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THE ILLUSTRATED JOURNAL OF AGRICULTURE



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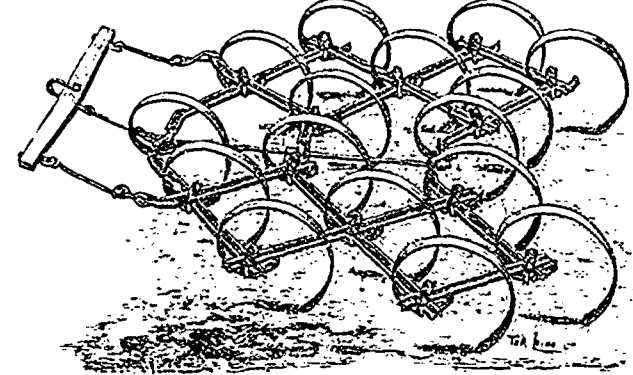
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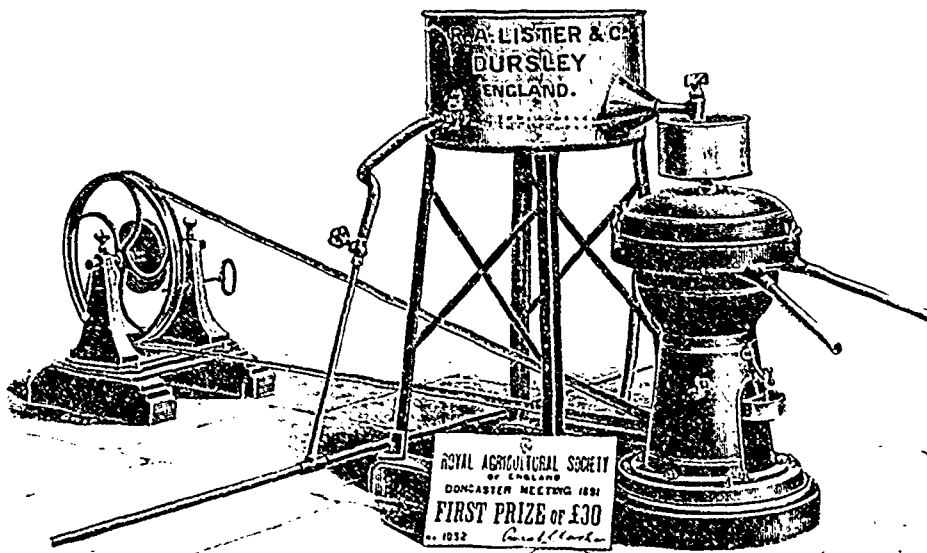
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THE ILLUSTRATED Journal of Agriculture

Montreal, March 1, 1894.

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Notes by the Way.

THE ROOT CROP.—In another part of this number of the Journal will be found the commencement of a series of articles on the root-crop. This was requested to write by the Department of Agriculture, it being

considered, and in our opinion very wisely, that the cultivation of roots has been too much neglected in this province.

POTATOES IN THE U. S.—The crop of potatoes in the States—1893—was nearly the worst ever grown there, except in that wonderful Aroostook district, where the yield was enormous. Why? Probably because the farmers in that county study the nature of the plant and have learnt how to prepare their land for it. The yield per acre varied from 97 bushels in Maine to 48 bushels in Indiana, the average over the whole of the States being according to the government report, 72 bushels an acre.

WHEAT-SEEDING.—As a general rule, thin sowing of wheat has not found much favour on this side of the Atlantic. It is clearly inadvisable when spring wheat is grown, but on good land, well farmed, there is no reason why a bushel an acre of early-sown fall-wheat should not be sufficient, though, at most of the Experiment-stations in the States, eight pecks of seed were found to give the largest yield. (1) But, then, we must remember that, as a general rule, there is something or other left out in these experiments. It takes a long experience to make a good experimenter; a man must be a good farmer, as well as a well taught scientist, to conduct a series of experiments to a satisfactory end; and the worst of it is the scientists are not farmers and the farmers are not scientists, or else we should not find in the Reports of the Stations such a marvellous statement as the following allowed to pass unnoticed: "Farmyard dung is of little use on heavy land"!

THE CROPS IN FRANCE-1893.—The following are the returns of the yield of the various crops grown in France during the season of 1893. *Meslin* (2) is, we believe, a mixture of rye and wheat. The French measures are converted into English, imperial, and the cwt. is 112 lbs.

Table with 4 columns: Crops, Acres, Bushels per acre, Cwt. Rows include Wheat, Meslin, Rye, Barley, Oats, Maize, Buckwheat, Potatoes, Mangels, Sugar beet, Hop, Tobacco, Hay, from clover, &c., Hay, from permanent grass.

(1) Just about the same as in England. Three bushels are never sown in England, though they may be in Scotland. Dr Hoskins'—Ed. (2) In Yorkshire, called *Maslin*. A mixed cake is called in Scotland, if our memory serves us: a *maslum bannock*.—Ed.

One very striking point in the above is the trifling difference between the mangel and the sugar beet yield: only 560 lbs. to the acre! But, then, the mangel-crop is very small, not quite ten tons an acre. The hay, for such a dry year, seems to have yielded well, particularly the hay from the sown grasses, clover, sainfoin, lucerno &c., but the potato-crop was poor, not 3 tons, or about 105 of our bushels (60 lb.) an acre.

LETTERS.—Says Dr. Hoskins, in the *Vermont Watchman*: "We got some queer letters: all editors do." Do they? We don't. Nobody seems to think it worth while to write to us.

LEADERS.—The leaders in four-hand, unicorn, and tandem are some way from their work; consequently, to pull a pound takes more out of them than the same amount of work takes out of the wheelers. Except on a heavy bit of road, or up hill, the traces of the tandem-leader should be slack, and the bars of the four-in hand or unicorn should rattle. This remark we are led to make because on Saturday, January 20th, we saw a very nicely appointed four-in hand going down that pretty slope in Guy street, between Sherbrooke and St. Catherine streets, with the leaders traces as tight as they could be.

HEADLANDS.—As a general rule, the headlands in this country are defrauded of their rightful due; they are, apparently, supposed to be places for the horses to turn upon, and are neither properly ploughed nor fairly manured. Even when the rest of the field is turned up in the fall—and that is not done too often—the headlands are not touched till spring. Why neglect so large a proportion of your farm, asked we of a Lachine man once? Oh, replied he, we have lots of it! Not so, with Monsieur Guèvremont, of Sorel; his headlands are ploughed every time the field is ploughed; equally manured when the rest is in roots, and when the horse-hoeing of the potatoes and swedes is finished, the headlands are sown with white-turnips, which, in their turn are horse-hoed and singled, yielding pretty nearly as well as the main crop.

A PROFITABLE BEAST.—The Queen's shorthorn heifer, that won first prize at the late Smithfield Club-show, turned out the most profitable beast that has ever been exhibited at any of the fat-cattle shows. The percentage of carcass to live-weight of this wonderful animal was 77.55! The Devons, though pretty bullocks enough, seem to have been lumps of fat, and did not please the butchers, but the polled Angus and Galloways, and the Kyloes, or Highlanders, turned out, as they invariably do, full of marbled lean. Still, the best of all others that was what is termed the "best butcher's beast," was a Sussex, its purchaser telling Mr. Turner, who reports for the *Agricultural Gazette*, that he wondered farmers did not breed and feed more of them. And so it was the common opinion in 1830, since which time, the Sussex cattle have been marvellously improved, their great fault, the hollow behind the shoulder, having been nearly, if not quite, filled up. There was a very good selection of this breed, some years ago, at Mr. Whitfield's, Rougemont. What has become of all that wonderful lot of cattle?

TROTTERS.—The Americans have begun to find out the mistake they have been guilty of in breeding so much for trotting-speed to the entire neglect of size and form. The farms of the Eastern States are full of speedy weeds, undersized, inferior animals, useful for no purpose, and men are everywhere crying out that the business is overdone. Once more, they have to look across the ocean for a remedy and they have found it in the English hackney, of which strain a very large number was imported into the States last year.

BARN AND TUBERCULOSIS.—A voice is heard saying that shutting up a lot of a cattle in a barn is a sure way of promoting tuberculosis. Granted, if the ventilation of the barn is imperfect. But there are so many ways now practised of securing the introduction of fresh air into buildings and at the same retaining warmth, that an ill-ventilated barn or stable is an unpardonable crime.

TOP-DRESSING WHEAT.—The *Country Gentleman*, in a reply to a question, on the propriety of top-dressing fall-wheat when above ground, says that "it is rather a desperate remedy to apply fresh manure to growing wheat," wherein we disagree with it. For, if, as it recommends, "well-rotted dung be applied to the land and ploughed in before sowing," there must of necessity be hollow places left in the land by spring, and the root-hold of the wheat will be imperfect. Top-dressing growing wheat was a common practice in Kent, England, in our younger days, and answered well, but the best crops we ever grew were after clover top-dressed in the first winter, and mown twice for hay. The clover-ley, ploughed once, was rolled with a heavy roller, well harrowed, and then drilled with 6 pecks to the acre. Clover never was allowed to stand for more than one year, as the rotation imperatively required by farm leases was: roots, grain, seeds, wheat; the regular 4-course system.

FAT AND FOOD.—Prof. Cooke, of the Vermont Station, says that "cows that have been properly fed in the barn do not shrink in quality of milk when turned to pasture. They usually increase both in quality and quantity." If this does not imply that you can feed fat into milk, what does it imply?

Again "Hoard's Dairyman," acknowledges that "the great majority of cowkeepers believe that the food eaten has an effect on the per cent of fat in milk, and that there is some evidence to support that belief;" and, it continues, "There is no question with us but that generous supplies of rich food do, in the long run, tend to improve the quality of the milk, but the great preponderance of evidence is that you cannot by any change of food for a few days or weeks make a 3 o/o cows give 5 o/o milk...." True; for the first thing the poorly fed cow has to do with her improved rations is to supply the waste of tissue, &c., caused by being obliged to furnish a quantity of butter-fat from insufficient food.

What says the well known Mr. Woodward, a great feature in the discussion of the New-York Institute meetings. He is a very heavy feeder, buying up thin, young, farrow cows cheap in the fall and expecting to have them into beef by spring, with

considerable butter to pay for their feed. He said that he had a lot of cows which, when first got together, required 29 pounds of milk for a pound of butter, and after a few months of heavy feeding it took less than 19 pounds of milk for a pound of butter.

Observe, these were farrow cows to start with, so the increased richness of their milk must not be attributed to the lateness of the period of lactation.

As a correspondent of "Hoard," who evidently agrees with us, says:

There was a good deal of discussion on this point at the late New York State Dairy Association meeting, and while the scientific men were inclined to hold to the dictum that you cannot feed fat into milk, yet it seemed to me that they introduced a good many "ifs," notably, "if the cow has previously been fed to her full capacity." Now I am inclined to think that when a cow has only flush, half developed June pasture, or other very succulent food, why then she gives thin milk, or as some people would put it, she has not been "fed to her full capacity." At the Watertown convention the dairymen seemed to feel that such was the case, although they of course hated to say so before University Professors.

—Will no dairyman try the simple experiment I have put forward before?

Ration number 1 — Wheat straw, mangels, brewers' grains.

Ration number 2. — Clover hay, pease-meal, maize, and crushed linseed.

The quantities of each ration to be as much as the cows will eat up clean. The albuminoid ratio of the ration No. 2 is of course much higher than desirable for ordinary feeding, but after a month on ration No 1, the animals will require a good deal of support to restore them to their normal condition. About 2 lbs. of crushed linseed will be enough for an ordinary cow's food for a day. (Not ground cake.)

JUDGING-CATTLE.—In all fat stock shows, where three judges are employed, one of them should be a butcher. There are certain points of a beast that indicate, to an expert, the existence in its carcass of an undue proportion of fat to lean. For instance; a broad, full termination to the spinal column, the "setting on of the tail," is an almost certain sign of the beast's abundant flesh. And so of a sheep: a full, firm, stiff tail shows that the lean is plentiful. We do not see many over-fat beasts here, but many of them are too full of loose fat and have no thickness of lean along the back.

THE DUNHAM FARMER'S CLUB.—This association seems to be aiming at good work. Many valuable experiments have been tried during the last year, and sums of money are granted for the purpose of testing fertilisers as applied to corn, oats, and potatoes. To encourage dairying, \$25 were given in prizes to the patrons of each creamery and cheeseery in the Tow hip who shall furnish the largest average per day of milk per cow during August and September, providing the average is 15 lbs. a day or over.

M. O'Brien, the President of the Club has kindly sent us the following report of the three experiments with the "Victor" brand of fertilisers on potatoes, oats, and corn. The analysis of the Victor reads thus:

Ammonia..... 2 to 3½ per cent.
(= nitrogen—1.6 to 2.90)
Phosphoric acid 7 to 9 per cent
Potash..... 2 to 4 " "

The percentages seem to us to be very vague, and the amount of nitrogen far too small to be effective, unless very large doses are employed. We are inclined to think that 150 lbs. of nitrate of soda, at \$2.50 per 100 lbs., and 500 lbs. of E. India bone-meal at \$1.40, costing for the whole \$10.65, would turn out a heavier crop of potatoes than 1,000 lbs. of the Victor, the cost of which is \$15.00. The bone-meal contains 3½ per cent of nitrogen and the nitrate of soda 15.50 per cent., so the above quantities would add to an acre of land 40 lbs. of nitrogen, which is a fair dose. Where the dung-cart has been no stranger to the land, the potash may be neglected, and, indeed, the spring application of this matter is hardly ever effective. The phosphoric acid in the bone-meal should be about 20 to 25 per cent.

Now, the following is about the value of the two ingredients of the manures recommended:

Nitrogen, &c..... 14 cts. a pound.
Phosphoric acid..... 6 " "

M. Choquette, in his analysis and valuation of the "Victor" brand puts it at \$17.76, i. e., \$12.24 less than the selling price, though the government-analyst, Mr. Macfarlane, makes the difference only \$7.57! The question will be found fully treated in this periodical, under date May 1891, p. 68.

TESTING FERTILISERS ON POTATOES.

Four plots of potatoes of one-eighth of an acre each were planted in proportion of 400,600 and 1,000 pounds of fertiliser per acre. The yield given in table below:

TREATMENT.	Planted.	Came up.	Harvested.	YIELD.				Cost of Labor	Cost of Fertiliser	Cost per bushel		
				Mer- chant able.	Sets.	Rotten.						
Untreated.....	May 20	June 3	Sep 25	77	20	41	20	9	36	\$35.20	\$0.29	
400 lbs. per acre..	" "	" "	" "	24	125	20	52	15	44	35.20	\$6.00	23
600 " " "	" "	" "	" "	24	122	8	55	36	16	35.20	9.00	25
1000 " " "	" "	" "	" "	12	166	40	48	5	4	35.20	15.00	23

Ground ploughed in spring. Planted with large Early Rose, cut with two good eyes in a piece. The ground harrowed four times over the rows, drills 3 feet apart. Fertiliser dropped two feet apart in row, and the seed placed on each side, which made the sets one foot apart. The cultivator was run between rows as soon as the plants could be seen. This was done once a week for four weeks. Hoed twice, last time lightly hilled. (1) Paris green applied twice at the rate of 1½ lb. per acre. The tops rusted early in August, which made the yield more even than if it had proper time to grow. Owing to the programme having to be sent to the Honorable the Commissioner of Agriculture for his sanction, the crop was delayed two weeks in the spring, and I feel confident potatoes will yield 10 per cent. better on fall ploughing. (2) The above table shows cost of labor \$35.20. This includes fourteen bushels of seed potatoes at 75 cents per bushel. (3)

(1) Good.—Ed.
(2) Right.—Ed.
(3) This would be a small seeding, but enough for 3 foot drills.—Ed.

TESTING FERTILISER ON OATS.

Four plots of oats, one-fourth of an acre each, were sown in proportions of 200,600 and 800 pounds of fertiliser per acre. The yield is given in table below:

TREATMENT.	Sown.	Came up.	Harvested.	Matured in.	Yield per acre	Yield of Straw per acre.	Cost of Labor	Cost of ferti- liser.	Straw at \$4 pr ton.	Cost of Oats per bushel
Untreated.....	May 22	May 29	Aug 22	92	33	1800	\$8.77		\$3.60	\$0.153
200 lbs. per acre.	" "	" "	" "	92	47	1670	8.77	\$3.00	5.52	133
600 " " "	" "	" "	" "	92	49	2670	8.77	9.00	6.56	224
800 " " "	" "	" "	" "	92	48	1480	8.77	12.00	6.06	284

The ground was ploughed in the spring. Harrowed four times before sowing. Seed sown at the rate of six bushels per acre then harrowed twice. Fertiliser sown and harrowed, twice more rolled. Where the fertiliser was sown the crop came up fully twelve hours before where there was none used. The fertilised lots kept gaining on the unfertilised lots until full grown and were ripe four days earlier, but owing to unfavorable weather could not be cut. The 600 and 800 pound fertilised lots grew very stout, and one-half of the grain lodged flat before headed and did not fill; beside the straw spoilt and rotted in places. (1)

Ground ploughed in spring one week before planting; harrowed four times in a place; planted with a Queen Corn Planter in rows three feet apart, and hill three feet in the rows, with eight-rowed Yellow Corn; eight to nine kernels in a place; as the corn planter capacity for fertiliser was only about 400 lbs. per acre, for 1,000 and 600 lbs. per acre I used the balance

before the first hoeing, spreading it around the plants so as not to hit them, for where ever it did it made them yellow and wilt. The 1,000 lb. lot was planted first. I overloaded with fertiliser and the field was very spotted, as though some hills had not received any, and where I used the balance I made some allowance, and I do not consider this a fair test, but it evened up after tasselling. The cultivating was the same as for potatoes—hoed twice, hilled but very little, thinned at first, hoeing to four spurs to the hill, and all suckers broken off at second hoeing.

One hundred pounds of ears was thoroughly dried for three weeks and then shelled, which made sixty pounds of shelled corn and eighteen pounds of cobs.

OUR ENGRAVING.
(Next number.)

It is difficult to say which is the more admirable on Mr. James Drummond's farm, at Petite Côte, Montreal, the herd of Ayrshire cattle, or the perfect manner in which all the acts of husbandry are performed. As we cannot hope to present our readers with a representation of the latter, we must rest satisfied with exhibiting portraits of the five principal members of the former.

Viola 3rd, we had the honour to select in 1892, as one of the finest specimens of the breed we had ever seen. A stately dam, indeed; the full udder and the milk-veins, denoting a strongly developed vascular system, show that she must be a great milk producer

TESTING FERTILISER ON CORN

Four plots of corn one-fourth of an acre each, were planted with indian corn in proportions of 200,600 and 1,000 pounds fertilizer per acre. The yield is given in the table below:

TREATMENT.	Planted.	Came up.	Harvested.	Matured in days.	Yield of Corn		Stalks.	Stalks at \$2.00 per ton.	Feed Corn @ 10c per bs.	Cost of raising Shelled Corn per bush.	Labor & fertiliser per acre.	
					Sound.	Un-sound.						
Untreated.....	May 22	June 1	Sep 13	114	9	6	26	1760	\$2.43	\$1.02	\$1.58	\$19.13
200 lbs. per acre	" "	" "	" "	114	30	49	6	1800	7.25	1.50	43	22.13
600 " " "	" "	" "	" "	114	40	38	5	300	8.00	1.25	4	28.3
1000 " " "	" "	" "	" "	114	51	29	4	1200	9.00	1.00	46	31.13

(1) Naturally, if the land was previously in good heart.—Ed.

while her handling, or *quality*, as Tommy Bates used to call it, prove her aptitude to fatten when her milking-time is past. This cow was out of condition at the last Provincial Exhibition at Milo-End, and was consequently placed low in the judges' decisions; but, recovering her good looks before the Toronto Industrial, she was placed *First* in her class in, certainly, one of the strongest rings that has appeared for many years. This is the cow that stands on the left hand side of the engraving, broad-side to the spectator.

Her daughter, Viola 5th, faces her dam, and greatly resembles her; so much so, that, in Septombor, we were almost inclined to think the daughter was the mother, till a glance at her horn-rings showed us our error. It was a decided case of "*O mater pulchra filia pulchrior.*" She was placed second in the same class.

