better than small, and repays the additional cost. Uncut seed is better than an equal weight of cut seed. The value of manure of different kinds depends upon the season. A heavy dressing of farmyard manure applied in the spring, is barely remunerative on the first year's results. Chemical manures should contain nitrogen, potash, and phosphoric acid in proper proportions. Imperfectly compounded chemical fertilisers do not pay. Soot and kiln dust are barely remunerative in a dry season. Farmyard manures favor disease more than chemical fertilisers.

**LOSS OF MANURE CONSTITUENTS.**—In the gas from the interior of a well-moistened heap of natural manure not the smallest quantity of ammonia was observed.

Moistening manure regularly has the effect not only of preventing the loss of ammonia, but also of promoting fermentation.—W. H. B.

**TOMATOES.**—An experiment on the "Single-stem training" of tomatoes showed that, as we have always held, a great waste of space is commonly made in planting tomatoes. If the single-stem training is practised, 15 inches in the row and 24 inches between the rows will be amply sufficient. The season is so backward that we fear our own tomato-plants will not be in the beds till June 10th; but we still hope to gather ripe fruit before August 10th.

**Single stem training** (Rep. Ex. Stations).—"A number of *Ignotum* plants were set 1 foot apart in rows, and each plant was tied up to a perpendicular cord, but one stem or stalk being allowed to grow in each case." The plants gave decidedly larger yields per square foot of land than untrained plants and the crop was earlier. These results agree with those of the previous year.

ENGLISH-CROPS — We give here a thoroughly trustworthy compilation, from the Government Statistical office, of the average yield of crops per acre in the United Kingdom for nine years. The yield of the turnip-crop seems small—11.86 tons—but it must be remembered that, in South and in South-East England, at least one-third of the average of turnips is merely a "catch-crop," many thousand acres of that root following rye, vetches, and even early grain. The average of potatoes is less than we fancied it would be—only 150 bushels of 60 lbs.

a really profitable pursuit. Of course, the thinning-out is the real trouble, and, until that has become a familiar process, no great advance will be made in the cultivation of the root-crop. But, if an English labourer, with his abominably clumsy hoe, can, and does, single half an acre of turnips a day, a *fortiori* could an American farmer, with his exquisitely handy hoe, get over the same area.

SOME of our English friends express great wonder that Americans are so long in learning the importance of root-culture for feeding stock. We be-

so many Vermont dairymen who went into heating water for their cows in winter abandoned it? Is there a reader who has discontinued the practice who will tell us why he did so?"

VERMONT WATCHMAN.

We have fed milch-cows extensively on roots, particularly in the hard winter, at Sorel, in 1884, '85, and our practice has always been to allow the roots to remain in a bin in the cow-house for 12 or 18 hours before cutting up for the cows. If the root house is properly constructed, there is no fear of the mangels, &c., freezing; and,

have the effect of rotting the potatoes. We are sorry to hear that in New-Jersey, many fields were destroyed. There, the planting was finished about May 20th, a full month later than last year. As there is every prospect of the government of the States lowering the import duty on potatoes next session of Congress, our home-growers of the crop will be wise not to hurry their sales in the autumn.

THE BORDEAUX MIXTURE.—A most useful public servant is Mr. L. R. Jones, Botanist of the Vermont Experiment-Station. He deserves credit for an original and striking device for advertising the use of the Bordeaux Mixture for potatoes. It consists of a very heavy piece of card board about 15 x 10 inches, with protected corners and a device for hanging up. At the top is a large, showy photograph of a field of potatoes showing a streak of dead vines where the mixture was not used, with sprayed portions on either side. Below, after giving facts about the crop, is printed in large letters—

TRY IT THIS SUMMER.

Bordeaux Mixture consists of { 5 pounds of Blue Vitriol, 5 pounds of Fresh Lime, 50 gallons (Barrel) of Water.

Dissolve the Blue Vitriol in a wooden or brass vessel, slake the lime and dilute to a whitewash; strain these two solutions into a clean barrel and mix thoroughly. Keep the mixture clean to avoid clogging pump and nozzles. Add Paris-green for bugs if needed. (1)

Then follow brief directions for spraying. A copy of this card is to be sent to one person at each post office in the State to be hung in a prominent place. Now, this, to use a common expression, is business. It is the best advertising scheme that has yet been devised by any of the stations. We should like to have this card hanging in every post office and country store in this land.

HOED CROPS.—If, as there is every reason to suppose, the long persistence of rainy weather be followed by a drought, we cannot sufficiently impress upon our readers the absolute necessity of keeping the horse-hoe going between the rows of turnips, and other hoed-crops, as long as neither implement nor horse do any injury to the plants. The finely pulverised soil will induce the roots to travel out of the rows in search of moisture; we remember, in one very dry summer, seeing the roots of white-turnips meeting across the intervals between 24-inch-rows; not rootlets, but good stout roots, as thick as the stem of a 24-inch clay-pipe; and we attributed the superior flavour and mildness of the turnips to the stirred soil enabling them to go along without a check.

Now, here is a paradox: we roll land to help it to retain moisture, and we hoe it to help it to get moisture: how is this latter proceeding to be accounted for? When there is no moisture from above, there is still a steady rising up from below, and, thus, capillary moisture is best prevented from escaping by a finely pulverised surface. Besides, this fine surface, practically, retains the dew, &c., better than a smooth surface.

THE TURNIP-FLY.—The *Haltic-nemorum*, or flea-beetle, is so destruct-

(1) We prefer the word *battles*.—Ed.

AVERAGE YIELD OF CROPS PER ACRE IN THE "UNITED KINGDOM" FOR NINE YEARS,

Compiled from the Official Returns.

Years.	Wheat.	Barley.	Oats.	(Horse) Beans.	Peas.	Potatoes.	Swedes and Turnips.	Mangels.	Clover &c., Hay.	Hay from Permanent Grass.	Hops.
1884	Bush. 29.90	Bush. 34.21	Bush. 37.85	Bush. 25.82	Bush. 24.63	Tons. 4.97	Tons. 13.12	Tons. 16.57	Cwts. —	Cwts. —	Cwts. —
1885	31.24	35.18	37.58	20.68	13.78	4.74	10.41	15.24	—	—	7.14
1886	26.89	32.32	38.46	27.09	27.31	4.31	14.75	20.13	—	—	11.07
1887	31.97	21.12	34.25	22.47	24.43	5.26	9.89	14.61	29.08	23.68	7.18
1888	27.97	33.03	37.95	28.61	24.20	4.00	12.51	16.78	31.51	33.06	4.81
1889	29.89	32.37	39.75	28.87	26.27	4.71	14.43	18.21	35.75	32.77	8.62
1890	30.66	35.23	41.54	32.77	28.71	3.53	14.27	17.76	33.19	30.81	5.26
1891	31.30	34.72	40.46	29.82	28.23	4.74	13.40	18.60	31.39	28.13	7.78
1892	26.48	31.78	39.82	22.33	25.85	4.45	14.04	17.99	29.10	23.30	7.35
Nine years' average .....	29.64	33.64	38.18	26.50	25.60	4.55	11.86	17.32	31.67	28.62	6.58
+ Increase } in - Decrease } 1892 compared with nine years' average }	-3.16	+1.14	+1.64	-4.12	+0.25	-1.10	+2.18	+0.67	+2.50	-5.32	+0.77

STICKING PEASE.—The tall marrow-fat pease—6 feet high—must, of course, be stuck, or brushed, as our neighbours call it. We never succeeded with wire, as the tops always broke off in a high wind. We prefer Bliss's American-Wonder for the first crop—10 or 12 inches high—and Daniel O'Rourke, &c., that never grow more than 3 feet long, for succession-crops. Sow deep—3 or 4 inches—and plenty of seed: 30 inches between the rows for the later kinds mentioned above, and 15 inches for the American-Wonder, will be ample space. The seed-trenches should be 3 or 4 inches wide, with a perfectly level bottom, so that pease do not roll together. Not half enough seed is generally allowed

Roots.—A most satisfactory set of experiments have been tried at one of the U. S. Experiment-Station of the fattening of beasts on silage and grain, as against a ration composed of roots, silage, and grain. The conclusion arrived at is, that it is pretty clear that silage and grain, alone, do not furnish a ration that is altogether safe in finishing beef cattle; and second, they have proved in a comparative sense the great safety in feeding a ration of which roots are an important factor. Our advice, therefore, in the meantime, to those who are growing roots for this purpose would be to continue to grow corn in addition where this is practicable.

From an article in the "Vermont Watchman," by Dr Hoskins, it would seem that, in that State, farmers are beginning to see that growing roots is

lieve that a great many more roots could be profitably grown than are grown in America; but writers on the other side fail to give due weight to the fact that the countries where roots lead as a feeding crop cannot grow our Indian corn.

DR HOSKINS.

C. F. Curtiss says, in *Rural Life*: "Mr. Hyatt is right in urging a more general cultivation of the root-crops. We hear men say, 'O, well, it does all well enough to talk about roots and nitrogenous feed, but give me an animal that will get along on what we can raise on the farm.' That may sound practical, but it is short-sighted. Nitrogenous feed and roots are natural products of a fertile soil, and the question that confronts the stock-raiser is not: Can I afford to raise them, but can I afford not to raise them? He ought to insist rather on his farm producing more nearly what his animals require, what will contribute to greater success and larger profits than that the stock manage to eke out an existence on the products of a limited cultivation. The root crop, if properly managed, is about as certain and about as easily raised as any crop grown on the farm."

"All these ideas have truth in them; but the difficult matter to decide is on which side the balance of utility is to be found. We are now inclined to think that the matter of temperature in the feed of the cows of a winter dairy will bear a great deal more study and careful experiment than has yet been given to it. Why, for instance, have

after all, the cow is not so terribly delicate an animal as she is commonly thought to be; though this is hardly a safe doctrine to insist upon in this country. What says the Report of the Minnesota Experiment Station on the subject of warm and cold water for cows?

"10th. With but one exception, the cows, while they ate less and drank less during the cold water periods, weighed more at their close; and, with but three exceptions, they weighed less at the close of the warm water periods."

But this does not imply that cows can be turned out of a warm cowhouse and sent to the water-trough with the thermometer at zero, and the ice a couple of inches thick. Far from it; the water should be always ready in the stall-troughs, and then, if the cowhouse is, as it should be, kept at a moderate temperature of, say, 56° F., there will be no need of heating the water.

Generally speaking, cows are allowed far too much out-of-door's liberty in this province. We do not wonder that Monsieur Emile Castel, the Secretary of the Dairymen's Association, was so horrified at the condition of the stock in a *tournee d'inspection* he made last month. Let us hope that the prizes offered by the Department of Agriculture for winter-butter-making will have the effect of making our farmers more careful and more liberal in the treatment of their stock in the winter months.

POTATOES.—We mentioned, at p. 126 that we feared the copious rains of May and the beginning of June would

ive in some parts of this province, that it is a most hopeless to attempt growing swedes or turnips where it is prevalent. We have seen, at Saint-Hugues, three sets of successive insects, of apparently the same species but each more bulky than its predecessor, attack and destroy the early sown swedes. At Lachine, too, the fly is most destructive, while at Sorel, M. Séraphin Guevremont, who has been growing swedes annually for the last 9 years, has never lost a plant by its ravages. May this be owing to the land never having been previously in turnips or swedes? No doubt, one of the causes of the great abundance of this creature in Britain is the frequent recurrence of the crop it feeds on. Why do cabbages sown in a hot bed, always escape rot free? It cannot be owing to the heat, for late sown turnips, when just coming up, are often carried off, though, in August, the soil must often be at 120° F. Cabbages, sown in open ground, are often as great sufferers from the fly as turnips. Is the freedom from the fly in the hot bed owing to the superior preparation and richness of the earth enabling the plants to push along into the rough leaf, and so baulk the beast of its food? Probably, this has a good deal to do with it.

At all events, a tilth free from clods, and general good cultivation, combined with a destruction of all the crucifer weeds, charlock, &c., steeping the seed in turpentine; plenty of seed, and that new, passing a bush-harrow and a light roller over the field, all these plans to annoy the enemy should be tried. Lastly, the following mixture, which we used with fair success some 45 years ago, may be dusted all along the rows when the leaves of the turnips are moist with dew or rain.

1 bushel of white gas-lime;  
1 do of fresh unslaked lime;  
6 lbs. of flower of brimstone;  
10 lbs. of soft-coal soot.

To be finely pulverised and well mixed. The above quantity is plenty for 2 acres and is not a costly application. (1)

## ENGLISH

### THE USE OF "WILL" AND "SHALL."

There is probably no more confusing part of the English language than that which regulates the proper use of "shall" and "will." (2) The reply of James Russell Lowell to the woman who wrote, saying, "I would be very much obliged for your autograph," has been often in print, and has undoubtedly been clipped for scrap and pocketbook reference by many persons. The poet essayist granted her request in the following fashion: "Pray, do not say hereafter, 'I would be obliged.' If you would be obliged, be obliged and be done with it. Say, 'I should be obliged,' and oblige, yours truly, James Russell Lowell."

An additional hint to go with this "cut me out" is that of the old verse:

In the first person simply shall foretells,  
In will a threat or else a promise dwells,  
Shall in the second or the third doth threat  
Will simply then foretells the future feat.

Or "shall" in the first and "will" in the second and third persons are to be regarded as simple declarations, and both in all other cases convey a threat.—*New York Times*.

(1) Only, if rain washes the plants clean the dressing must be repeated.—Ed  
(2) Just the same with would and should.—Ed

## Operations on the Farm.

(July.)

This month is one of the busiest of the twelve; so many different things, all crowding one on the top of the other, demand attention. First, there is the hay, then the hoed-crops, then the milking of the cows, and the care of the fences, to keep out intruders, must not be neglected. Oh, there is no rest for the farmer from sunrise to sunset during July!

And, first, of the HAY-CROP. This year, thanks to the plentiful rains of May and early June, the hay is abundant; it will want all the more care in the making. One of the great faults of the hay-farmer, in this province, is that he will let his grass stand too long before mowing. Clover should be cut, as we have often said, when the majority of heads are in full bloom; timothy, when the "first blossom," as it is called, is just about ready to fall, or even a little sooner. In fact, it may be taken as a rule that both clover and timothy are allowed to stand at least two days longer than they should stand.

For, consider: if you have, as many farmers in the Townships and in the counties of Maskinonge, &c., have, 50 or 60 acres of hay to make, and you do not begin to mow the first acre until the blossoms of the clover and timothy are dying off, because the grass in that state will take less trouble to make; and if, after the first two or three days, the hay-harvest is interrupted by a spell of wet weather; consider, please, what will be the state of the 50th or 60th acre by the time it is reached!

We remember well the hay-season of 1872, at Compton. Mr. Quartus Bliss and Col. Pomroy had, each, about 100 or 120 acres of mowing land to make. They began cutting about a fortnight after the earliest meadows were, to our eye, quite fit; rain interrupted the work very soon after; a wet time followed; the last thirty acres on each of farms were utterly worthless, the hay crumbling to pieces when rubbed between the hands: fair oat-straw would have been far more nutritious.

In the neighbourhood of Montreal, clover is generally fit to cut, and ought to be cut, about the 20th of June; then, there is a fair chance of a good second crop, which, in our opinion should, if possible, be ensiled, as it is usually ready for mowing about the end of August, when the autumn rains are just beginning.

Clover, cut early, turned over gently once, got into cock when neither dew nor rain is hanging about it, made safe by hay-caps, and carried to barn or stack when thoroughly fit, is the most valuable of all hays. If cut late, turned out of cock and roughly handled when half-made, the leaf will drop off, and, nothing remaining but the stem and blossom, it is the most worthless of all hays.

If good clover-seed is worth growing, feed off the first crop very early with sheep and horses: the blossoms will come out more regularly the closer it is fed down, and the seed will ripen in more propitious weather than if the plant is allowed to stand the first time for hay.

Timothy can be treated more roughly than clover, as there is not much leaf to knock off.

We often see, in the agricultural papers of the States, talk about cutting hay in the morning and putting it into the barn after dinner. Yes, this is constantly done, the hay is cut, for it was hay before cutting; but

you cannot cut grass in the morning and carry it in the afternoon; grass cut on Monday morning, in really proper condition, will not be fit to carry before Wednesday afternoon.

**HOED-CROPS.**—Now comes the work of singling roots; not so difficult or costly a job as people, who have never seen it done properly, fancy. The singling the root-crop used to cost the Hon. Baptiste Guévremont \$14.00 an arpent; now it only comes to \$2.40! Keep the horse-hoe at work between the rows as long and as often as possible. "No weeds," do you say? Possibly, but how about the benefit the next crop—grain—will derive from the frequent stirring of the soil?

If any one will scatter along the rows of the mangels, after the singling, about 100 lbs. of nitrate of soda, an acre, he will thank the writer when the time for harvesting the crop arrives: cost \$3.00; probable increase 3 to 5 tons.

**MILKING COWS.**—Not pleasant for the milkers to have to do their work in the open air with the flies tormenting the cows, as well as the tails of the cows switching across the faces of the milkers. If there is no "allée" from the farthest pasture to the cowhouse—it will not do to let the cows tramp through the growing crops, as we sometimes see them doing—, a rough shed will answer all purposes, and cost but little.

Plenty of vetches, oats, and pease, should be ready for the cows by the 15th of the month—*gabourage* or *goudriole* of this kind will never be omitted, by those who have once tried it, from the course of cropping on a dairy-farm. Two bushels of oats, one of pease, and one of vetches, is the proper seeding. The Sorel people know the value of it; good for butter as well as for cheese.

After food, see to the water. Plenty of drink for your cows is a necessity if you want plenty of milk from them. Stagnant water spoils the milk? Well, we have seen perfect butter made from the milk of cows that had nothing but almost putrid water to drink, and our Gloucestershire cows have—those in the Vale of Berkeley—nothing but stagnant water, and, in most cases, a good deal of the drainings of the yards runs into the pools, and yet the cheese made in the Vale is supposed to be pretty good. How about the cows that are so fond of eating the sweepings of the horse-stables? That does not spoil their milk. It is wonderful what power a cow's digestion has to work off bad flavours. Not but that we should seek for pure water for our own cows if it could be had; but then it is sometimes very hard to find it. Oh! those fortunate men in the Townships, with those lovely springs flowing through their farm buildings; which springs they won't utilise for irrigating an acre or so of strawberries on each farm!

**FENCES.**—Every man who has any regard for his own peace of mind—to say nothing about the safety of his crops—will look after his fences. More bad language is caused by the irruption of intrusive cattle during the hot weather than by any other accident. The seven-foot zig-zag fences of the Compton district are costly and occupy lots of land, but they are mightily effective. The truth is, no one who keeps "breachy" cattle is doing his "duty towards his neighbour," and we have often wondered why this infringement of common courtesy, to say the least of it, was so mockingly submitted to.

**SECOND CROPS.**—After early potatoes, what shall we sow? If the piece is cleared by August, we advise breaking up the ground with the grubber, disc-harrow, or other like implements, and sowing six or seven pounds of rape broadcast, covering it with a brush, or chain-harrow, and then passing the roller over it. If the maturing of the potatoes was liberal, there will be a rare lot of food for sheep by the 1st of October, and it will last as long as the thermometer keeps above zero. If you want to get your cows nicely blown, turn them into a piece of rape on a frosty morning when their bellies are empty!

