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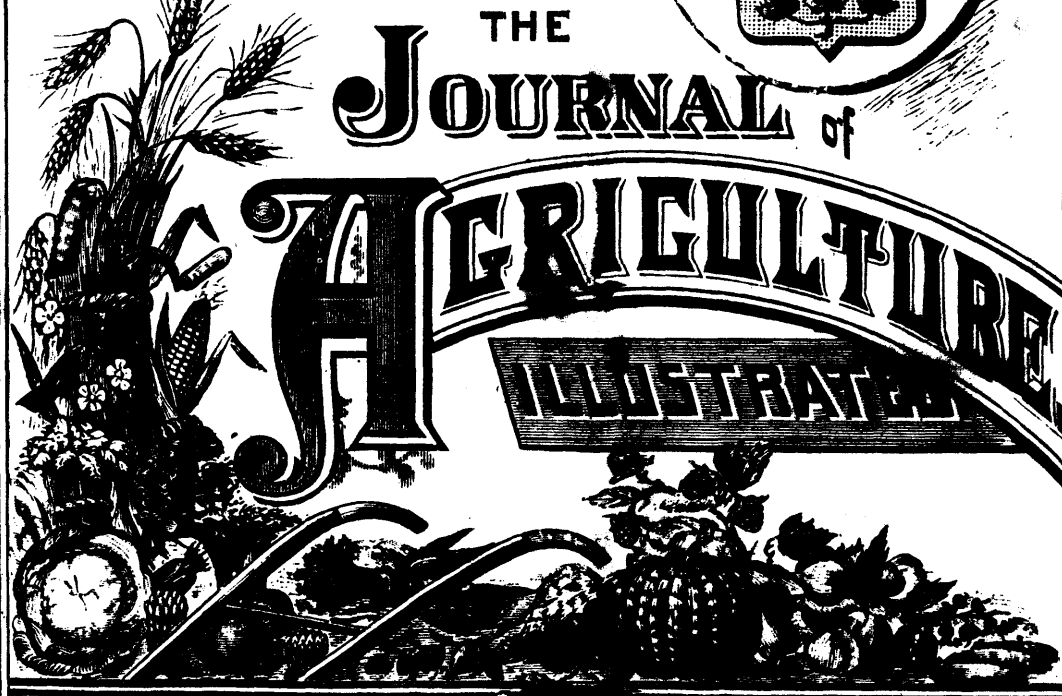
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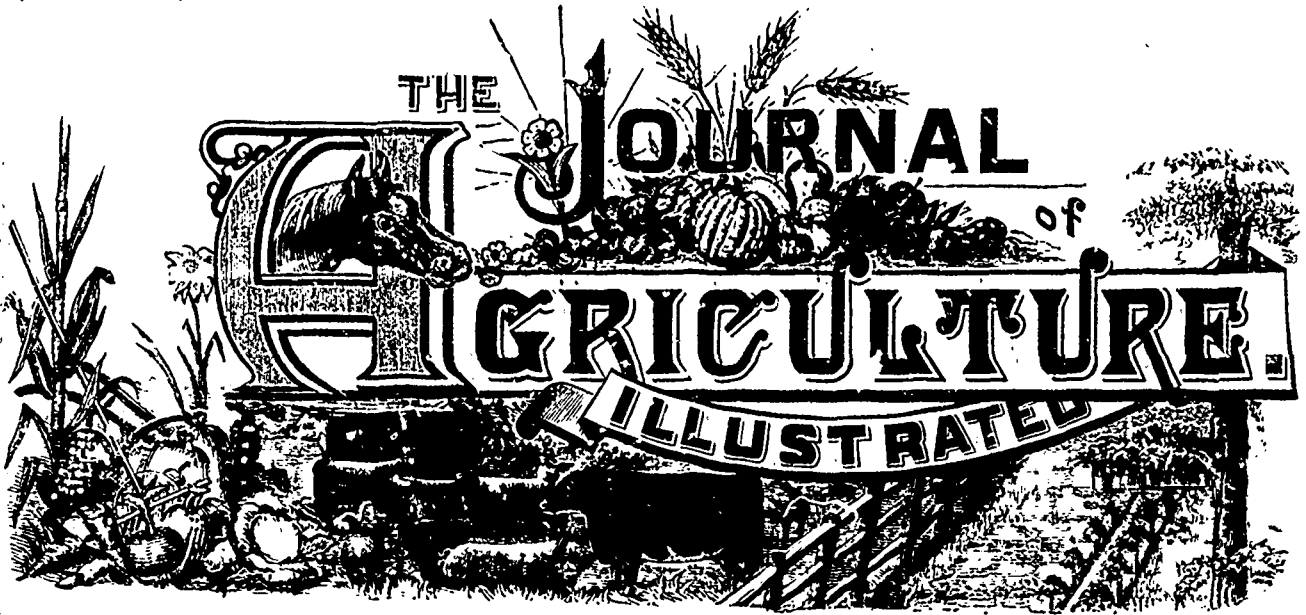
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made. They would visit, the best cultivators of the district, at their own homes, and show with exactitude the state of each man's farm compared with that of his neighbour. From the sums voted for the encouragement of agriculture, money prizes should be offered, say every other year, for the best managed farm in each parish; and these prizes might be reserved for farmers, properly so called, to the exclusion of amateurs, &c. We should thus have a parochial organisation tending to improve the cultivation of the entire district, the editors of the "Journal of Agriculture" and their assistants, aided, perhaps, by our professors of agriculture and of dairy-work, would act as visitors and judges of the competitions, and as lecturers; and at the end of each year, an official report might be sent out, stating, from personal inspection, the progress made in each parish where clubs are in operation.

When once parochial exhibitions are established, the success of district exhibitions is assured. It seems to us, that the Commissioner of Agriculture should assume as soon as possible the direct control of agriculture, in order that the relations between the clubs, the agricultural societies, and the department of agriculture, may be as intimate and as efficacious as possible.

The time has come when these questions connected with the progress of agriculture should be discussed, if possible, in every parish in the country. The result of the discussions should be remitted to the proper authority, under the form of a petition or otherwise, that the legislature may be enabled to become thoroughly acquainted with the opinion of the public on the subject.

DAIRY CATTLE.

(Continued from page 19).

Winter food for milch cows.—Winter is the true time for a good dairy-man to make his profit. Butter of first-rate quality is always worth from 35 cts. to 40 cts. a pound in Montreal from November to May. With judicious feeding, excellent butter can be made in winter, as I have often shown in this Journal.

AMENDMENTS PROPOSED IN THE ACT OF AGRICULTURE.

For many years, there have been discussions raised as to the alterations to be made in the act of agriculture to render it more efficacious, and to insure the more rapid improvement of farming in all the parishes of the country.

The more we see, the more are we led to think that additional encouragement to the establishment of agricultural clubs in our parishes would be useful. A club, consisting of a dozen or more good farmers meeting together with a view of studying matters connected with their own interests, and receiving direct encouragement in proportion to the real progress which they themselves shall have made in the practice of agriculture, could not fail to prove a lever which, before long, would raise the whole system of cultivation in the parish.

Each year, the government votes a considerable sum (about \$650) to the county agricultural societies; of which amount, the parochial agricultural clubs, whose function is really useful, should receive a part sufficiently large to be of direct and real encouragement to them. The clubs should be visited, at least once a year, by competent lecturers, who would be able to form, at each visit, their own judgment on the progress

If you have a *silo* you are a fortunate man ; if not, roots must be grown ; Belgian carrots, cabbages, and mangolds, or sugar-beets, for choice, though I am fond of swedes, as I have always looked after the dairy myself ; and in feeding milch-cows on turnips or swedes, great care is necessary to prevent the milk acquiring a bad taste. In fact, if you intend to make butter after any other than the Devonshire plan, I should advise you to stick to carrots and mangolds. However, I may as well let you know how I treat both cows and milk when I use swedes, turnips, or cabbages : I look carefully after any rotten leaves of the cabbage—give them to the calves ; I feed the cows with their swedes or turnips *immediately after milking* ; to every two gallons of milk I add a piece of saltpetre about the size of the top of the little-finger. This effects a perfect cure, but it needs great and continued attention—a servant won't do it—you would find him leaving out the saltpetre, and giving the cows their turnips about mid-day. Fourteen hours, or more, elapsing between the morning and evening milkings, I prefer giving the turnips in the morning—the digestive powers have a longer time to carry off the flavour. Milk should be cooled immediately after it is drawn from the cow. But, as usual, I have run away from my subject, my mind being, unfortunately, of the discursive order.