The bull, on the other side of the fence, is Victor of Parkhill, 5901. He by Rob Roy, 3971, whose sire was Promotion and dam Viola 3rd. Victor's dam was Victoria 2931, with a record of more than 10,000 lbs. of milk in a year. He won *First* at the Industrial Toronto show, in a very strong class of bulls.

Collectively, the group won the herd-prize, the highest honour of the show.

Alexander under the great seal of Scotland, brought their dairy cattle with them, and have a right to claim with the reverend gentlemen, and others who introduced cattle from France, their share in what is now call the Canadian cow.

You see then, that there is even more of a mixture in Ayrshire cattle than there is in Prof Robertson's *onsilage mixture*, and, my word for it, Ayrshire cattle and Robertson's mixture are what this province really needs and must have, if farmers are to live and prosper.

Excuse this hasty scrawl, and believe me yours truly,

A. McCALLUM.

versities, our orphanages, our hospitals? Was it not by the maternal care of the Catholic Church? Has not the clergy ever been at the head of all real progress? Have we not seen zealous and courageous priests penetrating the forest with our colonists to encourage, sustain and bless their labors, to enlighten and help them, in a word, superintend the foundation of new parishes?

The Church has never neglected even the material interests of our people, it is she indeed, we proclaim it boldly, who sustained and directed the nation in her onward march, and upheld her in her legitimate claims in all the critical epochs of her history.

us to love it. "*Hate not laborious works, nor husbandry ordained by the most High.*" (Ecol. VII, 16.) It is He who gives to the soil its marvellous fertility as a reward to submission and fidelity. The Lord, say the Scriptures, conducts his people into "*fat pastures, and very good, and a country spacious, and quiet, and fruitful.*" (I Paral. IV, 40.) And elsewhere: "And the Lord will make thee abound in all the works of thy hands, in the cattle, and in the fruit of the fruitfulness of thy land, and in the plenty of all things." (Deut. XXX, 9.)

It is when recalling these memories that the Royal Prophet exclaims: "O Lord Our Lord, how admirable is Thy name in the whole earth! What is man that Thou has crowned him with glory and honor: and hast set him over the works of Thy hands. Thou hast subjected all things under his feet, the beasts of the fields, the birds of the air and the fishes of the sea, that pass through the paths of the sea." (Ps. VIII.)

We are not without knowing, Dearly Beloved Brethren, that a kind of restlessness for pleasures and liberty has seized upon our rural populations and is bearing them away to the cities. The simple and peaceful life of the farm has become wearisome and monotonous. Allured by the pompous display of wealth, craving for greater independence, wishing to rise from an humble position to one of distinction, many foolishly rush to those modern Babylons, where, in quest of happiness, they find their ruin. This desertion of the country, which has been taking place for some years, has been for us, as it has been for all the nations of Europe, a real misfortune; it strikes at the national prosperity; it is a disaster, especially in the moral order. In the large cities, in the workshops, the countryman is soon brought into contact with bad leaders and corrupt society; little by little he loses that spirit of faith and of religion, while his creed and morals are soon wrecked, and in old age he only reaps poverty and disgrace.

On the other hand, country-life offers precious advantages from a moral and religious stand-point: it renders man better in preserving his manners simple, his heart upright, and by encouraging habits of economy, a taste for work and a love of justice; it procures to him wealth under various forms; the wealth of joy, of union, of family love, of moderation in desires. Let us say to you, with a great doctor of the Church, Saint Chrysostom, that agricultural communities live peacefully and that their life has something venerable in its modesty; "the countryman, continues the same Father, has more enjoyment than the rich citizen: a beautiful firmament, a lightsome, pure air, sweet and tranquil repose, are all given him as his right; the Creator seems to lavish on him, before all others, these gifts of the temporal order!" Thus you will find in this modest profession true pleasure and security, health, a good reputation and a life of regularity, which will free you from the exposure of your good morals.

Particular circumstances have stemmed, at least for the time being, the flow of emigration and have allayed the fever for adventurous journeys to the United States; nay, many of our countrymen, urged by penury or the constant desire of revisiting their loved Canada, have come back to our midst and have returned to the peaceful culture of their farms. It behoves us to make use of these circumstances to retain them on their native soil. To succeed therein, it is necessary to teach

Correspondence.

Danville P. Q.,
February 15, 1894.

TO THE EDITOR OF THE
"JOURNAL OF AGRICULTURE"

Sir,—In your last issue of the "Journal" you ask, "Can any of our Ayrshire Breeders, show us that there were Ayrshires" previous to 1740?"

I do not think we could prove that what we now call as a fixed type "an Ayrshire" existed before that date.

At that period, noblemen, land owners and prominent agriculturists were doing for the West of Scotland what the same class of men are trying to do for the province of Quebec today, i.e. improve this breed of their dairy cattle.

History bears out the statement of Mr. Dunlop except that the date is given as 1767 instead of 1740.

As early as 1725 the Earl of Marchmont had "a superior breed of dairy cows, "Brown and white." The Earl of Eglington had imported some "Jerseys from France"; Mr. Orr of Kilmarnock "Brought some larger cows than had been seen in Ayrshire from Glasgow," and Mr. Dunlop is also credited with bringing into Cunningham some "Dutch" cows "Brown and white" about the year 1770. There is no doubt, but "Teaswater" "Durhams," "Devons" "Dutch" and "Channel Island" cattle along with the Irish and native breeds, judiciously blended by the exercise of brains, went to form into a distinct type before the year 1800 what we now call "Ayrshires".

It was not the labour of one man or set of men, but a whole district, and with all due respect to your favorite "Dairy Shorthorn" they did this work well.

You think it strange that at that early date, "Devons" should have been sent from the extreme south-west of England to the west of Scotland. Why, man, over a hundred years previous to this, 1625, settlers on the lower St Lawrence on the territory granted by King James the 1st and 6th, to Sir Wm.



PASTORAL LETTER

OF THEIR LORDSHIPS, THE ARCHBISHOPS AND BISHOPS OF THE ECCLESIASTICAL PROVINCES OF QUEBEC, OF MONTREAL AND OF OTTAWA, ESTABLISHING THE WORK OF AGRICULTURE... MISSIONARIES.

WE, BY THE GRACE OF GOD AND OF THE APOSTOLIC SEE, ARCHBISHOPS AND BISHOPS OF THE ECCLESIASTICAL PROVINCES OF QUEBEC, MONTREAL AND OTTAWA,

To the Clergy, Secular and Regular, and to all the Faithful of Our respective dioceses Greeting and Benediction in Our Lord.

Dearly Beloved Brethren

Jesus Christ has entrusted to His Church the mission of teaching all nations, of everywhere spreading the light of the Gospel, and leading souls to Heaven: such is the supernatural end assigned to her. In this mission the Church has never failed, as is testified by the history of eighteen centuries.

Whilst especially solicitous for the spiritual wants of her children, she has never refused, nevertheless, to cooperate in whatsoever might better their material condition without compromising the salvation of souls: she has helped the individual, protected societies, and has placed at the service of either the resources of her powerful organisation and immense charity.

In truth—speaking of our country alone—how were founded our colleges, our seminaries, our schools, our uni-

To-day the difficulties are of a different nature, but, though of another form, they still exist and offer new matter for the exercise of the Church's zeal and charity.

Whilst traversing Our dioceses, in our pastoral visitations, We have discovered that in many places agriculture is defective, and we have deemed it urgent to direct the attention of our rural populations to the necessity of restoring to the soil its original fertility, and to the methods to be adopted to secure this object. We think we are performing a meritorious work, a work of charity and of public utility; when helping to give a vigorous impetus to intelligent and scientific agriculture. Our task consists in seconding, as best we can, those among us who by their occupation, their aptitudes or their experience, are in a position to give to our people wise counsels and precious instructions.

It has been wisely said that agriculture is the true fosterer of nations, their chief source of wealth; in the land is to be found the real fortune of a nation, that fortune which like the goodness of God is constant and certain, ever developing and little exposed to the disastrous fluctuations which so much affect commerce and industry.

It is chiefly in the tillage of the land that man appears as the king of nature, as the prince exercising his sovereignty in his domains, daily making peaceful conquests and affirming his indisputable dominion for the honor of his Sovereign Master and the good of his fellow-men. (Gen. I.) According to Scripture, it is God Himself Who established agriculture and Who command

them the art of good agriculture, that is, of improving the lands in such a manner as to assure them a suitable livelihood, it is necessary to put them on the road of success, if they have not yet reached it, it is necessary to teach them that our soil is all sufficient to meet our wants, that it is even superior to that of the other provinces if we consider it from the stand-point of agricultural industry, and that they can, by active and intelligent work, live more prosperously and happily in their own than in a foreign land.

But if the farmer do not study, success can be neither serious nor lasting. He should make constant research, if not in books, at least by assisting at agricultural conferences given by competent men, or again, by looking into the results obtained from the abundant productiveness of a neighbor's furrow. We request the heads of families in our country parishes to induce their sons to learn their profession. With the actual progress of science, and the perfection to which mechanics is brought in our day, we may say that the farmer has even more need of the assistance of his intellect than of his arms, wise directions, the communication of some important information, precise and timely given, may be worth months of labor.

Therefore the study of this noble profession is becoming more and more necessary because it is through it that our fellow-citizens will prosper, form a strong nation and enjoy in their families that serene peace that Christian independence not found anywhere else.

We earnestly solicit the Clergy, particularly the pastors of country parishes, to do all in their power to find in their respective parishes a pupil apt successfully to pursue an agricultural course of studies, one who is both intelligent and active, who likes the life of the farm and intends to make this life his calling. Let each use his influence to have their pupil enter one of our agricultural schools, the endowment of which is due to the benevolent concurrence of the Clergy and our government and which are destined to do more good in the future than they have accomplished in the past. It is much to be desired that the best methods of agriculture and the most correct notions thereon be propagated, as soon as possible, among the people of our rural districts. This knowledge, which practically means success, is always favorably received by every one, and transformation rapidly follows. No more desolate districts, no more of that extreme poverty which has made so many exiles, but everywhere honest comfort, joy and happiness at the domestic hearth.

In order to bring the science of agriculture theoretically and practically within reach of our people and to propagate it without delay, we have resolved to call to our aid certain members of our clergy, whose aptitude and assiduousness in the special study of agriculture are not unknown to us. These Agricultural Missionaries, as we call them, have commenced the exercise of their functions with success, Our Holy Father, the Pope has blessed them and we join with the Sovereign Pontiff in calling upon them and their work heaven's choicest blessings. You will unite your prayers with ours, Dearly Beloved Brethren, that this work may turn to the greater glory of God and the good of our country.

At the same time, We will ask of heaven that the Name of Jesus Christ be known and glorified by a greater number of our fellow countrymen, we will pray that the children of our land, our Canadians, be never brought

to eat the bread of exile, but that our farms, made fertile and productive by intelligent labor, give food in abundance to our populations. We will furthermore pray that luxury and sloth, the parent of every vice, be banished from our homes, and that temperance and all other Christian virtues reign therein.

We desire these Agricultural Missionaries to visit each parish, as far as possible, twice a year, in order to give unity to their work. They may help the parish priest to select the pupil who should represent the parish at the agricultural school and who will return therefrom to serve as an example to others; they shall continue to form those agricultural circles, which, with so much pleasure, we saw formed—four hundred and upwards—in 1893; they shall take notice of any new discovery, as well as the results obtained by experiments made elsewhere. The kindness they have hitherto shown will win for them the confidence which they have a right to, and make easy of acceptance the counsels they will give.

We notice with pleasure that the greater number of the agricultural circles are directed by priests, we have concluded that the sentiments expressed by Us to-day are shared by the mass of the clergy, and this fact is a great consolation to us, and an earnest of the future prosperity for our parishes.

The work of colonisation, of which we have spoken several times, is very naturally the companion of agriculture. The priest has always been kindly attentive to the settlers on the border of the forest when he has not been his constant companion. As in the past we grant him still all our solicitude, and of the resources, that the good will of the faithful will place at our disposal, in conformity to those presents, we reserve the privilege of contributing a part in behalf of colonisation.

The prosperity of the country is also that of the town, the farmer being the foster father of all. Therefore let the city as well as country parishes help us in the common cause. In order to be successful the Agricultural Missionaries need pecuniary aid, this we will consider an honor to procure them.

For these causes, having invoked the Holy Name of God, We rule as follows:

10. The Work of Agricultural Missionaries is established throughout the Civil Province of Quebec;

20. Once a year, in all churches where public worship is held, a collection, called "Collection for the Work of Agricultural Missionaries and Colonization," shall be taken up, the product of which shall be transmitted to the Bishop of the diocese;

30. This collection shall replace that of Colonisation, in dioceses where such a collection is still made.

The present Pastoral Letter shall be published from the pulpit, in all the churches or parochial chapels of Our respective dioceses, on the first Sunday after its reception.

Made and signed by Us, on the feast of the Epiphany of Our Lord, one thousand eight hundred and ninety-four.

E. A. CARD. TASCHEBREAU, Archb. of Quebec.

Edward Cis., Archb. of Montreal.

J. THOMAS, Archb. of Ottawa.

L. N., Archb. de Cyrène, Coadjutor of H. E. Card. Taschereau.

L. F., Bishop of Three Rivers.

L. Z., Bishop of Saint Hyacinth.

N. ZÉPHIRIN, Vic. Apost. of Pontiac.

ELPHÈRE, Bishop of Nicolet.

ANDRÉ ALBERT, Bishop of Saint Germain of Rimouski.

MICHEL THOMAS, Bishop of Châteauguay.

JOSEPH MÉDARD, Bishop of Valleyfield.

PAUL, Bishop of Sherbrooke.

By order of His Eminence and Their Lordships,

B.-PH. GARNEAU, Pst, Sec. of the Archbishopric of Quebec.

Poultry-Yard.

AGRICULTURAL MEETING AT AYLMER P Q—BENEFITS OF SUCH MEETINGS.—THE SPREAD OF KNOWLEDGE.—MEETINGS SHOULD BE HELD ALL OVER.—CUT GREEN BONES FOR POULTRY.

(By A. G. Gilbert, Manager Poultry Department, Central Experimental Farm, Ottawa.)

I had the pleasure of attending the first of a series of winter meetings under the auspices of the County of Ottawa Agricultural Association, No 1, division A, held in the Town Hall, Aylmer, on the evening of Thursday 1st February inst. I had the honour of being one of the speakers and I was very much delighted with the interest exhibited by the farmers in the talk we had on poultry matters. Mr Whitley of the Dairy Commissioners' Staff, and Mr James Fletcher, the well known and popular Entomologist and Botanist to the Experimental Farms, were also speakers on the occasion. The latter gentleman, although mentioned last, was really the leader of our little coterie, and he most happily designated Ottawa County as "a famous farming centre", and so it is. The possibilities for dairying, poultry and sheep, are unlimited. The audience was of an unusually high order of intelligence, some large farming interests being represented by several farmers present, among them the farm foreman of Messrs Conroy, Klock and Eddy. To judge from this meeting, the farmers of Ottawa County are determined to turn their agricultural advantages to account. They are enterprising and intelligent and are not far from an excellent market. The Agricultural Society are fortunate in having an energetic and capable secretary in Mr N. E. Jormier and he is ably aided and abetted by an enthusiastic president and board of directors. Their Annual Association Show, in the fall, is famous all over the country.

THE SPREAD OF KNOWLEDGE.

I am informed by Mr Cormier that it is the intention of the Association to hold eight or ten meetings during the season, the next one being at Chelsea on the 21st inst. The good done by these agricultural gatherings can hardly be over-estimated. Dormant energy is set in motion, a taste perhaps awakened, enthusiasm encouraged, and it may be ambition fired. And one of the most important features is the intense interest taken by the farmers' wives and daughters in the proceedings. The Secretary informed me after the meeting that he was told by a farmer's wife, who had come with her husband over ten miles through almost impassable roads, that she would gladly have come twice the distance rather than have missed the meeting. Is this arguing that the speakers of the evening were orators of a very pronounced type, or as some cynic may say a left handed way of paying himself a compliment,

as he was one of the speakers? No such thing. But the men who spoke were dead in earnest, and in plain words told their story of truth, begotten by years of experience, and truth told in such a way will never fail to carry conviction. And the audience came to listen and benefited.

ARE SIMILAR MEETINGS HELD ELSEWHERE?

And this it must be remembered was in your own Province of Quebec. After the proceedings proper, we had an informal sort of social meeting with the members of the Association and friends near by, and it was asked if similar Agricultural Association meetings were general throughout the province. If not, it was thought that they could not be taken in hand too soon by leading agricultural spirits in the different counties. If nothing else was done than the exchange of one farmer's experience with another's some interest would be sure to be excited, some good could not fail to follow. It should be the aim to have such gatherings of yearly occurrence and if held in winter evenings, the farmers would have ample time to attend. I do not attempt to dictate in this matter. I merely throw out the hint. I am sure I shall be ably seconded in this by your valuable journal.

COMING BACK TO POULTRY.

You will see that I have made the Aylmer meeting the text for a rather long dissertation, but let me hope not an uninteresting one. Coming back now to the subject proper of the poultry yard, we find that the whole methods of winter management and feed are undergoing a revolution. For now we must have plenty of room for the layers and we convert the green bones of the butcher, which heretofore have been almost total waste, into the best egg-producing winter ration known. The bones are cut up by mills, which I hope soon to see manufactured in Canada. At present they are rather high in price and that for the present will no doubt militate against their general adoption. However, by several farmers clubbing together, they might be able to purchase one and arrange for the use of it in turn. It is a great step forward in the economy of poultry keeping to have the waste of the farm converted into eggs, and that at a time when they command the highest price. The once popular idea that all you had to do to get eggs in winter was to stuff a hen with all the grain she could eat, is now one of the practices relegated to a past period. Green bones, cut up, and red-clover hay, the latter dried and put away in summer and steamed for winter use, are two of the most important factors in the production of eggs in winter. Grain is now used in comparatively small quantities to keep the hens in exercise by scattering it about, and to fill their crops quite full with, previous to entering on their long winter night's fast. But I will not say any more at present on these new winter ration for hens, but may again. In another letter, I should like to say something about the market and the prices to be obtained for eggs and chickens, and what ought to be the profit therefrom. I append the following for a winter morning mess for one hundred fowls. It is highly recommended by Mr A. N. Hunter, a practical poultry man and Editor of *Farm Poultry*, viz. Two quarts bran, one quart middlings shorts, one quart cornmeal, one quart ground oak, mix four pounds of this ground stuff with 16 pounds of small

potatoes boiled, with ground bone and a little red or black pepper dusted in. The mixture must be fed crumbly and not in a sloppy condition. It is, of course understood, that it is only intended for a morning ration which can be varied occasionally.

The Farm.

That discussion as to the relative profits of hand and machine planting of seed two weeks ago has started quite a discussion. Our position is that while it is possible to do better work by hand, the ability to work faster with the machine often counts for more. It seems to us, anyway, that the future of potato growing is to follow the course of wheat. The crop to be profitable must be ground on large acres with all the help of improved machinery. The following note is from one who has used a planter several years:

"In regard to that potato planting question, it must be an uncommon case in which a man can plant potatoes cheaper by hand than by machine, or get more profit from 10 acres of land. As for loose soil in the bottom of the trench under the seed, if he fit his ground properly, he will have with the planter. I prefer plowing twice, spring and fall, the spring plowing as near the time for planting as practicable; this is my gravelly soil thoroughly pulverizes the ground as deep as the plow goes. I run my planter about four inches deep in this fine, light soil. To illustrate: In planting large seed last spring, I planted R. N.-Y. No. 2 whole, besides cut seed without changing the machine. The No. 2's were rather large and the planter made some skips, but the yield was 20 to 30 bushels per acre better than my other seed, though there were fewer skips with the other. If a man can secure help at a moment's notice, perhaps he can do without the Aspinwall planter, but with us, we would miss our planter-digger, Breed's weeder, Clark's Cutaway harrow and in reality have to quit raising potatoes for market.

That is the position we have always taken, viz: that in order to raise potatoes at a profit, a farmer must provide himself with tools that will reduce the amount of unskilled hand labor. The cost of such labor is what destroys the profit.

ENSILING CLOVER.

Please give some information in regard to putting up clover for ensilage, —whether best to cut or put in whole, —and what kind of feed would it make compared with corn. How many tons will good green clover average per acre?
J. P.

Shiloh Hill, III.