**THE FLOCK.**—Rather a hard time for the flock, unless crops, such as rape, vetches, &c., are grown on purpose for sheep, and we do not seem to have begun that plan yet. They rub along, in the bush, the roads, &c., as well as they can; they come into the stubbles in August and pick up a better living then; but, after all, they meet the ram in poor condition and, consequently, rarely twin. In the reports of the judges of the *Mérite Agricole* competition (1892), there is only one instance of the number of lambs exceeding the number of ewes, and even in that instance there is only one case of twins; whereas, if the ewes were in good condition when put to the ram, 20 ewes should rear at least 25 lambs. We have heard a by no means bad farmer, here, say he did not like his ewes to twin; they brought up a single lamb better. This would rather astonish an English flock-master, who puts his ewes into rape for three weeks or a month before the ram is introduced to them on purpose to get as many twins as possible. In 1853, our flock of 250 Hampshire-downs—full-mouthed, or 4 yr-olds—lambled down 380 lambs. One night, out of 22 ewes, 21 had twins, and they did well with them, as the wether-lambs fetched 33s. = \$8.00, a head in September, though mutton was pretty cheap that year.

**SWINE.**—Sows and young spring pigs should have plenty of green-meat this month. Part of a clover-field fenced off for them, with abundant water, will do, but we prefer cutting fodder crops and "serving" the pigs in a well littered yard. A few pease will not be wasted on the young ones, but where well-bred swine are kept, care will be needed to keep the sows in fair, healthy condition without allowing them to get too fat.

**FOALS.**—The foal of a mare that is at work may run along with its dam without doing much injury to the crops. Only, if the mower is at work, the foal should remain at home, as it might very likely get into trouble prancing round that implement. Above all things, never let a foal suck the mare when she is hot: it almost always makes the young one scour. Let the foal get its share of oats as soon as it will eat. The first few months of its life are almost positive prognostics of its future quality.

**IMPLEMENTS.**—If your implements—the wooden ones especially—are worth anything, keep them and the harness, when idle, out of the sun. A coat of paint for the tools, and a brush over with oil for the harness, cost but little, and ensure their durability.

**PRICKLY-COMFREY.**—A good deal of interest is being again taken in this plant. A very fine field of it I hear is to be seen at the late Col. Rhodes' farm at Quebec. There is no doubt about its productive powers, but, from all we



have ever heard from growers of it in England, stock do not seem to care for it unless when very young and tender. We believe roots of the plant are to be sent to the different farm-schools for experiment.

**CANADIAN-JERSEYS**—Mr. Stovenson, the secretary of the Exhibition Company, informs us that there will be no prizes offered for Canadian-Jersey cattle this year.

**GARDENS**.—If any of our Montreal readers care to see fruit in perfection, we invite them to visit the garden of Mr. Burnett, Ontario Avenue, Sherbrooke Street.

Mr. Bland, the gardener, has been most successful; his grapes are superb, the bunches large, and the berries well thinned out. The peaches, in pots, now in the open air, (June 12th), are loaded with fruit, one tree, not nearly bare, having already yielded 4½ dozen of large peaches.

In a "wild garden," among deracinated stumps of trees, are 26 different ferns, all found in the Island of Montreal by that indefatigable fernist Mr. Syreth. Among them, towers in august supremacy, the grand *Osmunda Regalis*, looking as healthy as if it were in its favourite lanes of Devon and Cornwall.

## Science.

### THE FOOD OF PLANTS.

#### V.

By D. P. Penhallow.

#### THE APPROPRIATION OF FOOD.

We have thus far learned how the roots take up plant food from the soil and the relations which these organs bear to the medium in which they grow. It then remains for us to consider in this connection, in what forms the thirteen elements derived from the soil enter the plant, and, with one or two exceptions, which will require more extended treatment, their special value in the plant economy.

**Hydrogen**.—This element is absorbed by all plants either in the form of water as its principal combined form, or as ammonia compounds or organic bodies. It is one of the most essential elements of plant food, since it contributes to the formation of those bodies out of which the plant structure is built up. Its value, therefore, is very much the same as that of carbon with which it unites in the plant.

**Oxygen**.—The principal forms in which this element enters the plant through the roots, are water and as an essential constituent of those salts which are taken up by the roots in watery solution.

Like the two elements carbon and hydrogen, oxygen is essential to the formation of the basis structure of plants and is therefore indispensable. More than this, however, it is absolutely necessary as a promoter of respiration, and therefore as the basis of that energy derived from respiration upon which the continued activity of the plant depends. We have already seen that the production of this energy and the promotion of respiration, depend upon the free oxygen taken in through the leaves and other aerial parts of plants, though the same process takes place to a more limited extent in the roots, but it is observed that under some circumstances, respiration may continue for a time in the absence of free oxygen. The supply

of this essential element then comes from organic compounds within the plants, which are broken down, and in their decomposition supply the oxygen required to carry on what is then known as *intra-molecular* respiration.

In general terms, however, we may say that the free oxygen of the atmosphere contributes to respiration, while the combined oxygen derived from the soil, contributes to the formation of organic and inorganic compounds in the plant.

**Nitrogen**.—Nitrogen is one of the essential constituents of the albuminoids, and may therefore be regarded, with the three elements carbon oxygen and hydrogen already considered, as one of those food substances of first importance in the plant economy. As already seen it is not capable of entering the plant system except through the roots and this it does in two ways as

- (a) Combined nitrogen,
- (b) Free nitrogen.

(a) Probably no one element of plant food has had so much attention directed to it by scientific investigators as nitrogen, because (1) of its recognised value in the growth of vegetation and (2) because of the difficulties which have always surrounded a clear answer to the question of how it is taken up and what are its sources. Some of the most notable investigations are those of Boussingault in France, and of Lawes, Gilbert and Pugh in England. Latterly the question has also received much attention on this side of the Atlantic, but the principal part of our knowledge rests upon the observations of the first investigators mentioned, who first of all proved conclusively that the free nitrogen of the air could not be taken up by the leaves. As the result of an elaborate series of observations, they also came to the conclusion that it could only be taken up by the roots when in some combination, and those results were reached after such careful verification as to lead to the adoption of this view as a general law. It will appear shortly, however, that while to a large extent correct, our views must now be greatly modified.

Leaving out of account those plants which have the special power of taking up organic food developed in a high degree, we find that nitrogen enters the roots of plants in the combined state, in two principal ways, either as ammonia salts or as the nitrate of some earthy or alkaline base.

Ammonia, which is in itself a compound of nitrogen with hydrogen, is one of the most valuable forms of this element, and is produced in large quantity wherever organic matter is in process of decay. This compound cannot be taken up by the plant as such, but requires to be presented in the form of some of its salts such as the phosphate, chloride or sulphate and more particularly as the nitrate, which is one of the most valuable combinations for most plants. These combinations will, however, be found to have special values for particular crops, so that no general rule can be applied, and this we shall have occasion to refer to again at a later period.

The other combinations of nitrogen, are the soluble nitrates of soda, potash, lime and magnesia.

(2) In the course of experiments already noted, it was always observed that the plant gained in nitrogen to a greater extent than could be accounted for by the amount present in the seed together with that supplied in the food, and since 1880 the source of this nitrogen has caused much speculation. It has also been known for a long

time that the nitrogen present in the soil as a constituent of organic matter, is subject to continual loss, and it is clear that unless compensating processes are at work, the large amount of nitrogen in the soil must eventually be entirely lost to plants. The gradual direction of soils in this way, led some years ago to seeking special supplies of nitrogen in the form of guano and nitre, which could be economically applied, and keep up the necessary quality of the crops.

It has been observed within recent years that many leguminous plants such as the pea, produce peculiar pea-like tubercles on their roots and a more exact study of these structures has shown that it is through them that we are to gain a true explanation of the assimilation of nitrogen. The first extended studies in this direction were made by Wilfirth and Hellsiegel, the latter of whom first demonstrated that these tubercles were abnormal growths resulting from certain organisms in the soil, and they furthermore found that these structures were directly connected with the assimilation of free nitrogen. Hellsiegel found, for instance, that peas grown in a sterilised soil produced no tubercles and fixed no nitrogen, while peas growing in a similar sterilised soil and supplied with water in which ordinary soil had been standing for some time, did develop tubercles and fix nitrogen. It was thus clear that there were organisms in the ordinary soil capable of producing tubercles. It was then shown that each tubercle is filled with minute organisms of the nature of bacteria, and that the development of the former was parallel to the development of the latter.

More recently, Prasmowski has studied these organisms more critically, and his results, as well as those of several other observers, conclusively confirm the results of previous investigators.

As to the precise way in which these results are accomplished, we are still as much in ignorance as ever, and several suggestions have been made as to the possible way in which the nitrogen is taken up by the plant through the agency of the tubercles, or more properly of the organisms found in them. This much is clearly settled, however, that the atmospheric, free nitrogen which always penetrates a normally aerated soil and is dissolved in the water of the soil, is taken up and made use of wherever tubercles are produced on the roots.

In the earlier period of these studies it was held that leguminous plants only, produced tubercles and were therefore capable of free nitrogen assimilation. It is now known, however, that many other plants also produce tubercles, and it may eventually be found that such growths are a feature of all the higher plants. The importance of such results as these to the science of agriculture, cannot be overestimated, since they at once give an explanation of hitherto obscure operations in the plant, and place within the hands of the intelligent cultivator, the means of guarding against some of his most serious difficulties.

The results so far reached have not as yet made known exactly how much nitrogen plants are capable of taking up in this way. A few experiments have been made, however, and they show thus far, that a red clover plant will assimilate more than twelve times the amount of nitrogen in the seed, while a crop of beans will fix about 225 pounds of nitrogen to the acre, equal to about 1400 pounds of nitrate of soda. These facts are most suggestive and at once point out the very

important part leguminous plants play in the fixation of nitrogen, and their value in a rotation of crops, or in recovering exhausted soil. In these facts we find a definite reason for the great importance always attached to peas, vetch, cow peas, alfalfa, beans and clover for such purposes.

## Central Syndicate of Farmers of Canada.

The Board of Directors of the C. S. F. C. met Wednesday June 14th, at the Office, 30 St. James St.; Mr. Milton Macdonald, Vice president, in the chair.

Present: M. Auzias-Turenno, Manager, Rev. J. Charest, Messrs. R. Ness and Jenner East, directors, and Clo G. des Etangs, general secretary.

The minutes of the last meeting having been read and confirmed, M. Auzias-Turenno proposed that Baron de Mandat-Grancey, of Paris, France, be elected 2nd honorary Vice-president: carried.

Since the foundation of the syndicate, it has provided for its members the following good:

Seeds and seed-grain, 60,030 lbs.	
Chemical manure, 80 tons	
the cost of which amounted to	\$4,241.77.

The machines, such as mowers, &c., do not figure in the list, because, in spite of the numbers ordered, they will not be delivered to the purchasers until immediately before they are wanted for used.

The board took several steps enabling it to respond as exactly as possible to the numerous orders for hay, grain, &c., which have reached it from Europe.

The Board decided to mention, in its advertisements, that it is in a position to place a great quantity of these products, and to invite at the same time the farmers to forward to it, without delay, a description of the produce they have to sell now, or shall have after harvest, hay, grain, cattle, &c.; being careful to give their exact address, and to mention the price asked, the quantity offered, and the date of delivery.

## The Farm.

### THICK OR THIN SEEDING.

**EDS. COUNTRY GENTLEMAN**—I have just been glancing over the figures representing the yields per acre for the year 1892 furnished by the United States Department of Agriculture, and am surprised to find the yield so small. The average, in bushels, is as follows: Wheat 13, corn 22, oats 24, barley 24, rye 13, buckwheat 14, potatoes 62, hay, in tons, 2.

I have been in this country now nearly three years, and during that time a question that has puzzled me a great deal is—"What is the quantity of seed to use to the acre?" I refer, chiefly, to wheat, oats, barley, rye and potatoes. Of these crops, wheat, rye and potatoes give the best results in Suffolk county, but, even these will scarcely do more than pay for the raising, and in many instances will not even do this. I have worked for a gentleman on the same farm since I have been out here, and these are the crops with the addition of corn and hay which we raise; but at the end of the year the same painful fact always remains—that the expenditure exceeds the income.



I find that farming here differs in many respects from the old-country style. One of the most noticeable differences is the quantity of seed used to the acre. From personal observations, and what I have gathered from book authorities, I find that the quantity used here ranges all the way from three pecks to two bushels. These quantities are equally applicable to wheat, rye, barley and oats. I think it was only last year that I noticed in this paper the account of a farmer having raised 100 bushels of oats off one acre, from one bushel of seed. But unless his land was unusually fertile I fail to see how such a large yield could have been obtained from so little seed. Nevertheless, I will not say that it is impossible to do it, but I should like to know if men of experience think that one bushel furnishes seed enough for one acre of ordinary soil, to produce a crop worth harvesting. For my own part I do not think so, unless the ground is very fertile. My experience has proved that two bushels per acre on ordinary soil will not yield a crop worth harvesting. For instance, the average yield of wheat by sowing two bushels per acre in Suffolk county, will not, I think, exceed 18 bushels. Now farmers well know that such a yield as this does not pay, from what I have seen around here, nine or ten bushels of wheat are about all that can be raised from one bushel of seed. Up to this year we have been in the habit of sowing only two bushels per acre, and consequently the yield has been in the neighborhood of 18 bushels. But last fall, after a little persuasion to give three bushels per acre a trial, my employer allowed me to sow that quantity. With one exception, I do not recollect to have ever seen in the old country, wheat sown, unless there were three bushels per acre, and in many instances three and a half. The exception I have just mentioned is that of a farmer who spent his younger days in Australia. While there he practised this method of thin seeding, and naturally enough when he came home he continued the same practice; but very much to his loss. He thought he saved a great deal at seed time; but when harvest came round his yields were never more than about half of what his neighbors' were. Then he would lament over his small yields and assign the cause to the season being too dry, or too wet, or too anything, other than the right cause. Now this instance, I think, strikes the key-note of the trouble with many an American farmer. I honestly believe that the cause of small yields in this country is mainly due to the practice of thin seeding, and this as a solution I have suggested to several farmers I have spoken to on the subject. But, oh no, they say; that is nonsense. Still, when asked if they ever tried more than two bushels to the acre, the answer is always in the negative.

Appended is the average yield in the crops of the British farmers for 1892: Wheat 28 bushels, barley 32, oats 30, potatoes 200. In comparing the figures that represent the yields of the American and the British farmer, it will be seen that the latter gets decidedly the most off his acre. Now, I should like to know why it is that the British farmer produces the larger yield, if the secret does not lie to a certain extent in the fact that he is the more liberal seedsman?

(1) In East-England, 6 pecks in October to 10 pecks in December. Hardly any spring-wheat sown, but where it is, about 3 bushels would be used.—Ed.

Although I have already written more than I intended, I wish to say a few words on the better way to plant, drill or broadcast. Broadcast seeding is the better method, for the reason that the seed is more evenly distributed over the whole surface, and further, three bushels sown broadcast does not give as thick an appearance as two bushels sown with the drill. Any one who has seen grain come up after drill-seeding cannot have failed to notice that along the drills it is quite thick, while in the spaces between there is no grain at all. This is the chief objection I have to drill-seeding. My idea of planting any crop is, seed liberally but avoid having too much in the same place.

Setauket, N. Y. OSMO-AM-BYTH.

A few statements are suggested in connection with the preceding remarks. Thicker seeding is probably required in a cool climate than in one producing a rank growth, hence one reason of the thick seeding in England. The writer of these remarks has in one instance raised over forty bushels of wheat to the acre after two bushels seeding. In another instance, after sowing only one bushel of oats to the acre, to favor the young clover which was sown when the oats were several inches high and then brushed with the smoothing-harrow, the crop could scarcely be perceived to be less than another alongside with full seeding. There is no question that a portion of the small crops in this country owe their diminished quantity to imperfect cultivation. High culture is no doubt one reason of the large crops in England. In some of the finest wheat regions in this country, where from personal examination some of the crops were forty bushels to the acre, and the average in portions of whole counties not less than twenty-five, the commoner quantity of seed was but two bushels to the acre; but the land was well managed, previously manured, treated with superphosphate and thoroughly underdrained.—Eds.

#### POOR FARMING AND ITS CAUSE.

Unquestionably, one great reason for poor, slipshod farming is the lack of working capital, and the burden of a mortgage. As the *Maine Farmer* justly observes: "Many theories are presented for improving the condition of the American farmer, but it is safe to say that none would go farther toward advancing general farming interests than the division of arable sections into smaller farms. That many large land owners are 'land poor' is not to be denied. No one knows this better than those who are in this condition, and yet they cling to their landed possessions like grim death. Many men would make more money if they owned and managed but half as much land as they are trying to farm while the other half would make other farmer prosperous and happy. Improvement under such conditions would enhance the value of the rural real estate, lighten or even up the burden of taxation, and make times better in many ways. The most prosperous and happy people are always found in sections where small holdings are the rule."

Vt. Watchman

#### ROOT CROP CULTIVATION.

The best farmer is the man who obtains the largest amount of produce out of his land at the least cost and at the same time keeps up its fertility. The root crop is looked upon by

many respectable authorities as expensive to cultivate and uncertain in its yield. The indictment is only too true. And yet how can we farm without roots for our stock? We have given the matter careful consideration, and have arrived at the conclusion that on light lands it is impossible to do without them. The problem works out as follows. Without roots we cannot keep sheep, and without sheep we cannot cultivate light lands.

#### THE VALUE OF ROOTS.

Under this term we include turnips, swedes, and mangol, and without them we cannot imagine keeping sheep on arable land. It is true that when they fail us we manage to scrape through, but at an enormous expense. The root crop supplies a natural, palatable, and nutritious food for sheep. Look at a lot of sheep on turnips; how contented they are, and how healthy when supplied with a reasonable amount of dry food. Nothing can be more satisfactory than an abundant root crop. The objection that they are watery is shallow. It applies to most natural foods. Milk naturally contains as much water as do roots, and yet this is Nature's best and most nutritious food. The animal body requires plenty of water, and instances might be multiplied to show that the most succulent and luscious feeding materials are watery. It is no objection to roots that they contain much water, and any excess can always be counteracted by the use of dry foods.

The root crop produces an excellent effect upon the land both during its growth and in its consumption; and it is impossible to bring light lands into good corn-bearing condition without them. They are busy collectors of plant food and of nitrogen during the active period of their growth, and they prevent percolation of fertilising matter, through the soil into those deeper layers from which they cannot be recovered.

A good root crop is a most necessary factor in the successful cultivation of all light and medium soils, and it behooves us to study its cultivation minutely. The condition of successful root-growing are four in number: The land must be in a fine condition, and sufficiently cool and moist to promote germination. It must also be rich enough to supply food to a quick-growing crop, which arrives at maturity four or five months from the date of sowing. The land must also be clean. Fine, moist, rich, and clean, are the four words which express the conditions most suitable, and to these must be added a favourable season.