You will grow a certain number of roots, then, for your cows. I think, if you manure well, and keep the horse-hoe at work after singling, you may reckon upon fifteen tons of carrots, and eighteen tons of mangolds, to the acre ; or from 700 bush, to 850 bush, per acre—average, say, 770. Half an acre of cabbages should produce 8,000 heads, and each head will, at least, weigh seven pounds : 56,000 lbs. You have, thus, on two acres and a half 122,000 lbs of cattle-food. Each cow will need about 30 lbs of this a day, so you have nearly enough to supply twenty cows for the 210 days of the winter, supposing they all keep in milk. This will do very well ; but if you dry any of them off, you will of course dock their roots. Perhaps you have never realised the immense produce of half an acre of cabbages before ! I can assure you I have put it very low. They should be set at two feet by one foot intervals. About 23,000 plants to the acre ; but blanks will occur, and some won't heart. Any good sort, St Denis, savoy, will do—it is as well to grow the best, as you may sell a few and remember that, at one cent a piece, the yield of an acre of cabbages is \$230 00 ! They need not be troublesome to store. My plan answers well : choose a place, near the stable, where the snow generally lies ; as late in November as you dare, set the cabbages, roots upwards, close together, in beds twelve to twenty cabbages wide ; ten or eighteen, on them, diminishing one on a side each rank, until the pile is two feet high. If you please, you can throw up a furrow all round the outside, and against the sides. No straw or other covering except the snow. If they freeze, it won't hurt them, though many alternate freezings and thaws will do them no good. (1)

ARTHUR R. JENNER FUST.

Canadian export of beef ; with special reference to Veterinary Science.

(Continued from p. 16.)

Our soil cannot be surpassed for growing variety of food, and with rational cultivation it is equal to any other part of the globe for production of food. So you see, gentlemen, the climate and soil are well adapted to raising beef.

3. History of the prominent breeds and those best adapted.

This would occupy a large volume if properly gone into, but neither space nor time will permit me to do so, and I can

(1) Owing to a mistake of the printer, the remainder of this article will not appear till next month

A. R. J. F.

only give a brief history of the most prominent improved beef stock. The first to come under our notice is the noble breed of Shorthorn cattle, which, in my opinion, stands at the top of the tree, but I have no doubt other members of this association will hardly agree with me on this point. This breed may be called an artificial one, the founder of which was Mr Charles Colling of the county of Durham, England, commencing about the year 1770. They originate from the Teeswater breed, which were a large, coarse-boned sort, with thick skins, and immense feeders ; these cattle were gradually improved by Mr Colling and his followers, the most distinguished, being Messrs Bates and Booth, until now they are the standard beef cattle of the world. Their frame fills up a rectangle more than that of any other ; they possess that beautiful, delicate, elastic touch of the skin, which denotes the greatest aptitude to lay on flesh, and also have soft, silky, glossy hair, fine bone, etc. What makes them take the lead as the best beefers are the following points : early maturity ; no other breed can compare with them for this ; for example, two year old steers were sold last September, at the Ontario Agricultural college, weighing over 2,000 pounds, which shows their great rapidity for laying on flesh. This breed of cattle have brought most fabulous prices, realized not only by breeders in England and U. S., but here in Canada.

2. Polled Angus or Aberdeen Poll cattle. This is a breed which has come greatly into vogue the last few years, and is now, perhaps, the favorite one, anyway with a large number of stock raisers. They originate in the counties of Forfar and Kincardine, Scotland, and are hornless black cattle. They do not attain quite as heavy weights on an average as the Durhams, nor do they mature so early, but are more hardy ; not having been bred in and in so much, and their beef is of superior quality.

3. Devons : This race of cattle was thought a great deal of, and some stock raisers fancy them more than any other breed, still ; they originate in the county of Devon, England. Their form is graceful, compact, and they are decidedly a beef producing race, although their milk is of a superior quality, containing a large amount of casein which is the principal element in cheese. They are of a deep, rich red color, with a mellow, soft, yellowish skin, which denotes their good quality as a beef feeding animal. They do not attain the great weight of the Shorthorns, although attaining to considerable size, neither do they mature so early. The forte of this breed is their great suitableness to active labor ; they are agile, gentle, possessed of endurance ; their limbs have great leverage and, they can travel about the farm as quick as an ordinary farm horse.

4. The Herefords originated in Herefordshire, England. This is an original race, but has been greatly improved this century, and is now one of the finest breeds of cattle : by many it is thought to be the most superior. They are of a red color, with white faces and white stripe along back and belly, with medium horns which, in the cows, turn upwards ; in the bulls curve downwards and outwards. They attain great weight, are good stall feeders ; and in my opinion are the best grazing animals for beef purposes to cross with the common Western prairie cattle ; as they retain their character when crossed with other cattle to a very large extent, also are more hardy than the Shorthorns, easy feeders, will thrive where Shorthorns get low and down in flesh, and possess this peculiarity of good grazing qualities. They are largely bred in the U. S. and Canada for the improvement of beef growing cattle, and have made a most extensive and highly honored name for themselves.

5. Galloways: This breed's native land is Galloway, Scotland. They are of a jet black color, very hardy constitutions, rough coats with long curly hair covering their thick sides, though at the same time elastic and mellow ; have short legs with very long bodies well ribbed up, but their great characteristic,

which is always looked for in the London market, is the superior quality of their beef which brings the highest price on the market. A Scotch writer of the 16th century, speaking of the Galloway cattle says: "In this region are many fair kye and oxen, quibik the flesh is right delicious and tender." They have been imported into this country and U. S., but have not spread to such a large extent as the Shorthorns or Herefords on account of their slowness to fatten and late maturity.

Conclusions drawn from the different breeds are:

Shorthorns best for stall feeding on account of their early maturity; lay on beef faster than others and attain a greater weight.

Herefords best grazers; as they gain more weight while at pasture, and seem to be comparatively free from disease.

Polled Angus are perhaps next to the Shorthorns, and equal to the Herefords for stall feeding purposes.

Galloways present best quality of flesh and are the most hardy, but late maturers.

Devons fairly hardy, but do not obtain the weight or size of the first mentioned breeds.

4. Most profitable way of feeding and raising.

This would be a very difficult task to lay down a regular rule for, as every stock raiser has his own opinion on this matter. In my opinion, the most profitable way of raising beef is on the Western prairies of the U. S. and Canada. In raising and feeding on the prairies there is no long winter to house cattle and feed them inside with very great expense; cattle on the plains live out all the winter, and in the majority of cases are seldom seen all the winter, but have to forage for themselves on the dried prairie grass, which gets cured about the end of June. These cattle are extremely hardy, as they have to contend with a great many hardships, privations, cold, hunger, etc. It seems to me that a cross between these prairie cattle and Herefords would make the best beef grazing animal, as the former have hardness of constitution and superior quality of beef, while the latter have the weight, and are the best high-bred cattle for grazing purposes.

Then we have the stall feeding animals, amongst which I have tried to show the Shorthorns to be the most superior, therefore this breed should be selected, and none but good animals bred from. There can be no rule laid down for the quantity and quality of food fed to an animal, this must be followed according to the symptoms shown by the animal, whether he is doing well or not, and the amount of fatty and growing constituents contained in the food.

5. Most important diseases and their preventions.

If I were to undertake to fully describe all that is under this heading, gentlemen, it would not only be a task which would occupy my whole winter's work but, I feel, a life long labor. This is a most important part of veterinary science, as our worthy Principal tries to impress on our minds, which cannot be overlooked, and must be riveted in the minds of not only every veterinary practitioner but of every stock raiser, and, in fact of all the inhabitants of our country, as there are millions of dollars lost through disease, especially from those of a contagious nature which have long proved exceedingly troublesome in some countries, especially in England and parts of Europe, and the U. S., and which may even be compared to the plagues of Egypt. But, thanks to our painstaking Principal, this country has been free from the virulence of the great bovine scourges. With the exception of the Ploton cattle disease, which you are all familiar with, there has been no contagious disease of any importance to degrade and ruin our superior farming lands, which would bring to ruin many a farmer who is now comfortable and happy, and reduce him to penury and want.

The diseases which do the greatest damages in cattle are as follows: *pleura-pneumonia contagiosa*; foot and mouth

disease, *tuberculosis* and *rinderpest*. Upon these I will briefly touch as to their nature.

First to come is *Pleura-pneumonia contagiosa*. There are a great variety of names applied to this disease. Wulley calls it *zymotic p. p.*, others call it *p. p. epizootica, exudative p. p.* and to the outer world it is known as *lung disease*, or *lung ill, disemper*, etc. It is an insidious, exudative, zymotic disease, due to a specific poison peculiar to the ox, and has its local manifestations concentrated in the lungs and pleura. It is peculiar to the bovine tribe; no other species can contract the malady; no age, breed, class, or sex of the bovine species is exempt from the virus of this terrible scourge. It is one of the most insidious diseases, with which we are acquainted, and has produced greater losses to the British stock owners and dairymen than any other single disease to which animals are subject. No correct estimate can be made of the losses sustained by its ravages, for the simple reason, that a great many of the animals affected are never brought under the notice of the authorities. Cost, in England alone, supposed to be £2,000,000 or \$10,000,000, annually. So you may see the immense losses sustained by England alone; besides, it extends to Europe, Scotland, Ireland, and America.

This disease must not be taken for sporadic *p. p.*, as has been the case more than once by some of the prominent members of the profession. They ought to be called by totally different names, so as to make a greater distinction, and leave no excuse for any of the members of the profession to confound the two diseases; it is also apt to confuse the members of the medical profession, as they cannot understand its contagious nature. The sporadic form is comparatively insignificant, while the other is dreaded by whole nations.

In contagious *p. p.* there is effusion, exudation, and extravasation, resulting from a zymotic action in the blood, due to a virus or germ, no correlation between pulse and respiration, it also has an incubative stage lasting from three weeks to three months. Virus may be dormant for twelve months under favorable circumstances.