Whatever may be said about corn, clover should be run through a cutter into the silo. It is impracticable, otherwise, to spread it evenly and secure level settling. It should not be put in when wet with dew or rain. Being lighter than corn, it does not settle so readily without weighting. A little weighting before silaging, when the clover is very green, is advantageous.

The digestible nutrients in 100 lbs. of ensilage are as follows:

	Albuminoids	Carbohydrates	Fat.
Clover.....	2.2	10.0	0.5
Corn.....	1.1	13.2	0.7

On this basis the corn ensilage would have a value exceeding that from clover for general feeding, but the greater quantity of albuminoids in clover makes it specially valuable for "balancing" other foods. Indeed clover silage alone would make a very complete food, its nutritive ratio being as 1 to 5, while the nutritive ratio of corn silage is as 1 to 13.

A clover field that will yield two tons of well cured hay to the acre will make about eight tons of silage to the acre. If both first and second crops of clover are used for ensilage the yield per acre will range from ten to fourteen tons.
(Hoard's Dairyman.)

I BUILT A SILO in one end of my large bays 13 by 16 ft and 18 ft high several years ago. This is filled full in the fall and settles about half. It will feed my entire stock once a day from 100 to 150 days. This year I have 22 head of cows besides my horses. My farm contains 107 acres. Before I built my silo 12 cows and three horses were all I could keep and that only by feeding closely, using in addition several tons of grain. Now I keep my present stock, using ensilage instead. Last year I did not feed any grain until my ensilage was gone and had the reputation of bringing the best milk that was delivered to the creamery last winter out of some 30 dairies. I began to feed in November, 1890, and fed once a day until about the middle of March. Most of my cows were in milk all the time. I put the corn in whole and like it just as well, as I cut the ensilage out with a large hay knife and save the expense of so much machinery and help.—
[H. C. Pettis, Delaware Co., N. Y.]

Stock foods are composed of substances usually arranged into six groups.

1. Water. The amount varies with kind of food. It is of no economic importance.

2. Ash. This is the residue left after burning away combustible portions. It supplies the mineral ingredients to the animal body. A portion of the ash has a manurial value.

3. Protein. This is the nitrogenous portion of the food. It is used in the animal economy to form "muscle" and all other nitrogenous portions of the body; it also aids in the formation of fat. It is the most valuable ingredient.

4. Fat. This substance produces animal heat, or is stored up in the body as fat for future use. One pound of fat will produce as much heat as two and one-half pounds of carbohydrates.

5. Carbohydrates. This group includes the starches, gums, sugars, etc. They produce fat and heat.

6. Fibre. This substance has about the same composition as the carbohydrates, but it is much less digestible; it is of but little value.

Timothy is too binding for an animal whose system tends so readily to fever and constipation as does that of the sheep. Almost any kind of straw except buckwheat—which is apt to poison the lips—is better as a coarse feed for fattening sheep than clear timothy. In fact there is no kind of hay except clover which is as good, unmixed, as the same would be with a judicious alternation with straw.

SOME SHORT-HORN REMINISCENCES.—The death is chronicled in our English exchanges of the Earl of Bective at the early age of forty nine, although it is

more than twenty years ago that he succeeded to the estate at Underley, where he soon got together one of the most prominent Short-Horn herds in the United Kingdom. Indeed he seems to have made a beginning in this direction as early as 1868, and during the following years the choicest specimens from the best herds were apt to find their way to Underley whenever they came into the market. His greatest purchase, however, remarks the London Live-Stock Journal of Dec. 22, was made "at the New-York Mills sale in the United States of America in 1873, where 10th Duchess of Geneva was bought for £6,562 (\$35,000), her yearling heifer for £2,868 (\$15,300), and the 9th Duchess of Onoidea for £1,875" (\$10,000). The article continues:

The symmetry and quality and beauty of the 10th Duchess were the admiration of the extraordinary company that assembled at the great sale at Underley in September, 1874. She had been selected by Mr. Thornton in America in the winter of 1870-71 for Lord Dunmore, when 3,000 guineas was privately refused, and when Mr. Borwick, Lord Bective's commissioner attended the New-York Mills sale, his instructions were to buy the best, and this cow was then considered the cream of the herd. High as the prices paid for her and her daughter were, they proved remunerative, as 10th Duchess bred Duke of Underley, who was used in the herd till 1882, earning, in addition, a large sum as fees; also two heifers, Duchess of Underley, whose heifer was sold for £3,000, and Duchess of Lancaster, which bred two bulls sold for 1,500 gu., whilst her daughter was afterwards sold to Sir H. Allsopp for £4,500, and her two bulls realized 4,750 gu., one of them being 3d Duke of Underley, which went to Kimbolton.

It is also stated that when the British Dairy Farmers' Association were entertained at Underley in June last year, a little slip was handed to the visitors, showing that the farm comprised 376 acres, of which only about 50 were arable, and the stock—177 cattle, 260 sheep, and 7 horses. The result of five public sales and four years' private sales were also shown, amounting to upwards of £63,000.

FEEDING STEERS.—The fat steer that will bring the highest market price is the one that will give the largest proportion of meat in choice loins and ribs. This is shown by the results of feeding experiments at the Iowa station by J. Wilson and C. F. Curtiss (B. 20). Eighteen steers were bought in July and grazed together until winter. They had corn fodder on a winter blue grass woods pasture, with access to open sheds until the middle of February, when they were tied up in the barn and prepared for the trial for two weeks before the experiment began. The latter covered three periods of 92 days or three months each. During the first period, from March 1st to May 31st, with stall feeding, the average gain per day for each steer was nearly two and a half pounds at a cost of nearly six cents per pound. During the second period, June 16th to September 15th, nine of the steers, on red clover pasture and corn meal, gained an average of nearly two and one-third pounds per day at a cost of nearly four and one-third cents per pound; while the other nine steers on red clover pasture and linseed meal gained over two pounds per day at a cost of over six and one-fifth cents per pound. During the third period, from October 1st to December 31st, all the steers were fed in open yards, on both

corn and linseed meal, corn fodder and mangels. The nine steers, from the summer corn meal, gained over three and one-fourth pounds per day at a cost of nearly six cents per pound. The nine steers, from the summer linseed meal, gained two and four-fifths pounds per day at a cost of nearly six and two-fifths cents per pound. The steers were Shorthorn, Red Polled, Hereford, Holstein, Galloway, Angus, Swiss, Devon and Jersey, two of each breed. The lot sold in Chicago for an average of six cents per pound live weight. At the slaughter test the eighteen cattle dressed nearly two-thirds of their live weight, while twelve head of the beef breeds dressed over two-third. Over 27 per cent of the carcasses were the choice ribs and loins, selling at wholesale for eighteen cents per pound, and netting three-fifths of the total value of the beef. The Herefords brought the highest price per pound, followed by the Shorthorns, the Galloways and Angus, the Red Polled, the Swiss and the Devon. The profitable killing steer should have a liberal amount of fat marbled with the lean, and not an excess deposited about the internal organs. The carcasses of the dairy breeds lacked in this and in the thickness of cuts. Steers must gain rapidly to enter the highest selling class, and a great deal of poor beef is put on the market at a loss when it would bring a profit if finished in the right manner.

ROOT-GROWING.

BY

THE EDITOR.

Several things are to be studied before an unskilled man embarks in the cultivation of roots. First, is his land fitted for it, that is, is it clean? If not, the cleaning operations are of the first necessity. Secondly, has he a sufficient supply of manure at hand? If not, a supply of artificial fertilizers must be purchased. Thirdly, has he ever seen a crop of roots properly thinned out, horse-hoed, and left clean? If not, the sooner he takes a trip to the Island of Montreal, Compton, Berthier, or to Messrs. Guévremont's farm at Soré, the better.

CLEANING LAND.—As roots should invariably succeed the last straw-crop of the rotation, the cleaning operations in the preparation of the land should begin immediately after harvest. A light furrow, followed by a grubbing, across the ploughing, by several harrowings, and, if needed by a passage of the roller between the harrowings, will generally suffice to free the couch and other root-weeds from the adhering earth, when the whole may be got together by the horse-rake &c., and burnt or otherwise destroyed.

This being done, and a vast saving it is both of time and expense over cleaning in the spring, the winter-furrow may be proceeded with. This should be a fairly deep one, say, 7 or 8 inches, and it should not be wider than 10 or 11 inches, that the furrows may lie well up at an angle of 45°, equal to half a right angle. If ploughed in this way, there will be no fear of the rains of spring battering down the furrows till they are so flattened out that the harrows can get no hold on them. This is the real reason why people object to fall-ploughing, they lay the furrows flat, and then are surprised that the land will not work well.

MANURE.—Had we only, say, 40 loads of dung to devote to 2 acres of

roots, we should prefer spreading them over two acres and filling up with a half-dressing of artificials, to putting all the dung on one acre and manuring the other entirely with artificials. This is the invariable practice of all the large farmers of East Anglia, which district includes the eastern counties of England from Kent to Norfolk. No man there dreams of using all dung for his swedes or turnips, but prefers a mixed manuring of dung and superphosphate. Mangels may be sown, occasionally, with dung alone, but the turnip-crop, which is so sadly subject to the attacks of the fly (*haltica*), must, they think, have some quick-acting manure close under it to produce prompt results, and push the newly sprouted germ into rapid growth.

SINGLING ROOTS.—It is very difficult to explain, on paper, the process of singling roots. One is mighty apt to pass over some apparently trifling part of the process, and thus a gap is made in the sequence which is hard to supply afterwards. Our advice to all intending root-growers is to visit a farm where the system has been carried out for some years, and pay particular attention to the way in which the strokes of the hoe are given. The cost of doing this piece of work may vary from \$3.00 an acre, if the farmer understands it, to \$12.00, if he does not understand it, so the matter is worth paying a railroad fare to a place where it can be learned. Half a day of attention should be enough to teach any one who has free use of his hands how to do the job perfectly. (1) The main secret—if secret there be in it—is to move with the hoe at right-angles to the row of plants. If you once lose sight of this, you will run the risk of earthing up the plants, instead of leaving them as naked as possible; but more on this subject hereafter.

We will divide the remainder of our essay into three parts.

1. The cultivation of the mangel.
2. The cultivation of the swede.
3. The cultivation of the white turnip after other green-crops.

THE MANGEL.

The origin of the *mangel*, *beta campestris*, or field-beet, is doubtful. It has been largely grown in England for at least seventy years, and is, we believe, a cross between the white-sugar-beet and the common beet-root used for salads. There are several kinds of mangels, the most important being: the long-red, the orange-globe, and the red or orange ovoid or egg-shaped. On the whole, though the orange globe is decidedly the best in quality, the long-red, in this country at any rate, yields so many more tons to the acre than the other, that we should always sow it.

SEED.—About 6 lbs. of seed will be required to sow an acre. This should be of the newest growth, and the preparation it needs is the following. Mangel seed is always slow to germinate, the more so, as it should be sown as early in May as possible, before, therefore, the land has been warmed by the sun, so treat the seed by steeping it, in a bag or sack, in lukewarm water for about 36 hours, then hang the bag up to drain, and when fairly dry keep it in a warm place till the germ begins to show itself in a tiny white speck on the side of the capsule. For you must not imagine, as the Superintendent of an important Experiment Station did in 1887, that the

'pickles' you see are the seed, they are the capsules containing the seeds, of which many contain three each.

The seed being now sprouted, it should be rubbed and mixed with a sufficient quantity of dry sand to enable the drill to deposit it equally. The Planet Jr. machine does its work to perfection, anything more regular than the way in which it deposits the mixed sand and seed, I never saw. It would not be amiss to mix a small quantity of turnip or rapeseed with the mangel seed, and for this reason: the turnip-seed being very rapid in germination would be up and show the rows at least a week before the mangel-seed made its appearance, and the horse-hoe could go to work at once. It is a matter of more importance than you might imagine, until you see how early horse-hoeing saves subsequent hand-labour.

And now the seed is ready for sowing, let us see if the land is ready for it.

As soon as the frost was out of the ground, and the dust began to blow about, we began the spring-preparation by a sound harrowing along and across the furrows. And now comes a question: shall we cross-plough or be satisfied with using the grubber? Well, that depends on the texture of the soil. If the land be stiff, the object of our work being to obtain a fine surface, we should be loath to bury the mould that has been pulverised by the winter frost, so we should prefer using the grubber, as often as needed by the state of the land, to be followed by repeated harrowings, and perhaps by rollings, until we had obtained a fair depth of mould, sufficient for the subsequent drilling up of the land.

On light land, cross ploughing may be used, as there is but little danger on such soil of bringing up obdurate clods that require great labour to reduce them to mould. At all events, whatever processes be employed, six inches of finely pulverised soil is the ultimate aim, and must be attained.

DRILLING-UP THE LAND.—The piece is now ready for making the drills for the reception of the manure. The question may naturally be asked: why drill up the land for mangels? The answer is simple: because 15 loads of dung in drills will produce as large a crop of this root as 20 loads spread broadcast and ploughed in on the flat. Besides, the pulling and cutting down of the drills by the horse and hand-hoe will aerate the land more thoroughly than the usual operations on the flat, and the mangels will produce fewer forked roots on drills than if grown in the other way. Again, the mangel is a hot-weather plant, and in this climate it is of importance to consider its taste, so that, although we prefer sowing swedes and white-turnips on the flat, we stick to drills for mangels.

The drills will of course be made with the double mouldboard plough. How wide shall we make them? In Scotland, where the drills formerly had to be made with the swing plough, for there was no double mouldboard plough suited to the work, drills, from old association's sake I suppose, are still made at 28 inches interval. In the South and East of England, they are made much closer, but, there, flat-work is the rule. Here, we have always found 24 inch intervals sufficient for all purposes, including potatoes, except in the case of such kinds as the "Champions," the tops of which grow so luxuriantly that a wider distance between the rows—often as much as 40 inches—required. With drills 24 inches apart, there is plenty of room for the horse in the

horse-hoe to walk comfortably with out treading on the plants, and plenty of light and air will be available to the growing crop. An immense number of acres may be seen wasted every season, taking the province as a whole, 36 inches between the drills is not an uncommon width, even for Early-rose potatoes. It does not seem to be any great loss until we look at it on a large scale.

DUNG.—And now about the farm-yard manure. This we suppose was carried out to the field where it was to be used, during the winter. About ten days before it is to be ploughed in, it should be turned over carefully, the outside should be thrown inwards, all the lumps broken up fine, and the heap be made as regular as possible both in width and height, so that all parts of the piece may receive an equal dose both in quantity and quality. As the dung will rise considerably in temperature after the turning, many of the weed seeds will be destroyed as to their powers of successful germination by the heat and deprivation of air. This is a difficult point to explain in ordinary terms, but it seems to us that the germ is started into life by the moist heat and then, finding itself in a medium too confined for respiration, fades into inaction. Our scientific readers will pardon this very lame attempt at elucidation, but the fact remains that, somehow or other, the heat of the fermenting dung-heap *does* destroy the life of the seeds, for example, in 1834, we were planting potatoes at Sorol, the piece was manured with prepared dung up to the latter half of the last three drills, when the supply gave out. The remainder was finished up with raw dung from the same locality, and the consequence was that the bulk of the land was as free from weeds as one could desire, while the part dressed with raw dung was as full of rubbish as it could hold. This is only one of many instances we could adduce to show that the heat of fermenting dung *does* destroy the germination of seeds.

The manure being, then, now ready, and the carts, horses, and men being at hand, the drills, too, having been drawn out at the desired distance apart, the dung should be carted out and carefully spread in the drills. And even here, there is a nice point: it will be found more expensive to put down the dung for 5 drills by one passage of the cart than if only 3 drills are done at once. The Scotch excel in this: the foreman starts the horse up the middle of the furthest 3 drills, and, with a dung-drag—a recurved two pronged tool at the end of a pole—pulls out the dung in sufficient quantity into the drill in which the horse is walking, without stopping the horse at all. A woman then goes up one of the *wheel-drills* (to avoid treading the dung into the ground and making it troublesome to spread) and gives a forkful of dung to all three drills, which forkfuls are spread and shaken about equally by three other women who follow, one in each drill. As, in this country, we have no women field-workers to speak of, we must be content with one man spreading the dung over three drills, and we shall find that he will do this much more accurately, with much greater ease to himself, and in much less time per acre, than if he were to muddle along over five or more drills, at once.

The Scotch always begin their operations at the further side of the field, so that, when the piece is finished, man and beast find themselves near home. There is not much in this, perhaps, but it shows how attentive

these economical farmers are to the most trifling.

How much dung shall we use? Well, that depends upon the quantity one has to spare, and whether we intend to use dung alone or to use half dung and half artificials. And, another thing, how shall we measure the dung? At Montreal, a load of rotten dung would weigh, probably, 1,500 lbs.; at Sorol, a load would certainly not exceed 900 lbs. Suppose we say that 15 tons of good manure from well fed cattle, pigs, and horses, all mixed together, would be sufficient for an acre of mangels, that is, to grow a fair crop, though nothing wonderful. But we want a full crop, as much as the land can produce, do we not? Well, then, if we really mean to grow such a crop as that, we must add something else to the dung, and that something else must contain nitrogen in abundance.

Many years ago, when we first began to love farming and to believe that a pound earned by agricultural pursuits was worth ten pounds earned at the Bar, in 1845, Philip Pusey, M.P. for Berkshire, tried certain experiments in mangel growing, on a rough heath farm of his that, two years previously, was said to have been incapable of growing even a white turnip.

We remember the land well. The soil was a peaty sand, on a sort of moorland (*tufa*) subsoil, impenetrable to the roots of any plants. Mangels were sown; with the following manures, on experimental plots of 2 acres each:

- No. 1.—Fourteen tons of farmyard dung.
- " 2.—Twenty-eight farmyard dung.
- " 3.—Three cwts. (336 lbs.) of Peruvian guano.
- " 4.—Fourteen tons of dung and three cwts. of Peruvian guano.

The yield of mangels—the long red—produced respectively from these four dressings, per acre, was:

- No. 1.—Eighteen tons. (2240 lbs.)
- " 2.—Twenty-one do.
- " 3.—Seventeen do.
- " 4.—Thirty-three do.

Now, in those blessed days, Peruvian guano contained about 17 oyo of ammonia, equal to about 14 oyo of nitrogen, and only cost \$75.00 a ton, so that it paid well to use it, as we see from the above figures that, while the addition of 100 per cent. of dung only added three tons to the yield of No 1, the dose of three cwt. of guano, containing 47 lbs. of nitrogen, produced an extra yield of FIFTEEN TONS, at a cost of 75 cents a ton!!!

Her., in the province of Quebec, where fertilisers are so extravagantly dear, we dare not recommend such heavy dressings, but we feel sure from our own experience, that the cost of 150 lbs. of nitrate of soda sown on an acre of mangel at twice, after the plants are up, would be amply repaid by the additional yield thereby obtained.

Mr O'Brien, President of the Durham Farmers' Club, complains of injury done to his corn by the manure used scalding it. There need not be the least fear of harm being caused to any growing crop by nitrate of soda mixed with thrice its bulk of earth. We have used tons of it, and it has always proved profitable both on grain and on roots.

If, instead of nitrate of soda, sulphate of ammonia be used, 125 lbs. of the sulphate will contain rather more nitrogen than 150 lbs. of the nitrate,

and may be sown broadcast over the drills and dung before splitting them, as it is not nearly so soluble as the nitrate of soda.

It may be useful to know that with drills at 24 inches apart, there will be 7200 yards of drill in an acre, whence the number of yards that must be sown along a drill, at the rate of so many bushels an acre, can be easily calculated.

Before sowing the fertilizers, mix them with dry mould of about three times their bulk, having previously crushed the manure with a barrel filled with stones, or other weighty matters, until not a single lump of even the smallest size remains unpulverised. The more perfect distribution of the manurial constituents of the fertilizer will amply repay the trouble taken.

The number of yards along a drill, with intervals of 24 inches, that can be manured with one pound of any manure at the rate of 112 lbs. on acre, is 65.