How then are these conditions to be secured in a season like the present.

#### A FINE TILTH.

The greatest judgment is required in order to produce this, the first, condition. An autumn ploughing, followed by cross ploughing in winter, is perhaps the best means of laying the foundation. (1) Land so treated naturally pulverises under the influence of the weather, and the work is accomplished with the least trouble. In a dry season like the present over-cultivation should be carefully avoided. There has been no heavy rainfall to consolidate the furrow, and to render further ploughing necessary. As far as possible we must use the forces of nature, and endeavour to conserve moisture by avoiding frequent ploughings.

(1) On light land, of course no one would dream of cross-ploughing heavy land till spring.—Ed.

#### MOISTURE

is so important that we pass on to consider how it may be encouraged and preserved. Land treated as above will be found covered with a fine mould. On scraping away the surface soil, a dark coloured and moist mass of soil will be found. This favourable condition may be preserved by harrowing and rolling, and, if we are fortunate, we shall find the best conditions for drilling the seed. The farmer who persists in ploughing such land will make a mistake to which it is to be feared is only too common. (1)

#### CLEANNESS.

The great difficulty is weeds, and we may almost as well say, couch grass. It is the curse of land cultivation, and the man who has succeeded in freeing his land from it has done much towards solving his difficulties. In a dry season the farmer of foul land is in a serious dilemma. His whole instinct is against sowing his turnip crop on foul land, and yet cleaning means losing his opportunity. *It is this which makes autumn cleaning so important.* If this necessary work was accomplished after harvest, the ground will have become charged with moisture, and is readily brought into the requisite condition for growing a heavy crop of roots.

#### THE PRESENT SEASON

is still hopeful for the root crop. The dry spring has been favourable for working the land. The drought must be near its end. We must, however, be careful to preserve what little moisture is left. It is worthy of consideration that a finely-worked seed-bed, if rolled down and left, at once begins to gather moisture from below. A little patience and we shall find that even dry land becomes darker in colour below the surface from capillary attraction. Good farmers are aware of this, and often allow their root land to rest awhile before sowing in order to obtain the necessary moisture. *Drilling on the flat is safer than the Northumberland raised ridges in a really dry season.* Ridges greatly increase the amount of surface exposed to the sun and drying winds of May and June. We are aware of the immense advantages of the system, but it has never spread upon the dry soils of the South of England. We also recommend deep drilling so as to get the seed down upon a cool and moist stratum. One and a half inches is not too deep, and this depth can be readily obtained upon finely-worked soils if the coulters are sufficiently weighted. The water drill is also more effective if the coulters are allowed to sink well below the surface of the soil.

#### PLENTY OF SEED.

In a showery season 2 lb. of turnip seed is enough, but in a season like the present it may well be doubled. The "fly" will be busy, and much seed will not germinate. Both considerations point to a large amount of seed being sown. When water is used it should be liberally applied. (2) If we can secure a plant we have done much to ensure success, for the young rootlets will soon push their way downwards in search of moisture. There are several other points which are worthy of consideration which must be deferred to on an early opportunity. JOHN WRIGHTSON.

(Eng. Ag. Gazette.)

(1) Very good.—Ed.  
(2) The water-drill, sowing artificials mixed with water, is largely used on the great, dry sheep-farms of Hampshire, &c.—Ed.

## THE CULTIVATION OF FIELD ROOTS.

BY ELMER LICK.

By field roots I wish to be understood as meaning turnips (swedes), mangels and carrots. The first thought in connection with the subject should be, What position shall these hold in the rotation of crops? In nearly all cases it will be found the best practice for turnips to be the last crop previous to seeding to clover and timothy. Such a course may lead to more work in cleaning the land than if the crop was placed earlier in the rotation, but even this will depend on the length of the rotation. In the older settled portions of the province a four or five years' rotation will soon become a necessity in order that success may be the lot of the farmer—a rotation somewhat like this: clover followed by peas or oats, then a hoed crop, (roots or corn) followed by barley or wheat, seeded to clover with timothy added, so that in case clover should fail, then this previous years' seeding could remain another year. Such a rotation as the above would clean the land, give a minimum amount of work on the hoed crop, increase the fertility of the soil, especially in nitrogen, and ensure a good "catch" of clover. Some one will say, That is all right, but I have very dirty land full of foul weeds; I cannot secure a "catch" of seeds except in favorable seasons. To such the best advice is, put on the hoed crop manure liberally and cultivate thoroughly, then by following some such course as above indicated ultimate success is reasonably sure. It is a better practice in this section to grow a hoed crop than to summerfallow, which is probably true in nearly all sections. A good crop of roots is an expensive one to raise, nevertheless a very valuable one considering its feeding value. There are several things to consider when deciding which to grow—mangels, turnips or carrots.

The first would be, For what purpose is the crop to be used? For making butter, turnips, except white and greystone varieties, are very objectionable, whereas mangels and carrots do not injure the quality of the product.

For beefing cattle, sheep and young cattle, turnips are generally accepted as being superior in quality for feeding purposes. Many contend that they can feed turnips successfully without noticing the taste in milk or butter. Where one can do it ninety-nine fail. (2) Another consideration that would have an influence in guiding us is the quality of the soil. Turnips do not do well on heavy clay, but are fond of a loamy soil while mangels do very well on clay, except in wet or dry seasons. Climatic influences also vary the prospect of success in various localities. The carrot is not adapted to growth on a large scale, owing to work of thinning plants and also labor in harvesting. The mangel will not stand heavy frosts and requires early harvesting—scarcely safe to leave them out after October 10th to 15th. A mangel crop will usually produce more to the acre than turnips. Carrots should be placed on soil free from weeds. The preparation of the soil should begin in the fall as soon as the previous crop is removed. The usual practice is to plow thoroughly once and leave until spring. If possible, and

particularly if weeds are abundant, one plowing early and another late would be preferable. This is not always possible, owing to pressure of full work. I find particular difficulty in securing the late plowing, owing to apple picking coming in October. If the field should be infested with Canada thistles, this fall work will be found of very great advantage, in at least weakening the plants and thus making their destruction more readily accomplished and more certain. Under favourable circumstances many weeds will sprout during the fall cultivation.

Root crops have a short season of growth, and require a thoroughly manured soil, and one well prepared in every possible way. Farmyard manure liberally used, say 20 to 25 loads per acre, would furnish plant food, provided such manure were from well-fed cattle, horses or pigs. It must not be too strawy, otherwise difficulty will be found in working the soil. As corn likes strawy manure all such had better be kept for that crop, and only well-rotted manure used. The quantity of manure required will vary according to the fertility of the soil. If a person has manure left over from spring, have it applied in the fall and plowed under for carrots and mangels. I have tried for some years to have the land manured and ridged in the fall, but so far have failed to find time for the work, my intention being to simply split the drills in spring and thus sow very early. Having the land plowed in the fall, when spring comes cultivate with spring-tooth cultivator or similar implement, harrow, and if time permits roll as early as other work will allow. The object of this is to encourage the germination of as many weeds as possible. About two weeks later apply the manure, unless such has been done in the fall, plow under, harrow thoroughly, and roll. If this has been done by the 20th of May or 1st of June, about two weeks later a light gang—plowing or thorough cultivating will bring more weed seed near the surface and encourage sprouting. Every possible means should be used to destroy weeds, as it makes the subsequent hoeing easier, and also the freeing of the land from weeds more complete. For mangels and carrots, unless the land has been manured and prepared as previously indicated, apply the manure and plow under as early as possible. Mangels and carrots should be sown early in May—the earlier the better. Often good crops will be secured even if they are not sown until May 20th; however, the prospects of success are not as good as when sown earlier. Turnips are sown usually from June 15th to 25th, the object being to escape the turnip fly, or more properly beetle. The land for either of these crops, when prepared, should be ridged in drills from 25 to 30 inches apart, depending somewhat on the freedom of the soil from weeds, a wider space between the rows making weed destruction easier. To drill the land use a double-mouldboard plow; if you have none, the single plow will answer the purpose, only it makes more work in marking out lands. Sow the seed with a drill, using in the case of mangels from 5 to 6 lbs. per acre; carrots, 5 to 6 lbs.; and turnips, 2 to 3 lbs. per acre. On clean soil, with good seed, the lesser quantities are sufficient, but if the conditions are otherwise larger quantities should be used. Too much seed makes more work in thinning; too little causes skips, and the plants do not start as readily and thrifty as where more seed is used. Cultivate

with a good scuffler as soon as plants can be seen in the row, and as closely as possible. As soon as plants are easily seen, in the case of mangels, hoe and thin to about 6 or 8 (1) inches apart, and keep thoroughly clean by use of hand hoe and cultivator. With carrots trim the sides off with the hoe, leaving a row of plants in the centre of row; and when these get about the size of a pon stock, either thin with a carrot hoe to 4 inches apart or thin on hands and knees, straddling row, using old bags tied about knees. I find it easier to keep the carrot standing when about the size indicated than when thinned smaller. After the turnips have come through, in case the beetles attack them, use a mixture of ashes, plaster and salt, scattered over the plants; this is about the best cure I have tried or seen tried. I expect, however, that in the near future we shall find it profitable to spray the young plants with Paris green. After the plants have attained the rough leaf they should be closely cultivated and hand hoed to from 10 to 15 inches in the row, and kept clean by use of hand hoe and cultivator, usually only two hand hoeings are required in case of turnips. The more the cultivator is used judiciously the better for either of the above crops. I have not mentioned commercial fertilisers in connection with root crops, having very little practical experience with them, but am satisfied that it will pay better to use such on root crops than on any other crop which the farmer grows. Salt, especially on mangels, applied at the rate of two or three hundred pounds per acre, gives good results.

As to varieties, I use Mammoth Long Red Mangel, Short White Carrot, and Bangholm and Jumbo Turnips. (Farmer's Advocate.)

## RAPE GROWING.

Though until recently comparatively unknown in this country, rape has been grown as a food for fattening sheep in England for many years. This practice has been introduced in a number of places in Ontario, and especially in the county of Wellington, where it has long played an important part in the finishing of lambs for the Buffalo market. The fattening of lambs on rape has lately been brought prominently before the public by experiments conducted at the Ontario Experimental Station, Guelph. Still, the rape is practically an unknown plant to many farmers, and we would advise all to sow a small area as an experiment. In appearance the plant resembles the turnip, to which it is closely related. The main difference is that rape has no fleshy bulb-like root, but the condition and preparation of the soil are similar. The soil should be plowed in the fall and well worked in the spring. This plant gives good returns for all manure applied, and as it is considered one of the best cleaning crops, it will take the place of a summerfallow. The more work and cultivation given the land before sowing, the less will be required to keep the weeds down after the plants are up. Sow from the twelfth of June to the middle of July (2) in drills, as for turnips, twenty-seven or thirty inches apart, with about one and a half to two pounds of seed per acre. (3) Use a common turnip drill. The most satisfactory results are obtained from slightly raised drills, but one disadvantage in this system, which will not

(1) 10 to 12.—Ed.

(2) From 10th May to 10th August.—Ed.

(3) Never sow rape on raised drills, but on the flat.—Ed.

be found in flat cultivation, is that the lambs require careful watching, or they will be liable to get on their backs between the rows. (1)

Do not leave the plants too thick in the row, as they require plenty of room. Start the scuffler as soon as the plants appear, and keep it going, not only to kill the weeds, but also to keep the surface loose and prevent evaporation. The rape should be ready for pasturing by the first of August, if sown about the middle of June, or before the 25th. An acre should carry ten to fifteen lambs from that date to the end of the season. Rape is acknowledged by all to be the best late fattening feed for sheep and lambs. Cattle can also be profitably fed on it, but they require more attention. Always feed stock well before turning on rape. If turned on hungry, animals are liable to eat too much, and loss may occur. When buying lambs for feeding always get the best obtainable, well-bred ones if possible. Poor late culls are dear at any price. If at all possible, plow land used for this crop in the fall, for after the tramping of lambs in all kinds of weather it should be turned up to the mellowing influence of the winter's frosts. Great care is necessary when buying the seed; obtain it from some reliable seedman, and have him guarantee that it is the right kind. If this is done, and the seed does not turn out to be as represented, damages can be collected from the seedman. Last year, the rape on the Experimental Farm, Guelph, and also on the farms in that and other parts, was of an inferior variety, supposed to be a hybrid much larger than bird rape, but like it, ripens seed the first year, and thus was practically worthless for pasture. A variety called the Dwarf Essex, which does not seed the year it is sown, has given general satisfaction. Much seed resembling rape has been palmed off on farmers; among others a German rape, which is grown for bird food, and as it produces enormous quantities of seed, it can be sold much cheaper than the true rape for feeding. The true rape is known when the second leaf appears, it being smooth and glossy like the Swedish turnip, while the other varieties have a coarse, rough leaf like wild mustard. Test your seed before you sow; buy early, and sow a little in boxes.

(Farmer's Advocate.)

## CORN CULTURE.

The great increase in the number of siloes in Ontario during the last two or three years has increased the acreage of corn, and in each succeeding year farmers who have never grown corn for fodder before try it, to a greater or less extent, and those who have grown it for years are increasing the acreage. Corn requires a dry, warm thoroughly prepared soil, and plenty of sunlight; for this reason it is better to plant in rows running north and south. A clover sod makes a good seed-bed for corn, but it must be thoroughly worked up.

If the land is stubble plow it deep in the fall, manure and either plow or cultivate thoroughly in the spring. Sow about the 24th of May, either earlier or later according to the location and season. It is not well to plant too soon. The seed is better in the barn than rotting in a cold, wet soil. In sowing, use the common seed drill, and stop a number of the spouts so that the drills will be a suitable distance apart. Allow about half a bushel

(1) But you cannot watch lambs at night! Ed.

(1) From "clover-sickness"?—Ed.  
(2) Simple enough: give the turnips immediately after feeding and heat the milk up to 160°.—Ed.

of seed to the acre. As soon as the corn is up give it a stroke with a light harrow, repeat two or three times until the plant grows so high that the harrow pulls the plants out by the roots. The harrow will kill a large number of weeds, pulverises the soil, does the corn good, and is the cheapest method of cultivation. When too high to harrow, start the horse hoe at work, and keep it going during the summer, not only as a weed cleaner, but also to loosen the soil so that it will retain the moisture. Do not let the soil crust after a rain. The cultivation should be shallow, so that the roots of the plant be not injured.

Each grower should plant the varieties which mature in his own district. If the corn is nearly ripe these will have no unnecessary delay in waiting for it to wilt before being in the silo—the silage will be better in every respect.

The farther north the shorter the season of growth, therefore a variety will be needed which will mature in less time than is required for warmer localities, as a rule, the large varieties are later in coming to maturity.

Mammoth Southern Sweet and Red Cob Ensilage will do well for the more southern portions of Ontario. Thoroughbred White Flint, Pearce's Prolific, Angel of Midnight, Smutnose and Long-fellow are all favorites, requiring less time to complete the growth than the first named varieties. For farther north it is likely that a still earlier corn, such as Mammoth Cuban or Crompton's Early, would give better satisfaction. But the best advice to each grower is, sow the bulk of your crop of some variety which has been tried in your own neighborhood, either by yourself or some good farmer, also test the different varieties of newer sorts in small plots. In this way each farmer is always sure of what he is doing. *Advocate.*

### ROOTS.

It is necessary for the stock-keeper to provide some succulent food for his animals. If he has a silo, he will find that corn is the cheapest and most convenient crop to grow for this purpose. If he has not a silo, he will have to use roots of some kind as a substitute. Turnips are doubtless the most important root; they are the mainstay of the British farmer. Cattle continually fed upon dry feed frequently "go off their feed." Turnips aid digestion and give a relish to the dry fodder. A larger acreage should be grown by nine-tenths of our farmers. *Advocate.*

**PARNIPS**—As a general rule, says a correspondent, writing in *Gardening Illustrated* on exhibition of vegetables, the best parsnips are grown by cottagers, and this fact goes a good way to show that the parsnip does not require a very rich soil, for the ordinary cottager cannot command the use of so much manure as a gentleman's gardener, and in regard to growing parsnips for exhibition he suffers nothing in consequence. What is of more importance in cultivating this useful vegetable for exhibition is a rather light and deep soil. I do not wish it to be understood that good roots can be grown in a soil that is altogether deficient of plant nutriment; but they may be successfully grown on land that was fairly manured the year previous, and I would rather depend on land so treated, if it is properly prepared, than on soil made rich by recent applications of

manure. In this matter a careful inspection of a number of lots exhibited side by side at a cottagers' show will reveal the fact that the most handsome roots are those which have been able to send down deeply a long tap root, and these are invariably selected by the judges for the principal prizes, on account of their uniform size and even outline. In a rather long practice I have had many opportunities of seeing and judging the merits of this vegetable, and I have no hesitation in saying that those with a medium sized crown and long, tapering, clear skinned root usually take the highest honours. If we view them from another point viz., their table quality—we shall find that all good cooks prefer the medium sized roots to those with huge crowns that have several ugly, deformed, branched roots.

### SILAGE AS COMPOSE.

The use of ensilage as a material for compost is a new idea that, on the principle that any feeding matter is best used first for feeding, and the refuse of it for manure, strikes me as not being at all scientific, because wasteful, if it can be fed, otherwise it might as well be grown for this purpose as economically as clover is, to be turned under and used with chemical fertilisers. It is a mere matter of availability and cost. The cutting of it would be well repaid in the more thorough spreading of it on the land, but the two haulings of it will be an expense that has to be considered. On first principles, it should be fed, and the manure from it used. We must not think that we have got past that old principle laid down by Cicero, that "feeding of cattle is the most important part of agriculture," although we have invaluable chemical fertilisers that he knew not of, for it is as self evident a truth as that two and two make four. On this principle ensilage should first be fed and then go into manure. (1)

H. STEWART.

**ENSILAGE AND CLOVER.**—Please give value of one ton of good corn ensilage against one ton of clover hay at \$16 per ton. I have 100 tons of ensilage for sale, and am anxious to know its money value. J. G. B. [Ensilage is given an additional value for its being in a succulent state, which causes a more complete digestion, and this additional value is usually estimated at one fifth. If clover hay be worth 80c. per 100 lb., the best ensilage should be estimated at 22c. per 100 lb., or at \$4.40 per ton. But ensilage would have the greatest value, especially in winter, to be fed out on the premises where stored. We have estimated both the ensilage and the clover hay as of the best quality, and this must be very nearly correct, since the value of the clover is estimated on an average of 25 analyses and the ensilage on an average of 53 analyses. E. W. S. *Cultivator.*

### DRAINS AND FENCES.

These require the immediate attention of the farmer. The land may be thoroughly drained, and yet if the outlets are neglected the pipes soon become silted up, and the efficiency of the drainage, however skilfully executed, is rendered valueless. In all flat districts it is difficult to obtain a sufficient fall, hence every inch is of importance. In all drainage works the

(1) Good.—Ed.

outlets should be reduced to the least possible number, in order that they may be more easily attended to. All outlets should have a cast iron nozzle, secured in a breastwork of blue bricks laid in hydraulic mortar. This saves the drain pipes from the destructive action of frost. These outlets frequently fall into, or are on the same level as, an open ditch surrounding the field. No drainage can be efficient unless this ditch is periodically scoured out.