Fatality: In most malignant outbreaks it reaches 80 to 90 per cent, milder ones 30 to 40 per cent. Circumstances favoring the disease are bad hygienic surroundings, and congregation of cattle together, as in fairs, etc. Man may carry the diseased germs about with him in his clothes, as also may birds and other animals.

Symptoms: Their rapidity and violence, or otherwise, depend on the amount of poison received into the system, its virulence, also the constitution of the patient and the attention which is paid to the animal in a medico-hygienic sense. A great premonitory sign is the elevation of temperature one or two degrees.

There are three stages in the disease. First stage depends on the virulence it is ushered in with, whether it will be rapid or not. Second stage: If fever was high in first stage it will decrease, and if low vice versa. Temperature may have a slight decline or may vary, pulse much same as former. Respiration labored, always accelerated, and the characteristic grunt and cough. Affected lung will be changed. Third stage: Total suspension of all natural functions, and the disease becomes aggravated, until death occurs from asphyxia.

Foot and mouth disease. Called a variety of other names as *Exema Epizootica, American Disemper, Epizootica aphtha*, etc. It is a vesicular eruption due to a specific ferment, and having its lesions localized in the skin and mucous membranes. This disease may be said to be indigenous in the bovine tribe. It spreads with perhaps the greatest rapidity of any contagious or infectious disease when once established. Upon the nature of the disease I need not dwell, as it was a short time ago fully described.

Fatality depends upon the character of the outbreak, largely. Sometimes death is a rarity, while others die in the pri-

mary effects of the disease. No disease can be propagated in such a variety of ways as this one.

Rinderpest: It is termed by various other synonyms, as cattle-plague, steppe-murrain, contagious fever.

It is a specific eruptive fever, peculiar to cattle, produced by a special zymotic poison; its lesions are localised in the skin and mucous membranes.

Nature of the disease: though indigenous in the bovine tribe alone, it is propagated to other ruminants, but in a more modified form. There is considerable diversity of opinion regarding the nature of this disease, but one thing agreed upon is, that it is purely zymotic.

There are also numerous other formidable diseases, for example, tuberculosis, which was fully presented at the last meeting.

Prevention. - The prevention of these contagious and infectious diseases can only be effected by the strict system of quarantine in excluding the entry of infected cattle from the country. I have had the pleasure and honor of bringing before you to night one of the few countries free from these plagues, namely Canada, which freedom is largely due to the energetic efforts of our worthy professor, the Principal of this college.

Commercial dairying in Canada. (1)

In 1858, our exports of cheese were purely nominal, amounting for that year to \$1,497 00. The following year, they increased over 200 0/10; again in 1860, the increase is nearly 400 0/10, in 12 months, and so on, in a wonderful manner to this year, when the increase in our exportation is estimated at 25 0/10 over that of last year, itself the largest on record.

EXPORTATION OF CHEESE FROM CANADA. See Trade and Navigation Reports.

Table with columns: Cheese lbs, Value, Cheese lbs, Value. Rows for years 1858 to 1873.

Now, if we turn to our butter trade in the past, and compare it with the present, we, unfortunately, have no reason for congratulation, but the reverse:

In 1862, before Confederation, the united provinces of Ontario and Quebec, alone, exported more butter than the whole Confederation of Canada does now; the figures being for 1862 a total of 8,905,578 lbs. whilst for 1883, a total of 8,106,447 lbs.

It is true that 1882-83 has been an exceptionally bad year for butter exports, the decrease from the previous year being no less than 46 0/10, - our exports for 1881-82 reaching over 15,000,000, whilst in 1880, they were nearly 19,000,000 lbs.

EXPORTATION OF BUTTER FROM CANADA: see idem.

Table with columns: Year, Butter lbs., Value, Year, Butter lbs., Value. Rows for years 1858 to 1883.

We see by the table just quoted that our butter trade has been at a stand still ever since 1871, when our exports were over 15,000,000 lbs.

Now let us look for the main cause of this very unsatisfactory butter trade. At first sight, from the fact that, at present, it apparently pays better to make cheese than butter, this alone, to many, seems to explain the falling off in our butter trade.

A second, and in my opinion, a still better reason for this decrease is the unsteadiness of the demand for Canadian butter. Let us now look into this latter argument. Our export market for butter is undoubtedly Great Britain. Nearly 80 0/10 of our butter goes there.

AVERAGE OF CURRENT PRICES OF BUTTER AND CHEESE ON 1ST SATURDAY IN JANUARY IN EACH YEAR, FROM THE LATEST ACTUAL MARKET SALES (1)

Table with columns: BUTTER (per cwt. sh), Foreign (Friesland, Jersey, Kiel, Normandy, American, Bosch), CHEESE (Engl-h Cheddar Fine, Engl-h good new, Red Somerset leaf, White or yellow Cheddar leaf, Scotch Cheddar, Cheshire, North Wilts leaf, Derby Wilts leaf, Wiltshire new, American fine, Gouda, Edam new, Gruyere new).

(1) See "Journal of the Royal Agri. Soc of England, 1883," part 1st page XXVIII.

(1) A paper read by special request, at the "Western Dairymen's" Convention, on the 14 Feb. 1884, at London, Ont., and at Peterborough, Ont., on the 21 Feb. 1884, before the Eastern Dairymen's Convention.

If we now turn to the butter exports to England, from Normandy in France, and from Denmark, we find their trade increasing in a most satisfactory manner. Let us take Denmark for an example :

Not more than 50 years ago, Danish agriculture was certainly not ahead of ours. All, or nearly all the grain and hay Denmark then produced was sold out of the country.

Cows were fed on straw all winter, and the butter produced in summer was of very little amount and of poor quality. Now, Denmark sells neither grain nor hay;—on the contrary, it imports more grain and oil cake for its cows than the whole country used to export years ago. Cows, instead of giving little butter, in summer alone, are made to give an average of over 250 lbs. for each cow,—many farmers producing annually over 300 lbs. per cow, on an average, on large herds. Moreover, about 70 0/10 of all the cows in Denmark are made to give more butter in winter than in summer—the calving of such cows taking place between September and January.

Although the English cheese market is open to them, as well as the butter market, their principal production is firstly butter and secondly,—skim cheese.

The following table shows the wonderful increase in butter exports from Denmark to Great Britain, from 1865 to 1881, or in 16 years. (See "Journal R. A. S. of England," 1883, part I p. 28.)

QUANTITY AND VALUE OF BUTTER IMPORTED INTO GREAT BRITAIN FROM DENMARK.

Years	Quantities	Computed real value.	Years	Quantities	Computed real value.
	Cwt.	£		Cwt	£
1865	65,555	362,440	1874	226,053	1,363,433
1866	67,305	319,528	1875	206,171	1,275,870
1867	80,389	422,479	1876	201,195	1,311,234
1868	79,137	471,262	1877	210,322	1,347,791
1869	103,613	574,981	1878	242,427	1,517,467
1870	127,013	767,190	1879	281,740	1,673,452
1871	140,851	803,226	1880	300,157	1,777,176
1872	173,574	1,009,322	1881	279,625	1,911,894
1873	201,558	1,203,459			

We see here, that whilst our Canadian butter trade has been at a stand still and worse, since 1872, the Danish butter exports to the same market as ours have increased steadily by nearly 100 0/10!

If we now compare our exports in butter to England with those of other countries, besides Denmark, we find that whilst we are even going back, our competitors are progressing in a most satisfactory manner to themselves.

Thus, Holland has steadily increased its exportations by nearly 200 0/10 from 1872 to 1880 : see as above page 29.

Years	Cwt.	£	Years	Cwt	£
1872	269,091	1,358,579	1877	372,131	2,084,686
1873	279,004	1,453,875	1878	460,601	2,494,903
1874	351,605	1,877,755	1879	555,377	3,331,149
1875	357,106	1,917,910	1880	810,509	4,076,399
1876	402,984	2,252,909	1881	745,536	3,745,885

How much of this increase is due to oleomargarine? I shall not venture to say, although I believe it to be very large. But from the quoted reports, even this artificial produce from Holland is quoted at much better prices than we can obtain for our butter.

Now, if we compare even American exportations of butter to England: their trade is most satisfactory,—whilst ours is going back, as I have already mentioned.

Thus, whilst we exported in 73-74 over 15,000,000 of lbs. of butter, principally to England, the exports of the U. S. there were little over 4,000,000 lbs. But they doubled every second year or so, until they reached nearly nine fold in six years (from 1874 to 1879), being then nearly 34,000,000 of lbs.!

	Cwt.	£		Cwt	£
1874	36,307	183,769	1878	219,794	998,756
1875	40,331	205,900	1879	301,054	1,243,975
1876	118,131	593,122	1880	277,790	1,343,967
1877	138,491	920,561	1881	174,246	845,125

See as above, page 29.

Therefore, if we look for the reason of the unsteadiness of the demand for Canadian butter, we must,—no matter how painful the public avowal,—admit that the true and only reason is the very poor quality of our butter.

I have asked the largest exporters of butter in Montreal an estimate of the relative proportion of fine butter to poor. They answered that they were not far wrong in the following :

Finest Canadian butter.....	5 @ 10 0/10
Fine " "	25 @ 30 0/10
Poor " "	50 @ 60 0/10

I leave you, Gentlemen, to estimate the amount of loss this means to the country annually. I shall only say, that the butter makers of this country can—right here—stop a leak in their net profits amounting—in the aggregate—to millions of dollars annually.