And now the dung being spread and the drills split over it, we are ready to sow. One thing we must bear in mind and attend seriously to. The manure spread in the drills must never be allowed to lie exposed to the desiccating influence of the sun and wind one moment more than is absolutely necessary. If possible, the last drill dunged should be split, even at dinner-time; for dried dung takes much longer to combine with the soil than fresh dung, and its effects upon the young plant will be considerably retarded if it be allowed to become parched up. At night, before leaving the field, the last drill split should be sown and rolled; for the moisture of the soil soon evaporates, and it is of great importance to all root-crops, that depend so much on a vigorous growth in their early stages, that the seeds should be deposited in a finely pulverised, moist, warm bed, of which they will take immediate possession, swell at once under the influence of their pleasant surroundings, and spring forth from their genial couch into the free light of heaven, instead of lying, as they will do when badly treated, for days, sulking among dry clods, and only showing themselves above ground to be immediately overpowered by their little but persevering enemies, the weeds.

(To be continued)

The Dairy.

DAIRYING.

Mr. Monrad gave an address on "Dairying," which was listened to with much interest:

The conditions are such with the improved machinery, like cream separators and so forth, that there is no longer a "dairy belt" as was the case a few years ago. Climate even is no more a factor in dairying with the improved methods; for with proper facilities a fine article of butter can now be produced in the sunny South. The conditions for dairying west or east are not materially different except that land is cheaper in the West, and people are a little more apt to make use of improved methods than they are in the East. We have found that the dairy cow does not need ice water in winter. We have also found it costs more to warm water with clover-hay than it does with fire. Linseed-meal also is too expensive to keep cows warm in a cold barn. The cow must be comfortable and conditions all right

if good pure milk is what is wanted and in paying quantities. The Babcock test must also not be forgotten for it is one of the greatest inventions of the age. It is better than churches to make people honest. He would never make half skim cheese. If you must lie, tell a whole lie. Make full skim cheese, but better leave the cream all in if you want to have a demand for your product. Honest skim cheese is all right if you sell it for what it is. Separator milk from which the cream has all been taken is not all poison as some persons were wont to think, but is a food of high value if properly used: it must be supplemented with other grain or linseed meal. You cannot afford to feed 35 cent butter fat to calves or pigs. But what can this association do to improve the product? It should be the centre for dairy instruction. Cheese of good quality should be the objective point.

should have the purse a part of the time. In Scotland he found two daughters who had charge of dairies of 100 cows, and kept everything in the best possible condition.

J. B. Phelps took exception to Mr. Monrad's idea of having women employed in the dairy. The average barn is not a fit place for a woman, the work in the home is sufficient, and milking is not very refining.

Mrs. Helen Johnston said she thought it not in the least degrading for girls to learn to milk. She knew of a home with four daughters, with no sons to help the father, where the daughters did what they could to help the father. They were as refined as any daughters of families where no girls are pampered, and the mother is allowed to do the work. They went into the best of society, and could take their part at piano or organ. Women ought only to ask for equality, and

For best results feed all the cow can digest. The cow must not be allowed to shrink in milk, as it will be almost impossible to bring her back.

Some one says. "Suppose all should change to winter dairying?" But they won't. Too few from each neighborhood attend such meetings as this to make a person have any fear of too many going into winter dairying.

THE CHOICE OF FOODS.

Prof. I. P. Roberts of Cornell University followed with an address on "Foods—the Part They Play in the Dairy":

He prefaced his remarks by urging his audience to make the best of their environment because whatever that may be we alone are responsible for it. He was sorry to hear "so much complaining when there is so much to be thankful for. We have taken the wild fruit of the forest and have bid it yield fruit of the kind we command. So you go into the dairy and say to one calf, die, and to another, live, and it is so. You make your own environment.

Breed and environment have every thing to do in making a success of the dairy. Breeding and selection are a power, yet selection is not always improving. We would like to reproduce, but it is better to produce better stock. In selecting, select the best, then feed to a purpose. No great body of people has ever been civilized without having their food also of a better and finer quality.

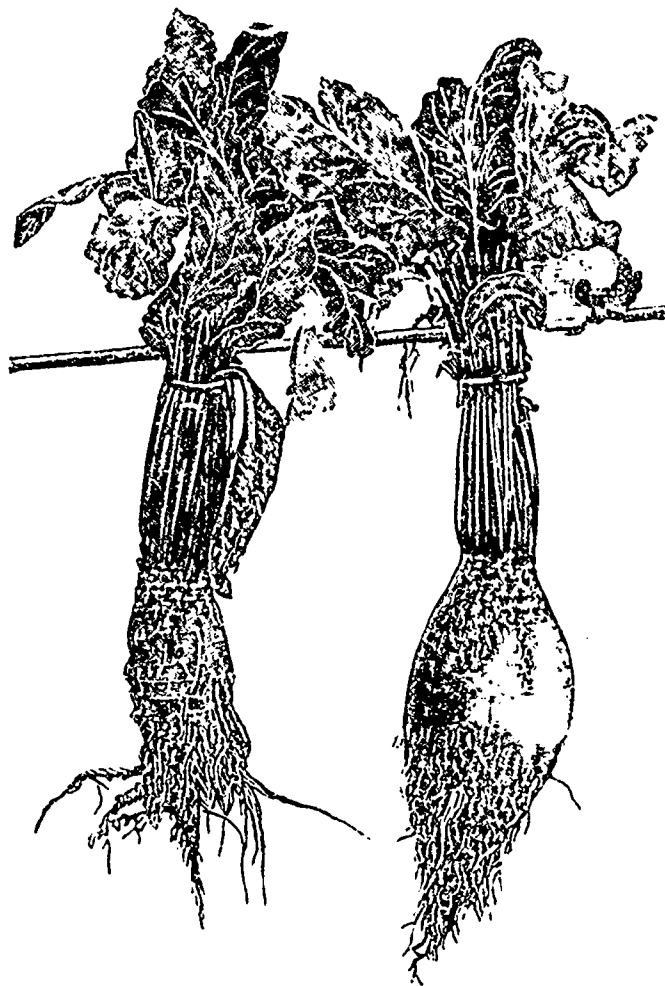
Take two animals exactly alike; feed one in a cold barn or out in the cold, the other in a warm barn with pleasant surroundings, and the result will be two different breeds, which will produce milk of different quality. Food in a human family is an index of civilization. The nation that consumes the most butter and sugar is the most civilized.

Environment will change the animal. Food is the greatest factor to produce change for the better. Clover and turnips were the great lover that elevated the English farmer. Cows fed on straw could never become good dairy cows. The Ayrshire cow, from being the most undesirable of all cows, was made by care and feed the best all-purpose cow. The turnip made her a good milker. The Holstein was not the great cow that she is until after the draining of the marshes of Holland. Our oil meal also helped to improve her. So with the Channel Island cattle. Environment has made them. By long pasturing, the islands were depleted of phosphates, and the result was cattle of small stature and bone. Care in feeding has made them what they are.

Henry Clay had such a high idea of his own Kentucky blue-grass that he never took his horses to a distant race-course without taking his feed with him. Quality of food in the vicinity of Lexington, Kentucky, is undoubtedly the reason why over \$2,000,000 worth of horses are sold from there annually. The successes of others should be lessons to us. The food of parents, years before, play an important part in the offspring. Feed for beef, and in a few years you change the animal.

We should study out what we want, and then fix the conditions accordingly. The person who will try to get a dairy cow by way of feeding for beef will meet with failure. The calf should be educated to put milk into the pail. You should feed at high pressure in the right direction. Fat-fed calves are taught to put fat on the loins instead

(1) Surroundings is just as expressive though not so scientific a word Ed.



HOW NITROGEN AFFECTS THE GROWTH OF ROOTS.

You must get an appropriation and a Babcock test.

Mr. M. related his experience in using the Babcock test in Southern Illinois where from one day to the next there was a great change in quality of milk furnished at the creamery. The manufacturer was losing, by not having the cream taken from the milk perfectly, about \$15 per month. Use the test in the dairy; it will make good cows. Thousands of dollars are thrown away by keeping poor cows. Keep a record of each cow as to quantity and quality of milk. He kept the first record of cows 20 years ago in Denmark. After that, in New-England, with good results. Did not do it every day. Saturdays would do. Get the boys interested in it. It will help to keep them on the farm. The girls, too, should be interested, for they are peculiarly fitted by nature to do much of the work in the dairy. Formerly, before creameries and factories were established the wives made the butter and had the proceeds. This, in many instances, has changed. The wife

where circumstances require, it ought not to be looked upon as degrading for women to do any light work.

WINTER DAIRYING IMPROVEMENTS.

An essay on "Winter Dairying," by E. S. Crooker of Union City, was read.

When he was a boy, the aim was to get cattle through the winter with as little feed as possible. Cows were expected to give milk six months in the year, and generally were not milked during the winter months. Now cows are milked in some dairies the year round, some of the cows going dry six weeks or a month. The aim of the essayist is to have his cows come in so as to milk them at a time when farm work is least pressing. Let cows go dry in July and August, when milk is worth the least. With a warm barn, it will pay best for the average farmer to keep only good cows, and to work up his milk during fall, winter and spring, because labor is cheapest and the product sells for the best price.

of into the pail. Calves are easily spoiled by over feeding if not rightly fed. Heifers should be treated as cows, and well cared for, to be ready for motherhood, so as to have a large reserve force. If weak, they will fill a consumptive's grave. Depletion of the system will cause tuberculosis. Cows are easily injured by feeding corn meal, yet, fed with care, it is one of the best of foods. Food skillfully applied will lengthen the milking period.

We often make mistakes. One mistake is to buy foods rich in albumen when we ought to raise them. You send to Iowa and Mississippi for nitrogen, when clover seeds will do the business for you. Corn and clover make a good food. The speaker related how visitors at his barn were attracted by the aroma of the clover hay. The volatile oils assist in digestion. The cow should be taught to eat all she can digest. You can just as well as not double the quantity of butter fat if you commence with the calf

Cultivator

A CALL FOR INFORMATION,

AND A SUGGESTION AS TO
FEEDING OATS.

ED. HOARD'S DAIRYMAN:—Would it not be a good idea for those successful dairymen who are so busy in good weather attending to the many necessary wants of the modern dairy, to stop long enough this very cold spell and tell us just how they operate that same successful dairy. We want the minutiae of the every day work, just how they do it, and what they do it for, and above all things give the results produced by the course they have pursued. Then if we are the students of our business that we ought to be, we shall know more about how to conduct our dairies than we now do, and the writers will not be any the worse off by instructing us that we are behind in such matters, and the day may come when we shall make it interesting for them.

One thing I am interested in is the feeding of oats to cows. Is it profitable? I believe not, as usually done—that is to thresh and grind. And especially when some one else has to be paid for the threshing and grinding, because we can buy a better feed for less money that does not have to be ground. I think few farmers count the cost when they take oats to the mill. But suppose, as soon as our oats are mature enough to be handled by a binder, they are bound and left in the shock to cure nicely, then set up your feed cutter and carrier and draw them to the cutter and run them through that up into the barn just where you can't get anything else. You will never have to touch it again till you feed it to the cows, then run it down a chute into the manger or feeding car. The cows will eat it all up clean and you have saved the stacking, threshing, and grinding, with their great waste and expense, which is very seldom counted at its full cost. You get full benefit of straw and grain, and from what experience I have had, vermin will trouble it less than most any other way; especially if it is cut in short lengths, as then they can not make roads through it, as they fill up as fast as made. I never had any success making oat hay, as when cut with the mower it falls very close to the ground and is very hard to get up, with any degree of cleanliness, neither was it eaten clean with a proper relish after I had gotten what I did.

Loon Lake, Ill.

H. D. H.

TEMPERATURE IN CHURNING CREAM.

EDS. COUNTRY GENTLEMAN.—There has been some discussion lately, notably in Hoard's Dairyman and the Rural New-Yorker, as to the possibility of churning sweet cream at low temperatures. The statement was made that at Vice-President Morton's farm the cream was churned at a temperature below 40°. Others follow with statements that it is impossible to churn any cream at that temperature.

As the mistake that is at the bottom of the trouble is a mistake which I also made in this paper last spring, it is proper that the confession of the error should appear in the same paper. In an article by John Gould, he quoted us as saying that we churned at 45° to 48°. The whole trouble comes from considering the "temperature of churning" as the temperature at which the churning began. This is the customary way of speaking, and was what we had in mind in saying that we churned below 50°. This is not, strictly speaking, a correct form of statement, for the real or true "temperature of churning" is the temperature of the cream when the butter comes.

Taking this definition of churning temperature, we should have to modify our statements and say that when churning sweet cream we start the churn at as low a temperature as possible, but that the temperature when the butter comes is usually about 54°.

If the temperatures used at Mr. Morton's farm were looked up, it probably would be found that though they had cold cream to begin with, even below 40°, yet the temperature of the buttermilk, when drawn off, would be over 50°.

It is an interesting point to know how cold it is possible for cream to churn, and on this question we have made many tests. We got a surprising uniformity of 52°. No matter how low we start we never have been able to get the butter to come until the cream had warmed to 52°, and in most of the special tests it has churned at just 52°.

In one test we kept the cream at 40° by occasional additions of pounded ice, and churned for two hours with no result. We then warmed the room and let the cream gradually warm while it churned. In an hour and ten minutes more the butter came, and the temperature was just 52°.

So far, then, as our work is concerned, we may say that cream will not churn—i. e., the butter will not come—at below 52° temperature.

Later—Since the above was written we have been making another test in relation to the same subject, but taking the cream under somewhat unusual conditions. The morning's milk was run through the separator directly from the cows, the cream at once put into ice water, and an hour later when it was cooled to 40° it was put in a large churn which it filled less than a tenth full, so that in the churning it had a great deal more pounding than would ordinarily happen. Under these conditions, with the perfectly sweet, fresh cream, we were able in two hours and twenty minutes' churning in a cold room to get butter to come at a temperature of 49°, although the grains were so fine that it was somewhat difficult to wash them. This lowers the temperature given before as the lowest possible at which cream could be made to churn, but it does not indicate that under ordinary conditions churning can be done at any less than the 52° temperature above mentioned.

W. W. COOK.

Vt. Experiment Station, Dec. 12.

RICH GURNESEY MILK.—We have just figured up the yearly milk records of the Ellerslie herd. Sixty-two cows and heifers—all that have completed a year's work—average 6,119½ pounds of milk each. We are now milking 80 head, all registered Guornays. A composite sample of the mixed milk of the whole herd for eight milkings, just analyzed by Prof. Cooke, of the Vermont Experiment Station, shows 5.37 per cent of fat, 3.06 per cent of casein and 15.18 of total solids. Forty-two per cent of the milk is from cows that have calved within three months. Our average feed per cow is bran, five pounds, corn meal, four pounds, linseed meal and cotton-seed meal one-half pound each, seven pounds of mixed hay and 25 pounds of corn silage. Our cows have not left their stalls since October 15. Prof. Cooke's analysis shows the casein to be only 57 per cent of the fat in our milk. As we are breeding and feeding exclusively for butter, this is a very satisfaction showing.

Ellerslie Stock Farm.

R. W. Yorker. H. M. COTRELL.

WINTER FEEDING FOR CATTLE DISCUSSED.

At the afternoon session yesterday, Prof. Robertson delivered an address on somewhat the same lines as Mr. Fisher's remarks of the morning. Ensilage and winter feeding for milk was the subject he discussed. Prof. Robertson first drew attention to the great importance of dairying. In fact, he attributed in great measure the immunity which Canada had experienced from the financial depression of the past year, to our success in this particular line of farm products. In cheese especially had our farmers excelled, and the reputation of Canadian cheese was now established in the markets of the world. Our cheese industry was, therefore, established, but there was room for a very considerable development in butter-making, especially during winter months. While we export over 50 percent of the cheese imported by Great Britain, our exports of butter was insignificant. But in order to increase our butter output it was necessary to pay very particular attention to the feed furnished by the farmer to his cattle during the winter months. As successful farming was not so much a question of land as of good management of the land, so in the matter of dairying; success in this depended not so much on the cow as on the management of the cow. The cow required appetizing, succulent food every day of the year, and if she did not get it she would not perform the functions required of her in a satisfactory manner. Sufficient supply of pure water and a warm stable were also of the highest importance.

Corn silage was not in itself a complete and perfect food for cattle, containing as it did a very large amount of starch. To supplement the corn in forming ensilage it, therefore, became necessary to add another food. Horse beans were often grown for this purpose and went far towards supplying the defect.

But in our cold country a certain amount of oily food became necessary, and here the value of sunflower seeds come in. Sunflowers could be grown at small expense, extracting as they did the greater part of their nourishment from the rays of the sun, without impoverishing the soil. No less than 700 lbs. of oil per acre could be procured from a crop of sunflowers, while the average cost per acre would be found

to be not above twenty dollars. To form a perfect ensilage, then, he would recommend a mixture of the following proportions: Corn, the product of one acre; beans, one-half acre, and sunflower heads, one quarter acre. In conclusion Prof. Robertson emphasized the importance of feeding with a purpose. Cattle to be fitted for the market, for instance, required a different line of feeding from cows kept for dairy purposes. The object in the one case was merely the accumulation of fat; in the other it was the development of certain properties

The Orchard and Garden.

MONTREAL HORTICULTURAL SOCIETY

AND FRUIT GROWERS ASSOCIATION OF THE PROVINCE OF QUEBEC.

A few hints on the planting of Fruit Trees.

If all the necessary preparations have been completed as advised in the last issue of the *Journal*, and every thing is in good order, the next step in the programme will be to prepare the places to receive the trees. It might be advisable to state here that when the ground is in the proper condition to proceed with such operations as the planting of potatoes, or the harrowing in of grain, then the operation of tree-planting can be judiciously taken in hand. This condition of the soil is important both to the operator and to the subject to be operated on. The earth in that condition will work clean, being neither wet nor dry (a condition that all soils should be in when being worked to the best advantage). The Spring is perhaps the better time taking every thing into consideration, with the one exception that every sort of work on the farm requires all the attention that can be given to it in that short season. These hints are equally applicable to Spring or Fall planting.

If Spring planting is to be proceeded with, it will be well to put the operation through as soon as the ground can be had in the proper state. If Fall planting be decided upon (and the trees can be procured in the immediate locality), let the operation be performed early enough to allow the trees to take. Some time about from the twentieth to the last of October being generally a suitable time; if all the other conditions are favorable then.

The places to be dug for the reception of the roots will require to be made sufficiently large to allow them to be stretched out to their fullest extent. It is poor practice to cramp or twist the roots into any other position than the most natural one. Every root should be set in its own place without being entangled with any other as far as can be practically and carefully done. The aim of the planter should be to place the roots in as natural a position as possible; which position should be almost horizontal in each individual case; allowing them to incline a little deeper as they extend outwards from the tree. The pit or place for the reception of the tree should be slightly convex in shape, having the highest point in the centre, where the stem of the tree will be placed directly above it. This incline from the centre will allow the dip to the roots advocated above. The proper depth to plant a tree is of the utmost importance to its well doing in after

life. There is perhaps no better rule to adopt than the old one, that is, to plant as deep as the tree was growing previous to removal. To be accurate however, the collar of a tree is the height that the earth should be made up to. This collar is the point from which the roots generally extend downwards; and the same point from which the stem rises upward: the dividing line between root and top. The collar of a tree should never be covered deeper than an inch or so.

It will be well to examine the trees, and if any bruised or broken roots are attached, cut them off with a sharp knife. It will also be found very advantageous to puddle the roots of trees before planting, and for the information of those who may not understand the process of puddling, I will here briefly explain it. The puddle consists of a mixture of clay, loam, or road mud with sufficient water to make it of the consistency of thick paint or cream. When this is procured in sufficient quantity dip the roots into it. This puddle will form a thick coating all over the roots, and

cess must not be carelessly or hurriedly performed. The packing must be done more firmly and the earth made harder than most amateur tree planters have any idea of. A good rammer for this purpose is a cut of a young tree about five or six feet long and about four or five inches diameter at the larger end. The ground to be filled in and packed round the roots requires this packing process to bring the earth into contact with the roots; close, very close contact at that; so that, when the newly made roots make their first effort to extract nourishment from the earth, they will find the material to work upon close at hand, for the purpose of supplying it; and also to keep them steady in their position.

Nothing in the shape of manure should come in contact with the roots of a newly planted tree. Manure can be much more profitably applied as a mulching than by incorporating it into the soil around newly planted tree roots.

As a mulch, the manure prevents the drying out of the soil, and furnishes the food for the trees in an avail-

in assisting to make the journal popular in our households. If you share the same opinion you can use the following dedicated to "The Ladies."

"The rose looks fair, but fairer wo it deem

"For the rich odour which doth in it live.