In many districts years of neglect and bad management have reduced the live fences of the farm to a woefully dilapidated state. White-thorn, where well managed, make the best fence, where neglected the live plants from various causes soon die. On many estates this is becoming a serious question to the landowner, on whom it entails a large outlay in the shape of posts and rails or other dead fencing. Mismanagement from the earliest stages of growth is the chief source of our present troubles. Formerly it was considered good practice to plant the young quicks on a mound raised from an excavation of more or less width and depth on one side. On wet, undrained soils the system was admissible. By means of the open ditch the roots of the young plants were preserved from being waterlogged. The practice then obtained of planting only a single line of plants, whether these were weak or strong. Generally before planting the stems were cut off a few inches above the roots, almost or quite level with the surface soil. When planted, this had the effect of checking and retarding the progress of the young plants, not only to protect from the inroads of stock, but likewise to form a barrier to restrain the stock within the different enclosures. A fence of some kind had to be erected, often at considerable cost, and one which would last until the live plants had reached a fenceable growth. On tillage lands this was more easily and quickly accomplished than was the case on permanent pastures, where a heavier class of stock had to be restrained. In some districts, after a few years' growth, the tops of the young vigorous plants were ruthlessly chopped off, and, periodically, side-switching or trimming was resorted to. Where grass and weeds were allowed to luxuriate on each side of the fence, the growth of side shoots was completely choked; hence the fence grew up thin at bottom. The vitality and strength of the plant were expended in supporting a top growth altogether useless for the purpose of a fence, so that many of the plants soon became exhausted and were short-lived. (1) Then cutting and laying were resorted to, when the patient was already beyond all hope of recovery. There is not sufficient live wood to make a fenceable job whatever may be the skill of the workman. Then it is that posts and rails have to be used, at great cost, and with questionable satisfaction either to owner or occupier.

The planting of quick-set hedges is now better understood than formerly. It is now the general practice to plant on the flat, the land having been previously prepared by digging. Instead of a single row, we now have a double row of quicks. The quicks are planted whole, as they come from the nursery bed, only a few of the long struggling roots are removed by a clean cut with a sharp knife. They are allowed to remain for two years before they are

(1) This will show Dr. Hoskins where the fault in his hedge, mentioned in the Vt. Watchman, lay.—Ed.

cut off, and by this time they have become well rooted, meantime the soil of both sides has been carefully kept freed of weed and grass. Early in the spring of the second year the plants are cut off close to the ground, which is best done by a pair of especially constructed long-handled shears, which obviate all bruising or injury to the bark. Each plant then throws a numerous and vigorous growth from the crown. During the subsequent winter, when the young wood has ripened, and before the season's growth has made a start, a careful man should examine each plant, and thin out the weak shoots. *By this means, if the weeding is attended to, we insure a close, impervious bottom.* In three more years the fence will be fit to lay. This should be systematically performed. One row of plants should be laid to the right and the other to the left hand, and thus forming a network and the foundation of a fence that will last, with careful management, for many years. It is needless to say that the yearly cleaning and earthing up the roots is essential to its success and duration. In this way we have succeeded on good land in eight years in raising a fence sufficient to restrain young cattle and sheep.

GILBERT MURRAY.

### POTATOES.

A light, rich soil, moist but not wet, and a moderately cool climate are the most favorable conditions for the successful growth of the potato. We find all the above conditions in the natural home of the plant, which is half way up the slopes of the Andes. The nearer that we approach these natural conditions by artificial means, such as draining, plowing and cultivation, the better success we may expect. Potatoes may be grown with profit on almost any soil, but they do not do well on heavy, wet clays. Perhaps the heaviest crop can be grown where considerable vegetable or alluvial deposits are found, but still the finest quality, if not the heaviest yield, is produced on dry, sandy loam. A soil will give good results. The preparation of the land largely governs the yield and quality. Apply, if possible, plenty of manure, either in fall or spring as may be most convenient. If applied in the fall plow under lightly, cultivate and plow deeply again before winter, and again as early in the spring as possible cultivate thoroughly. Sow the early varieties about this time; for the later varieties cultivate again after you are through with the other roots. Plant either in hills or drills—other things being equal, the yield will be much the same in either case, but though some very successful potato growers prefer to plant in hills the majority plant in drills. Planting and harvesting can be more easily effected, for horse labor will largely take the place of hand work, and therefore less work is required. Plant with a light furrow; try to cover about two or three inches deep. (1) A common and very successful way is to plow the ground lightly, planting in every third furrow.

In order to obtain the best results, good seed must be chosen, cut directly through the centre, and if large split again. If the potatoes are of moderate size split in half lengthwise. Some experimenters say it is better to throw away the seed end, because this part produces small potatoes. Thirty inches apart in rows is a good distance for

(1) Four inches.—Ed.



the smaller varieties, and thirty-three to thirty-five for the larger, dropping from twelve or fifteen inches apart in the rows, harrow the ground as the potatoes are coming through. It is wise to repeat this once or twice. Start the horse hoe as soon as the plants are all above ground, and continue until in full bloom. Shallow, flat cultivation gives the best results, except in very heavy or wet soils. (1)

What is known as the Bordeaux mixture is being used with good success in combating the potato blight. At a recent agricultural meeting in England, members reported satisfactory results from the use of that mixture; the Irish land commission also reports great success with their experiments in the same line, while most of the experimental stations on this continent, as well as prominent growers, have reported in its favor. When the plants are a foot high or less, spray with the mixture made as follows:—Dissolve six pounds of copper sulphate in sixteen gallons of water, slack four pounds of fresh lime in six gallons of water. When cool mix, strain through a coarse piece of sacking. By the addition of two ounces of Paris green the potato bug can be destroyed at the same time. Potatoes should be sprayed at intervals of about two weeks. This is the standard Bordeaux mixture, but Prof. Fletcher recommends the above diluted to forty-five gallons with water. If this is done, add sufficient Paris green to still keep up the original proportion of one ounce to eleven gallons of water.

Never plant potatoes in a field where the crop was formerly affected by either the rot or the scab, for there will be a sufficient number of spores left in the ground to spread the disease for several years. The corrosive sublimate treatment for scab is reported by the experimental stations, and also by well-known potato growers, to have given reliable and satisfactory results. It is as follows: Dip seed potatoes in a solution of two ounces corrosive sublimate and fifteen gallons of water.

The Beauty of Hebron, White Elephant, Burbank's Rural No. 2, Summit and Empire State are the varieties which have given the most general satisfaction over the country. The last named variety is third among forty-eight sorts experimented on at the Experimental Farm, Ottawa, while it and the Summit occupy first and second places respectively, both for best average crop for three years at the Ontario Experimental Farm, and also the same relation on the list in the co-operative test conducted by the Experimental Union in all parts of the province of Ontario. The Everett, which heads the list at the Ottawa Experimental Farm, is mentioned by one experimenter, from Durham county, in the co-operative work, as being the best of the lot, which shows the influence of climate, soil, etc., on crops.

*Farmer's Advocate.*

## GREEN PEAS AS A MARKET CROP.

C. L. HILL, MINNESOTA.

The pea crop is not exacting in the matter of soil, and makes no heavy tax on the fertility of the land. It is not ruined by light frost, has but few insect enemies, does not require the whole season for its maturity, and never fails to yield a paying crop. I grow about two acres of peas annually, and begin with fall plowing, so that

(1) Deep horse-hoeing, at first, then shallow, if you choose.—Ed.

the land may be ready for use early in the following spring. Usually the ground is not in condition to be worked before the second week of April. The seed bed is prepared with the smoothing harrow, aided by the use of a plank drag, to crush the lumps. The essential thing is to have a few inches of well pulverized soil.

When the ground is ready, I use a horse corn-marker to mark off the rows, three at a time, about three feet three inches apart. I want width enough to do the cultivating with horses. The marker leaves a depression in the soil, an inch or more in depth. Along these I run the garden seed-drill, so set as to place the peas about half an inch apart in the row. This requires 400 peas to the rod. By actual count I find 3,500 of my smallest peas in a quart; 1,600 of my largest. The large peas are placed about an inch apart. So, of either kind, a quart plants from eight to nine rods; or about three bushels to the acre. (1) The drill plants and covers the seed, without filling entirely the depression made by the marker. The earliest varieties, planted when the ground is wet and cold, are put scarcely more than an inch below the bed of the track. This shallow covering permits them to commence growth at once. (2) When the peas begin to break through the ground, I pass along the rows with a garden rake, and draw the fine surface soil over the row, rounding the earth slightly above the level. This fills up the track, gives the peas another inch or more of covering, and destroys all the weeds that may be starting along the row. As a first hoeing it has all the virtues of the proverbial "stitch-in-time." A few days later the peas come up, and weeds along the row have little chance to do harm. Sometimes this work of filling in the marker tracks is done with a team and smoothing harrow, the team straddling the rows. The harrow must be a light one, and the teeth well slanted, else the peas might be disturbed to their injury. This method has the advantage of stirring the whole surface, and of doing the work quickly; but it is not quite as good as may be done by hand with the steel rake. As soon as the peas are an inch above the ground, a light two wheel hand-cultivator is run along close to the rows. This little implement straddles the rows, and, as the plants stand in a single straight line, the knives or shovels may be set to run very close. If the soil is free from lumps, this work along the rows is easily, quickly and thoroughly done. The cultivation after this is done with a two-horse riding cultivator.

The small, smooth-skinned, extra early pea, gives the earliest dish, but not the best. American Wonder is a week later, but is larger, sweeter and better in every way. Champion of England is an old standard variety, for a late pea. (3) One hundred bushels of green peas per acre, is about the amount I can safely count on, year after year. This is not a big yield, yet is a good return for the amount of labor expended. The work up to picking time is no more than that given to an acre of corn. The cost of picking is from fifteen to twenty cents per bushel. (4) The selling price in our

(1) This is about the quantity we used in England.—Ed.

(2) Peas should go in about 3 to 4 inches deep.—Ed.

(3) The C. of Eng. used to be 6 feet high, and was too long for growing without sticks or brush.—Ed.

(4) In Kent, England, women used to earn 3 shillings a day at from 8 to 12 cents a bushel.—Ed.

market is about one dollar per bus. el. The crop matures early, and may be followed with some other crop when desirable.

*Am. Ag.*

## ABOUT ENSILAGE SPOILING AT THE SIDES.

We are all the time learning something about the silo and its proper management. The most general complaint is concerning the spoiling at sides and corners.

The most apparent reason for this is that the air gets to it there, and further that the heat passes off before it rises to the proper temperature, and the cause lies largely in the method of filling the silo. The talk has been to keep the middle the highest when filling. Evidently this is wrong. Mr. C. P. Goodrich in writing to this paper on that point in April of last year, page 2,192, says that he had always lost more or less silage at the sides and corners, and that as he progressed in feeding out the silo he invariably found that it had drawn away from the sides leaving free access to the air; hence, a lot of spoiled, mouldy silage. He concluded to change the method somewhat, and instead of keeping the middle the highest he kept the sides the highest until nearly to the close of filling when he filled the middle as much higher as it previously had been the lowest—two or three feet. The consequence was that the silage pressed so hard against the sides in settling that it kept the air out completely and his ensilage was as good at the sides as elsewhere. This is a most valuable hint to remember, yet we fear many of our readers forgot it when filling their silos last fall.

*(Hoard's Dairyman.)*

## EFFECTS OF ROLLING SOIL ON MOISTURE.

Rolling makes the temperature at 1½ inches below the surface from 1 degree to 9 degrees Fahrenheit warmer than similar unrolled ground in the same locality, and at 3 inches, 1 degree to 6 degrees warmer. 2. Rolling land by firming the soil increases its power for drawing water to the surface from below, and this influence has been observed to extend to a depth of three feet. 3. The evaporation of moisture is more rapid from unrolled ground, unless the surface soil is very wet, and then the reverse is true.

4. In case of broadcast seeding, germination is more rapid and complete on rolled than on unrolled land. Greatest in dry and least in wet weather, and weighed about two pounds per bushel the most. Rolled oats yielded a trifle over two bushels more per acre.

*Green's Fruit Grower.*

OH!

THERE is nothing like printer's ink for broadcasting information—good or bad. As a rule the biggest stories have the biggest advertising. The following note has been sent us by at least a dozen people who ask if there is "anything in it":

"Some wonderful results have been obtained in potato culture by a gentleman farmer, a distinguished chemist, near Nantes, France, who selected the best seed and soaked it for 24 hours in a mixture of water 25 gallons, sulphate of ammonia six pounds and salpêtre six pounds; and then drained it, allowing it to stand for 24

hours longer. Then he planted it in land well manured and deeply plowed or dug, and obtained a yield of 42 tons per acre."

So far as we can learn, this story was started by the British Consul at Nantes, France "Wonderful results!" We should say so! A yield of 1,568 bushels per acre from six pounds of sulphate of ammonia and six of nitrate of potash is indeed wonderful. We wrote for information to Vilmorin-Andrieux & Co., of Paris, thinking the grain of truth in such a story might be valuable. Here is the answer:

We beg to say we have no knowledge of the experiment referred to, nor could we gain any information about it from other parties here who are specially well posted about anything done towards the improvement of the culture of potatoes.

Replies from other French agriculturists are in the same tenor. So much for the ending of another "big story."

*R. N. Yorker.*

## ILLINOIS EXPERIENCE WITH ENSILAGE.

ED. HOARD'S DAIRYMAN:—I have used the silo for five years with good satisfaction, both to myself and the cows. I have been in the dairy business about fifteen years and it has been my constant study how to produce the most at the least cost, as we have to compete with bogus butter. Have always had a winter dairy. Have no use for summer cows. Before having the silo, I found it impossible to keep up the flow of milk in cows that came into milk in September and October until grass, without a large shrinkage, although I grow sugar beets and fed them up to grass. But since I have had ensilage, the shrinkage is very small until grass, and then the flow increases for some time.

Now, as there as been a good deal of discussion as to the variety of corn to use for ensilage, I will give my side of the question. For the first two years, I used the large Southern corn, but in reading in the agricultural papers and your paper in particular, favoring more corn in the silo, to test it for myself, I planted the field corn, a large yellow kind that I had been raising for several years. I commenced filling the silo when in the milk but before getting through some of it became hard. It took more than double the ground to fill the silo, and it did not keep as well, and in feeding I did not get near the result that I did with the large variety, and it was all gone a month earlier than usual. So that is the last of field corn for me in the silo.

Now, my idea of ensilage is, and always has been, to furnish a succulent food in winter, and my experience is, if there is no corn in it, it is all the better. This will make some dairy-men smile, but it has proved to be altogether the best for me. The season of '91 was very dry here and no ears formed, so that there was not a ear of corn in the silo, and one other year the same, and in both cases the cows did a great deal better than when there was corn in the silo.

Last year, fed on that ensilage, they averaged over 300 pounds of butter per cow, two of them being farrow. The most of them were common grade cows.

I see in your last paper that Mr. Gardner has discarded the large ensilage corn. Now, in my opinion, he has made a mistake, as it takes more



than twice the ground to fill the silo, and I find it takes a third more time to fill with the field corn, and then you have not so much feed after filling.

Now, as to keeping the land clean, I have one small field that I have drilled for five years in succession and expect to drill it again this season.

My plan is to run an Acme pulverizer with two horses light over the ground before the corn comes up, and then follow with the harrow to smooth. I have found by experience that to keep corn clean, it must come up clean. Now, as the harrow will not do that by itself, I use the pulverizer for all my corn, unless it should rain very heavily about the time it ought to be done. I also use a spring tooth cultivator with ten small shovels. You can plow much closer to the row the first time through, which is very essential to keep the weeds down. Besides, it leaves the ground level, which cannot be done with large shovel plows.

JAMES GRAHAM.

### THAT BIG CORN CROP.

#### MORE COMPLETE DETAILS.

IN THE RURAL of February 18, a statement was printed with regard to a big crop of corn I raised last summer. Since this item appeared, inquiries have been made of me as to what kind of fertilizer was used; and the kind of corn I planted, etc. The fertilizer used was the Mapes corn manure; and in order to enable readers to know what such fertilizers are made of and to more fully understand the matter, I would urge those who have not done so to read the article contained in RURALS of March 11 and 13, entitled "A Bag of Fertilizer," what it is and how it is made. This concise and simple statement has given me more insight and knowledge of complete fertilizers that I ever had before. The corn from which I raised the big crop, was a selected strain of Pride of the North and Yellow Dent, the cobs of which from a bushel of ears weighing 70 pounds will only weigh 12 pounds. For many of the readers of THE RURAL it will be a useless task to try to raise such a crop, unless their land is naturally very rich or is made so with barnyard or other manures or combined manures, including commercial fertilizers, but even then many will fail. I have known farmers who, while their land is rich enough to produce large crops of corn, begrudge the price some seedsmen ask for a bushel of good seed-corn—\$1.50 to \$2—and yet when we consider that this is only from 25 to 30 cents per acre (by the way, a ridiculously low price for this kind of seed compared with the cost of almost all others) it is certainly small economy to pick corn out of a man's corn crib and pay perhaps 50 cents per bushel for it, and then plant it. To those who have grown, and are still annually growing large crops of corn it is needless to give advice, but those who are striving to grow a larger crop every year it may be that my experience in the matter may help somewhat. To such I would say that it is not only to the kind of corn I raise or the kind of fertilizer I use that I owe the big yields, but to the combination of several well-directed efforts on my own part, and unless these are followed by others, most of them will fail to get extra yields. These are, first, a thorough preparation of the soil at the right time, consisting of good plowing and heavy manuring, followed by a

disc or other good harrow, second, the planting of some good kind of corn that will mature in one's own latitude. The corn should be tested at least three weeks before it is planted, so that one may know in time whether to purchase other seed in case it fails to grow. Third, just as soon as the corn shows above the ground so that one can see it all, he should hoe the ground for a distance of five or six inches each way from the plant, no matter whether there are weeds there or not. This may seem somewhat expensive to some, but a good man will hoe an acre per day at that time. (1) I wish every one who has never done so before would try at least one acre this year and he will be convinced of the value of the labor bestowed on this early care and tender nursing of the corn plant. I believe there is no plant on the farm that will so richly repay the owner for his labor at that stage. I find that then the plan has clear sailing; it is ahead and stays there if one follows as soon as possible with a cultivator of some kind. The main thing is to cultivate and keep on doing so as often and as long as one can until the corn begins to tassel. After this I generally wait about two weeks, and if the growth does not interfere too much, I then go through it with the cultivator once, and sometimes twice. If the season is ordinarily favorable and the farmer has given it the required care and attention, he may then expect a bountiful crop.

If at husking time one wishes to know, and not guess at the quantity raised per acre, he should make preparation to have his corn weighed or measured. If a large scale is not used on his own place, he may perhaps bargain as I did when I raised 83 bushels per acre, and pay the scale owner so much for weighing the crop. I believe I paid \$1 for having the whole crop weighed, and when one has the figures before him he is very apt to resort to the same means every fall thereafter at husking time. The satisfaction obtained from such work is pleasing; even if one does not obtain the desired result, he knows what he is about, and if any failures occur on his own account he is generally inclined to remedy the fault.