Let me now refer to the very important question as to which pays best:—butter making or cheese making. I have given you the experience of Holland and Denmark,—it is the same as ours. It is a remarkable fact, that whilst in Canada farmers think cheese making pays better than butter making, the contrary seems to be the experience of Denmark and Holland. In these countries, butter is the principal industry, and what cheese is made comes from milk more or less skimmed. We give here the exports, and value of such cheese to England, from Holland alone. By comparing figures, it will be seen that the quantity shipped and the prices obtained for such skimmed cheese compare most favorably with our exportation of full milk cheese. See as above, p. 29.

	Cwt.	£		Cwt.	£
1872	329,535	912,537	1877	341,980	984,855
1873	336,654	1,013,233	1878	355,159	1,018,669
1874	398,888	1,164,921	1879	275,039	743,107
1875	370,123	1,073,591	1880	288,666	810,590
1876	330,435	949,413	1881	264,626	747,052

In such a study, and in order to arrive at an exact conclusion, you will admit with me that all the elements of the case must be taken into consideration.

Now, let us see if it would be prudent to increase very largely the production of Cheddar cheese, the only kind made in Canada as a rule, over what it is at present.

That such production could be increased even ten-fold in a very few years is to me the more evident that,—in our province alone, not one single cheese factory existed in the French settlements, up to 1872. Now, we produce in those same settlements nearly one quarter of all the cheese manufactured in Canada. And, there is still room, for an increase of a 100 fold!—In the maritime provinces, where facilities for butter and cheese making are, in my opinion, at least, fully equal to those of Quebec—hardly any cheese is exported.

THE FOLLOWING TABLE, SHOWING OUR TOTAL EXPORTS, IN BUTTER AND CHEESE, AND WHEY EXPORTED, IS TAKEN FROM THE TRADE AND NAVIGATION RETURNS FOR 1883

BUTTER. 1883

CHEESE. 1883

BUTTER. 1883			CHEESE. 1883		
	lbs.	\$		lbs.	\$
GREAT BRITAIN.			GREAT BRITAIN.		
Ontario	1,205,591	266,850	Ontario	12,144,134	1,356,608
Quebec	5,023,242	1,063,458	Quebec	45,528,709	5,953,235
Nova-Scot.	1,260	262	P. E. Island.....	116	14
P. E. Island.. ..	80	15			
	6,230,273	1,330,585		57,672,959	6,409,857
UNITED STATES.			UNITED STATES		
Ontario	331,995	60,424	Ontario	220,945	24,960
Quebec	626,085	139,616	Quebec	415	91
Nova Scotia.....	4,485	992	Nova Scotia.....	87	7
New Bruns.	20,059	4,447	B. Columbia.....	12	3
B. Columbia.....			P. E. Island.....	70	7
P. E. Island.....	3,767	655	N. Brunswick.....		
	986,391	206,134		221,529	25,068
B. W. INDIES			NEWFOUNDLAND		
Nova Scotia.....	35,861	8,078	Nova Scotia.....	470	60
P. E. Island	300	60	P. E. Island.....	5,615	567
	36,161	8,138	Quebec	125,114	11,853
S. W. INDIES.				132,040	15,480
Nova Scotia.....	1,980	370	B. W. INDIES		
			Nova Scotia.....	3,551	482
D. W. INDIES.			B. W. INDIES.		
Nova Scotia.....	62,782	12,992	N. Brunswick.....	135	17
BRAZIL.			B. W. INDIES.		
Nova Scotia.....	105	26	P. E. Island.....	200	25
NEWFOUNDLAND.			ST. PIERRE		
Quebec	387,983	73,011	Nova Scotia.....	120	20
Nova Scotia.....	303,029	56,097			
P. E. Island.....	11,021	2,233	D. W. INDIES.		
	702,033	131,341	Nova Scotia.....	664	82
ST PETER			F. W. INDIES		
Quebec	11,606	2,308	Nova Scotia.....	1,000	100
Nova Scotia.....	67,126	12,443	BRITISH GUIANA.		
P. E. Island.....	7,143	1,302	Nova Scotia.....	9,189	1,339
	85,869	16,053			
MADAGASCAR.			TOTAL:		
Nova Scotia.....	125	25	Ontario	12,361,079	1,380,969
BRITISH GUIANA			Quebec	45,655,038	5,068,179
N. Scotia.....	625	125	Nova Scotia.....	15,081	2,090
N Brunswick.....	140	28	N Brunswick.....	135	17
	765	153	B. Columbia.....	12	3
JAPAN.			P. E. Island.....	6,042	613
B. Columbia.....	67	30			
TOTAL:				58,041,387	\$ 6,451,871
Ontario	1,537,586	327,274			
Quebec	6,048,912	1,278,393			
Nova Scotia.....	477,372	91,360			
N. Brunswick	20,199	4,495			
B. Columbia.....	67	30			
P. E. Island.....	33,311	4,265			
	lbs. 8,106,447	\$ 1,705,817			

See Trade and Navigation Returns, 1883

Again, Gentlemen, if we examine the cheese imports of England, we shall observe that they do not increase in that hopeful proportion which we might be led to suppose, from what may have been said in this very convention.

Great Britain imported in

1879	1,789,168	cwt. of cheese
1880	1,773,503	“ (less)
1881	1,834,480	“ (a little more)
1882	1,692,495	“ (considerably less)

See "Journal of R. Soc. of England," 1883, part 1st, page XXIV.

CERTAIN ARTICLES OF FOREIGN AND COLONIAL PRODUCTION IMPORTED IN THE YEARS 1879-82; AND THEIR QUANTITIES

	1879.	1880.	1881	1882
ANIMALS LIVING :				
Oxen Bulls, and Cows (number).....	208 720	350,950	282,691	309,360
Calves ".....	39 172	38,999	36,683	31,340
Heifers ".....				
Lambs ".....	944,809	940,091	935,244	1,124,391
Swine and hogs, and Cows (number).....	52,267	51,030	24,273	15,670
Bones (burnt or not, or as animal charcoal) tons.....	65,067	79,740	65,007	54,401
Cotton. Raw Cwts.....	13 171,043	14,547,283	11,952,724	15,794,566
Flax ".....	1 694,051	1 896,249	1,781 762	1,966,969
Guano ".....	76,945	78,965	50,072	45,095
Hemp ".....	1,304,036	1,320,731	1,475,421	1,354,407
Hops ".....	262 616	196,688	116,710	315,377
Hides untanned : Dry Cwts.....	545 373	660,198	554,134	576 451
" " Wet ".....	463,086	584 693	457,295	613 593
				Gallons
Petroleum tons.....	170,831	152,672	234,968	59 133,384
Oilseed cakes tons.....	216,002	243,993	220,790	190,252
Potatoes cwts.....	9 352,236	9,420,623	4,034,577	2 997,514
Butter ".....	2,045,606	2,319,802	2,046,421	2,167,428
Cheese ".....	1,789,168	1,773,503	1,834,480	1,692,495
Eggs, great hundreds.....	6,388,838	6 228,437	6,306,645	6,757,234
Lard cwts.....	835,897	929,616	855,792	665,895
Bacon ".....	3 996,922	4 370,860	3 838,855	2,348,060
Hams ".....	906,121	938,269	747,000	548,507
Salt beef ".....	242,864	289,422	248,698	227,748
Salt pork ".....	400 591	384 057	345,709	266,259
Clover seeds ".....	315,206	271,609	279,925	354,869
Flax-seed and linseed qts.....	1 665,333	1,712,576	1,829,838	2,437,918
Rape ".....	365,340	400,694	373,028	547,679
Sheep and lambs wool lbs.....	411,106,627	460,337,412	447 044,809	483,954,318

I do not know what the official figures may be up to last December; but I cannot see that the consumption of cheese in Great Britain had any reason to increase within that time, as high prices on cheese were, on the whole, fully maintained.

If we now consider that we are crowding our American friends pretty closely in cheese, on the English market, we shall see at a glance that somebody must suffer if our increase of production, in one kind of cheese only, continues as it has done in the last ten years. The tendency, certainly is towards an increase in a much larger ratio than ever

Butter, 4 lbs. @ 20c net.....	80
Skimmed milk.....	20
Total.....	\$1 00

Now, all authorities agree that, in calf feeding or pig raising, sweet skimmed milk is worth *one half* of the full milk, so 20c is not the real value, to a careful farmer. It has been shown in some of the experimental stations under Government control in the United States, that, under proper care, 100 lbs. of skimmed milk produce 6½ lbs. of pork, live weight. This shows the real value of skimmed milk for meat production.

I shall mention but one more element, and a very important one in my estimate.

Cheese producers are generally of opinion that they had better not raise any heifer calves, but buy milch cows. They may be right in their calculation, that milk at one cent per lb. is too high to raise common calves on. But then, where shall we go for milch cows, if cheese producing becomes the rule, and butter making the exception?

With butter making, as it has been shown here, there is no difficulty in raising the best dairy cows on skimmed milk, with a little fattening food added, such as pea or oat meal, oil cake, &c.

Now, respecting a market for our butter?

First, we have our home market, which will increase many fold when really good butter shall be the rule instead of the exception. Where is the family, with a cultivated taste for butter,—which will accept and consume *poor* butter in any quantity? Those who have tried the experiment know how much butter their own families will consume of good—*really excellent* butter,—and how little of poor butter!