Yes, the rose is not only an emblem of beauty but of virtue, for its fragrance does not leave its petals until long after they have ceased to live, and we may well exclaim with another old songster:

"May I gain a good name by well doing my duty.

"Which will scent like a rose when I'm dead.

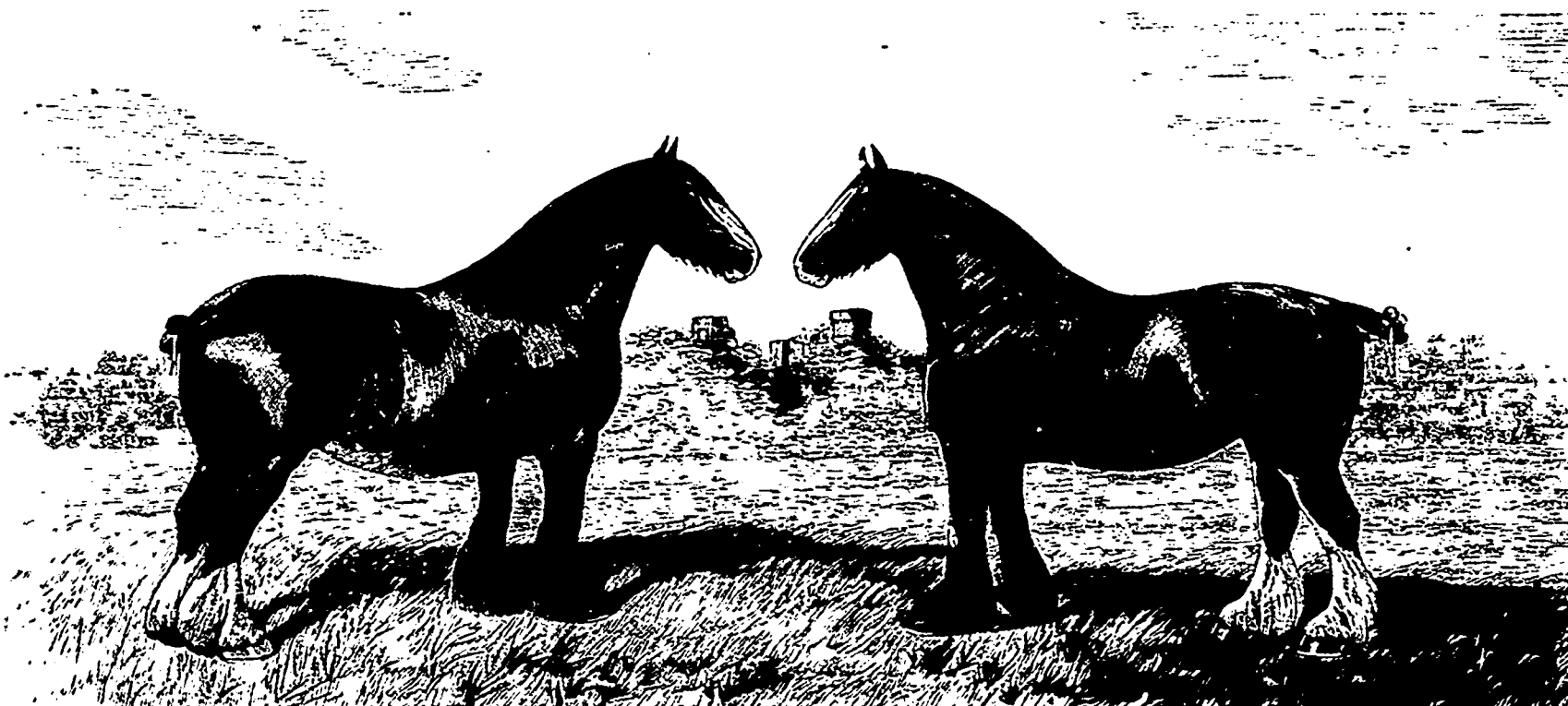
The rose, first called the "Queen of flowers" by Sappho more than two thousand years ago, has well maintained her position as such throughout the ages, and reigns supreme favourite among lovers of flowers at the present day no less than when Solomon sang "Let us crown ourselves with rose buds before they be withered," or when Homer made her a figure by which to illustrate the beautiful.

Few who notice the roses lying in

where many allusions are made to it, and always in a way which shows its popularity at that remote period of time. We read of him: "who should make the desert blossom as the rose," and again: "I am the Rose of Sharon and the Lily of the Valley."

Some people speak of the use of flowers on bridal, festal and funeral occasions as if it were a new-fashioned extravagance, but so far from this being the case, there is abundant evidence to show that roses and other flowers were used extensively for such purposes by the ancients at a very early date. Old manuscripts, pictures, and statuary, show that flowers were used as offerings to the gods, and that the victims sacrificed were gaily bedecked with garlands of that and others flowers.

The rose was dedicated to the goddess of beauty, and to the gods of love, of silence and of the dawn (Hence the phrase *rododaktulos 25s*, the "rosy-fingered dawn". Ed., by the Greeks, and what more fitting emblem can be found to express one's emotions that these old mythological deities repre-



WILDFLOWER.

SHIRE MARES.

CORNFLOWER.

BRED BY AND THE PROPERTY OF MR. WILLIAM BOUCH, ASHORNE, WARWICK. WINNERS OF FIRST AND THIRD PRIZES AT R. A. S. E., WARWICK, 1892, AND OF NUMEROUS OTHER PRIZES.

place within their grasp something to commence operations on.

On removing the roots from the puddle, they should be dredged all over with fine dust, such as road dust; in fact there is nothing better as a dredge than road dust; this will firm up and increase the thickness of the puddle coating; forming a crust all over the surface of the roots, excluding the air and preventing the roots from becoming too dry while the operation of planting is being performed. This puddle actually supplies the young roots with the proper material in the proper place to commence a new start in life.

There is nothing I know of will encourage the growth of young roots on a newly transplanted trees better than the above puddling. When the tree is placed in its position and the roots properly placed, let it be held there while some of the finely pulverised good soil is placed among and over the roots. See that none of the roots are misplaced in this operation.

As the filling in proceeds, it will be necessary to pack the earth among and over the roots. This packing pro-

able form after the rains have washed down the proper fertilising ingredients. Besides the growth that has been forced with too much manure is very likely to withstand a hard winter with indifferent success.

The next issue of the *Journal* will contain a few hints on pruning, thinning and regulating the growth of fruit trees.

THE HISTORY OF THE ROSE.

By George Moore.

MR. EDITOR,

Your admirably conducted *Journal* may be said to be faultless as an agricultural periodical, but I should like to see the ladies interested by some articles occasionally, a little apart from the solid and useful instruction which is so freely set forth for the benefit of the sterner sex.

Perhaps a brief history of the flower which is the type of their sex and, in fact, of all beauty, might be of service

such profusion in the windows of our florists, or use them to adorn their persons or decorate their tables, are aware of the interest attaching to them on account of their history, extensive culture, or commercial value. Roses grow naturally, in their various species, in all countries and climates, from "Greenland icy mountains to India's Coral Strands" with one notable exception where no indigenous species have been discovered. Australia with all her rich array of wonderful and curious botanical beauties has no roses! poor Australia! (1) But it is not the wild species that we propose particularly to notice, nor the great natural family *Rosacea*, one of the largest, including most of our domestic fruits, the apple, pear, strawberry, raspberry, &c., to which our favourite belongs, but to confine ourselves—more especially—to a notice of those which the skill of man has brought to a state of refined civilisation.

The antiquity of rose-culture is strikingly proved by sacred writ,

(1) Her "botanical beauties," lovely as they are, have no odour.—Ed.

sent. Anacreon gets ecstatic over the rose and calls it "The delight of the gods," "The favourite of the muses," and sings:

"Call me straight the inviting rose
"Shielded by the thorn it grows,
"Call the rose. What boots the smart?
"Boundless sweets regale the heart."

and then as if struck by a deeper and more pathetic regard for its loveliness, he adds:

"Pluck it not; the glowing gem
"Unwilling leaves the parent stem,
"Round the feast of fragrance rove,
"But gently touch the rose of love."

The Romans no less than the Greeks were enthusiastic admirers of the rose. They had the art, too, of forcing roses to bloom at unwonted seasons, and by the same means as do our florists of the present day. Seneca speaks of roses being grown in houses in which were tubes filled with hot water, and they flowered, he says, in December. A modern-rose house could not be better described.

Flora, the Roman goddess of flowers, was a pretty girl whom the Romans

deified on account of her beauty, and whose occupation was selling flowers.

When Roman luxury had attained its highest state of development (1), the love and use of flowers shared in the excess.

Ladies and Patricians took their meals reclining on couches of rose leaves, they were scattered on the floors of their guest chambers, put into their wine cups, strewed in their thoroughfares, and crowned their statues. The licentious and extravagant Nero is said to have expended a sum equal to \$50,000 for roses to grace a single feast.

Coming down to a later period we find that it was a custom of the Pope to consecrate a rose and present it to some great personage as a mark of his special regard. Henry VIII had one thus presented to him, but he eventually ill requited the compliment.

The golden rose is presented by the Pope to special favourites even to the present time. In olden times it was customary at some social gatherings to hang a rose over the assembled guests. (2) This no doubt alluded to it as the Greek emblem of silence, for it was understood that where the rose was thus suspended no scandal should be indulged in and no secrets divulged. This custom led to the common expression, relating to a secret communication, "under the rose." If a rose could be placed over some of our social parties of the present day with a like object it might yet be an advantage.

This love, awe, even veneration, for the rose has continued through all the changes and chances of time to the present day and its culture is more extensive and important as a commercial enterprise now than ever before.

In the old world, roses are cultivated both for the beauty of their flowers and fragrance of their petals by scores, even hundreds of acres, and give employment to thousands of persons. Large areas of land in Persia are planted with roses for the purpose of making that subtle and exquisite perfume, "Attar of roses," which is unequalled in its delightful fragrance, and the extract of which in its purity, is worth far more than its weight in gold. Some will exclaim, "All this is useless extravagance and a waste of money!" But when we reflect that by their means many a poor family is provided with the means of gaining an honest and respectable livelihood, and that unlike the midnight revel, the demoralising gambling table, or the yet more vitriating horse-race, there is nothing to lower but everything to elevate the human character, in the taste for flowers and their products, surely these objections are futile and vain.

I know, too, it will be urged that many use flowers for mere ostentatious display and not for the love of them. This is to be regretted certainly, but even these contribute to the commonwealth by the distribution of their money for what at least is harmless, while those who desire to possess flowers—short-lived though they be—

(1) And very soon that highest state was—
v. Juvenal. Ed.
(2) In the great Hall at Lullingston Castle
Kent, hangs a painted rose with the inscription

"By this flower every Kentish man knows,
That what is said here is said under the
rose."

Talk was loose in the days when that hall was the dining-room of the household, though in hot weather the family still take their meals in its airy, lofty, oak-paneled recess. The lovely Darent flows gently past it, and the herds of deer towards sunset feed tranquilly in front of the ample doors. Mr Moore will make one poetical in spirit of one self. Ed.

are benefactors to mankind by encouraging a taste for the gifts of God in their most lovely form, and improving the good sentiment which exists in their less affluent neighbours. To the poor and solitary what comfort there is in flowers! Ask the kind ladies of the flower missions with what delight a poor suffering bed-ridden patient greets their coming with the simple nosegay, which gives them a glimpse of the beautiful world without, and brings back sweet memories of the past, happiness to cheer, and gratitude to raise their thoughts to the giver of all good, by the coming of these benevolent friends with nature's charming gifts.

As a means of social advancement, the taste of flowers must be encouraged in all well order communities, and the capital expended on them is not invested but put to a very useful purpose.

The rose-nurseries of Great Britain are very extensive, occupying hundreds of acres. I never shall forget a visit I paid in the year '53 to the Rosary of Mr. Paul of Waltham near London. The grounds on which roses alone were cultivated were then thirty acres in extent and have been since increased more than four fold. The day was fine as only a day at the end of June can be, and the night previous a gentle shower had refreshed the beauties and made them as near perfectly as could be imagined.

The sparkling drops were still hanging upon flower and foliage, and were being kissed away by the rising beams of day, exhaling odours, ravishing, inimitable, exquisitely delicious—almost Divine—and beauties were unfolding, beauties beyond the powers of imagination to conceive. The London Athenæum said that Paul's roses "were to be seen once and dreamed of for ever". In my case, the truth of this is exemplified, for amidst all the turmoil of a changeable life, the hours I spent in that rose nursery can never be obliterated from my memory. (1)

How true it is that
"A thing of beauty is a joy for ever."
In those days we had no General Jacqueminot—it was about the time of his debut into the "Rose world,"—but we had *Giant des batailles*, brilliant and magnificent, we had *Couped'Hebe* which for form, delicacy and luxurious growth has never been surpassed, many a *premier* prize against all competitors have I gained by this exquisite rose.

The Hybrid perpetuals were then few in number and not remarkable in quality, and therefore it was only in the summer we could expect a large and fine display of flowers, but now all this has been changed by the wonderful improvements which have been effected in this class, and in England a profusion of roses can be seen in the gardens from the beginning of June until the frost destroys the blossoms of the tardy bloomers late in autumn.

Mr Paul has been the most enthusiastic, and successful rose grower in the world. He has introduced many new varieties of his own raising and imported many from the European continent particularly from France, where the climate is more suitable for the ripening of seed and therefore the production of novelties, while the moist climate of England is more conducive to the development of sturdy growth, solid flowers, and vigorous constitution. This accounts for so many of our choicest roses bearing French names; they are raised as seedlings in

(1) Mr Moore would, doubtless, like to die of a rose in aromatic pain.—Ed.

France, exported to England, and then their sterling qualities are brought to perfection.

The Americans have turned their attention to the culture of roses in some cases very extensively. Ellwanger & Barry, of Rochester are large growers of hardy roses, and Stark of Louisiana advertises 30 acres, but it is the cultivation of tea-scented roses under glass for cut-blossoms that they principally excel.

In this department they have outdone their contemporaries of the old world and attained to a degree of perfection beyond any on the other side the Atlantic.

The rose-houses of E. M. Wood of Boston are wonderful in extent, acres being covered with glass, and yet, so great is the demand for roses, that he has not to go out of the city of Boston for customers, and he is by no means the only grower. (1)

(To be continued.)

THE WINTER MEETING.

OF THE

POMOLOGICAL AND FRUIT GROWING
SOCIETY OF THE PROVINCE
OF QUEBEC,

WAS HELD AT ABBOTSFORD

Thursday and Friday, 8th and 9th
February 1894.

OPENING SESSION, THURSDAY, 9 A.M.

Organisation, Preparation of Constitution, By-Laws, etc.

2 P.M.

Progress in Horticulture

Spraying for the Prevention of Injurious Insects PROF. CRAIG
Remarks on the Nomenclature of Russian Fruits PROF. FLETCHER
J. M. FISK

8 P.M.

Small Fruits S. CROSSFIELD
Discussion, Strawberries, Raspberries
Currants, Gooseberries

FRIDAY, 9 A.M.

The best Market Varieties of Apples G. E. ROACH

Discussion—Will it pay to continue to grow the Fameuse?

What are the best varieties of Apples to grow for Export?
The best for Home Markets.

2 P.M.

Grape Culture W. MEAD PATTISON
Plum Culture in the North A. DUPUIS
Notes on some varieties of Plums grown on the Island of Montreal

A few Notes for Beginners W. W. DUNLOP

R. W. SHEPHERD, JR.

8 P.M.

Russian Apples R. HAMILTON
Discussion, Orchard Culture, Fruit Packages

QUESTION BOX.—A Box for the reception of Questions for discussion was open during the meeting

All interested in fruit culture were cordially invited to be present.

Samples of Winter Fruits were specially solicited.

(1) Thanks Mr Moore.—Ed.

FRUIT GROWERS AT ABBOTSFORD.

THEY DISCUSS MANY IMPORTANT QUESTIONS BEFORE ADJOURNING.

Abbotsford, Que., Feb. 10.—At this morning's meeting of the newly organised Pomological Society Mr. G. E. Roach read a useful paper on the best apples to plant for the market. This was followed by a spirited discussion in which, besides the essayist, Mr. Brodie, Mr. Shepherd, Mr. Fisher and others took part. The conclusion reached was that, except Fameuse, which has suffered so much of late years from spotting, there has been no change in the views of fruit growers, and Duchess, Wealthy, St. Lawrence and Alexander are the general favorites, with Yellow Transparent and Red Astrachan running them closely in the race for public favor.

The next question discussed was, will it pay to continue to grow

THE FAMEUSE APPLE.

All deplored the spotting which, has nearly ruined the orchards of that favorite sort, but most of the growers hoped for an improvement through spraying with the Bordeaux mixture and lime. All hoped that their large orchards of Fameuse might be spared. Mr. Sidney Fisher's splendid success the past season was very encouraging to the owners of Fameuse orchards. The question as to the best varieties for export depends chiefly on the manner of shipping, whether in barrels or boxes, and where the shipments are made to, Mr. Shepherd showed that he was able to ship some of the bright red apples, though soft-fleshed, in his special apple, cases so as to realise very high prices. But for shipment in barrels, fruit that is harder and capable of standing the pressure is better. Mr. Shepherd ships Fameuse, Wealthy and McIntosh Red and receives fancy prices for high-class fruit. Red Canada, Canada Baldwin and Golden Russet were recommended for export.

GRAPE CULTURE.

Mr. Patterson who is a specialist in the cultivation of the grape, was unable to be present and sent his paper. The decision reached was that it does not pay to raise grapes at present prices in this province. Brighton was highly recommended. An improved wild grape of Abbotsford, named the 'Gibb,' of which a single vine yielded 150 pounds last season, and sold for fifty percent more than the best American grapes, was highly recommended for hardiness and productiveness.

PLUMS.

Mr. W. W. Dunlop, Montreal, read notes on some of the varieties of plums grown in the neighborhood of Montreal. Mr. Dunlop grows about eighty varieties and is looked upon as an authority on this fruit, and his paper called forth a great deal of comment and discussion. Some of the new Russian plums were recommended. A number of sorts that originated near Montreal, it was thought, should be more widely grown than the foreign kinds.

Mr. Shepherd's paper, 'Notes to Beginners,' provoked a good deal of discussion. His hints were in the direction of preparation of the soil; the kinds to plant and methods of caring for them and marketing. It must not be supposed that making a hole in the ground and sticking in a tree will

ensure fruit. They must be planted on fairly good, well drained land, and protected from cattle. The ground should be cultivated for a few years. Keep the trees free from insects, mulch in hot weather, and in the fall, for winter protection, and dress with some mixture to keep mice from gnawing them and plant hardy kinds from a nursery near home. Don't send off for American or Ontario trees. Yellow Transparent, Duchess, Wealthy, Canada Red, Canada Baldwin, Golden Russet, were the sorts recommended.

RUSSIAN APPLES.

Mr. Hamilton's paper on Russian apples was very much discussed, Mr. Frégeau of Rougemont and Mr. Guay of the Trappist Fathers' establishment at Oka, taking a part. The great beauty of some of the Russian kinds, especially Lievland, Switzer Yellow Transparent, and Golden White, was much commented on. Mr. Frégeau and Mr. Fisher, both much admired Lievland.

Heartly votes of thanks were passed to the kind Abbotsford people by the strangers, who expressed their gratification at the splendid entertainment they had received, and to the Methodist congregation for having given the use of the church free for the occasion.

A summer meeting was arranged to take place at Knowlton, Mr. Sidney Fisher having kindly invited the association to do so, and the next winter meeting at St. Johns, Que. Letters and telegrams were read from many persons who were unable to be present, and one of the most enjoyable meetings came to an end.

TOMATOES AS A GREENHOUSE CROP.

In the Eastern States tomatoes are often forced in midwinter, at which time they bring fancy prices in the large cities. A higher temperature is required to force tomatoes than most other crops, artificial pollenisation must be practised, and great care taken to keep the plants free from disease. These items reduce the profits very materially, and render this business quite uncertain except near large cities.

The Ohio Experiment Station has found that there is more profit in keeping the houses filled with lettuce during the greater part of the winter and holding back tomatoes for a spring and early summer greenhouse crop.

Lettuce is not a profitable greenhouse crop later than April, but tomatoes flourish in the houses during the spring and early summer months much better than in winter. The crop is mostly gathered during May and June, at which time 16 to 20 cents per pound is realised.