La Crosse County, Wis.

JOHN VAN LOON.

R. N. Y.—Mr. Van Loon speaks of hoeing the crop. There is nothing equal to a hoe in the hands of a good man for doing this work. That tool is the standard. Harrows and weeders are more or less good as imitations of the hoe. They save time where hand labor is scarce—that is all.

EXPERIMENTS WITH CORN AND ROOTS. —The Report of the Pennsylvania State College gives the result of a large number of experiments in raising corn for ensilage and other purposes, and in the production of root crops. We give some of these results:

After trying a number of measured experiments for ensilage with different varieties of corn, the following conclusions were reached: That thicker seeding was better than is generally recommended, and larger varieties for the purpose of securing a heavy yield, even when these varieties do not fully mature. (2) An extreme is to be avoided. Two rates of seeding were adopted, namely, 6 quarts and 20 quarts per acre. The reported results of green fodder were the following: Small thin

(1) Quite right: this is the edge-hoeing we have so often spoken of.—Ed

(2) Next month, we hope to give the opinions of the Dairymen's Association on this important point.—Ed

seeded, 6 tons; large thin seeded, 10½ tons; small thick seeded, 9½ tons; large thick seeded, 13 tons. These results are strongly in favor of thicker seeding of ensilage corn than is common, recommended, and the large-growing varieties secure the heaviest yield, although there may be less difference in the quality.

In the experiments with mangolds and sugar beets the cost of producing sugar beets was 89.7 cents a ton, and the cost of mangolds only 68.9 cents for the yellow globe and 59.6 cents for the long red. (1) Mangolds were therefore regarded as much more preferable for farmers to raise as stock food than sugar beets, particularly on a close, compact, clay soil. Early seeding facilitated early weeding and thinning, and these seemed to lessen the expense of after cultivation of the crop. The advantage of early over later seeding was forcibly shown by the fact that there was a gain in yield of from 3,000 to 5,000 pounds per acre. There was a marked advantage in the use of the larger amounts of seed. The seed was sown at the rate of 12 pounds per acre on the thick-seeded plots, and 6 pounds on those thin-seeded. From 8 to 12 pounds was found generally advisable. The results show that with mangolds the application of commercial fertilizers more than paid for itself in every instance. It did not pay in a part of the experiments with sugar beets. The experience at the station is in favor of the mangolds. This agrees with Prof. Roberts' experience. He reports that five varieties of sugar beets averages 23.1 tons per acre, and three rows of long red mangolds averaged 31.4 tons per acre.—Cultivator.

### Competition of Agricultural Merit.

THIRD YEAR, 1892.

Report of the Judges of the Competition.

No. 52—M. JOSEPH BOLDUK.

On the 2nd August, we paid a visit to the farm of M. Joseph Bolduc, of the parish of St-François, Beauce, containing 120 arpents, 70 of which are arable, 5 not ploughable, 33 in bush; the soil is clay, stony and hilly.

M. Bolduc's system is: 1st year, after meadow, wheat, after pasture, gabourage and grass seeds, 2nd year, wheat after wheat; 3rd year, wheat again after wheat with interred dung and 2 gallons of timothy and clover mixed. Hay stands from 6 to 10 years, and pasture, generally, 4 years. M. Bolduc ought never to plough more land than he can manure during the rotation, and therefore we deduct 1 mark, only allowing him 3. The divisions of the farm and the fences are good.

Hardly any weeds in the fields, but, as there are a few ox-eyed daisies, we take off half a mark.

The hoes is all right, but all the farm buildings are old-fashioned and not very handy.

Good style of implements, and plenty of them; but the manure is not well cared for as there is no protection.

General management good, but no accounts kept.

(1) This is what we suppose the writer means, but the figures in the original are evidently erroneously printed, as they read \$8.97 a ton, &c.—Ed

Permanent improvements satisfactory; 13 out of 15 marks for this item. Stock; 1 brood-mare, 1 yearling colt; 1 bull and 6 milch-cows, 3 fattening beasts, 3 2-yr-olds, 2 yearlings; 1 ram, 15 ewes, and 14 lambs.

Crops: 2 arpents of wheat, 14 of oats, ½ of pease, ½ of seed timothy ½ of flax, ½ of beans, 1 of potatoes, 14 in meadow, 40 in pasture, and a garden of 125 by 145 feet.

M. Bolduc was awarded 72.90 marks, and is therefore entitled to the diploma of Agricultural Merit.

No. 53.—ALFRED TURGEON.

The 5th August saw us at the farm of M. Alfred Turgeon, of St-Vital de Lambton, Beauce. He has 120 acres, 50 arable, 25 not ploughable, and 35 in bush. Soil, loam with a porous subsoil.

We do not approve of M. Turgeon's system, and only granted him 2 marks for it: 1st year, oats, pease, partly manured, and grass-seeds, potatoes with manure; 2nd year, after potatoes wheat, barley with seeds. He mows 3 years and pastures 2 or 3 years. He manures half the land he ploughs.

As the fields are not sufficiently divided, we deducted ½ a mark out of the 2 for this item. The fences are in good order, and there are no weeds in the pastures.

Buildings excellent: barn, cow-house, stable, perfectly adapted to the farm.

Implements in good order, and nearly enough of them.

Dung well-preserved and increased in quantity; general management good.

Incomplete book-keeping; only 2 out of 3 marks allowed.

Energy shown in the permanent improvements: stone-clearing, straightening of water-course, ditches, water-furrows, &c., very satisfactory.

Stock: 1 stallion, 1 work-horse; 2 bulls, 10 cows, 4 fattening beasts, 5 calves; 1 ram, 10 ewes, and 9 lambs.

Crops: 12 acres of oats, ½ of pease, ½ of beans, ½ of swedes, ½ of potatoes, 4½ in meadow, 55 in pasture, ½ in orchard, and a garden of 100 feet square

M. Turgeon gets 72.90 marks, and a diploma of Agricultural Merit.

No. 54.—PHILEAS CHAMPAGNE.

We visited the farm of M. Philéas Champagne on August 6th. Situated at St-Honoré de Shanly, Beauce, it contains 252 arpents, 130 arable, 30 unploughable, 60 in bush; the soil is loam with a porous subsoil.

System of rotation: 1st year, wheat, oats, buckwheat, pease, with seeds, potatoes with manure; 2nd year, after potatoes, wheat with seeds. Meadow stands 3 years and pasture 3. He manures 6 acres yearly as a top-dressing as soon as the hay is carried. This is a defective system, since he does not manure all the land he ploughs, and we deduct 2 points in consequence.

As the fields are not sufficiently divided and the road between them and the barn is not convenient, we deduct 1 mark from this item.

The fences are of wood, but not well arranged.

No weeds in either meadows or pastures.

Buildings, in general, convenient.

Almost enough implements, still we deduct 1 mark out of the 5.

No shelter for the dung, so it is not well preserved.

We could only allow M. Champagne half a point for his accounts.

Satisfactory permanent improvements; 6 marks for stone-clearing and utilising the stones.

Stock: 2 work-horses; 3 cross-bred bulls, 10 cows, 3 fattening beasts, 6 2-yr-olds, 6 yearlings; 7 ewes and 4 lambs.

Crop: 26½ arpents of oats, ¼ of pease, 3 of buckwheat, ½ of seed-timothy, 1 of potatoes, 40 in meadow, 60 in pasture, ¼ in orchard, and a garden 100 x 180 feet.

M. Champagne earns 72.80 mark, entitling him to a diploma of Agricultural Merit.

#### No. 55.—AMBROISE VOYER.

The farm of M. Ambroise Voyer, of Ste-Cécile du Bic, Rimouski, received our visit on the 3rd September. It contains 190 arpents, 160 arable, 20 in unploughable pasture, 10 in bush; the soil is partly clay, partly sand.

The rotation followed by M. Voyer we do not approve of, and we only give him 2 marks for this item, which is as follows: 1st year, after meadow, oats, wheat, with interred dung, and seeds; after pasture, wheat, oats, pease, rye. Second year, after wheat, gabourage, after oats, rye, after pease, wheat, after rye, rye with seeds, i. e., 1 gallon of timothy and 5 lbs. of clover to the arpent, with interred dung, in part, and potatoes dunged. Third year, wheat after potatoes, with seeds. He leaves the meadow down as long as the hay is abundant, and pastures 3 years. Ten arpents are manured yearly. No more land ought to be ploughed than can be manured.

The divisions and the fences are good, and the house is all that is needed for the accommodation of a family. The farm-buildings are old and are to be re-built next year. The implements, almost sufficient in number, are well cared for. The preservation and augmentation of the dung are far from being perfect.

General management not so good as might be expected. No accounts kept.

By the number of marks allowed for permanent improvements, it will be seen that they satisfied us.

Stock: 1 brood-mare, 2 workhorses, 1 3 yr-old colt, 1 yearling; 1 bull, 11 cows, 3 fattening beasts, 2 2-yr-olds, 2 calves; 1 ram, 18 ewes, and nineteen lambs.

Crops: 5½ arpents of wheat, 1 of barley, 16 of oats, 1½ of pease, 1½ of buckwheat, 8 of meslin of oats, pease, and rye, 6 of potatoes, 30 in meadow, 40 in pasture, and a garden of 60 x 75 feet.

The diploma of Merit is due to M. Voyer by right of his having won 72.10 marks.

#### No. 56.—ADOLPHE ST-LAURENT.

We visited on the 30th June, the farm of M. Adolphe St-Laurent, at St-Valr: de Bulstrode, Arthabaska; it contains 105 arpents, 60 of which are under the plough, 40 not ploughed. — The soil is clay, and in some parts loamy. M. Laurent's system is faulty: First year, wheat, barley, oats, buckwheat, with seeds—1 gallon of *Vermont* clover to the arpent. Second year after a hoed-crop, wheat, barley, with seeds. Hay stands as long as it yields well, and pasture for 2 to 3 years. About 6 acres of the lands ploughed receive no manure, unless in the next rotation; wherefore, we deducted 1 mark from the 4.

One mark deducted because the fields are not properly divided. The fences are good, and the land free from weeds.

Buildings not suited to the farm. Implements very good, and nearly

enough of them. Manure well cared for and increased in quantity

No accounts kept, but general management good.

Permanent improvements satisfactory, as the marks testify: collecting and employment of stones, ditches, straightening water-courses, drains, planting of forest-trees, &c.

Stock: 2 work-horses; 1 bull, 5 cows, 6 2-yr old beasts, 2 yearlings; 1 ram, 24 ewes, and 17 lambs.

Crops: 4 acres of wheat, 3 of barley, 4 of oats, 2 of gabourage, 2 of potatoes, 2½ of silage-corn, 10 in meadow, 10 in pasture, 1½ of green-crop, 1 in orchard, and a garden of 100 x 50 feet.

Wogave M. St-Laurent 72.05 marks, which entitles him to a diploma of Merit.

#### No. 57.—CHARLES BARBEAU.

M. Barbeau's farm, at Ste-Marie, Beauce, which we visited on the 30th of July, contains 80 arpents, 65 of which are arable, 5 unploughed, and 10 in bush. The soil is in part alluvium, with some sandy and some clayey bits.

Rotation, good: First year, oats. Second year, hoed-crops, with ploughed in dung, barley, oats with ashes. Third year, after hoed crop, barley, oats with seeds; where there were barley and oats with ashes, he puts oats with interred dung and seeds—½ a bushel of timothy and 5 lbs. of clover to the arpent. The meadow lies out 5 to 7 years, and the pasture 3 years. All his pastures are *ashed* every time they are broken up.

The division of the farm into fields pretty good, but still we deduct a quarter-mark for this item.

Fences good, and made of good stuff.

We deducted one mark from the item of "freedom from weeds," as there were some daisies about.

The house is perfect. The barn, stable, cowhouses, wood- and cart-sheds, and harness room, are most convenient and all that is needed for the farm.

Not enough implements, so we deducted 2 marks from this item out of the 5 allowed, and 1 mark from the 5 for the preservation and increase of manure; as it is not well cared for. In addition to the farmyard dung, M. Barbeau bought 78 bushels of ashes and 2 bags of superphosphate.

General management, good, and 2 marks out of 3 were allowed for accounts.

The permanent improvements were satisfactory.

Stock, especially the horses, good: 2 stallions, 1 monte, 1 brood-mare, 2 2-yr-old colts, 2 yearlings; 4 cows and a calf.

Crops: 1 arpent of barley, 3½ of oats, 1½ of beans, ¼ mangels, 1½ of swedes, 1½ of carrots, 1½ of potatoes, 20 in meadow, 35 in pasture, a garden 80 x 75 feet, and 1½ of an arpent of tobacco.

M. Barbeau gained 70.35 marks, for which he will receive a diploma of Merit.

#### No. 58.—F. X. GAULIN.

It was on the 25th July that we visited M. Gaulin's farm, at St-Eugène, l'Islet. It contains 130 arpents, of which 114 are arable, 7 non-arable, and 8 in bush. Soil, partly clay, partly sandy.

Rotation: First year, after meadow, wheat manured; after pasture, oats, rye, pease, where the land is poor. Second year, after the wheat, potatoes, after the oats, rye, pease, of the

1st year, he sows the same grain again with seeds, which he pastures for 2 to 5 years. Third year, after potatoes, wheat with seeds, which are mown for from 4 to 5 years. Seven or eight arpents are manured annually. This system is faulty, since the land in pasture, the poorest of all the farm, is sown to grain too often and is hardly ever manured. For this, we only give him one out of four marks allowed.

M. Gaulin's farm is not sufficiently divided by fences to allow of a proper rotation being followed; wherefore we deduct one mark from this item. The fences are good and well kept up.

No weeds on the farm.

Buildings, good but not convenient. The implements are insufficient in number, but of good kinds and well cared for.

General management, fair; but as for accounts, we could only grant half a mark for some "memory-notes."

As we gave M. Gaulin 14 out of 15 marks for "permanent improvement," these must have been highly satisfactory.

The stock is Canadian: 2 brood-mares, 1 workhorse; 1 bull, 9 cows, 1 fattening beast, 2 yearlings; 6 ewes and 8 lambs.

Crops: 4 arpents of wheat, 25 of oats, ½ of pease, 1½ of seed-timothy, ½ of flax, 4 of potatoes, 30 in meadow, 50 in pasture, and a garden 80 x 80 feet.

Thus, M. Gaulin, who gets an award of 70.15 marks, is entitled to a diploma of Merit.

#### No. 59.—ALPHONSE POIRIER

Our inspection of the farm of M. Alphonse Poirier, at St. Joseph de Beauce, was made on the 1st of August. It consists of 240 arpents, of which 72 are arable, 100 not ploughable, and 68 in bush. The soil is alluvial, partly clay, partly sandy, and partly *terre jaune*.

Rotation: First year, oats. Second year, oats. Third year, oats, barley, buckwheat, pease with seeds. About half the land ploughed gets manure. He plants potatoes, with manure, on three soils alternately, and pease follow. M. Poirier's system is wrong, since he does not manure all the land he ploughs and, in consequence, we deduct 2 marks from this item. Division and fences are all right.

One mark deducted from freedom from weeds' item, as we saw some daisies.

House and farm-buildings, good; but cowhouse not well divided.

Implements, sufficient in number and in good order. Manure not under shelter, so that there was a loss of fertilising elements, and we deducted one mark from the 5 allowed. General condition of the farm, good; but the buildings might be better, and M. Poirier keeps no books.

Very little has been done on this farm in the way of permanent improvements. The stock is cross-bred: 1 brood-mare, 2 workhorses, 1 3-yr-old colt, 2 2-yr-olds; 6 bulls, 13 cows, 8 fattening beasts, 3 yearlings, 6 calves; 2 rams, 24 ewes and 20 lambs.

Crops: 21 arpents of oats, 2 of pease, 1 of buckwheat, ¼ of seed-timothy, ½ of beans, 1½ of potatoes, 50 in meadow, 100 in pasture, 1 in orchard, 300 cabbages, and a garden 100 x 100 feet.

M. Poirier gets a diploma of Merit, as we accorded him 70.15 marks.

#### No. 60.—ALPHÉ LALIBERTÉ.

On the 16th July, we reached the farm of M. Alphé Laliberté, at St.

Louis de Lotbinière; it contains 295 arpents, of which 130 are arable and 165 in bush: the soil is clay.

M. Laliberté's rotation is not a good one, so we only granted him 2 marks for it. It is as follows: First year, wheat and oats with seeds—1 gallon of timothy and half a gallon of clover to the arpent,—buckwheat and potatoes dunged. Second year, wheat after potatoes, and after buckwheat, oats with seeds. Part is left in meadow as long as the hay yields well, and the rest is pastured for 2 years. Only part gets manure. We advise M. Laliberté, 1st, never to plough more land than he can manure; 2nd, to divide his fields so as to manure them thoroughly, and to make a fenced roadway to bring his cattle from the furthest field to the cowhouse.

The fences are good, and there are no weeds.

The house is good and fit for the needs of the family, but the cellar is too low. Barn, stable, cowhouse, sheepshed, piggery, and granary, are all in good order but not convenient.

Not enough implements; but what there are are of good kinds and well kept.

Manure well preserved and increased in quantity.

General order and management, good; but no accounts kept.

Stock: 1 Canadian mare, 3 workhorses, 1 3-yr-old colt; 2 bulls, 5 cows, 4 2-yr-old beasts, 5 calves; 1 Shropshire ram, 9 half-bred ewes and 9 lambs.

Crops: 6 arpents of wheat, 45 of oats, 1 of pease, 4 of buckwheat, 3 of seed-timothy, 1 of potatoes, 53 of meadow, 50 in pasture, and a fine garden of 180 x 90 feet.

We gave M. Laliberté 69.97 marks; so he is entitled to a diploma of Merit.

#### No. 61.—JOSEPH OLIVIER.

The farm of M. Joseph Olivier of St. Edouard de Lotbinière (Rivière Boisclair), Lotbinière, which we reached on the 16th of August, contains 164 arpents, 134 of which are under the plough, 5 are not ploughable, and 25 are in bush: the soil is clay.

Rotation: First year, wheat, oats, buckwheat, barley, and pease, with seeds—2 gallons of timothy and 3 lbs. of clover to the arpent,—with manure harrowed in on the furrow, but only in part, the other part only getting manure, if at all, some years later. About 7 or 8 arpents are manured yearly. The meadows are top-dressed with any dung that may remain in the fall. This is wrong, since M. Olivier does not manure all the land he ploughs; moreover, he does not thoroughly bury the dung he harrows in, and there is a consequent loss of fertilising matters. On account of these errors, we deduct 2 marks.

We take off ½ a mark from those allowed for the "division of the farm," as there is no roadway.

The fences are of wood; owing to some slight neglect we deduct 1 mark out of the 4 allowed for this item.

As there are a few weeds, we took off a mark from this item.

The house is good; barn, stable, cowhouse, sheepshed, piggery, without being modern in construction, are sufficient for their purpose.