I do not exaggerate in stating that in such cases the difference is four fold! And the difference in price 40 0/10!

Then, we have the English markets, where the best of butter is always in demand, and the supply nearly always short.

UNITED-STATES EXPORTS.

	Butter lbs	\$	Cheese lbs.	\$
1873	4,518,844	952,919	80,366,540	10,498,010
1874	4,367,983	1 092,381	90,611,077	11,878 995
1875	6,360,827	1,506,996	101,010,853	13,659,603
1876	4,644 894	1 109 496	97,676 264	12,270,083
1877	21,527,241	4,424,616	107,364,666	12,700,627
1878	27,837,117	3 931,822	123,783,736	14,103,529
1879	38 248,016	5,421,205	141,654,474	12,579 968
1880	39,236,658	6,690,687	127,553,907	12,171,720
1881	31,568,500	6 256,024	147,995,614	16 380,248
1882	14,794,305	2,864,570	127,989,782	14,058,975

It has been shown that when every element is considered, —and in a series of years,—butter making pays the farmer fully as well as cheese making.

The comparative calculation is easily made:—100 lbs. of standard milk will make, in Ontario, 9½ lbs of cheese or 4 lbs. of butter. Whey is considered of little account, being valued at about 5c per 100 lbs.

Therefore, we have 9½ lbs. of cheese say 10 cts. net,—a very high average. 95

Whey 5

Total \$1 00

Again, we have all the markets of the world, which the U. S. are just now opening up for us, as well as for themselves.

We here see (in the following table) that, even Canada imports 274,597 lbs. of butter from the States, and that only about $\frac{2}{3}$ of the American exports in butter go to Great Britain. Moreover, that Newfoundland, Labrador, Miguelon, and St. Peter, import 549,339 lbs. of butter from the States, which should evidently be butter from Canada, if Canadians could supply it.

COUNTRIES TO WHICH EXPORTED	BUTTER lbs.	CHEESE lbs.	CONDS. MILK
Argentine Republic	1,000	140	\$ 16
Belgium	126,000	224	.....
Brazil	425,176	6,447	1,058
Central American States.....	31,393	22,467	3,465
Chili	2,802	1,165	176
China.....	25,384	26,378	10,631
Denmark.....	98,763	.....	.....
Dan. West. Indies.....	34,508	26,672	476
France.....	311,427	21,566	.....
French W. Indies.....	82,957	7,246	16
French Guiana.....	1,008	.....	511
Miguelon, Langley and St. Pierre Is.	96,991	.....	.....
French Poss. in Africa and adj. is ..	1,094	.....	.....
do do all other.....	13,710	4,565	764
Germany.....	1,760,197	134,100	467
England.....	17,147,428	119,903,552	48,669
Scotland.....	6,334,382	21,111,543	.....
Ireland.....	.....	107,300	.....
Gibraltar.....	10,337	985	.....
N. Scotia, N. B.—P. E. I.....	30,784	250	115
Que. Ont. Man. and N. W. T.....	130,257	5,195,977	436
British Columbia.....	113,556	37,442	2,503
Newfoundland and Labrador.....	452,348	2,687	.....
British West Indies.....	1,661,399	495,086	10,470
do Guiana.....	88,716	162,588	.....
do Honduras.....	63,776	22,890	2,856
do East Indies.....	.....	234	.....
Hong Kong.....	7,061	26,954	9,514
British Poss. in Africa and adj. Is..	73,079	2,799	43
do do Australasia	749	.....	20
Hawaiian Islands.....	104,863	31,404	5,824
Hayti.....	426,595	9,055	199
Italy.....	103	970	.....
Japan.....	106,306	56,808	12,589
Liberia.....	1,920	927	182
Mexico.....	94,267	45,522	1,185
Netherlands.....	21,032	673	.....
Dutch West Indies.....	152,400	9,863	408
do Guiana.....	67,272	.....	.....
do East Indies.....	360	250	.....
Portugal.....	80	.....	.....
Azores, Madeira and C. Verde.....	984	100	.....
Russia, Asiatic.....	76,645	1,482	90
San Domingo.....	94,065	34,782	281
Spain.....	200	1,822	.....
Cuba.....	308,950	71,555	14,797
Porto Rico.....	245,646	247,085	.....
Span. Poss. in Afr. and adj. is.....	602	900	.....
Sweden and Norway.....	1,619	174	.....
Turkey in Asia.....	.....	1,030	.....
United States of Columbia.....	269,883	47,117	10,731
Uruguay.....	12,086	2,257	138
Venezuela.....	338,831	17,158	148
Other coun. in S. America.....	739	450	32
do do in Africa, all other is .....	.....	110	389
and pts. e. s.....	1,669	1,773	.....
Total.....	31,560,500	147,995,614	139,407

I leave you, now, Gentlemen, to ponder over this question of the present and future of Commercial Dairying in Canada. I have shown before this convention in previous years, how

dairying pays as compared with beef raising in Canada. (1) The fact that our world-renowned butter producer of Hamilton, Mr Valancy Fuller, shows us how to produce 850 lbs. of butter in a year, worth 25c a lb., from a cow weighing about 1000 lbs. live weight, on no more food than it would take to produce 750 lbs. of matured meat, live weight, in an equal space of time,—worth 5c. points out distinctly to that side on which the profit lies between dairying and meat raising!

Let us now, if you please, ask our Federal Government for the dissemination of all such practical knowledge as will increase the profits of Canadian farmers on all subjects pertaining to agriculture in general, and also show us clearly where our future markets lie, and we can, hopefully, let the future of Canadian dairying rest with our intelligent

Canadian Dairymen!

Selection of Breeds.

PROFESSOR G. E. MORROW.

AMERICANS deserve much credit for enterprise in the work of importing and breeding improved live stock. Not only are high prices often paid but, what is more important, intelligence, good judgment and patient industry are very often made use of in the breeding and care of the stock. There is, however, oftentimes a lack of care in selection of breeds.

The fact that a breed of animals is of great value in one country, does not prove it will be equally valuable in another. The horse or cow best suited for New-England hill sides is, presumably, not best suited for the prairies of Illinois. This commonplace fact is often lost sight of. The Channel Island cattle have great value, but they are not desirable stock for the average general farmer of Illinois or Iowa, to whom beef-making is as important as milk-giving. The English long-wooled sheep are not suitable for light, hilly, rocky pastures, or for the dry, thinly-coated prairies of the Far West. Yet these and other breeds have been almost as freely introduced into regions to which they are not adapted as to those for which they are fitted.

Of most classes of animals there is more than one breed of comparatively nearly equal merit. The Angus, Hereford and Shorthorn are all excellent beef making breeds. Many other illustrations might be given, of two breeds of nearly equal value and adaptation for a given region. Let the average farmer select the best known, longest tested and most plentiful. There are a few Swiss cattle in this country. Suppose the evidence satisfactory that they are as good cattle for Central Illinois as are the Short-horns, it would still be a mistake for an Illinois "steer-raiser" to purchase a Swiss bull. It would cost him more; he would have only a small number from which to select, and would have no security that he could find a satisfactory successor to the first one chosen. It is not oldfogyism for the general farmer to cling to the well known, generally esteemed breeds, however strongly little known ones may be praised. One can try a new variety of grain with little inconvenience or loss should it prove a failure; one cannot so try a new breed of animals.

For men of enterprise, sound judgment, and experience, the choice of a valuable but little known breed is often the right course—so far as doing good and making money are concerned. Shrewd men who invested in Hereford or Scotch polled cattle, Shropshire sheep, Jersey Red hogs, Plymouth Rock

(1) Experiments made with great care in Denmark, on large herds, where the food was weighed carefully during a whole winter—proved that the food required to produce one lb. of matured flesh live weight, actually produced on an average of 46 animals—21 lbs of milk from which $\frac{3}{4}$ of a lb. of butter and $1\frac{1}{2}$ lb. of cheese (partially skimmed) were made... See "Journal of the Royal Agricultural Society of England," vol. XII, page 341.

chickens, a few years ago did a good thing for their communities and for themselves. There are other breeds almost unknown in this country in the importation of which the right men might find a fortune. In modifying breeds now in this country to better adapt them to our wants, lies a work promising even greater good to the country and, I believe, equal or greater profit to those who engage in it, than further importations. In the life-time of a farmer the characteristics of any breed may be so greatly modified and improved that few would suppose the new type descended from the old.

Industrial University, Champaign, Ill.

of soil, and largely provided with rivers and inland lakes, giving great facilities for transport purposes.

It does not appear to him to be in any degree probable that emigrants will, for some time to come, select the unclaimed forest land of this district, and give to such land the long continued labor which is necessary for bringing it into cultivation.

The report goes on: "In these districts there are a large number of farms which may be purchased at a small cost. On many of these farms there are good residences and convenient farm buildings, with churches, chapels, schools, good roads, and good markets within easy reach. The rough work



SHORTHORN COW, WATER SPRITE.

Professor Tanner's Tour in Canada

The third instalment of Professor Tanner's report on Canada contains the first of his opinions on the agricultural capabilities of the country. To make the report complete he divides Canada into three groups. In the first district are associated the older settled Provinces of Quebec, Ontario, New Brunswick, Nova Scotia, and Prince Edward's Island. In the second district the Provinces of Manitoba, Assinibola, Alberta, and the North West Territories east of the Rocky Mountains. The Province of British Columbia forms a distinct section.