This is less than half the price paid in winter, but owing to decreased cost of production and greater demand, there is more profit in a spring than in a winter crop.

In order to have plants ready to fill the houses as soon as the last crop of lettuce is out, tomato seed is sown about the last week in December. Seed is sown in shallow boxes, not having more than two inches depth of soil. As tomatoes require considerable heat, these seed boxes should be kept in a warm part of the greenhouse.

Soon after the plants have formed the second leaves, they should be transplanted. For this purpose the same kind of shallow boxes are used as before and in these the young plants are set about two inches apart each way. If kept growing nicely the

plants will begin to crowd each other in three or four weeks, when they should be again transplanted. This time they are to be set about four inches apart each way. The same kind of boxes may be used as before, but greater care must be taken to keep the plants watered than when younger, as more water is required, because of the greater amount of foliage. During all stages of growth in which the plants are kept in boxes or flats, a good method of watering is to place the boxes of plants in a shallow vat, holding a small quantity of water. If these plant boxes have slatted bottoms, as they should have, the water soaks up evenly through the soil, and in a more thorough and satisfactory manner than when surface watering is practiced. The only precautions that need be observed in following this method is not to water until the plants require it, and not to keep them soaking after the soil is fairly wet. If desired, the plants may be set in four-inch pots or in large beds at the second transplanting, instead of into boxes, but the latter plant has some advantages over the others.

Early in March, the plants ought to be a foot or more in height, and just coming into bloom. They are then ready to set in permanent beds for fruiting.

These beds should contain about six inches of soil. The plants are set about 20 inches apart each way, and in order to occupy the ground fully, lettuce plants are set between. As soon as the lettuce is cut, the tomato plants are given the whole space. The soil should be stirred frequently, and it is advisable to mulch the surface with half rotted manure. An important part of the care of the crop consists in pruning and training. The plants must be tied to some support and the tying must be repeated as often as required, as the plants increase in height. Stakes may be used for support, or strings may be tied to the rafters, and the lower end fastened to short stakes driven near the plants and the plants tied to these strings. The side shoots near the base of the plants must be removed as they appear, and the plants kept trained to single stalks, or if preferred two shoots may be allowed to start from each plant, but in any case the surplus suckers must be removed as they appear. (1) This pruning hastens maturity and makes possible to grow the plants within the narrow limits named. It is not necessary to remove any foliage, unless it becomes diseased, in which case it is better off than on, as it does no good; besides, it is unsightly and serves to spread the disease.

As before stated, tomato plants are less subject to disease late in the season than early, but the best preventive of disease is good care so as to keep the plants growing thriftily. A fair crop when grown in this manner is about five pounds per plant. This cannot be rated as a highly profitable greenhouse crop, but when it is considered that it is grown at a time when the houses would otherwise remain idle the reason for growing it is apparent.

Concerning varieties, but little need be said. Almost any smooth-fruited sort is suitable for the purpose. The extra-early varieties are too rough and irregular for the purpose, as their close pruning seems to make the defect still more prominent.

Acme, Favorite and Beauty are very satisfactory. Dwarf Champion does very well, but is less fruitful than the

(1) Every one; and only one stem.—Ed.

above, and is more difficult to prune. Its earliness is its chief merit.

A method of growing early tomatoes out of doors to succeed the greenhouse crop will be given at another time.—Ohio Agricultural Experiment Station.

INCREASING THE FERTILITY OF WORN-OUT FARM-LAND.

All arable soils in their virgin state, which grow crops successfully contain the elements of plant food in varied proportions and amount, and also all different kinds of farm crops use the same elements contained in the soil, but the proportions required for each are different. Hence the importance of a proper rotation of crops to abstract these elements which are by nature in the soil, or applied by the hand of man, so that the soil shall not have a superabundance of any one element to be of no pecuniary service to the owner.

There are three main sources of plant food: the mineral ash, nitrogen, and carbon. The one is derived largely from the soil, the others from the air. The leading constituents of the soil, which all crops appropriate are nitrogen, phosphoric acid, potash, lime and magnesia, and several others usually in large abundance in all soils, but nitrogen, phosphoric acid and potash are the most taken up by crops and usually the least abundant in soils, hence they are the quickest exhausted. The composition of average good virgin soil contains per acre about 2,500 lbs. of nitrogen, 2,500 lbs. phosphate and 3,000 potash. This amount is sufficient for about 50 to 75 full crops of grain and hay. Although this apparently large amount of plant-food is in the soil; yet it is so chemically combined with other materials, principally carbonates, that the roots of plants are not able to appropriate it fast enough for rapid growth; and, again, the roots of plants as sown to produce crops, are only able to come in contact with a small proportion of the whole soil. Hence the necessity of having plant food in large abundance and in a soluble form, so as to be available for the roots to obtain sufficient to form a large growth—good cultivation, proper drainage and good vigorous seed promote the dissolving of plant food in the soil so as to make it available—yet it should be apparent to all farmers that the more thorough the cultivation, and the more perfect the drainage, the quicker the exhaustion of the soil elements which go to produce plant growth. There is a limit to all soils for crop production, and when we consider that almost all old soils are beginning to show a diminution of crop from actual lack of sufficient plant food for the roots to appropriate to produce a full crop, a vital question arises, how shall such soils be made fertile again at the least cost and in quickest time.

There are two ways now known of doing this practically, which are as follows; the applying of commercial fertilisers such as guano, mineral phosphate, superphosphate, bone dust, dried blood, nitrate, potash salts, &c., &c. The other is stable manure either manufactured or produced on the farm or purchased elsewhere. To arrive at a comparison of the cost or value of the real plant-food in cash of these fertilisers, it is necessary to know the constituents of each article of fertilisers in relation to the amount of nitrogen, phosphoric acid and potash which they individually contain, as compared with their actual cost after being applied to the soil.

The composite values of nearly all commercial fertilisers is alike, all being based on the following prices: nitrogen fifteen cents per pound, phosphoric acid 6 cts. and potash 4½ cts., and the prices run from fifteen to sixty dollars per ton, which is according to the contained parts of the above ingredients. The value of stable manure is more difficult to estimate and is a more general plant-food, usually containing all the ingredients of organic and inorganic plant-food necessary to promote vigorous health and growth. The constituents of stable manure vary in a very marked degree—and are only known when a chemical analysis is made, or when the chemical constituents of the food is known, the class and kind of animal, and how the excrements, liquid and solid, are preserved afterwards. It is now a matter of very easy calculation to know the value of stable manure—in all its constituents when the excrements are properly preserved and the food given daily is considered: for example; a balanced ration for a milch cow for a day, should contain 26 "dry matter, 2½ "albuminoids, and 15 lbs. of carbohydrates, this daily ration usually contains, 3/5 of a pound nitrogen, ½ "phosphate and ½ pound of potash: valuing these at the usual market prices, nitrogen at 15c=9 cts., 1/5" Phosphoric acid 1c. ½ Potash 2½ cts. the whole equals 12½ cts.; one fifth of this is usually taken to produce milk which leaves about 10 cts. worth of fertilisers daily, and if 5 lbs. of straw is used for bedding (and should be used), it adds about one cent more to its value daily. The value of a maintenance ration is but three cents; and so the value of all stable manure is determined largely by the way it is preserved afterwards. Should the liquid be not saved and should the heating be allowed to be excessive, the nitrogen forms into ammonia gas and passes off into the air, and should water and rain be allowed to leach the soluble parts, then again a severe loss would be experienced, which given results of experiments, show to be fully one-half. The average weight of excrements voided by a mature animal fattening or in milk, is about 100 lbs. per day, liquid and solid, it therefore takes twenty days to produce one ton, this one ton would contain (when the animal is fed a balanced milk ration) 12 lbs. nitrogen 8 lbs. phosphate and 20 lbs. potash, this will make about \$2.00 per ton at the usual market value of nitrogen, phosphates and potash.

To get at a comparative cost of fertilisers in each of the different named articles a considerable problem has to be solved. In the first place, the cost of commercial fertilisers is easily known by the market value and cost laid down on the farm, but the cost and value of stable manure when manufactured and preserved on the farm is considered a much more difficult question to answer, as the market value of foods, the market value of animal products produced from such foods, and the labour-cost to perform the whole operation require careful calculation. I will here give one or two practical examples which the writer has personally experienced and operated for the past five years—for the production of milk beef and fertilisers.

MANUFACTURE OF FERTILISERS.

A steer costing \$30.00 weighing one thousand pounds (1000) live weight can be fed for 6 months at a cost for food of \$25.00, labour \$2.00, interest \$1.00, insurance 25 cts., use of stable 50 cts., ½ ton straw for bedding \$1.25, total cost of steer

when finished say \$60 00 and should make a gain of two pounds per day. This would make the steer weigh when finished 1360 lbs, and it should be worth 5 cts. per pound live weight which would make 68 00. The fertilisers produced from such feed would be 12 cts. per day including the straw as bedding which for 180 days, would make say \$20 00, which value is reckoned on the same basis as commercial fertilisers containing only nitrogen, potash and phosphoric acid. Stable manure properly preserved has many other valuable ingredients such as lime, magnesia, soda and other mineral elements, besides a large quantity of humus which is very valuable to soils.

MILK PRODUCTIONS.

Example in producing milk to make the greatest amount of fertilisers
 A newly calved milch-cow will cost say \$35.00, will cost to feed 200 days, on a well balanced milk ration, about \$26.00, straw for bedding, 1/2 ton, \$1.25, labour feeding and milking, \$3 00, interest, \$1.00, insurance, 25 cts., use of stable, 50 cts. total, \$67.00. Winter milk produced, 3600 lbs @ \$1.40 per 100 lbs. making . . . \$50.00
 Manure produced for 200 days at 10 cts. per day . . . 20 00
 Value of cow 25 00
 Cost . . . \$67.00
 Milk produced . . . \$50 00
 Value of cow 25.00
 Total \$75.00
 Profit on milk product . . . 8.00
 Value of manure produced . . . \$20.00
 Profit on milk produced . . . 8.00
 Total \$28.00
 Milk cow make . . . \$28.00
 Fat steer 28.00

The comparison of commercial manure is this: providing one thousand dollars are spent in manufacturing manure through steers, the account would stand thus.

16 Steers fed and fattened would sell for \$1088.00
 Total cost for feed, labour, interest and expense . . . 1000.00
 Balance to profit from beef \$88.00

Manure profit produced from 16 steers @ \$20.00 . . \$320.00

In this transaction we have \$320.00 worth of the best fertiliser known in the world, costing nothing, and \$88.00 bonus for making it, or an entire profit of four hundred dollars in six months from one thousand dollars investment, or 40%, in six months; or this same fertiliser when applied to the soil and properly utilised in a rotation of crops to produce 280,000 lbs. of milk @ 90 cts. per 100 lbs. equals \$2,520.00, or in finished beef, at 5 cts. per pound live weight of \$2,400.00. The summing up of these results although seemingly an exaggeration are yet true from a scientific as well as from a practical basis. I do not believe it is necessary to mention the conclusions that a practical farmer would come to in seeking how he can best enrich the soil to almost an unlimited extent with the least cost. It is undoubtedly a fact that commercial fertilisers can be purchased at great cost to enrich the soil in the least time, yet the expense per acre would be about fifty dollars; whereas, stable manure properly made and preserved, can be ap-

plied to the soil without any cost except on capital account, which would be for stables, siloes, &c., &c.

My strong and urgent advice to all farmers is to build large and convenient stables sufficient to hold not less than one animal to each acre of arable land, siloes of capacity to hold five tons to corn for each arable acre; and to use the winter to manufacture fertilisers to build up the soil in the summer.

Study well the science of feeding cattle so as to obtain the greatest amounts of animal products in the shape of beef, milk, porks and manure at the least cost; study well how to convert these manurial products during the following summer and winter into marketable products, and raise greater values each year per acre, and leave each acre each year in a higher state of fertility. Make progressive fertility in the soil concur with progressive profits, and I will assure you when this shall be achieved, the land will gradually increase in value, the profits from working it will also increase, population will increase, the young, bright men will remain in the country, as then they will have some prospect of success by staying in it; our country will prosper, and an era of national spirit will prevail to make this Canada of ours the foremost and progressive country in the world.

D. M. MACPHERSON.

Lancaster, Ont.

The Horse.

BREEDING OF DRAUGHT HORSES.

The recently issued Journal of the Bath and West of England Agricultural Society contains a valuable and interesting article by W. Graham, of Eden Grove, Cumberland, on the breeding of draught horses, from which the following extracts are made:

Whether the male or female parent has the more potent influence over the character of the offspring is a subject on which opinions differ considerably. In the animal world, generally speaking, the male exerts a strong and predominant influence, particularly over the anatomical formation and development of the limbs of the produce; also over the colour and character of the hair with which the body is clothed, and the temperament of the animal. Therefore, in selecting the stallion, avoid horses that are in any way defective in the relative position and character of any one section, limb, or joint of their fore and hind legs. This ought to be much more studied, when stallions are selected for use on mares, than great bulk of carcass and exaggerated action in trotting movements. This latter point many stallion owners seem to cultivate in showing off their animals because the public take a delight in witnessing it. Many big-bodied stallions, with badly-formed knees and hocks, round fetlock joints, short and straight pasterns, and small, weak, and contracted heels, can do a short trot or walk in the best of style; yet, when the relative position and character of these respective members are examined, they are found utterly worthless for use and in the stud. Too much importance cannot be attached to the structural development of the legs and feet of any stallion, whatever else the animal may have to recommend him in respect of size, weight of body, or pedigree. The want of proportionate and proper anatomical structure in these parts means nothing more or

less than absence of the lasting and wearing utility of the animal for the purposes for which it is required to be produced, and it also indicates deficiency of power. An animal may possess what is in some quarters so much talked of, namely, weight of carcass; but if the bones of the legs are not of the hardest character and the limbs placed in proportionate position, great weight of carcass only renders the bones more sensitive to the wear of concussion, and the joints less able to respond with ease and activity to the movement caused by the extension or contraction of the muscles of the limbs when in action.

SIZE OF THE DRAUGHT HORSE.

The produce of any animal in respect to its size also generally follows the sire rather than the dam. Therefore, in breeding horses for haulage and draught purposes, size is a great consideration, and in this particular, too great height ought to be particularly avoided, as it is generally a consequence of disproportionate height of limb, or some other such malformation. About seventeen hands is the outside height a stallion should stand, as a properly developed horse of this height can, and does, reproduce colts that, when gelded, are of great power and substance; in fact, of quite sufficient size to haul the heaviest weights without any sacrifice of speed. This must be considered a main feature; as the greater the speed a draught horse can walk at, or a van horse trot at, with a maximum weight, the greater its proportionate value. Horses of excessive size also take a larger proportion of food to sustain their power up to its maximum; and as the cost of keep is an important item in the economic value of any animal, it surely must be more useful and economical to employ, say, a pair of single horses that would haul a certain weight at two journeys, rather than three heavier horses capable of hauling the same weight at one journey, even if they took rather less time over the work than the two lighter-bodied horses, although in other points equally good.

To exemplify the class of living horses it is desirable to breed from, we may take among the Clydesdales such horses as the best sons and grandsons of Darnley, 222, and of Prince of Wales, 673, in particular; amongst the Shires such horses as Vulcan, R. R., Royal Sandy, Chalwick Combination—perhaps the finest Shire stallion of the present day—and Wellington Boy. The latter, by the way, has a strong infusion of Clydesdale blood in his veins, being twice descended from the Scotch-bred horse Young Lofly, 957, that was some years ago taken down to Gloucestershire, and after being used there successfully on the local mares, was bought and re-sold to a stallion owner in the neighborhood of Burton, adjoining Derbyshire, where he was said to be used extensively on the local-bred mares. Wellington Boy, as regards his breeding, holds relatively the same position to the Shire-bred in connecting it with the Clydesdale blood, as Prince of Wales, 673, is said to hold to the Clydesdale, although Wellington Boy's breeding shows a more thence Clydesdale blood more strongly concentrated than the breeding of Prince of Wales does that of any Shire blood. As the horses named are of public reputation, they may be referred to, in exemplifying the type of sire that it is desirable to breed from without making any invidious comparisons. Now, when a horse, such as Wellington Boy, having a strong infusion of Clydesdale blood in

his breeding, is so prominently brought before the public as a prize taker and sire, the question arises whether or not the general breeder—that is, the tenant farmer—of the ordinary dray or agricultural horse or mare should strictly adhere to the defined lines of pedigree Shire or other brood stallions? Or should he, on his ordinary heavy work mares, use horses irrespective of whether they are of distinct Shire or Clydesdale blood, so long as the stallions are of that defined type already mentioned, especially when one considers the good results obtained by the breeders of what are supposed to be pure bred mares who use as stallions horses with an acknowledged mixture of an alien blood in their veins? The answer to this query is obvious. It is, that if the farmer or breeder has what are termed stud-book mares of either the Clydesdale or Shire breed likely to produce stock that will be suitable and profitable to rear as stallions or pedigree mares, he should stick to the line of breeding of the same character as the mare. If, on the other hand, his mares are not suitable for this purpose; or, if he does not intend to incur the expense and risk which breeding the highest class of stock involves, the wiser course is to select a stallion of the best quality, moderate size, good action, and sound whether it be Clydesdale or Shire. But, above all things, he should avoid the use of a stallion with a big, heavy body (out of proportion to his limbs), and thick, round joints and legs covered with an unnatural development of coarse hair, as their class is a most uncertain breeder, generally throwing stock not only of a common description, but with a liability to such hereditary unsoundness as bad hoof formation, side bones, ring-bones, and spavined hocks.

I have briefly indicated the lines that it is advisable to follow in selecting and mating the stud mares and stallions, but there are other points that are worth taking into consideration, such as the influence which soil and climate exert on the physical development and maturity of horses, as well as on that of stock in general. There can be no doubt that this influence is very potent, and that so-called weight or size of bone is particularly dependent on such circumstances as the nature of the produce and character of the land on which horses are raised. For instance, bring the best class of Clydesdale mares down from Scotland to the rich grass lands of Northamptonshire, or the fens of Cambridgeshire, and the offspring will show a marked difference in character from the original stock, developing a greater size of bone and carcass, although not possessing any material increase of strength over their parents. An instance of this was very clearly indicated in the Whittlebury stud of Clydesdales, which were so successfully bred by the late Sir Robert Loder, and shown by him at all the leading shows of the midland counties, until the fashion was adopted of confining the draught horse section of these shows to what may be called the Stud Book-bred Shires. The success attending the Clydesdale studs of Lords A. and L. Cecil in Kent, and Sir J. Duke in Sussex, at the South of England shows, where, in mixed classes, Clydesdales and Shires still compete together, also indicates that, when draught horses are reared under similar local conditions of soil and climate, the very marked distinctive difference that is observed between a certain section of Shire-bred animals and those of a cleaner make and build, is lost to a great degree, especially when the animals come to four or five years

age. Thus, provided the stallion approaches the medium height of between 162 to 17 hands, is about 11 inches in clean measurement below the knee, with hind leg measurement of 12 inches or so to correspond below the hock; possesses good muscular development of thigh and fore arm, with well-shaped and sound feet, and sufficient slope of pasterns,—we have an animal suited to breed the most wearing and useful class of draught horse, either for dray or agricultural purposes, and the males of which, when gelded, will develop quite a sufficient weight of carcass. Weight of carcass is supposed to add to the animal's power in the dray, but, if it be too great, it tends not only to encumber its speed, but also to render the gelding less useful, by depreciating its wearing and lasting character, and also to make its maintenance more expensive in proportion to the work it can perform.

SHOEING THE COLT.

We have now arrived at the time when the youngster should be shod. It will not be any detriment to the future usefulness of the horse to defer shoeing as long as possible; indeed, so noted a trainer as Charles Marvin prefers to work his colts without shoes which he is enabled to do on the covered track at Meadville. This letter, however, is for readers who do not enjoy such advantages, and under ordinary conditions the young horse must be shod when regular driving begins. If the feet have been properly cared for from the time of weaning up to the age of two years, a good foot has become an assured fact.