Implements, nearly enough in number. General order not so good as we could wish, but the manure is well cared for: no accounts kept.

Permanent improvements satisfactory, as the marks allowed for this item will show.

Stock: 1 brood-mare, 1 workhorse, 1 2-yr-old colt, 1 foal; 2 bulls, 13

cows, Canadian crosses, 1 fattening beast, 4 calves; 14 ewes and 5 lambs.

Crops: 11½ arpents of wheat, 14 of oats, 2 of pease, 3 of meslin of buckwheat, oats and pease, 7 of oats and wheat mixed, 1 of seed timothy, 1 of potatoes, 60 in meadow, 40 in pasture, and a garden 100 x 100 feet.

As M. Olivier gets 69.95 marks, he wins a diploma of Merit.

#### No. 62.—ANDRÉ LACROIX.

On the 30th. of July, we paid a visit of inspection to the farm of M. André Lacroix, at Ste-Marie, Beauco. This farm comprises 200 arpents, 150 of which are arable, and 50 in bush. The soil is partly alluvial and partly clay.

Rotation: First year, after meadow, wheat, barley, with seeds and unploughed dung; after pasture, oats, pease, gabourage, and grass-seeds without dung. The hay stands 5 to 6 years, and the pasture the same. We advise M. Lacroix not to plough more land than he can manure in the rotation, and as we do not approve of his system of cropping, we have taken off one mark from the 4 allowed.

Division of the farm is not perfect, so he only gets 1 out of the 2 marks allowed for this item. The fences are good.

As for the destruction of weeds, not only cannot we give M. Lacroix the points allowed for that item, but we should feel tempted to take marks off that he has gained for other items, did we not know what a quantity of weed-seeds are carried by the wind from neighbouring fields. Here, the trouble is the daisy, which is very plentiful.

The house is perfectly suited to the occupation, but the other buildings are by no means perfect. Not enough implements. Manure badly cared for, so we deducted a mark from those allowed for this item.

Management good, except in the fields: no accounts kept.

The permanent improvements are satisfactory, as the marks show.

Stock: 1 brood mare, 3 workhorses, 1 2-yr-old colt; 1 bull, 10 cows, 8 fattening beasts, 6 yearlings, 4 calves; a ram, 16 ewes and 11 lambs.

Crops: 4 arpents of wheat, 3 of barley, 33 of oats, 1 of pease, 1 of seed-timothy, 1 of flax, 1 of beans, 1 of turnips, 1 of potatoes, 25 in meadow, 60 in pasture, and a garden of 100 x 100 feet.

M. Lacroix gets 68.65 marks, and thereby wins a diploma of Merit.

#### No. 63.—EDWARD STEEL.

The 6th of September found us at the farm of Mr Edward Steel, at Cay Noir, Bonaventure. This contains 105 arpents, 80 of which are arable, 10 not ploughable, and 15 are in bush: the soils is sand and clay.

Rotation: First year, oats with unploughed sea-weed. Second year, oats and seeds, potatoes with fish-manure. Third year, oats after potatoes with seeds. He mows 4 years, and top-dresses the meadow the first year of mowing with well rotted dung in rainy weather, and then pastures for 2 years. He manures all his land, but we advise him to plough in all his dung.

Both division and fences are good, there were a few weeds, for which we took of a quarter mark. The house is good, but the barn, stable, cowhouse, sheepshed and piggery are not conveniently arranged.

Implements, numerous enough.

Four points out of five allowed for preservation of manure.

General order not good as regards the implements and buildings. Mr Steel keeps no books.

For permanent improvements, we allowed 8 marks out of 15. Mr. Steel carted on to his farm 30 barrels of fish and 200 loads of sea-weed for manure.

Stock: 1 brood-mare, 2 workhorses, 1 2-yr-old colt, 1 foal; 1 bull, 3 cows, 3 fattening beasts, 2 2-yr-olds, 2 yearlings, and 2 calves; 6 ewes and 2 lambs.

Crops: 1½6 arpents of wheat "Campbell's white chaff," 15 arpents of oats, 1 of oats and buckwheat, 1½ in various new kinds of potatoes, 26 in meadow, 15 in pasture, 1 in orchard, and a garden 100 x 30 feet.

We gave Mr. Steel 68.55 marks, which wins for him a diploma of Merit.

#### No. 64.—CHARLES HAMEL.

The 10th August, we went to inspect M. Charles Hamel's farm, at St. François, Beauco. It contains 170 arpents, 94 arable, 30 unploughable, and 25 in bush. The soil is alluvial, and the greater part is a mixed loam, with some clay in places. Rotation, which is a pretty good one; First year, after pasture, oats with seeds; after meadow, wheat and oats, manured. Second year, pease after the oats: after pease, oats manured, after wheat, barley and buckwheat with seeds and manure. Third year, after oats and pease, he sows oats with manure and seeds. He, usually, manures all the land he ploughs. The hay he mows as long as it yields well, and the pasture stands from 2 to 3 years.

Division and fences, good. We found a few weeds, for which we deduct half a mark. The farm buildings in general are not comfortable or suited to the requirement of the exploitation.

Implements, sufficient for the farm. Preservation and increase of manure, all right. General order good, except as to the buildings. No books kept.

Permanent improvements satisfactory as the marks allowed show. Stock: 1 brood-mare, 2 work-horses, 1 3-yr-old colt; 9 cows, 5 fattening beasts, 3 yearlings, 4 calves; 1 Leicester ram (registered), 14 ewes, (half-bred) and 14 lambs.

Crops: 1½ of wheat, 9 of oats, 1 of pease, 1 of buckwheat 1½ of potatoes, 45 in meadow, 53 in pasture, and a garden of one square arpent.

M. Hamel received 67.95 marks, and is therefore entitled to a diploma of Merit.

#### No. 65.—M. J. B. VALLÉE.

On the 5th July, we went to M. J. B. Vallée's farm, at Plessisville de Somerset, Megantic. It contains 162 arpents, out of which, 103 are arable, 20 are in a maple grove, 1 in orchard, with a garden 50 x 100 feet the soil is sand, clay, and black-earth.

Rotation: First year, oats with seeds, goudriole of pease and oats. Second year, after pease and oats, hoed crops with unploughed dung. Third year, after hoed crops, wheat, oats, with seeds—2 gallons of timothy with 3 lbs. of clover to the arpent. Meadow lies out for 2 to 3 years, and is pastured one or two years. We were obliged to deduct 1 mark for his system, as part of the land receives no dung during the rotation.

Division, perfect, and fences, good. Meadows and pastures good, and free from weeds, as are the hoed-crops.

House, good and suitable to the

farm. Barn, stable, cowhouse, sheepshed, piggery, granary are all sufficient in size, &c., and M. Vallée has built a silo with which he is satisfied.

The implements are not complete, only 3 marks given for this item; one mark, too, we have deducted from the preservation and increase of dung because it is not sheltered.

General order, pretty satisfactory; but M. Vallée keeps no books, so we could only give him a half-mark for "memory-notes."

M. Vallée has carted many loads of stones off his land and built them up into walls. He carts every year 100 loads of bog-earth to his sandy land. With 600 maples, he made 600 lbs. of sugar. Along the road, he has set out a good many ornamental forest-trees. The cattle, half-bred shorthorns, are very fine; the horses, too, are good; 1 brood-mare, 1 work-horse, 1 Hamblonian 3-yr-old colt, and 1 foal; 1 registered Ayrshire bull, 12 cows, 4 2-yr-old fattening beasts, 6 2-yr-olds and yearlings, and 7 calves; 2 rams, one of which is a Leicester, and the other a Shropshire registered lamb-ram, 10 Leicester ewes and 9 lambs.

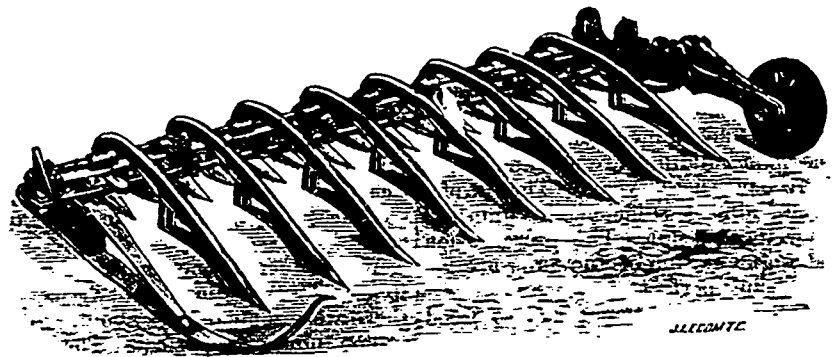
Crops: 3½ arpents of wheat, 20 of oats, 2½ of goudriole, 2 of potatoes, 1 of maize for seed, 40 in meadow, 30 in pasture, with a garden 50 x 100 feet.

The number of marks assigned to M. Vallée, 67.75, give him a right to a diploma of Merit.

of the flesh from the thickest part, and it will be found properly cooked by the time it is sufficiently freshened.

**SMOKED SALMON.**—Soak a half pound of salt, smoked salmon for an hour in cold water, drain and set on the back of the range for twenty minutes, drain again, lay for a few minutes in cold water, and with a sharp knife cut into strips half an inch wide and three long. Roll each strip in flour or in egg and bread crumbs and fry brown in hot fat. Pile up log-cabin fashion, and pass a cream or tomato sauce with the dish. It may also be broiled after soaking.

**SALT-FISH MINCE.**—One of our nicest compounds was made from the remains of cold boiled salt fish, sometimes from a mixture of salmon, mackerel and shad. Pick out all the skin and bones carefully and mix with twice its bulk of cold boiled or baked potato, well chopped. For a quart bowl of this mixture, cut a dozen thin slices of fat salt pork, fry brown and dish; turn the minced fish and potatoes into the hot drippings and season to taste with pepper (salt is generally not required). Stir with a broad-bladed knife until smoking hot, and if you wish it browned on the under side, set back on the stove for a few minutes. Dish with the pork around. A boiled cauliflower with white sauce, or turnips cut in dice and boiled and served in a white or cream sauce with this mince



THE GENUINE TOLTON PEA HARVESTER GREATLY IMPROVED FOR 1893. (See p. 126.)

## Household.

### DOMESTIC ECONOMY.

#### COOKING FISH.

**CREAMED MACKEREL.**—Provided you do not include this in your daily bill of fare, there is no better breakfast dish. Soak the fish all night in cold water. The next morning wipe it well to get off the salt crystals, cover with cold water if you have any suspicion that it is not sufficiently freshened (otherwise with boiling water), and simmer until the bones lift easily; drain and pour over a sauce made by heating a gill of cream in a small saucepan, seasoning with white pepper and thickening slightly with flour. Drop bits of butter over the fish, and pour the sauce around. If you have been provident enough to provide a window box of herbs, mince some parsley and sprinkle over the fish. Baked or stewed potatoes and corn bread are nice accompaniments. If you prefer, you may wipe dry a fish, thus soaked, brush over with melted butter and broil, serving with the same sauce or simply with melted butter. Should it be necessary to freshen a fish hastily, place it skin upward in a large flat frying-pan, cover with cold water, heat gently, and before it comes to a boil pour off and replace with more cold water. By this process the fish will not become hardened. Test when it is freshened enough by tasting the water, and to make sure, a bit

of fish, makes a palatable, nutritious and excellent dinner.

**SAUCE FOR SALT FISH.**—Melt in a saucepan two tablespoonfuls of butter and one of sifted flour; add two-thirds of a pint of boiling water and when smooth a tablespoonful of chopped parsley and one of any nice vinegar or a minced gherkin. Season with salt and pepper, pour over the boiled fish, and surround with boiled parsnips or mashed potatoes. Omit the vinegar or pickle from the above sauce, and add two chopped hard-boiled eggs, and you have a favorite English sauce for salt fish. (1)

**RÉCHAUFFÉ OF SALT FISH.**—Free the fish from skin and bones and pick it into flakes. Mash some cold parsnips to a pulp and moisten with a cupful of drawn butter sauce seasoned with pepper and mixed mustard. Stir the flaked fish and this preparation over the fire until smoking hot, and serve at once. Use potatoes instead of parsnips if you do not like the latter.

Another way is to tear the fish into flakes, mix with twice the quantity of mashed potatoes, moisten with cream, season well, add a beaten egg and mold into small balls, flouring the hands. Brown in hot fat. Or you may tear the fish into flakes or bits, and put in a buttered dish with alternate layers of bread crumbs or mashed potatoes, seasoning each layer of fish with

(1) The universal salt-fish same in England; but our cod is only salted for 5 or 6 days, and is very different to the dry, long-salted cod we get here.—Ed.



pepper and a very little prepared mustard. Put crumbs on top, dot with bits of butter, pour over enough cream, or egg sauce, to moisten it, and bake half an hour for a good-sized dish.

**SALT-FISH PIE.**—Cod is the best for this pie, although any kind of cooked salt fish may be used. Take twice the quantity of the fish in cold, sliced boiled potatoes, and half the quantity of potatoes in onions parboiled and sliced. Butter a pie-dish and put in alternate layers of fish, potatoes, onions and hard boiled eggs, seasoning each layer and dotting with bits of butter. Pour over all a pint of egg sauce for a quart dish, cover with pastry or mashed potatoes and bake.

ALICE CHITTENDEN.

**GOING TO THE WORLD'S FAIR.**

How many different expressions we hear on the subject of going to the fair. One says: "No one would like to go more than I, but I can't afford it, so there's no use in thinking of it." Another, with less income and apparently heavier expenses, will declare that "If they live they are going to get there somehow."

In this great world there are many "points of view," and from some points the impossible looks possible, while from another situation the possible seems utterly impossible. Observe, for instance, the use made of the expression—"I hav'n't any time" for this and that—when it is evident to an outsider that better arrangement of time might result in more for the desired object. So it is with money. Every one has their extravagant and economical "streaks." Mrs. A. does her own dressmaking and wonders how Mrs. B. can ever pay \$10 for having a dress made. Then Mrs. B., who trims her own hats, thinks it extravagant for Mrs. A. to spend \$10 for "a love of a bonnet." The explanation of these varying opinions lies in the individual weaknesses and capabilities of each one.

There are undoubtedly many people who cannot by any planning or economizing get together enough money to go to the fair, yet there are many others who must depend upon the most careful management to get them there. If this is to be done, they must make up their minds not to despise "little things." They must save in every way and save *practically* and not theoretically. That is, if you deprive yourself of anything the actual sum saved should be laid aside. And do not be backward about adding the coppers and nickels to this fair fund. If husband and wife combine their energies in this direction they will find it a real pleasure to forego many pleasures and even comfort for the sake of the trip. Every one who can go should feel that it is not merely a pleasure trip but that to the observant it will be educating almost beyond calculation.

Beside laying up funds to pay your way it will be wise to remember the physical demands, which will be made by the trip. Start a bank account of physical energy, for if you are not exceedingly strong the sight-seeing will prove very wearisome. Begin to take daily exercise regularly and include walking in this exercise. Walk a little farther each day and by the time you reach the fair you will be able to see and enjoy much more than if haunted and followed by fatigue. Besides increasing the muscular powers you must learn to surrender them to rest. If this is learned, a few minutes will answer as well as hours to recuperate the bodily forces. The expense

of board will be such that those who have to economise will not be able to take time for resting except at night, and this will be all too short for the tired souls unless they give themselves up to real rest.

Some people have been frightened about the railroad rates, as the newspaper talk has been that there would be very little reduction. But no doubt there will be excursion rates on all roads. It would be best, if possible, to engage board as soon as the time is set for going and the European plan is to be preferred if the cost is to be considered.

In making preparations for the trip, those who travel most, always advise as little baggage as possible. For a lady, a good light weight wool dress ought to answer all purposes if a shirt-waist or silk blouse is taken. A water proof cloak of Cravenotte or English waterproof cloth will answer for cool weather and rainy days. If a gossamer is carried instead of the cloth cloaks, one should take some garment for warmth as no summer month can be trusted not to have some cool weather. I should advise a black undershirt and corsetwaist and be sure to start with comfortable shoes. If your hair is not naturally curly, buy a false bang and cast care to the terrible damp winds that detract from the amiability and attractiveness of the straight-haired unfortunate. The hat worn should be becoming but plain. Ribbon trimming is more serviceable than flowers and more suitable for travelling.

The gentleman will probably take advantage of the comfortable and becoming shirts which are so much handier to pack in small compass. If one white shirt is wanted for an emergency, it should be rolled around another article of clothing to keep the bosom in shape. The shirt should be taken as it comes from the laundry, folded the size of the bosom and rolled with the bosom outside. He will need a thin coat—gloria is an excellent material for one—and a light-weight overcoat.

If the husband carries the satchel and umbrellas (fasten two together) the wife can carry a small bag containing numberless little things which will relieve the larger bag. It is astonishing to the uninitiated what one telescope bag will hold. If I should tell what I once saw taken out of one, I fear my word would never again be taken at "par." These bags are made on the principle of a deep box with a deep cover, and this cover can be shut way down or as they usually appear—just made to squeeze over the edge of the bag and be held with the straps that fasten around the entire concern. They are the least expensive bags with such capabilities.

J. W. A.

Cultivator.

**The Dairy.**

**CAN WE FEED FAT INTO MILK?**

There is great conflict of opinion on this point. Can we by feed change the ratio of milk solids to each other in milk? Taken in its fullest meaning affirmatively, this would be saying that if a cow at normal condition gives milk say of 3 per cent butter fat and casein 2.75, we can by certain feeding increase the fat and make the disproportion between fat and casein still greater. It must be confessed that nearly all carefully conducted experiments thus far, answer this proposition in the negative. That of Prof.

Cooke, of the Vermont Station reported in the *Dairyman*, on page 52 and following shows, however, a different result. The Colorado Station has conducted an experiment which confirms Prof. Cooke in his work. The ration fed for the first period was ground oats and lucern; second period bran and lucern. Invariably it was found that bran and lucern produced the the largest per cent of fat. Another experiment was tried with oil meal, corn meal, and wheat bran as a grain food and lucern and bright oat straw as roughage. In every case, a ration of oil meal and oat straw produced milk with the largest per cent of fat. The poorest milk came from a ration, in four cases, of corn meal and lucern, and in two cases, wheat bran and lucern. The widest variation was with a 9 year old Jersey cow that gave 4 per cent milk while eating 6 lbs. wheat bran and 21.1 lbs lucern hay. On a ration of 7.1 lbs. oat straw and 4.4 lbs. oil meal she gave milk which tested 5.12 per cent fat.

The *Dairyman* confesses to being about as badly puzzled as any body at the conflicting experiments, and would suggest that in the future, if farther experiments are made, that the reports embrace a full description of the cows, their temperament, disposition, &c., which will aid in arriving at a judgment concerning the individualities of the animals.—*Hoard*.

**BUTTER-FOOD; FEEDING CALVES.**

**EDS. COUNTRY GENTLEMAN**—Please give best balanced ration for butter, from a Jersey herd, composed of clover hay, \$6 per ton; ground barley, \$13.50; ground oats, \$16; ground peas, \$19; linseed meal (ground from the seed, and no oil expressed) \$50; bran, \$12; carrots, 10c. per bus; mangel wurzel, 8c. As barley is very cheap here in Canada I should like as large a proportion as is consistent. I am at present running the carrots and mangolds through a root pulper and mixing the grain ration with them. Will this answer as well as cutting the hay and mixing the grain ration with it?