As to the first district, Prof. Tanner says: As a general rule this was a richly wooded district, having a great variety

has here been done, and these farms would soon become as well finished as the best in the old country, and for the class of persons to whom I have referred such farms possess many advantages. The conditions which influence the varied systems of farming in Great Britain and Ireland are found to exist in this district with even increased distinctions. Thus we have some districts especially suited for raising stock and for growing oats of superior quality, others in which stronger grazing land is found and on which good wheat is produced, whilst in other parts some splendid barley and sheep farms are found, and further south Indian corn and the choicest fruit are brought to perfection. Thus there is a far greater choice of district for any special system of farming,

and a greater certainty as to the character of the climate.

The question will naturally arise, how is it so many farms can be purchased in this district, if the conditions of success are as great as they are represented to be? I think a satisfactory answer may be given, at any rate it shall be a correct reply. The work of improvement, which has been carried out by the emigrants of fifteen or twenty years back, has accustomed them to pioneer life, and having accomplished one task, they have less hesitation in seeking fresh opportunities for improving land especially if they have any particular inducement for doing so. In many of these cases the sons have grown up on the original farm, and the time has come for settling them in business upon farms of their own. Settlers of this class would seldom think of again attacking forest land, as they had done in the days of their youth, but they generally prefer the much easier work of the prairie. The consequence is that as they sell their farms they migrate to the North-West, and settle themselves and their sons upon farms in that district. To these hardy and experienced pioneers such a change does not involve any hardships, whilst their successors prosper on the farms which had been reclaimed for their use. The progress made in their original work of reclamation is even now illustrated by some very unattractive sketches, representing the farms on forest land as they are said to have appeared at the end of 5, 15, and 30 years. In these days, however, we look for quicker returns, and recent experience in Canada shows that it is attainable. Whatever may be the inducements which other portions of Canada hold out and they are certainly great—this district has already attained a manufacturing and industrial power, and possesses such wealth producing capabilities, that her future prosperity is practically assured.

VETERINARY DEPARTMENT.

(Conducted by Dr McEachran, F. R. V. C.)

THE CATTLE TRADE OF CANADA; ITS FUTURE DEVELOPMENT.

Recent events in connection with the question of the meat supply of Great Britain, and other European countries, from the North American and Australian Continents, are worthy of the attention of our readers. It is well known that notwithstanding the fact of Australia and the United States being both on the scheduled list of countries from whence importation of animals is permitted for slaughter only, an immense and profitable trade has been developed, in both live stock and dead meats; and, owing to our northern and colder climate, while our grasses are luxuriant and nutritious, we cannot produce the feed stuffs which grow abundantly in both the United States and Australia: therefore, in a competition with either country in dead meats we are at a decided disadvantage. What then is the course open for our Canadian farmers to pursue?

The following statement made a few days ago by Mr. F. Lingham, and subsequently endorsed by Sir Alexander Galt, C. M. G., we think clearly indicates our course.—He says: "When in England a few weeks ago, I was informed by Lord Dalhousie that the Canadian cattle were very highly thought of by the Scotch farmers, and he instanced some of his own tenants who had bought Canadian cattle for stockers: they gave £20 a piece for them, fed them eight weeks, and sold them for £30. His Lordship was convinced that there will be an immense demand this year for them."

Messrs. Lingham and Kennedy sent Canadian cattle by S.S. "Surrey" to London. They were bought mostly by Scotch farmers to take north to feed; but owing to quarantine regulations, they were unable to bring them home, and they were sold in London for £2 7s. 6d. less for beef than these men

were paying to carry them north to feed. Mr. Lingham was informed by them that they never knew stock take on flesh so rapidly as good grade Canadians.

He was of the opinion that the three or four weeks of housing and feeding in transit prepared them for feeding, so that when they reach the home farms, they are in the very condition to utilize the nutritious feeding stuffs with which they are liberally and judiciously fed. In view therefore of the above facts, and owing to the fact that our stock are entirely free from contagious disease, and that, in consequence, this is almost the only country from whence live animals can be imported, our course is clearly to increase the annual production of cattle and sheep to the utmost capacity of the farms, and instead of going to the expense of feeding them for beef, let them be exported as store cattle to be fed in Britain.

It is the opinion of many that this is the trade which will be done altogether in the Provinces in the near future. Now, if we accept this surmise as correct, the duty of our farmers is clear: they must improve their stock by using thorough-bred bulls, and certainly there can be no excuse for not doing so, with such herds as those of Senator Cochrane, Mr. George Whitfield, R. H. Pope, Dawes & Co., Andrew Allan, and others in Quebec; the Bow Park Herd, Geary Brothers, Gibson, Attil, Beatty, Stone, and others in Ontario, to obtain bulls from the very best blood which is obtainable in or out of England of Short Horn, Polled-Angus, Hereford, and Galloway blood, the surplus of which are at present sent annually to Chicago and Kansas City for sale. Let our own farmers invest in these valuable young bulls, let Agricultural Societies, instead of giving their money in insignificant but multitudinous prizes at exhibitions, the beneficial effects of which are open to question, and certainly not demonstrable, buy pure-bred bulls for the use of their members, and we are convinced they will accomplish their mission—the advancement and improvement of Agriculture—far more certainly than by any other means. Complaints are often made of the scrub quality of too many of our exported beasts; certainly many of them are not a credit to us, and yet it costs just as much to feed one of these as it does to feed a good one: perhaps more.

We also believe that our cattle trade, with the exception of those fed at distilleries, will be confined to stockers, (1) and, if our suggestion is carried out, the time is not far distant when thousands of our heifers will be exported for breeding purposes, at paying prices. These remarks are applicable only to the older Provinces of Canada, but we look forward to the development of a very large trade in beef with the Eastern towns and cities in Canada, and perhaps England also, from the grazing belt at the foot-hills of the Rocky Mountains.

THE FUTURE OF THE BEEF TRADE IN THE NORTH-WEST TERRITORIES.—Many of our readers may not be aware that Canadians have one of the richest pasture lands to be found anywhere, in the district of Alberta, in the North-West Territories. It commences at the boundary line, the Territory of Montana in the United States forming its southern limit. It extends north about six hundred miles, and from the base of the mountains, say, about fifty or sixty miles; in some places further.

The soil is one of the richest black moulds conceivable, it is abundantly watered by rivers of considerable magnitude, and innumerable smaller streams and springs abound everywhere. The vegetation is therefore luxuriant, nearly the whole extent is covered by what is commonly called bunch-grass, which grows from three to fifteen inches in height, and covers the soil like a thick mat. On many of the ranges, hay

(1) By *stockers* is meant lean beasts for fattening. In England, &c., they always fetch a higher price, proportionally, than fat beasts.

can be cut almost anywhere. So far, therefore, as the essentials, food and water, are concerned, nature has been lavish in the provision for stock, and for eight months of the year, the climate is also most favourable; and horses, cattle, and sheep, thrive remarkably well. During many winters under the modifying influences of the *chinook* winds they are enabled to graze out all winter in many parts of it, at least the southern third, so that stock raising on a large scale can be profitably conducted. It is yet problematical, however, whether the present system of depending on the cattle finding their own food during the entire winter, with all its attendant

ous, grass fed beef from the foothills of the grand old Rock mountains, the former home of the bison and the antelope.

It needs no prophetic eye to foresee the future of that rich pasture land, formed by nature as a home for millions of gaminivorous animals, perfect in its provisions of grass, water, and climate, for cattle-breeding and raising, and the abundant production of these industries, dairy farming, beef, mutton and wool.

There are no where else so many attractions presented to the better class of British stock raisers; the scenery is grand in the extreme, the soil is rich and inexhaustibly deep, the



GROUP OF BERKSHIRES.

risks and losses, will not give way to a more rational and reliable system.

At present, there are about 25,000 head of cattle so herded, and so far, except on one branch located too far north and badly managed, the losses have been nominal.

At present, the steers of these herds cannot more than supply the government contracts for feeding the Indians and police, and the few settlements in the district, but as the herds increase, an outlet must be sought for the surplus beef. The great distance from Eastern markets precludes the possibility of shipping live stock, hence, dead meat in refrigerator cars must be the form in which we shall receive the rich, luscious

water pure, clear and cold: so clear and transparent are the streams, that it is impossible to judge of their depth by looking down on them, and they are full of the most delicious trout. The temperature during summer is temperate, always cool at night. Occasionally the thermometer dips low during winter, but the atmosphere is so dry that it is not felt nearly so severely as a much higher temperature in a more humid climate. Sport of all kinds can be had during the autumn months, and the healthful out-door life, on horse-back almost constantly, imparts tone and vigor to the frame, and a buoyancy and lightness to the spirits that makes life there very enjoyable.

With such a country and such facilities, we can easily

foresee a population of Britain's best blood following the life of the ranche-man, and bringing to bear upon it all their home training and experience in the improvement of the quality of the stock.

As stated above, should it ultimately prove that the risks are too great to trust the herds unprovided for during the winter, we may yet see a system of feeding introduced, at least during the months of January, February, and March, either by the large ranche companies putting up sheds and hay themselves, or paying small rancheman so much per head for feeding them over the critical part of winter.