By a good foot I do not mean always a perfectly formed foot as we so it illustrated. Some families are predisposed to long, narrow feet; some to flat, tender feet. Almost any foot will become misshaped if allowed to grow without care. It has been asserted that more feet are spoiled before shoeing than after. This may be too sweeping a statement, but it is a fact, nevertheless, that much injury may result from neglect of the feet before shoeing, and if to that we add the cutting and carving of an ignorant smith, it is little wonder that so many horses suffer from poor, tender, diseased feet, resulting in premature lameness and disability. I am firmly of opinion that, aside from an accident, no horse need have poor feet at any time in life.

Every colt owner should own a foot-rasp, never mind about a knife—the less a knife is used round the foot the better. The first time the smith gets at the foot he will probably cut it enough to last a lifetime. When the colt is weaned, if it has been handled and gentled, it will allow the feet to be raised and leveled with the rasp, and this should be done at least every two or three months. If the colt has a tendency to walk on the heel or frog and develop an abnormal length of toe, rasp the sole toward the toe, to take away the thickness accumulating, and shorten the toes. If the foot is worn at the toe and the heels have become too high, lower the heels with the rasp so that the frog will just touch the ground and receive the necessary pressure to keep the foot expanded. When a foot has kept in good shape, but the edges or rim of the hoof have grown, leaving the frog and centre hollow, rasp the edges so the frog rests upon the ground lightly, or lower the heels to a level with the frog and take away the toe with the rasp in the same proportion. The more frequently the foot is put in proper shape, the more it becomes fixed in growing in that shape.

The first shoeing will be largely experimental. If your colt is pure-gaited and strongly trottingbred, he may acquire speed with very little change from the first shoeing. Again, it may be necessary to shoe him in many different ways before you get him just balanced. The first shoeing should approximate as nearly as possible to the conditions of nature, and shoes of about 6 oz. each are best for the first time. Weigh them, too, and know just what they weigh. It has been my custom to buy the steel in the bar and have the shoes forged. My experience has been that a bar 7-16 by 1/2 or 5-16 inch will produce shoes weighing about 6 oz.; if 3/4 by 3/4, 8 to 10 oz., and if 7/8 by 7/8, 10 to 12 oz., which is as heavy as I have had occasion to use. I also buy my own nails, not because they are any better than the smith may furnish, but because few country smiths have use for such a light nail as the foot of the colt requires. I, being a farmer, am writing to farmers just as experience has taught me.

Again, no matter who may laugh or poke fun, weigh the shoes and insist upon having the work done as you require. Have the smith first rasp the foot to the proper level, and be sure that it is level. If you think so much precaution unnecessary, try the experiment upon yourself by nailing a piece of sole leather on either the inner or outer side of your shoe, throwing the bearing of the foot at an angle, and see how tired and sore your ankle will be after a few hours' wear.

Do not let the smith put a knife to the foot unless it be to shorten the toe, and if the feet have been properly cared for this will not be necessary. Above all, do not have the heels opened, as it is called, which means cutting away the bars or all the support to the heel on each side of the frog. This support was put there to bear the weight of the horse in travelling and to protect the inner component parts of the foot and joints. Why a smith should cut away the foot at the very place where strength is most needed I could never understand.

I recall buying a mare that had a slight lameness, caused as I supposed by one foot being contracted. I took her to a shoeing expert, and he cut the sole of her foot until he could press through it with his thumb. Then he opened her heels, cutting away the bars and slashed off almost all the frog; in fact, when he had finished there was but little left for the mare to stand on. It was just such shoeing that ruined her. The foot had been treated in this manner so often—robbed of the very covering that nature had placed there to protect the internal machinery—that an injury to some internal part of the foot had occurred, resulting in permanent lameness. The sole of a horse's foot is intended and constituted to receive and withstand the shock of travel, and to protect the delicate and intricate internal machinery from injury. Every time the smith cuts away this natural covering he invites permanent injury to some one of the delicate parts left wholly or partially unprotected.

If your colt is inclined to be mixed-gaited—that is, to shift from a trot into a pace, let the toe to the front feet remain moderately long, and have the heels lowered as much as is consistent. This will give him more ground surface and have a tendency to prevent his pacing.

After the feet have been prepared according to your ideas and best knowledge, have the shoes made to fit the feet. Let the heel of each shoe come round under the heel of the foot,

not run out straight inviting injury to the pastern of the hind foot and leaving the heel of the foot, without support. Unless calks are necessary to prevent slipping, have the shoes made plain with a short toe and heel calks on the shoes behind, as the hind legs and feet are really the propelling power. Many prefer a plain shoe without calks on all feet, but these are matters of little moment at this time.

Be sure and have the colt well protected by boots, as he will naturally be awkward and be liable to inflict injuries that would not be expected after becoming accustomed to the new order of things. Quarter boots are indispensable, and the majority will need scalping boots, too boots for the hind feet. Many others will need shin and ankle boots forward, and possibly shin and ankle boots behind, but of these the owner or driver must judge by the general action and inclination to travel close. Do not take any chances of injury, for such injuries are oftentimes very serious.

With the youngster broken to drive between the poles, shod and properly booted, we are now ready to hitch to the joggling-cart or wagon, and this will form a proper subject for another letter.

L. C. UNDERHILL.

The Flock.

IDEAS CULLED FROM SHEEP BREEDERS' ANNUAL REPORT, 1893.

John I. Hobson, Mosborough, writes in relation to

RAPE CULTURE:

"The system which is generally followed by those who have grown it successfully is to prepare the land just as is done for the turnip crop. Taking it for granted that one of the objects in growing it is that it will be a cleaning crop, then it follows that if the land is pretty well worked the fall before, a good many thistles and weeds will have been got rid of and so much less work will be required in the way of hand hoeing the next season. The last plowing should be done deeply, or if the land is inclined to be stiff, plowing in what is termed ridge and furrow—that is, putting it into drills—is an excellent plan. I have found in my own practice that it answers a good purpose, the winter's frost making it more friable when worked the following summer. An important matter is to have the land in fine tilth when sown.

As to the soil best suited for growing rape, a fair crop can be grown on almost every variety if properly prepared. I have a few acres of sandy soil on the opposite corners of my farm; in one case it is what may be called a poor leaching soil, and some of the finest crops of rape ever grown on the farm were on these fields. In both cases it was sown thinly, with about three-quarters of a pound of seed to the acre, and top-dressed when the plants were into broad leaf with two hundred pounds of gypsum to the acre. Scientists can, perhaps, explain the reason why. My general practice of late years has been to grow it on land at the end of the course and apply a small quantity of manure—about seven or eight loads to the acre.

The time of sowing may be any time from about the 20th of June to the middle of July. I prefer the last week of June, if the land is in good condition and the weather favorable.

The drills should be from twenty-seven to thirty inches—the latter width is preferable if the land is very rich and likely to produce a heavy growth.

Coming to the question of sowing, if the seed is fresh and good, and the land well prepared, from one to one and a quarter pounds to the acre is ample. It is a great mistake to sow thick. To obtain a full and well-grown crop it requires room for the plant to grow large and high. I mean by a good crop one that when a flock of lambs is turned in they will be about covered with the plants; and it is quite a mistake to think that the strong and thick stalks of the rape plant are not quite as nutritious as the leaves. At all events, if a chemical analysis were to show the contrary, practical results would then be at variance with science. (1)

The after-working should consist of a free use of scuffler as long as there is room to work between the rows, and it is here where comes in one of the advantages of raised drills, the work of horse hoeing being so much more readily done. If the drills have been carefully made of a uniform width, the scuffler can be so set as to hoe close up to the plants, and then the work of hand hoeing, if it is done (and it certainly should be if the best results are to be obtained), is a comparatively light affair, just cutting away any weeds or thistles that may be amongst the plants. By a free use of the scuffler not only will the land be left as clean as after a first class summer-fallow, but the weight of the crop will be much increased.

In regard to the value of rape as a late fall feed, there are no two opinions as to its being the best crop grown for fattening sheep and lambs, but there is some difference of opinion as to its value for feeding cattle; not but what it is well understood that flesh can be laid on at less cost and more rapidly than by the use of any other feed that is fed off directly in the field, but the experience of many growers is that it is rather risky. Without advising as to its use for cattle, all I can say is this, that having grown it somewhat extensively for over twenty years I have found it a very cheap and satisfactory fall feed for cattle, and even pigs do remarkably well upon it when they receive a small allowance of grain. During the many years we have grown it there has been the loss of only two calves, one of them clearly the result of mismanagement in turning on with an empty stomach. With regard to either cattle or sheep, great care should be exercised to see that before being allowed to feed on rape they have been well fed beforehand. My own practice is to have a grass field adjoining, to which the stock can have free access at all times, and when once put on rape leave them there until the weather gets cold and rough in the late fall, when it is necessary to house at nights. When taken off in this way it is very important to see that they are well fed in the morning. Much of the trouble and loss which does occasionally happen in feeding rape is mainly attributable to not exercising a little common sense in these matters of detail. (2)

A well-grown crop of rape should carry from ten to twelve lambs to the acre for eight or ten weeks, or say from about the 20th September to the end of November. Some feeders consider it a good plan to feed a small quantity of grain when in the field. My own experience leads me to think that there is no profit or advantage in

(1) As they very often are.—Ed.

(2) This is quite right, and very simple. Ed.

doing so unless for special reasons—such as being a little over-stocked, or when meat is high and oats and bran very cheap. (1) Of course, all good feeders know that the lambs should become accustomed to eat grain before being changed from the fields to the yards, and for the same reason it is always well to mix in a little turnip seed when sowing. If attention is paid to these things very little shrinkage will occur when put on to changed feed.

In regard to the after use of the land, it is needless to say that if the preparation for the crop and its after management has been what it should be, the land will be quite as clean as after a first-class summerfallow, with the advantage of having received from \$10 to \$20 an acre in some cases considerably more, in the increased value of the stock from the time of their being turned on until they are taken off, or rather when they are sent to the market, which is usually, in this section between the 5th and 15th of December. Besides this, the land has received all the benefit of the manure without even the expense of drawing and spreading—this is a good preparation for next year's crop.

Owing to its being the last feeding crop of the season, one is a little apt to get caught with the frost before getting the land plowed (2). However, if it can be managed at all, it is very important that the plowing should be done. With much treading of the stock the soil will have become very firm and stiff, and stands much in need of the action of the winter's frost after being turned up. Spring plowing of rape land with us has not been followed with satisfactory results. On the other hand, on our soils, when plowed in the fall, we always expect a good crop of spring wheat if the season is at all favorable, and the land we find to be in good shape for seeding down."

Mr. J. C. Snell, Edmonton, says of

RAPE AS FEED:

"Care is necessary when stock is first turned into it. They should not be put on it while wet with dew 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. Some times there are considerable losses from stock becoming bloated or scoured, and I have known cases where the ears of sheep have become 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 (3). Young cattle also do well on it, but it is not well to let the milking cows have it, as it taints the milk (4). 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

(1) This is quite wrong. The dry foods: clover-chaff, peas, oats, &c., are not wasted but pay both in the sheep and in the land. Ed.

(2) The plough should follow the field close up.—Ed.

(3) Our experience too.—Ed.

(4) Not if it is young and green. Dead leaves of course will.—Ed.

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." (1)

SHEEP vs DOGS.

It is quite bad enough to have our sheep worried and killed by dogs; but that is not the only way in which dogs may do serious injury to flocks. From the United States department of agriculture has been issued a volume relating to the "Animal Parasites of Sheep," by Cooper Curtice, M. D. He says, on page thirteen: "The relation of the dog to sheep husbandry is too important to be overlooked. Were it not that the definition of parasites excludes such animals as can be considered beasts of prey, the dog would be placed at the head of the list of parasites as being the most destructive. Though this be unmistakably apparent to a large majority of sheep owners, there are many who believe that the dog is man's most faithful friend and that he is of great use even on a sheep farm. It is unfortunate for the dog that the mass of testimony on this subject is against him. It is not from the standpoint of the dog as a beast of prey, however, that this work is written, but it is from the more technical standpoint of the dog as a carrier of parasites dangerous to sheep and man. In the list of parasites of sheep there are at least four which are common to the dog and sheep. The dogs harbor in their intestines the adults of these species, and they scatter the eggs of the parasites broadcast for the infection of sheep. Thus, each dog, harboring one or more, is a constant menace to the health and lives of the flocks in the neighborhood. Nor is this all, for man himself can be infected by at least two of these species—*Tenia echinococcus* and *T. marginata*—in their cystic stage. The former of these species produces disease of slow development, but one which is nearly always fatal in result."

A paper was read at the recent meeting of the Connecticut Board of Agriculture by F. Chambers of Newtown upon "Sheep Husbandry." Mr. C. asks: "Are our grasses less nutritious than formerly? No. Are we obliged to take less for products of the sheep, wool, lamb and mutton? No. On the contrary, lamb and mutton are selling to day for four times the price they were bringing forty years ago; wool we admit, a trifle less. Is it difficult or a trouble to market the products? Not in the least. Each has a market value, ready sale and cash on delivery. With so much in its favor, why was the business abandoned? Why have we allowed it to be turned over literally to the dogs? The principal cause, we believe, is want of proper legislation."

There has been a good deal said, lately, about Dorset sheep as being "dog-proof." We wish it might be true; but that experienced shepherd, J. S. Woodward of New-York, rather casts a coldness over the subject as follows: "The Rural says 'advertisers are claiming the Dorset sheep to be dog-proof,' and asks if this is so. It surely is not true, and, what is more, the men who so advertise know it is not true. At the same time the Dorsets are well supplied with horns, and those are an evidence that they know how to use them, which is very true. They are ex-

(1) Very short, but very good.—Ed.

tremely pugnacious; not only do they fight among themselves, but they are ready to give the shepherd a sly poke, if provoked. As a consequence they are quite ready to go for a dog, and are much more able than other breeds to defend themselves from attack. Especially is this true of an old Dorset ewe with lambs by her side; still they are by no means dog-proof, as the owner will find to his sorrow who takes the word of these advertisers and takes no measures to protect his sheep from the curs."

DR. HOSKINS.

WINTER TREATMENT OF BREEDING EWES.

"As winter comes on the sheep should be folded at night and during storms. While they seem perfectly capable of withstanding the bleak autumn winds, yet a chilling rain under such conditions may be decidedly injurious. The winter food should be as varied as our resources will permit. Clover hay, pea straw and roots will of course form the staple. Clover should be furnished once a day at least, and clean, well-preserved pea straw *ad libitum*. A few oats will amply repay their cost in increased vigor of the animal, but not more than a gill or two per head need be supplied. It is not wise to give too many turnips to ewes bearing young, but yet a small quantity, say one to two pounds, will help digestion. A similar quantity of ensilage, if available, may be furnished also. Water should be provided constantly. Salt should be kept in a small trough, so that the sheep may help themselves at will."

"A good crop of turnips means a poor crop of lambs;" as sheep are passionately fond of them, they are apt to gorge themselves, thus crowding and weakening the lambs. But it does not follow that because the excessive use of turnips is detrimental, the moderate use of them may not be profitable; in fact, when fed with judgment, their place cannot be filled by any other article of food for keeping any class of stock in a healthy, vigorous and thrifty condition. As the season advances and the lambing season comes on, it will be necessary to feed a little grain, or clover hay, because the farther the animal is advanced in the period of gestation the more nutriment does the system require. It is also desirable that the amount of nutriment should be increased without increasing the bulk of the ration. It is bad policy to feed a bulky ration to any animal heavy with young, because the crowding of the fetus is apt to result in weak or deformed offspring. After lambing the ewes should be fed liberally, so as to induce a good flow of milk, because if one wants to raise good, thrifty, profitable lambs it is important that they give them as good a start in the world as possible. For this purpose a ration of clover hay, with a few oats, fed whole, and a liberal supply of roots is, perhaps, as good a feed as can be got. For milking ewes, I like mangels the best. They may not induce a greater flow of milk than turnips, but it is richer and has a better flavor; in fact, I have known lambs to refuse to suckle if their dams were given a feed of turnips as a change. When the lambs are about a month old they should be induced to eat a little grain. A small enclosure should be penned off at one end of the sheep-house, leaving an opening through which the lambs could run in and out at will. In this pen a trough should be placed having a little bran or ground oats in, and the lambs will soon learn

to nibble at it, and although they will not eat very much, they will pay their owner handsomely for what they do consume."

"For the general farmer who is not in the show business, the lambs will be in plenty of time if they come from the middle of April until the same time in May. Coming, as they would, in time for the first bite of grass, there would be no standstill or go back with them, as we so often see in very early lambs. But we must say a word about the fall and winter treatment of the breeding flock. The ewes have had the run of the stubble and pasture fields, and they should be looking well, though run down in summer, they have had time to pick up again. But the first indications of winter are upon us, and the flock needs a little more attention. The sheep pen should be open at all times, that they may find shelter in wet and stormy weather. Shelter is of great importance in the cold, wet and changeable weather in the fall of the year. They should have the run of the fields as long as they are free from snow, supplemented with a few cut turnips and nice, clean pea straw fed in troughs and racks in the pen. Old and weak ewes will have a hard time to get their proper share of the feed from the young and vigorous, and should have a separate pen if they are to be kept another year. But, unless the flock is much reduced in numbers, they should be fattened for the butcher at once, as their clip gets lighter every year, and they are not able to rough it so well as the younger ones.

Farmer's Ad.

The Household.

The *Journal of Agriculture* has been asked to give a few words for the wife as well as the farmer, and why not? Is not the wife an active worker on the farm? Has she not a right to speak as well as work? Many a farmer has to thank his wife for keeping things all right during many an hour spent by him in chatting at the village store &c. It is work for her all day and often all the evening as well. On her depends the comforts of the family, and who so willing as she, when a poor animal is suffering, to try and do all in her power to help it. I think the day is not far distant when the farmer will take his wife as freely into the farm's working as himself; for education will teach her, with a woman's natural shrewdness, to see things more quickly than her husband. Perhaps he is despondent about a field that will grow nothing; she says, immediately: Look into your *Journal*, or write to the Editor, and see if you can't find out what is the matter; the children won't thrive if I do not give them the right food; and depend upon it, that field is starving for want of some kind of food that we can't find out. He takes heart, and in the end finds, as his wife says, "starvation is what is the matter;" so he sets to work, and by the help of manure and hard work, turns that field into a prolific piece of land, burdened, perhaps, with the finest crop of roots to be seen in the country. It has perhaps, taken a couple of years to do it, but the wife holds her tongue, and smiles when her husband takes a neighbour to see the terrible bit of land that used to grow nothing.

Now the right having been given, the best use must be made of it, and from time to time little things must be talked about, household affairs, in

fact, anything that will help to make this life of the farmer's wife a cheerful one. In the first place to pick out for her little helps to labour that she has no time to look out for herself.

In the months of March and April look over old dresses for spring wear, and see what can be done to improve them; and depend upon it there is nothing like soap and water. An old dress picked to pieces and well cleaned, ironed on the wrong side, and then cut out in a fashionable way, with a few yards of a blinding colour to retrim it, will well repay the trouble taken. Black and blue, or red, go well together. Cut on the cross, one founce about 12 inches for the bottom of the skirt, or the same cut into 3 small frills and put on, with about 3 inches between each frill, will be more stylish; a little of the same colour to trim the waist; put a frill broad on the shoulder sloping down to about half the width at the waist. Should your skirt lining be limp, washing and a very little starch, with great care in ironing not to pull it out of shape, will improve it. An old dress of another colour does well for trimming if new is not to be had, and should the dress shrink in washing you can lengthen it in this way, or less stuff will be wanted if two or three bands cut on the cross, say the first at the bottom of the skirt 3 inches, second 2 and third one and a half, with two inches between each band: of course the waist must be trimmed to correspond. A piece on the cross from the shoulder wide, and narrowing down to the waist.

It is a good time now to make the children useful in picking to pieces, and should the article be for themselves of course the pleasure will be the greater. Two little dresses done up in much the same way as the above would be very pretty when finished, and when the children wear them, they will feel not a little pride in that it is partly their own work.

Should there be a few bits left over, give them to her to make a doll's dress, and depend upon it a copy of yours, will be the result; thus teaching them the art of sewing and fitting in time for themselves. With what pleasure will the little pieces be twisted and turned about to make dollie look nice, and with what pride will the little workers show their work. No body but those who love children can appreciate their delight in such work.

E. J. F.

AMUSING PARLOUR GAMES

FOR

WINTER EVENINGS.

BY HENRY REEVE, HIGHLAND CREEK.
THE EYE OF ISIS.