What is the relative value of carrots and mangels, and which is best for cows, taking into consideration both quantity and quality of butter?

Is boiled barley meal, mixed with milk, a good food for calves? What quantity should be given? Would a small portion of linseed meal added to it be an improvement?

I raise a quantity of flaxseed along with two-rowed barley, sowing about two quarts to the acre, which does not injure the barley crop, and is easily separated in cleaning. If it ground all the oil is left in. Is this meal as good or better than ground oil cake for feeding to cows and calves, and what is the relative value of the two kinds? E. C. B. *Newcastle, Ont.*

E. C. B. seems to have cheap foods, and by using ground peas can balance his ration. We will give him the following combination—using all the foods for variety: 15 lb. clover hay, 4 lb. ground barley, 3 lb. ground peas, 1 lb. ground oats, 2 lb. bran, 1 lb. ground flaxseed. This will have the following digestible nutrients, in pounds:

	Albumi-	Carbo-	
	noids.	hydrates.	Fat.
15 lb. clover hay	0.98	5.00	0.18
4 lb. ground barley	0.36	2.40	0.07
3 lb. ground peas	0.60	1.62	0.05
1 lb. ground oats	0.09	0.46	0.01
2 lb. bran	0.23	0.92	0.05
1 lb. ground flaxseed	0.17	0.19	0.35
Total	2.43	11.59	0.74
Nutritive ratio 1 to 5.4.			

This is a full ration for medium Jersey cows. It has many good points in its favor, as it has a good variety of food, large proportion of fat, and the addition of 15 lb of pulped carrots, or mangels, would assist in its digestion and improve its effect.

We use 1 lb. ground flaxseed principally for the purpose of increasing the oil, and we think this ration quite moderate in price, as it costs complete only 18 1/2 cents. But B.'s method of mixing the grain food with pulped roots instead of mixing it with cut hay, is not good. If 1 bushel per cow of the clover hay is cut and then 15 lb. of pulped carrots and mangels is mixed with it, and further moistened—the ground feed mixed together dry, and then mixed with this clover and roots, and fed to the cows, half morning and half evening, with the balance of the clover fed long, B. will find the result in milk and butter to his entire satisfaction. Then the food will all be well digested. The feeding value of carrots is about 2c. per 100 lb more than mangolds.

B. speaks of raising a quantity of flax with his barley crop, but he does not give definite information enough to enable us to say how much this flaxseed increases the feeding value of the barley with which it is ground. As a milk food, 1 1/2 quarts of flaxseed ground with 1 bu. of barley would increase its value, say, about 5c. or 6c. a bushel. It would also be an important addition to the fattening part of the barley, but we can give no definite comparison between the relative value of this barley and flaxseed with linseed meal, without knowing the proportion of the barley and flaxseed.

Barley meal, boiled or unboiled, mixed with milk is good food for calves. It would be well to mix 1 pint of linseed meal with 4 quarts of barley meal, and then stir 1 gill of this mixture into 2 quarts of warm milk for each calf at a feed when fed three times per day. The milk should always be given warm.

E. W. S.

**FIFTY YEARS A DAIRYMAN.**

**SOME VALUABLE LESSONS.**

**ED. HOARD'S DAIRYMAN:**—I see there is much said about exercise and fresh air for the dairy cow, and, as you are trying to improve the dairy interest, I wish to give some of my experience in that direction.

For the last ten years I have kept my winter milch cows exposed to the cold as little as possible, and have received great benefit by so doing. I have kept them months without letting them loose, with good results.

Some seven years ago, I tried an experiment in the same direction and put a

**FURNACE IN THE BASEMENT**

stable, where with a little expense and trouble I could keep any temperature I saw fit. It worked admirably and more than met my expectations. It enabled me to save feed and make more milk, regardless of the weather. I was then making butter in the winter and cheese in summer. In the spring, after I stopped feeding meal, my cows averaged to make over four pounds of cheese each daily and kept a large flow of milk, whereas in years before that, scarcely three pounds. This satisfied me that to get large returns the cows must be kept warm. Cold is about as fatal on milk as frost is on corn.

Take thirty cows, all equally skilled for milk, feed all alike, turn out ten,



day and night through the winter, and ten others during the day only, with a warm stable, nights, and keep the remaining ten in a warm stable day and night, and the result would be that the first lot would be kept at a loss, the second might possibly pay for their board, while the third would return a good profit. Viewed from this direction we can see that there are millions of dollars annually lost in giving that

#### EXERCISE AND FRESH AIR

which some of our American dairymen consider so necessary.

Some years ago, Harris Lewis, then President of the N. Y. State Dairymen's Association, said that the dairymen of America were not getting enough from their dairies, that they must look to some other country that was doing better and profit by their doings. He said, Holland was doing better than any other country and dairymen might well study the methods followed in that country.

Mr. S. Hoxie, who had then been three times to Holland for stock, was present, and being called upon to give a description of the way cows were managed in that country, said, among other things, that they were put in the stables the 15th day of October and remained there until the 15th day of the following May, not being turned out for any purpose whatever.

I have also experimented a good deal with

#### FEED FOR THE DAIRY COW.

Corn meal, ground fine, if not fed too heavy, has done better for me, at its cost, than any other feed. But I am a high feeder and have ruined a number of fine cows by feeding too high with corn meal. I fear danger if fed over six quarts.

A few years ago a friend was stopping with me a few days in February and weighed the milk of my dairy, and wrote to his people in the East about it. He showed me the letter, and that part of it was about as follows:

"I am stopping with a dairyman, that is milking 34 cows that were fresh in milk last November. Their eyes are as bright and coats as short as in June, and 11 of them are giving over 45 pounds of milk each per day."

Those cows were kept in a brick basement, warmed with a furnace to 65 degrees, and fed 4 quarts corn, 4 quarts oats, mixed and finely ground, and 4 quarts wheat bran—making in all 12 quarts a day to each cow. This was wet up with skim-milk and one-half fed at night and the other half with a pint of oil meal and a spoonful of salt added, was fed in the morning. They had all the early-cut hay they would eat, were watered in the basement twice a day with water at 70 to 80 degrees, and were carded and bedded every day.

In my

#### FIFTY YEARS OF DAIRY LIFE,

I have never fed feed that gave better satisfaction than that did, at what it cost. It looks like expensive feeding, still, that year my profit was large.

Let me say to the dairyman that has been in the habit of turning his winter milch cows out in the cold for exercise and air, fit up your stables, between now and next fall, so they will not freeze in the coldest weather, have your cows fresh in milk about November, water them in the stable, keep them in feed the same as this year, and they will do well.

#### AERATING MILK.

There is a general complaint on the part of factory men, that farmers are not particular enough as to aerating their milk, especially where there are hand separators away from the creamery.

This is a subject which should be better understood and to which the dairy farmers should pay more attention, as it is impossible to make a good article out of a spoiled material. When in Montreal, I met with a lady who had been induced to buy some creamery butter offered by a pedlar as first class, at several cents a pound below the market price. The butter, as might be supposed, was not of good quality and its fault was that the milk had not been aerated and perhaps the stable not too clean, for the animal odour or taste was so noticeable as to render it very disagreeable and probably unwholesome.

It is not cooling, as may suppose, that has the desired effect but exposing the bulk of the milk to the action of the air by running it in a thin stream from one vessel to another or spreading in shallow pans for a short time where the air is quite pure and fresh. By slowly straining the milk away from the stable and in clean pure vessels, the impurities will be removed and bad flavours driven out. Very cheap, simple and effective machines for aerating and straining milk are to be had, and no dairy farmer should neglect possessing one of these as it is to the interest of all to make butter and cheese making as near perfection as possible. The matter is highly important, and as I find that the neglect of this is a trouble in many places I have visited, and an obstacle to the perfect success desirable, I therefore deem it well to ask you to insert this for the benefit of those of your readers who would not be likely to read the more elaborate explanations and directions of men of science who have written upon the subject. The aeration should be done before the milk has had time to cool.

It is hoped that our farmers will strengthen the hands of all who are endeavouring to put them in the right track of making and keeping our dairy products at the head of the class and this they can help by the simple, easy, and inexpensive operation of aerating their milk.

GEORGE MOORE.

#### OFFICE OF THE DAIRY COMMISSIONER.

CENTRAL EXPERIMENTAL FARM.

DEPARTMENT OF AGRICULTURE

OTTAWA, CANADA.

#### NOTES FOR CHEESE-MAKERS FOR JULY.

By JAS. W. ROBERTSON,

Dairy Commissioner.

July cheese, like July butter, has a reputation for being the poorest of the summer. This year it should be exceptionally fine (1). The abundance of grass in June, with a too plentiful rainfall, will leave the pasture with richer herbage than usual. Suitable conditions for the production, preparation and preservation of the milk in a fit state for the manufacture of fine cheese can be continued by the

(1) Well, the June grass is plentiful enough but there is no proof in it, the cows scour and the milk is poor. Ed.

patrons giving effect to these simple requirements:—

1. Cows need the owner's providential care in the following matters, viz.:  
(a) An abundant allowance of succulent or other feed;  
(b) Opportunity to drink pure water at least twice a day;  
(c) Access to salt every day;  
(d) Shade in the pasture fields from the weakening influence of July suns;  
(e) Regularity in milking;  
(f) Management and handling with continuous kindness, and an eye to profits.

2. Cows should be prevented from drinking impure water and should be protected against the attentions of all dogs.

3. (a) Milk should be strained immediately after it is drawn from the cow;  
(b) It should be aired by the use of an aerator or by dipping, pouring or stirring;

(c) It should be cooled to the temperature of the atmosphere;

(d) It should be protected from contamination by the foulness of impure air.

It will be of quick and durable advantage to direct the attention of all patrons to these matters by sending to each a concise, clear and courteous reminder of duty in connection therewith.

When the yield of milk by the cows begins to shrink, the temptation to make up the quantity in some other way is increased. The Act passed by the Dominion Parliament to provide against frauds in the supplying of milk to cheese, butter and condensed milk manufactories is a piece of wholesome legislation.

It forbids the sending to any such factory (1) milk diluted with water, or (2) milk in any way adulterated, or (3) milk from which any cream has been taken, or (4) milk commonly known as skimmed milk, or (5) milk from which any portion of that part of the milk known as strippings has been kept back, or (6) any milk that is tainted or partly sour. The penalty for each offence against the provisions of the Act, upon conviction, therefore before any justice or justices of the peace, is a fine not exceeding fifty dollars and not less than five dollars, together with the costs of prosecution.

The fine when recovered shall be payable, one-half to the informant or complainant, and the other half to the representative of the factory to which the milk was sent, to be distributed among the patrons in proportion to their respective interests in the product thereof.

Let every cheese-maker get a copy of this Bulletin published in the local newspaper, and further, let him see that every patron is furnished with a copy of that issue.

Some of the qualities that are expected and desirable in the cheese of July are:—

1. Rich, clean, creamy flavour;
2. Solid, firm, buttery body;
3. Fine, silky, flaky texture;
4. Bright, uniform colour;
5. Attractive, neat, symmetrical, stylish appearance.

In order that cheese having just these qualities may be manufactured regularly, I make the following notes for guidance:—

1. Thorough distribution of the rennet in the milk must be effected by diluting the rennet extract and by vigorous stirring.

2. Sufficient rennet to coagulate the curd into a state fit for cutting in from 35 to 40 minutes at from 86° to 90° should be used. When an extra quantity of rennet is used, a corresponding

increase in the weight of salt should be added to the curd.

3. The contents of the vat should be perfectly still when conglomeration commences. Vibration of the floor and of the vat during the thickening of the milk causes waste.

4. The horizontal knife should be used first in cutting; and active stirring should not commence until the cubes of curd become slightly heated.

5. The temperature should be raised gradually to 90° or 98° Fahr.

6. The stirring should be continued until the curd particles are so well "cooked" or "dried" that when a handful has been pressed for a few moments they will fall apart again as the result of any slight disturbance.

7. As soon as the presence of acid is discernible by the hot iron test, the whey should be removed. In the case of gassy curds, a further development of acid before the drawing off of the whey will be beneficial.

8. Hand stirring will be of advantage until the curd is firm.

9. The temperature should be maintained at or above 94°.

10. The curd should be allowed to mat into one mass.

11. It should be turned so frequently that whey will not collect or stand in small pools in or on it.

12. If it becomes gassy it should be aired (if need be by grinding and stirring) and afterwards kept at a temperature above 94°.

13. The gas formed in gassy curds hinders the development of acid; and the presence of acid prevents the formation of gas. The treatment should provide for the removal of the gas by aeration and the maintenance of temperature by the application of hot water to the curd or steam to the vat or sink in which it is.

14. Close matting and packing of the curd are beneficial only after the curd is sufficiently dry and when aeration is provided for.

15. When the texture of the curd becomes stringy in its nature, it should be put through the cutter or grinder.

16. Aeration should be effected by the stirring of the curd before the addition of salt. Usually 15 minutes of such treatment will suffice.

17. Salt should be added at the rate of from 2½ to 2¾ lb. per 1,000 lb. of milk, according to the dry or wet condition of the curd. A judicious variation in the quantity of salt should be made in proportion to the moist or dry state.

18. The "hooping" of the curd should begin when the harsh surface, produced on each piece of curd by the salt, commences to give place to a slippery, mellow quality.

19. Shoulders or projecting edges on cheese are unsightly evidences of careless workmanship, and lessen their value from 2 to 3 shillings per cwt. in the English market. Careful pressing and bandaging and the turning of the cheese in the hoops in the morning will prevent their formation. The pressure should be continued for at least 20 hours. In that way cheese can be finished having an attractive, neat, symmetrical and stylish appearance.

20. The sprinkling of cold water in the curing rooms in the morning and just after noon will reduce the temperature.

21. The curing room should be thoroughly ventilated and should be kept clean.

Cheese-makers may obtain copies of this Bulletin free, in English and French, by application to the Dairy Commissioner, Central Experimental Farm, Ottawa.

## Poultry Department.

B. A. G. GILBERT, MANAGER OF THE  
POULTRY DEPARTMENT, EXP.  
FARM, OTTAWA.

In reply to questions I beg to say:

1. There are various calculations as to what the different breeds of fowls will consume per diem, or in a year. I think the following will be found nearly correct. An ordinary barn yard fowl of 4 lbs. will eat four per cent of her weight per day or 2 $\frac{1}{2}$  ozs. for the same time; some may go the full 3 ozs. At the first figure she will eat about a bushel of grain in a year, at the second figure, 35 ozs. above a bushel. You can calculate pretty safely that a hen will eat a bushel of grain in a year. It is easy to estimate from this how much 10 or 100 will consume.

2. QUESTION.—How many eggs can it produce?

ANSWER.—A great deal depends upon the breed and their age. A Leghorn, Red Cap or Black Minorca hen ought to lay 140 to 150 eggs in a year. The first and last named breeds will lay slightly larger eggs than the Red Caps. Mr. C. X. Wyckoff of Groton, New-York, declares that some of his White Leghorns have laid as many as 200 eggs in one year. He calls them the "business hen" and says his 600 hens averaged him 168 eggs per year. (1) The Asiatics, such as Brahmans, Cochins and Langshans may not lay so many, but a great deal depends upon the management. I should think for an Asiatic 120 eggs per year a good allowance.

3. QUESTION.—What are the kinds of grain and variety of feed most proper to force a hen to lay all it can and exhaust it in about 3 years?

ANSWER.—You cannot get all that is possible out of a hen on a grain ration alone, for I believe the hen would not stand such monotony in diet, and remain in good condition. You will have to give green food, grit, meat and bone, lime in some shape, &c., &c., besides. The hen, in confinement, must be supplied with what you think she can supply herself with while running at large in the warm season. WHEAT IS THE BEST all round grain, for it contains so much albumen. Buckwheat is another good food. Barley, good for a change, but should be fed in small quantities. Oats are a poor egg producer alone, but where a good deal of meat is fed more oats can be used. It is sometimes good as a mid day meal. There should be a variety in diet. Cut green bones, entrails of pigs, sheep, cows, &c., &c., well boiled and mixed with bran-ground grains of the cheaper sorts, are the best egg producing foods. This should be fed in the morning, and the dry grain at night. Of course this applies to fowls in confinement during our long winter season. In summer, while running at large, the grain may be thrown to them. Milk in all shapes is a splendid food. Corn should only be fed to the Spanish family.

4. QUESTION.—What quantity of each kind of grain should be fed?

ANSWER.—In summer, a very small handful, taking the grain up with the palm of the hand turned downward. Lewis Wright, the great English authority, says only what can be contained in the palm. In winter, a very little for mid-day and a more liberal

(1) We saw a statement in the papers, yesterday, that "Miss Blank" has a hen that lays two eggs a day!!!—Ed.

quantity for the last feed, to keep the crop full as long as possible during the long night. A laying hen will eat more than one which is doing nothing. But if a hen does not lay eggs in paying quantity she should be killed, for she is eating a part of the profit another is making.

5. QUESTION.—What quantity of eggs from a hen during its first year and what quantity the second year supposing it is lodged and fed according to the requirements of its nature?

ANSWER.—An ordinary pullet should begin to lay in 5 $\frac{1}{2}$  to 6 months, and should begin to do so when eggs are getting scarce and high in price. For the remaining portion of the year, she should lay 60, 70 or 100 eggs according to breed. I have had a Plymouth Rock pullet laying in 4 months and 29 days and two others a few days after. A hen is at her best during her second year and should lay 120, 130, 140, 150 and 160 eggs according to breed. After this, the hen should be killed and sold or eaten, unless of the Spanish family, when she may be kept another year.

6. QUESTION.—How large should a hen house be to contain a flock of 100 hens?

ANSWER.—Allow no less room than 4 feet square to each hen and as much more, in reason, as you please. I would divide up the hens into small colonies of 25 each, for I think you will get better results from small numbers with plenty of room.

7. QUESTION.—Do the hens in large flocks lay comparatively as many eggs as those in small flocks?

ANSWER.—I think the small flocks do better. They are easier handled in case any vice, such as feather picking or pulling, or egg eating, is developed or sickness shows itself. However, many successful managers keep their hens in flocks of fifty. In our long winters, small flocks do the best. Where they can get out frequently the larger flocks may do.

8. QUESTION.—Do you advise the keeping of as many as 1000 hens, and if so what space should they occupy in the house and outside, and how many attendants would be needed to secure a sufficient profit from them?

ANSWER.—I would certainly advise none but an expert to handle one thousand hens. The novice must begin with a few, make a success of them, and then go on to greater achievements. For a specialist, who went into poultry raising as a business, he would have his premises, and plans so arranged as to entail the least manual labour. I would not have more than 500 hens in one building, if so many, in case of sickness of an epidemic character. With 25 or 50 in a pen, and allowing 4 square feet to each hen, at the very least, you can calculate the rest. Of course, the style of building depends upon the amount of capital and taste of the inventor. A good man, with all arrangements and conveniences complete, should be able to look after the hens, with the assistance of the proprietor of course. This will bring it to about 500 hens each, with perhaps some extra help during the hatching out period. A smart active boy or lad might do. The value of the manure ought to go a long way to pay his wages. Every 100 hens would require an acre of ground. That would necessitate at least ten acres for 1000 hens, but where land is cheap, more room could easily be given.