May we not look further, and see extensive feeding and slaughtering establishments at Calgary and Fort MacLeod, where from 500 to 1000 head a week shall be killed, the dressed meat shipped in refrigerator cars, and the blood, offal, fat, hoofs, horns, &c., all be utilised on the spot? We are credibly informed that Mr. Swift, who carries on an immense business at Chicago, supplying Boston, Lowell, Nashua, and a large

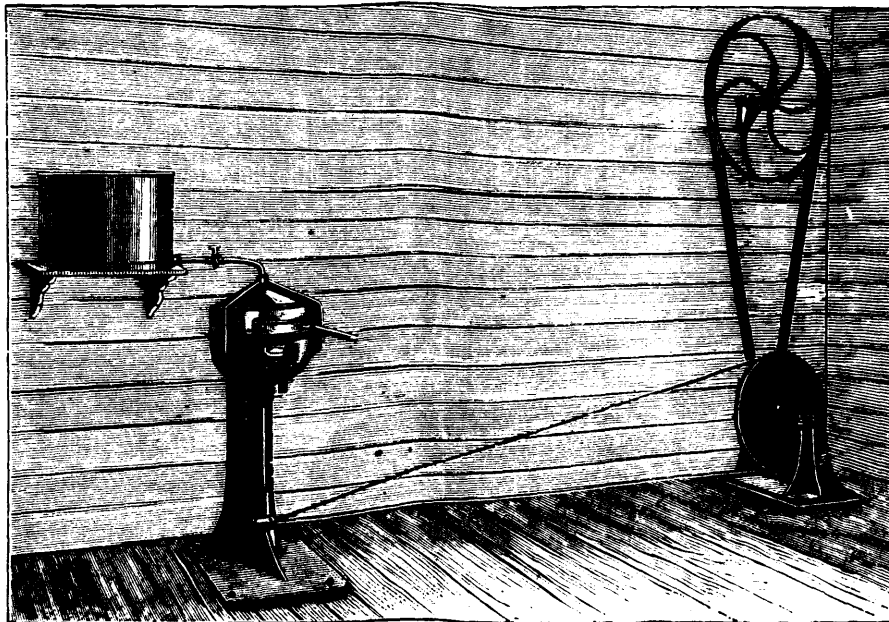
Shorthorn Cow, Water Sprite.—This splendid cow has five crosses of noted Booth bulls on top of Water Witch by 4th Duke of Northumberland (3646), she (W. W.) out of a daughter of the great Norfolk (2377).

Group of Berkshires.

Polled Angus bull, Young Duke.—The property of F. W. Harvey, Syracuse, Neb. Mr Harvey's polled-Anguses are carefully selected from the best families, such as Erica, Pride, and others. He is also a successful breeder of Short-horns and Jerseys.

Cheese and Butter Maker.

Mr Albert Letrecq, of Bécancourt, is an excellent maker of both butter and cheese. He has worked under both Mr Mr Jocelyn and Mr Painchaud, government instructors and cheese and butter makers, at Rougemont and Stanstead. Mr Letrecq holds the best certificates for capacity and honesty,



THE DE LAVAL CREAM SEPARATOR

number of other cities, cleared over \$600,000 last year, as the beef can be produced for at least one half of what it can be brought for in Chicago market. It is evident that this enterprise will be some day established, and Canada will thus take front rank in the beef and stock markets of the world.

OUR ENGRAVINGS.

The De Laval cream separator.—This marvellous machine was at work during Carnival week in Craig Street, but there was such a difficulty in getting milk that very few people, comparatively, saw it in operation. I had never seen it before, and therefore, in accordance with my invariable rule, never said anything about it. Now, however, I can state from ocular evidence that it is perfect in every way, and no dairy milking 15 or 20 cows should be without it. Three-quarters of one-horse power will be sufficient to drive the separator, and the simplicity of the gear can be seen in the engraving. No heavy foundation is necessary. I believe Messrs Wilson and Cheesman, the agents, have already sold fifteen separators. It is manufactured by the De Laval Cream Separator Co., 32 Park Row, New York.

and we are happy in giving him the highest recommendations to any one in want of a confidential dairyman.

CORRESPONDENCE.

Dear Sir,—I am asking a favor, but under the circumstances, I will hope that you will pardon a stranger in his coming thus before you. The Messrs Tucker, of the Country Gentleman, kindly gave me your address and encouraged me to write to you.

I read with much pleasure your excellently practical paper in the first number of the Am. Agric. Association's monthly on wheat-growing aided by a crop of rape to be fed off on the ground by sheep, which, though giving many details creates with me the necessity of asking for more, that I may escape failure in this new departure from the modes about me. Will it make a crop on an old sward carefully ploughed and well worked on the furrow? I ask this, because my farm, just purchased, is almost wholly in grass and needing turning over—it has many handsome belongings, but its fields show plainly long continued neglect. The practice, I suppose, is to hurdle in breaks of convenient size. Informa-

tion gathered from reading shows that there are several species of rape, some very inferior to others, again, the seedsmen of New York and myself do not meet each other very intelligently: I, not aware of the kind needed for my purpose and the others not being acquainted with the kind adapted to this special purpose. Can I get the seed to meet my wants in Montreal—the crop is doubtless, to a large extent, grown in Canada.

With apologies I am yours, very respectfully,

J. McDONALD MCINTYRE.

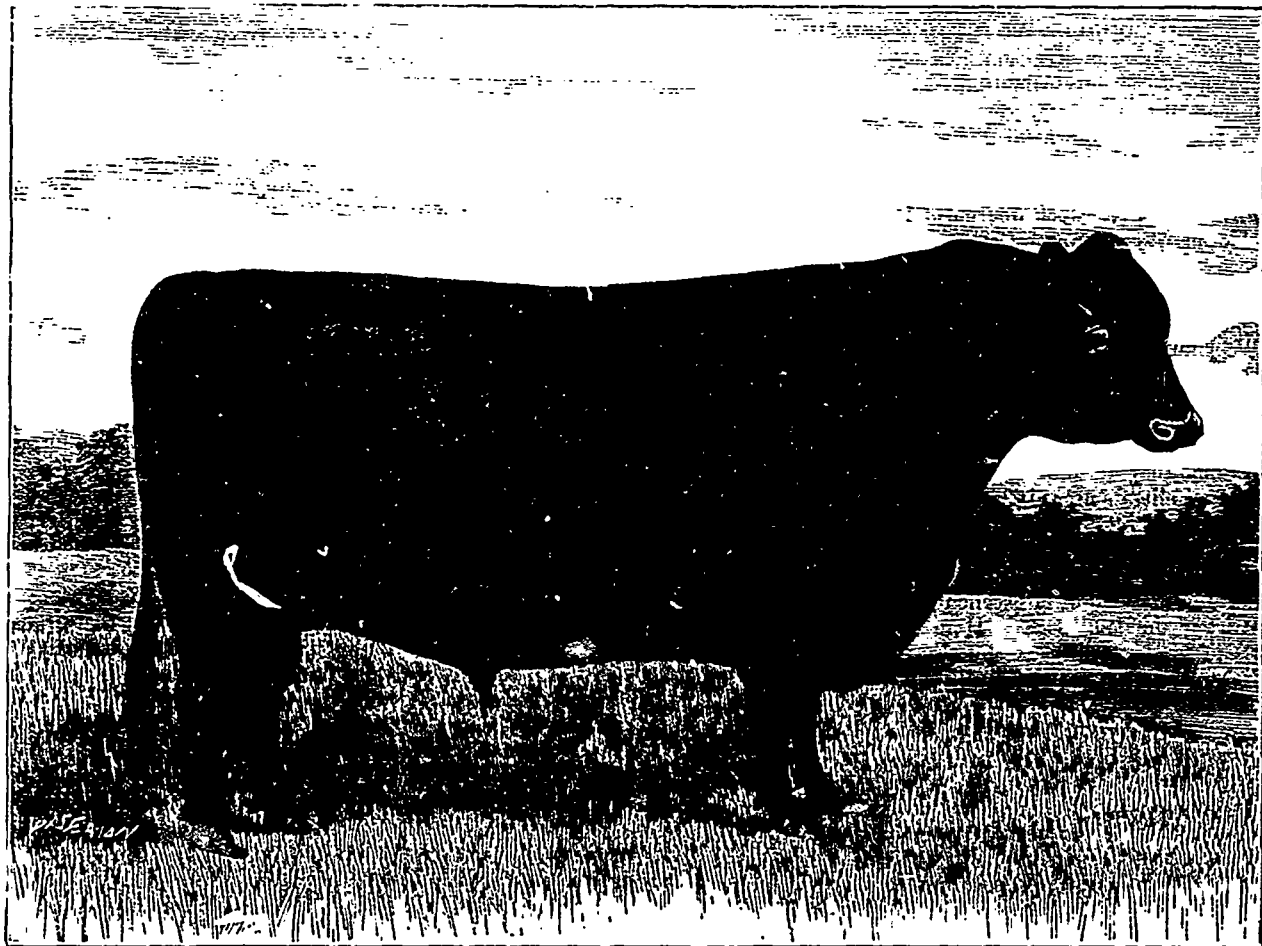
Answer—Though broken land is the best seed-bed for rape, I think that well worked old turf would answer well

planted out in spring. (1) But the price is so low, that it is as easy to buy the seed as to grow it.