This is played by taking newspapers and placing them over a clothes horse, and cutting holes large enough and high enough for a person to look through. Several go behind the screen, and the company then guess, if they can, who the owners of the eyes are: they seldom are able, and the mistakes made are ludicrous.

"THEY CAN DO LITTLE WHO CANNOT DO THIS, THIS, THIS."

This game is played thus:—The party seat themselves in a circle; the first person then takes a stick in the right hand, and knocking the floor says, "They can do little who cannot do 'his, this, this,'" then passing the

stick from the right to the left hand, presents it to the next person. Many think the catch is in the number of knocks, or in the words spoken, when it is merely in taking the stick in the right hand, and passing it with the left hand to the next person. A forfeit must be paid for each mistake.

NERVOUS CHILDREN.

I want to say a word about nervous children. Never scold or make fun of them. They suffer enough without your threats or sarcasm. Don't let them know you see their awkwardness when in company, nor their grimaces when alone. A case was reported of a boy ten years old, who, on being vexed, and often without any apparent provocation, will clench his hands and make the most frightful contortions of the muscles of his face and head, till his poor mother fears he is idiotic. By no means. He is the brightest boy in his class at school, fond of reading and of natural history, but he is of a highly nervous temperament, and has not been taught to con-



A CHILD'S VERY EASILY MADE DRESS.

trol the little wires, so to speak, on which he is strung. This is no single case. There are thousands of children who give way to their nerves in similar fashion. Never whip them, but talk to them about these curious little strings that should be made their servants, not their masters. A prominent physician in this city says the man or woman who whips a nervous child, should for every blow given, receive five, and is on a level with brutes that have no reason. It is our duty to encourage and help them. Be patient with them. They are the making of our future successful men and women, for they will work hard at whatever they undertake. Brace up your own nerves first, and then be indulgent towards the capers of your over nervous children. (1)

USEFUL HOUSEHOLD HINTS.

Put a silver spoon into a glass jar before filling it with hot water. It will keep the glass from cracking.

A little flour dredged over a cake before icing it will keep the icing from spreading and running off.

Many fruit-stains which would otherwise be ineradicable can be removed while the stain is still fresh by pouring boiling water through the spot until it disappears.

Better than benzine for cleansing kid gloves is new milk and white soap. Rub the gloves with a flannel cloth dipped into the milk and then rubbed against the piece of soap.

(1) Excellent. We speak feelingly on the subject.—Ed.

Air your pillows often in the shade and in the wind, but never put them in the sun if they are made of feathers. The sun makes the oil of the feathers rancid, and renders them unpleasant and unwholesome.

A small piece of alum dissolved in the starch used to stiffen gingham, muslins, and other washable goods, greatly improves the appearance of the goods and keeps them fresh longer than they would otherwise remain.

WORK IN THE LAUNDRY.

Every stain or spot should be taken out before wetting. If fruit stains are dipped in boiling water they will be immovably fixed by the lime it contains, instead of being obliterated.

Tea stains, mildew and many fruit and vegetable stains are removed by the use of chloride of lime or jawelle water. Put one tablespoonful of the former into a pan of warm water, dip the stained spot in and let it soak half an hour, then wash in hot water and soap and rinse twice in clear water. Never use this solution on colored

quickly as possible, dry in the shade and take off the line as soon as dry.

Powdered soap bark is very useful for washing sateen dresses. It does not fade them and gives a gloss and freshness almost like new. Pour boiling water on the bark and let it stand, then use the clear liquid in the wash water.

In those days of soft fabrics only collars, cuffs and shirt bosoms are starched stiff, and yet cotton gowns and the like are soon soiled unless stiffened a little. To wash such a gown perfectly, make three quarts of starch, add half of it to enough tepid water to cover the garment, rub it thoroughly without using any soap, rinse in two waters to each of which half of the remaining starch was added and dry quickly. For dark colored garments make the starch of coffee water or make hay tea to wash them in.

When the color of red or pink garments is doubtful, soak them two hours in salt water before washing, and blue ones in water to which a tablespoonful of sugar of lead has been added. Always iron colored garments on the wrong side as far as possible.

Borax is a harmless and wondrously effective cleansing agent for white clothes, and is cheaper and in every way better than expending one's time and strength in rubbing. Dissolve it in scalding hot water, one tablespoonful to each pailful of water and pour it over the clothes instead of boiling them. Borax is the best alkali to use in washing flannel. It is not so harsh as ammonia and washing soda.

No matter what cleansing agent you use, never allow clothes to soak more than half an hour. No one thing makes white linen look worse than soaking over night.

DO YOU KNOW?

That finely sifted wood ashes will remove medicine stains from silver spoons? Egg stains on silver can be taken off with fine salt and a damp cloth.

That you can restore the polish to marble by washing it with soap and cold water, then wipe it with an old soft napkin, and when quite dry rub it steadily for an hour at least with white wax and a clean flannel rubber?

That when nickel plating becomes dull it may be polished with jewellers' rouge and lard oil or fresh lard applied with a piece of chamois leather? Rub the parts, using as little of the mixture as possible, and wipe off with a clean, slightly oiled rag or some cotton waste. In many cases no preparation is needed to clean or polish nickel, a simple rubbing with chamois skin or very soft cotton being all that is required.

That kerosene is used for softening shoes that have been hardened with water, and is said to render them as pliable as new?

That a case of common sheeting that can be removed and washed occasionally will keep a mattress clean a long time?

That when replacing the stair carpet it is best not to put it down exactly as it was before? If it will reverse, change it by putting the top at the bottom, and vice versa. This keeps it from wearing in spots, and will make it last much longer.

Some clean matting by sprinkling bran or coarse Indian meal over it, then with a long-handled mop, with cloth wrung out of clean, warm water, rubbing the grain well over the carpet then leave it until dry, when the grain is brushed off. This is claimed to be a thorough way of cleansing matting, but it is usual to simply wipe it off with

clothes. It is said that milk will take out all kinds of fruit stains from linen and cotton goods.

A weak solution of oxalic acid will remove bad mildew stains and iron rust from white goods; ordinarily, mildew will come out if wet with sour milk, buttermilk or with tomato juice and laid in the sun on the grass, allowing the articles to remain in the dew over night. Use oxalic acid with care, as it is poisonous. Diluted hartshorn takes mildew from woollen goods.

Cover spots of iron rust with salt, then squeeze lemon or pie plant juice over them and lay in the sun.

When wine is spilled on table linen sprinkle salt over quickly before it is dry, if possible.

Grass stains are obstinate, but soft soap and baking soda will generally overcome them. Wet the stain, rub it freely with the soap and soda and let it lie for a short time before washing. Alcohol will effectually remove grass stain.

Vaseline or machine oil should be washed with soap and cold water first. Machine oil stains on white goods should be first wet with ammonia and then washed out with ammonia and then washed out with soap. Wheel grease on wash dresses can be removed with soft soap and water. If the spot is pretty old, wet it first with kerosene oil. Use kerosene for blood stains.

On fabrics that will not be injured by it soft soap will take out paint stains much better than benzine, chloroform and similar cleaners.

Wash colored cottons and linens as

a damp cloth wrung out of salt and water, not wetting the matting much.

That for winter use, if a heavy layer of carpet lining is put under it, matting is a comfortable floor covering? With pretty rugs scattered over it, the room has a pleasant, home-like appearance that is very attractive. It is cheap, and if care is taken when putting it down that little cleavers, made especially for the purpose, are used instead of the ordinary carpet tacks, it can be taken up at any time when cleaning house, cleared and put down again, in less time and with less labor than a woollen carpet, and it does not require to be beaten, but may be washed while on the floor the same as usual.

[Mary Porter Langley.]

BRAIN CULTURE.

BY GEORGE MOORE, QUEBEC.

Many of our agricultural friends seem to have lost sight of the fact that they have a possession that has been given to them by an all-wise Providence that requires careful cultivation.

The brain is said to be the seat of knowledge and if so, it becomes a matter of great moment that it should be kept in a healthy and fertile condition; and yet it is the last piece of very real estate many of us pay any attention to.

The day has come when the farmer, to be successful, must first cultivate his brain, because brain power is the power most needed on the farm and is too often wasted.

And now, we notice that the brain, requires some such treatment as the land. First it must be drained—drained of all that tends to vice or immorality, of all undue frivolity, not quite all however, for, "a little nonsense, now and then, is relished by the wisest men." Drained of all parsimony and stinginess, all envy, hatred, and malice, and all uncharitableness; a farmer must be justly generous, if not, neither his field, his cattle, his dependant, nor himself can thrive. Any evil qualities not thoroughly drained out will chill all the good crops that may be planted, even as superfluous water acts upon undrained land.

Ploughing must be attended to; figuratively at least; for no man can afford to allow his brain to lie fallow. It must be stirred, that is, kept in a state of constant activity, and this can be done by practising habits of thoughtfulness and making good use of our powers of observation on what we see around us. I like an inquisitive person, up to a certain extent; one who "wants to know, you know," the why and the wherefore of things that concern his welfare. Such a man shows that his brain is in a state of cultivation, not barren or inactive.

You go to such a man's farm and, my word for it, you will see his fields alike fertile and his stock well taken care of. Now, mark the contrast: a man who never opens his eyes, takes no notice of what is going on in the world, sleeps while he is apparently wide awake, is utterly careless and indifferent. Whatever he does, he does it mechanically and without any apparent motive or looking to any goal of success to be attained.

A "Come day, go day. God send Sunday" sort of a man. What is the result? It is this: his brain becomes inactive, lies fallow, and is unproductive of any crop, except a poor one; and so with his fields. Such a man is

a chronic grumbler, too; he finds fault with everybody and everything, the government, the bad seasons, the country in which he lives, and even the decrees of a just Providence who at last consigns him to

"The vile dust from whence he sprung
"Unwept, unhonored, and unsung."

Fertilising.—There are many ways, happily, at the present day by which the brain may be fertilised; supposing it has undergone the two first important operations of draining and ploughing, it will be in splendid condition to receive the fertilising material now so freely to be obtained in the shape of the newspaper, hand-books on all subjects of agriculture, agricultural periodicals, lectures, clubs, which should be in a certain sense debating societies, schools and colleges and exhibitions—all these are the true fertilisers, so easily attainable, that no excuse can be made for not taking advantage of them as opportunity offers. These will aid us in the acquirement of the useful knowledge without which we shall not succeed in making our lands profitable.

After cultivation must not be neglected; we must keep our brain in good order by temperate and regular habits of life; we must keep it alive by healthy occupation and rational amusement. "All work and no play make Jack a dull boy."

We must exercise it by unwearying attention to all the details of our business, not put off until to-morrow what we can do to-day, perform all the operations, such as hoeing, harrowing and aerating the soil at the right time and on the approved principles. If we attend to all this as we should as regards our brain, we shall be sure to do so as regards our lands.

Eradication of Weeds.—The brain must be kept free from these, for if the crop of knowledge and success we seek is choked up with the weeds of desire for ease, in laziness, debauchery, gaming, horse-racing, pleasure taken when we should be otherwise occupied, or a hobby for some particular science apart from the main one on which we depend, our crop of the right sort of knowledge will suffer by the introduction of that, which, while it may be interesting, will supplant that which is necessary to the attainment of our life object.

As for instance, music, the "Divine art," may become a thistle on a farm. I had a friend who passionately loved the violin and became one of the most eminent amateur performers; but he found that, as he said, his fiddle spoiled his farm and he with it was becoming poor, so like a sensible man he gave up the former and put the whole energies of his mind and body into the latter, becoming the model farmer of the county in which he lived. If we want a crop of grain or roots, we must allow no weeds to rob them; if we want to profitably use our brains, we must beware of weeds.

Harvest.—The harvest of the brain-culture will be, comparative affluence; not great riches, perhaps, but a comfortable sufficiency for our declining years; contentment, caused by the feeling that we have done our duty; domestic happiness, the best earthly good, and if we have done our best, with a firm reliance on the Mercy of the Most High, Eternal Rest, after our labours here are finished. Let us cultivate our brains, and if we do so faithfully, we shall learn the necessity of cultivating the soil properly, and the means by which this is to be accomplished will appear easy to us.

GEORGE MOORE.

The Apiary.

BEE CULTURE AT THE WORLD'S FAIR.—AWARDS.

That Ontario apiculture should come out of the great Columbian Exposition in most creditable form, like agriculture proper, horticulture, and almost every other Canadian culture, was hardly to be expected, considering its comparative youth and the probable competition, especially from its greatest and nearest neighbor. But it has done that very thing, and thus proved the floral status of Ontario as well as that of its apiarists.

The province has taken no less than seventeen awards in the department I had the honor to represent—two provincial awards on the collection exhibit, and fifteen individual awards. Following is the list:

Allan Pringle, Selby, for the Province of Ontario, award on collection exhibit of 2,500 lbs. of extracted honey. Allen Pringle, for the Province of Ontario, award on collection exhibit of extracted and comb honey. The Gould, Shapley & Muir Co., Brantford, on clover comb honey, 1892; ditto, 1893; ditto on honey extractor; ditto on brood foundation. S. Cornell, Lindsay, on bee smoker. R. McKnight, Owen Sound, on Linden extracted honey. J. B. Hall, Woodstock, on clover comb honey, 1892; ditto 1893. D. Chalmers, Poole, on thistle extracted honey. Geo. Wood, Monticello, on Linden extracted honey. Abner Pickét, Nassagawaya, on Linden extracted honey. Geo. Harrison & Son, Dungannon, on clover extracted honey. A. E. Sherrington, Walkerton, Linden extracted honey. J. Newton, Thamesford, clover comb honey. J. B. Ocher, Popular Hill, clover comb honey.

Comparatively and relatively speaking, this is a very large number of awards for Ontario, being more than all other foreign countries combined, and on honey alone more than half as many as the whole of the States combined. Let it be remembered that I had but one exhibit case in which to make the Ontario display, while some of the states had several.

That the above individual exhibits receiving awards where the only meritorious ones is not to be assumed. Many of those left out were doubtless about as good, but the difficulty a judge experiences, no matter how competent and impartial he may be (and I freely predicate both qualities of the American judge, E. Secor), in deciding between numerous samples nearly if not quite alike, is well known to all who have been called upon to perform so difficult and unpleasant a duty. Moreover, as I understand the system carried out here, while the judge might recommend a certain exhibit as being worthy of an award, noting its various points of excellence designated by numbers, the jurors, who ultimately make the award, select one for the award out of half a dozen exhibits nearly alike but with figures differing a little. While, therefore, the primary responsibility of determining the real character and qualities of the exhibit, and accurately noting the various "points" of excellence or otherwise, devolves on the judge, the ultimate responsibility of making the awards rests with the jury. Some of the exhibitors, knowing the merits of their goods, may feel hurt at being left out, but if there is anything in lots of company they have hundreds and thousands of disappointed ones in Jackson Park and out of it.

The Ontario honey exhibit as a

whole was acknowledged by the disinterested and impartial visitor, and even by interested ones, to be superior. The press acknowledged it—over the American press—of which the Chicago Inter-Ocean, the Chicago Mail and the National Review might be quoted. Even the American bee journals acknowledged it. The Bee Keeper's Review, in its last issue, says: "So far as extracted honey was concerned, Canada made the most attractive showing. Especially was this true in regard to the manner and vessels in which it was shown. There was a great variety of kinds of honey, both liquid and in the candied form, and the sizes and varieties of the glassware were too numerous to mention. Some of the glass jars approached a foot in diameter and two or three feet in height. There was a small lot of comb honey from Mr. Holtermann, I believe." (This is a mistake, it belonged to the Gould Company's exhibit) "that was unexcelled. Some from Mr. Hall was also very fine. The Canada exhibit was under the management of Mr. Allen Pringle, and it is probable that no better man could have been chosen for the work." The Review, which makes these comments, is perhaps the most conservative and careful of the American bee journals, and would hardly give us credit for "the most attractive showing" unless we richly deserved it.

The bee-keepers of Ontario have ample reason to be satisfied with the results of their showing at the World's Fair.

Advocate.

CARE OF LAMPS.

As there are so many more homes in which the inmates depend upon kerosene lamps for their nightly cheer than upon gas, a few suggestions on the care of lamps may not come amiss. There is no necessity of sitting beside a sputtering, flickering lamp, with a smoked chimney, in gloom and half obscurity, if we only understand the management of our lamps. To insure a clear, mellow light, the brass of our lamp-burners must be kept perfectly free from smut and stain. An old blackened burner is, however, hard to be cleaned. It is a good plan to boil them in strong soapsuds, and if this does not brighten them, to scour them with brickdust, polishing off with whiting or soda. Never cut your wick by turning it just above the tube, but take the stub of a match and rub off the charred wick; by the method you will ensure an even flame. When the flame runs up the chimney of a lamp, it is an indication that the screw of the burner is worn out, it is unsafe. Cut it aside and buy a new one. Empty your lamps occasionally, and wash the inside with suds, care being taken that they are well dried before refilling them. Do not wash flint-glass chimneys too often in soapsuds, as it has a tendency to make them brittle, but rub them out with a piece of clean flannel. Lamps thus managed will give a brilliant light, and amply repay one for one's trouble.

A. C. R.

Meridian N. Y.

—Here is another flattering testimonial from a wellknown musical connoisseur, Mr. G. Couture, choir master of St. Peter's Cathedral, musical director of the Philharmonic Society, etc.

Montreal, 15th Dec, 1893.

L. E. N. PRATTE,
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Dear Sir,

It is with real satisfaction as a musician and pride as a Canadian, that I wish to congratulate you on the "Pratte Piano" of which I have lately become the possessor.

The care with which you have avoided the undesirable qualities found in other pianos and the choice of the best materials combined with judicious improvements, makes your piano one of the most satisfactory and perfect instruments one could desire.

Allow me to congratulate you and at the same time express my admiration.

G. COUTURE.

NOTES AND NOTICES.

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On another page they call attention to their line of Spring goods which will well repay careful examination of Quebec Farmers.

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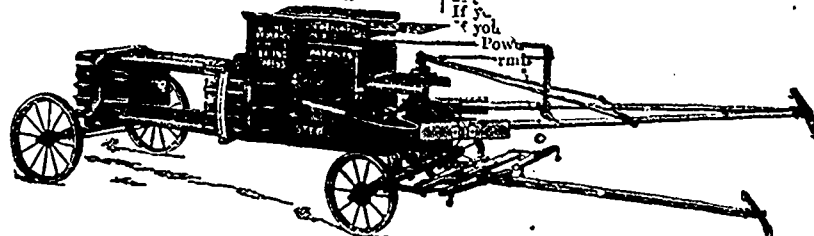
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Jolie of St. Lambert, 5726, Canada Champion Milch Cow, 16 lbs. 13 1/2 oz. butter, 48 lbs. milk per day.
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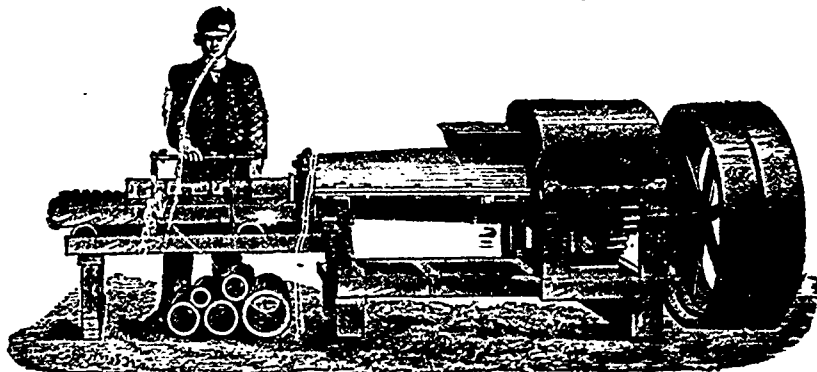
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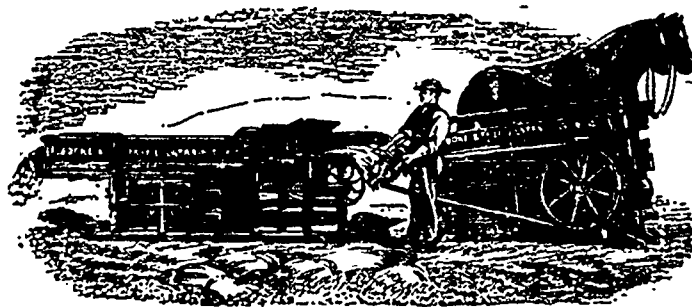
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