My own experience is that the more room you can give your poultry, the better it is for them.

Poultry in an orchard kill the injurious insects and are very beneficial. To small fruit men the manure is very valuable.

Yours very sincerely,  
A. G. GILBERT.

Prof. F. A. BARNARD,  
*Journal d'Agriculture,*  
Quebec.

P. S.—If this is not explicit enough, just say so and I will give any further particulars you may wish. With kind regards, I am yours truly,

A. G. G.

## The Flock.

### SUCCESS WITH HOT-HOUSE LAMBS.

EDS. COUNTRY GENTLEMAN—Having read the articles of Galen Wilson on hot-house lamb-growing, I desire further information. In an article published in your paper last June (p. 472), he speaks of having written three letters on the subject to a company in Ohio, who made a success of the business by following his instructions. I wish he would instruct me. I am 42 years of age, and have handled sheep since I was large enough to catch a lamb. I like them better than any other live-stock. I have been trying to raise lambs for market, and have succeeded pretty well for a start; but fail to get them dropped early enough in winter. Last year I sold my lambs the last of May at 8 cents, live weight. They averaged nearly 60 pounds. Have several now that weigh nearly 40 pounds; two at 22 and 23 days of age that weigh respectively 30 and 32 pounds. My stable is hardly warm enough for zero weather. I use a full-blood Shropshire ram. Have a few Merino ewes, but their lambs are of too slow growth. (1) The other ewes are coarse-wooled, picked up wherever I could get them. I wish to get them fat and sell most of them when the lambs go. I let the ram run with the ewes all summer; had only one lamb in December, two New-Year's day, and no more till middle of January. I have a self-feeding box where lambs can go and help themselves when they choose. I mix corn meal, N. P. oil meal, bran and middlings for lambs, and feed ewes oil meal, oats and shelled corn. (2) E. B. M. Warren County, O.

I did instruct some Ohio men how to grow hot-house lambs, and they were so well pleased with the results of their first small attempt of a year ago, that last summer they erected a new sheep house capable of accommodating 150 ewes and their lambs, which works admirably. They are "running" 120 ewes now, and next winter will fill up to full capacity. They sold lambs (under eight weeks of age) in February of this year at an average of \$9.50. In a letter from one of the firm, dated Feb. 21, he says: "So long as present prices of lambs keep up, I do not want any other kind of sheep business. Our sheep 'palace,' and the growing lambs racing back and forth in the 70 foot alley in January, at a temperature of 50°, produced from heat of sheep alone, is a great curiosity to people, and many come miles to see it, even when the temperature outside is 20° below zero."

E. B. M., being in the prime of life, and possessing a natural love for

(1) Precisely the fault we found with them at the Exhibition at Montreal last year.—Ed.  
(2) Why won't they use pease for lambs in this State?—Ed.

sheep, is well equipped to gain success. At present his sheep-fold is not warm enough. To make the room sufficiently warm, it was formerly the custom to build the walls double and fill in with sawdust; but this practice is becoming obsolete. That Ohio barn has only an outside wall. Boards are nailed to the studs horizontally; these are covered with thick sheathing paper, well lapped, and that covered with close fitting boards perpendicularly. This makes the walls air-tight, which is all that is necessary. It would not involve much expense for M. to fit his sheep-fold in this manner for another winter. He is reticent about whether his ewes are shorn or not, but probably they are not. This must be done, for best results. Shear them as soon as brought in, and keep the temperature between 50° and 60°—about the latter when first shorn. Subsequently it may be dropped to 55°, or 50°, even. The ewes are not let out of the fold at all until mild weather in spring, unless they are previously sold to the butcher.

Nor does E. B. M. state what kind of fodder his ewes get. It is customary here to feed bright clover hay, alternated with corn fodder sometimes. He seems to omit roots or other succulent feed, which is of prime necessity. Turnips are fed by some and beats by others. Ensilage for succulence has been tested and found to be a good substitute for roots, provided it is sweet. His grain feed for both ewes and lambs is passable. It is quite customary here to feed a mixture of whole corn, wheat bran and linseed meal, in equal proportions by weight. (1) This is fed to the ewes twice a day, all they will eat. In case of ewes that have twins, are hearty eaters and have large udders and good abdominal capacity, it is well to feed them the grain ration three times a day. The same grain ration is kept before the lambs continuously, only feeding a little at a time, in partially covered troughs, so they cannot get their feet in it or otherwise "muss" it. In rare cases, and when, apparently, they do not have a sufficiency of succulent food, they have the colic, which is liable soon to prove fatal. To remedy this, the ewes are given a table-spoonful of sulphuric ether in half a teacupful of warm water. Lambs are given a teaspoonful of the same remedy for the same disease. In either case, when the animal becomes quiet a dose of castor oil is given—two ounces for a ewe and less than half of that for a lamb. It is thought that drinking ice cold water sometimes induces colic. (2) If not drawn from a well in the fold it should stand in vessels in there long enough to take the chill off before given to the animals. The Ohio barn has a well in the fold, under the stairway. Salt should be kept before the sheep.

It is somewhat surprising that E. B. M. finds the lambs of Merino ewes do not grow as well as the others. Here all growers seem to have settled on grade Merino ewes and Shropshire rams as giving best results. A New-Jersey grower (who is also a New-York City merchant) has been in the business twenty years, and finally has arrived at the conclusion that this mixture of blood is best. E. B. M.'s lambs from coarse-wool ewes may be larger and more rangy, but it is doubtful if they are so fat. Size is not bred for in hot-house lambs but early fatness, and the rich milk of the Merino ewes, who are the "Jerseys" of the ovine race,

(1) Pease, pease, pease.—Ed.

(2) If plenty of roots are given, no water will be drunk.—Ed.

seems to accomplish this purpose best. It is useless to send these lambs to the New York market unless they are fat. Thin ewes are sold to any one who will give a few cents a pound. The financially able classes will have fat ones or none. The large hotels and many wealthy citizens employ special butchers to purchase for them the best stock as it comes in. A New York country-produce reporter for a Boston paper said, about Feb. 18, that some of these 30 to 35-lb. lambs were retailing at \$5 a hind quarter and \$3.75 to \$4.50 a fore quarter. A former New-York butcher who resides near me said he had sold many 6 to 8 lb. quarters every season for equal prices; that "wealthy people will not have them unless they are fat, and the price fat, too." I enter into these particulars to impress on the mind of M. the absolute necessity of shipping none but fat lambs and under eight weeks of age. The most skillful growers "ripen" them in six weeks. M. keeps his lambs now four or five months and gets \$4.80. With less expense, as I think, he could get nearly twice the money in less than half the time, and that makes an enormous difference.

E. B. M. has trouble to get his ewes to breed at the time he desires, and I see the causes of it. The ewes had been dragged down by suckling lambs perhaps four to six months, and had not had time to recuperate and get in breeding condition any earlier. Ewes that have been dry several months are the ones to select for this service. Such should be chosen and be put in good pasture where there is sufficient shade, and pure, cool water. For two weeks before turning the ram with them they should have a light daily ration of corn, and the ram, confined elsewhere meantime, should be liberally grained; then when he is turned in all will be in "condition." (1) The grain ration is continued until all, or nearly all, are served. A better way, but one that causes more bother, is to keep the ram confined and drive the ewes up every morning and place him among them, and see that a ewe gets but one service; and as fast as served, turn them into a field by themselves and withhold their grain ration. It is a good plan to number them as fast as served, from one up. (2) Then when brought to the fold for winter, as it is best to divide them into pens, those to drop lambs about together can be penned together. This saves examining every pen every time one goes into the fold when lambs begin to drop. E. B. M. may not regret that many of his lambs will drop later than he desired. Sale for them at the large prices continued till into May last year, and the demand was brisker then than in January, and it bids fair to be so this year. It is a trade that pays to watch closely.

GALLEN WILSON.

Tompkins County, N. Y.

#### SOME NOTES ON SHEEP BREEDING.

To the Editor of the

FARMER'S ADVOCATE:

DEAR EDITOR.—I have read the *ADVOCATE* with a great deal of interest; I think it is an excellent paper, and ought to be in the hands of every farmer. I noticed in one or two of the *ADVOCATES* a few practical hints on

(1) Three weeks on rape is the English plan to get ewes into season and together. We have known 40 ewes tupped in one night by one ram, and  $\frac{1}{2}$  of them stood. Ed.  
(2) We always ruddle the ram's brisket, and a real shepherd, knowing every ewe in his flock, has no doubt about the time each is due to lamb.—Ed.

sheep raising. I thought I would add my experience to theirs; perhaps it may be useful to others. Now, while I have not raised a sheep in Manitoba, I was an extensive breeder in Ontario.

After trying the effects of different kinds of feed on my sheep, I came to the conclusion that there was nothing better than good pea straw (half threshed), with a little ground grain in spring. My sheep did well on it, they were in good condition in the spring. They gave me less trouble in lambing, and the lambs were large and healthy.

When I first started to raise sheep I noticed that several ewes had twin lambs every other year. I came to the conclusion that by care in mating, I might have a pair of large, healthy lambs each year from each of my ewes. This was my plan. I selected the largest and healthiest twin ewe lambs for breeding purposes; then I secured as large a twin ram as I could get, I mated them, and the result was that I had two large, healthy lambs from each ewe every year.

I found, by selecting the largest lambs each year, my sheep increased in size instead of becoming smaller. I received the highest market price for my sheep and lambs. I might say that I started with Cotswold ewes and crossed with a Lincoln ram, by so doing I got a fair amount of wool of good sample, and a large boned, fleshy sheep.

I intend securing a few good sheep, and my plan shall be the same in this country as in Ontario. I shall go further and select ewes that give the largest amount of milk. I also believe that, with care in selecting, I can have ewes that will give me three and four lambs each year, and large, healthy ones at that.

Yours truly,

Virden, Man.

PRACTICAL.

#### RAPE AS A CLEANING CROP AND FOR FATTENING SHEEP.

BY J. O. SNELL, EDMONTON.

My experience with rape in the last three years, both as a cleaning crop and for fattening sheep, has been so gratifying to myself, I feel constrained to tell it to the world through the *Advocate*. The cultivation necessary to secure a crop is very simple. The land plowed in the fall need not be touched till late in June, or after all the spring seeding, including that of turnips, is over. A couple of plowings and thorough pulverisation by the use of roller and harrows is all that is required. Sown in drills 24 to 30 inches apart, about two pounds of seed per acre, kept clean by the free use of the horse-hoe, the cleaning process is quite as effective as a summerfallow, and the amount of feed produced is, in most cases, marvellous. It may be sown any time in June or July. I think it a mistake to sow earlier than June 25th, as the fly is apt to take the plants, and if it does get an early start it is liable to wilt and turn yellow in the dry spells we so often have in August. In clean land it will do very well sown broadcast, but better in drills with cultivation. (1) Stock should not be turned on it till it is about 12 to 15 inches high, as the stronger the stalks become the better feed they make. Care is necessary when stock is first turned into it. They should not be put on it while wet with dew

(1) We prefer broadcasting 5 to 7 pounds, as labour is too high here to admit of hoeing by hand. All our best East-England men sow thus.—Ed.

or rain for a few days, and a pasture field should be accessible, so that they may have the run of both grass and rape for two or three weeks, when they may safely be confined upon it. Sometimes there are considerable losses from stock becoming bloated or scoured, and I have known cases where the ears of sheep became swollen, and they have lost part of their ears, but in the last three years, with from 5 to 12 acres, I have not lost a single animal, have had no mishap, and my sheep have done wonderfully well on it. Last fall I had 25 Cotswold ram lambs on rape that had never been fed anything since they were put on grass in spring, and, on rape alone, many of them weigh from 150 to 175 lbs. each, and have backs as broad as a board. A good feature about rape is that its feeding quality seems to improve with frost, and the sheep will relish it and continue to improve on it right up to winter, or until it is covered by snow. (1) Young cattle also do well on it, but it is not well to let the milking cows have it, as it taints the milk. In addition to its usefulness as a cleaning and feeding crop, it goes without saying that the feeding of sheep upon the land makes a fine preparation for future crops. With rape for the sheep, and fodder corn for the cattle, we ought to keep twice as much stock, and have them in twice as good condition as we find them throughout the country.—*Farmer's Advocate*.

#### ABORTION IN SHEEP.

A correspondent of one of the U.S. papers wants to know the reason why his ewes lamb prematurely. This is rather vague, as no notice is given of the duration of pregnancy, &c. The food the ewes in question get seems to be "ground corn and-cob, and plenty of fodder." The want of nitrogen in the food of in-lamb ewes is the main cause of all the troubles that beset them; therefore, give pregnant ewes plenty of pease-straw, clover-hay, pease, linseed-cake, and other nitrogenous foods, in addition to their roots, silage, or other succulent foods. The ground corn-and-cob may do to fatten sheep, but is utterly insufficient for the support for the ewe and the fetus. We regret to say that, in many instances, we see breeding sheep of good quality treated as if they were the mere scavengers of the farm, and made to subsist on the weeds and rubbish they pick up. No wonder they are not a favorite stock where such treatment prevails. Ed.

#### Horticulture.

##### ITS POSSIBILITIES IN THE PROVINCE OF QUEBEC.

This branch of rural economy has so far been neglected in a great measure, to say the least, especially in the rural districts. Farmers as a rule despise a garden, saying they have no time to attend to it and a thousand and one other excuses. Now if they would only think for one minute of the advantages to be gained by a well cultivated plot of land, even if of small dimensions, they would change their minds.

The fresh vegetables that can be grown with only ordinary care will be a constant source of pleasure and profit. Doctors all agree that nothing is so conducive to health as a supply of good, sound, fresh, well matured fruit and vegetables and these can be pro-

(2) As we have often mentioned, we kept our lambs, at Sorel, on rape till December 7th.—Ed.

cured in all their sweetness and perfection in no other way than by growing them at home and using or cooking them immediately they are gathered. Then and there only they possess qualities which fade away with the morning dew, and may be said to be their very life. Only those who have enjoyed a dish of green peas, asparagus, or spring cabbage, gathered and cooked the same hour, can justly appreciate the difference between these and such as have been gathered for several days, wilted, heated in a load, or exposed for some time on the market. As to the profit of a garden, there is no portion of the farm that will yield half as much. If the farmer who is wise enough to cultivate one were to keep a strict account of the produce, and *per contra*, the bread the boys would have eaten if that had not been there to partially supply its place, he would be convinced of the economy effected. So much for the domestic view of the matter. Now we will merely glance at the commercial aspect of the case, and there are great possibilities in this respect for those who have land in the vicinity of cities. With the increase of population there is an increased demand for all sorts of garden produce and this demand is further increased by the supply, and people's tastes are changed by the mere fact that certain articles are offered to them. It is only a few years since that celery was not much used, and now the public taste for it has been fostered and encouraged by its more abundant production and exposure for sale until it is looked upon as a necessity by many and is a most delicious and health preserving article of diet.

The impetus given to the production of vegetables for canning and pickling is another important factor in the possibilities of realizing profit, by well managed horticulture. The quantity of fruit and vegetables thus used is enormous and increasing annually and the local supply, even near Montreal, is by no means equal to the demand.

As to small fruit, the markets might be better supplied and if more were exposed for sale and nicely displayed as to packages or baskets made with taste, the public would be induced to purchase at remunerative prices—in much larger quantities than heretofore. We have a great deal to learn in this respect, for however choice and good fruit may be, its attractiveness can be marred by carelessness in placing it before the public. This applies to all articles exposed for sale, as the windows of our dry goods dealers, jewelers, grocers and the like testify, but in the matter of edibles, which one would suppose should more especially be set off to the best advantage, this rule is too often entirely overlooked or neglected.

It is the duty as well as the privilege of occupiers of land to make it yield all that untiring industry, skill and intelligence can produce, and to neglect opportunities to do so from a fancied idea that time occupied in the culture of small fruit and vegetables is wasted is almost a criminal mistake—at least those making it are certainly blind to their own interest. The *modus operandi* of culture is easily learned and the principles governing the science of agriculture and horticulture are so nearly identical, that a little reading of the current literature, so freely and cheaply disseminated, so as to gain instruction as to certain details, should make a fair gardener of a farmer who knows his business. Where there's a will there's a way.

GEORGE MOORE.



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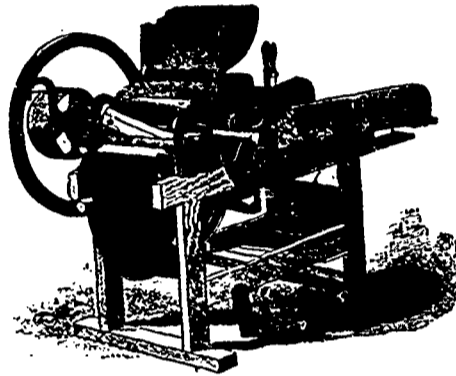
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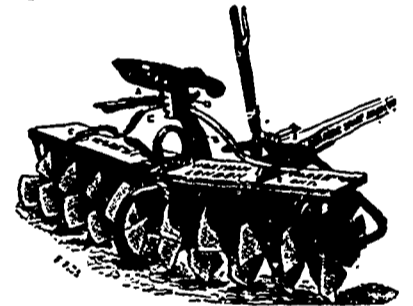
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Legally established according to the Revised Statutes of the Province of Quebec, Sections 1 to 10.

**30 ST. JAMES STREET, MONTREAL.**

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- President: Hon. J. J. ROSS, President of the Senate, Ottawa.
- Vice-presidents: Messrs. JOSEPH BEAUBIEN, importer and breeder of stock, Outremont.  
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The distinguished persons that occupy positions on the Board of Management, their experience in associations of the same kind, their business connections and their position in the great commercial metropolis of Canada, are a safe guarantee for the future of the Syndicate. They will put forth their whole energy and their spirit of enterprise, not to ensure the success of the work, for that is already ensured, but its thorough development.

Legally constituted only three Months ago, the Syndicate has already found that the extraordinary extension of its business necessitate the transference of its original offices to other more extensive.

Without being in any way connected with other works of the same kind, the **Central Syndicate** will always feel it a duty to encourage and support the creation of other secondary syndicates in the different Provinces of Canada and to keep them to share in the advantages its own central position in Montreal confers upon it.

Amount of business from April 15th to June 1st, \$4,241.77, represented by 60,030 lbs. of Seeds, first quality, 55 tons of Superphosphates, Chemical Manures, Phosphate of lime, Nitrate of Soda, Apatite, Cotton Cake, &c., &c.

All the Farmers are requested to send to the Syndicate the list of their products for sale: Cattle, Hay, Grain, &c., &c. Also, their address and every information about the quantity, quality, species, rates and date of delivery. However, the Syndicate, in doing so, will not guarantee that the goods be sold.