ARTHUR R. JENNER FUST.

A. R. JENNER FUST, ESQ, MONTREAL.

Dear Sir,—I have to thank you for answering my questions in the Journal for January which has just come to hand in its new clothes. May I ask you to answer the following by letter as I wish for an immediate reply: If a cow producing 15 quarts per day is given daily 2 bundles good hay, $\frac{1}{2}$ bush swedes and 2 mashes each composed of the following ingredients viz: 1 gal. bran, $\frac{1}{2}$ gal. goudriole, 1 pint linseed oil-cake meal, and a handful of salt, what and how



POLLED ANGUS BULL, YOUNG DUKE.

enough if thoroughly pulled to pieces, scarified, etc. At any rate the surface *must* be made fine.

The sheep are to be confined within hurdles as usual. Never put them into a fresh piece when the rape is damp with dew or rain. There should always be a trough or two in the fold, with a few pease once or twice a day.—Clover hay chaffed would be good for the sheep, but in summer they don't care for it. A little rock salt in a box with a pent-house over it to keep off rain would be useful. The best sort of rape is the *colza* of the continent of Europe—*Brassica campestris olifera*. The common rape is the *Brassica napus*.

For seed, the roots can be kept in a cold cellar, and

much chemical constituents are carried off if the mill is sold off the farm, and what artificial fertilizers and how much would be required to replace them?

Is there too much cake, and would it be necessary to produce milk?

What is the best feed for breeding sows if no skim milk is to be had?

Please answer by return mail, for which I enclose a stamp.

Your's truly,

H. F. HUNT.

Answer.—With such high feeding Mr Hunt need not

(1) Rape will stand a hardish frost—zero or so. I will try, next year, if it will bear our severe winter.

fear impoverishing his land. His imports exceed his exports, which is good economy, political or agricultural.

The valuable constituents carried off the farm, when the milk is sold, are: phosphoric acid, lime, potash, and nitrogen. As for the carbo-hydrates, fat, sugar, etc., as they come from the air they need not trouble one, and magnesia is generally present in the soil in sufficient quantity.

The composition of cow's milk is;

Water 87.—Albuminoids 4.—Fat 3.7.—Sugar 4.6.—Ash 0.7.—so, that, for every hundred pounds of milk exported from the farm, one-sixth of a pound of nitrogen, or practically one pound of sulphate of ammonia, and a handful of bone-dust, would be more than a compensation.

A. R. JENNER FUST.

HAMPSHIRE AT THE SMITHFIELD SHOW.

EDS. COUNTRY GENTLEMAN—As far as I can ascertain there has been very little, if anything, published in the stock journals of this country concerning the wonderful success of the Hampshire Downs at this the greatest fat stock show in the world. Such being the case, I take the liberty of sending you the substance of the report given by the correspondent of the London Live Stock Journal of Dec. 14th. The prize competed for was the "grand sweepstakes," for which all known breeds of English sheep could compete:

"In the sheep department the coveted distinction of champion was won by a trio of magnificent ten months old Hampshire lambs that were bred and exhibited by Mr. William Parsons; a victory which will do much to accelerate the growing popularity of this eminently valuable and practical breed of sheep. There can be no question that this breed of sheep is coming to the front as no other breed is at the present juncture, and they are indeed a most valuable breed wherever the land and climate are suitable. In the wether class, Mr. Alfred Morrisson won first and third prizes, with long, deep, broad, neat and very large sheep; Mr. Lambert slipped in second, with three grandly even and well balanced sheep, smaller than Mr. Morrisson's, but of excellent quality. There were twelve entries in the lamb class. Here Mr. Parsons carried off the first prize, the breed cup, and also the champion plate. These three lambs were grandly even, substantial, and of the finest quality, and to have carried off the champion prize of the show was a striking credit, not only for the breeder but for the breed.

"In the two classes devoted to cross-bred sheep there were many excellent animals; all the best having Hampshire blood predominant. In the wether class, Mr. Sheringham exhibited a grand trio of Hampshire and Cotswold blood, and had the first prize and breed cup; the second fell to Mr. Robinson, and the third to Mr. Sheringham, in each case for Hampshire and Cotswold blood. In the lamb class there were fourteen entries, Mr. Sheringham won first and second, Mr. Rush third and fourth; in each case for magnificent demonstrations of a union of Hampshire and Cotswold blood; broad, long, massive, very substantial, yet neat and of good quality."

Personally, I can but feel highly pleased at such a pronounced triumph for my favorites, and will add that they seem to be peculiarly well adapted to the climate and grasses of America; and I think before many years they will become very popular in the grazing districts. My agent is now in England, making another importation for me, and after the lambing season I expect to make still another, so well do I think of this popular English breed.

W. L. B.

—Mason's, Orange Co., Va.

HAMPSHIRE DOWN SHEEP.—After a thorough personal examination of all the leading breeds of sheep in different parts

of England, Mr. Wood of Westchester county, New York, gives the decided preference to the Hampshire Downs, as best adapted to this country, especially for mutton, arriving early at maturity with excellence of quality. His imported flock, carefully selected, is made up of animals of much uniformity in excellence. This flock has been fed on the Eastern blue grass (*Poa compressa*), which has been found so nutritive that without any grain sheep-farmers have insisted that their fine condition was owing to the large amount of grain given them. Five acres of this grass, on a rocky ridge, where the soil was in many places only two or three inches deep, gave six large two horse wagon-loads of hay. It was seeded by simply spreading the ripened hay over the ground, the hay acting as a temporary mulch.

HAMPSHIRE DOWNS.

Mr. Robert Smith, Steward of the live-stock department at the R. A. S. of England's Chester meeting in 1858, says of these sheep:

"In the class other short-woolled breeds, not being Southdowns," the Hampshire and Shropshire breeds are the only breeds which come into competition. The Hampshire Downs are clearly descended from an *original hardy race* peculiar to the county, possessing in early days the same bony characteristics as the long-woolled sheep. They have partaken of the improvements of other breeds; but their strength of constitution and size have been retained as characteristic of the animal, less attempt having been made to imitate the beauty and high proof of the Southdown. These sheep, as seen in numbers upon their native soil, are bold, rent-paying animals. As show sheep they have not reached the requisite uniformity of caste and quality."

In 1865, a great improvement had evidently taken place in the Hampshire Downs. Mr. John Dent Dent, in his report Steward of the R. A. S. live-stock exhibition at Plymouth, as says:

"If the Southdowns are the aristocracy of the south-country sheep, the Hampshire Downs well represent the thriving yeoman or farmer. They were certainly among the best and most profitable looking of all the sheep shown, and, under the careful management of their present breeders, bid fair to shine in quality quite as much as in usefulness. Size, substance, hardness, and quality, are what flockmasters require in these days of dear mutton and the Hampshire Downs, as shown at Plymouth, seem very likely sheep to furnish what is needed."

So, from "not reaching the requisite uniformity of caste and quality as show sheep," in 1858, to "bidding fair to shine in quality quite as much as in usefulness," in 1865; they have, in 1883, ended by beating all the sheep, long-woolled as well as short-woolled, for the championship at the exhibition of the Smithfield club at Islington. And the winners were only lambs!

A. R. J. F.

PIGS IN CLOVER.—"Mr. Child's of East Thetford, Vt., has sent a lot of eighteen pigs to Mr. Burnett's 'Deer Foot Farm,' Southboro', Mass., that weighed two hundred pounds each and over, at seven months old, and which had been grown chiefly upon milk and clover. The meal fed cost only \$2 75 per head. Green food for pigs is beginning to be appreciated by eastern as well as by western farmers." *Vermont Watchman*.

What should be the ration in clover and grain where they are used ad libitum?

Are not young pigs best kept in a sty? or would a clover pasture be advisable?

It would be impossible to answer the questions put by our correspondent without knowing the quantity of whey con-

sumed by each of the pigs and their respective ages. Whey is another instance of what I have so often talked about in the Journal, viz., the superiority of certain matters in practice to their theoretical value. Whey contains 93 oyo of water; and yet our family tenants fatten their pigs entirely with it, adding a few pease during the last month to harden the meat. The composition of whey is as follows:—

Water	93.02
* Butter (pure fat).....	33
Albuminoids	97
Milk, sugar and lactic acid.....	4.98
Ash	70

* 100.00

*Containing nitrogen.146

The above analysis is the average of eighteen made by Voelcker from our Gloucestershire cheese-vats, the invariable practice of the district being to make butter from the whey after the curd is taken out for cheese. The whey, then, contains, in addition to the water, the sugar and the albumen originally present in the milk, with hardly more than a trace of fat: the albuminoid ratio is 1:5.2.

Clover, again, is thus composed:—

	Water.	Ash.	Albuminoids.	Fibre.	Other carb. hydrates.	Fat.	Ratio.
Pasture clover young....	83.0	1.5	1.6	2.8	7.2	0.9	1:2.5
Red clover before blossom....	83.0	1.5	3.3	4.5	7.0	0.7	1:3.8
Red clover in full bloom....	80.4	.3	3.0	5.8	8.9	0.6	1:6.7

Here, you will observe, the food is, like the whey, very poor in fat, but, on the average, nearly four times as rich in albuminoids, and containing about $7\frac{1}{2}$ per cent of digestible carbohydrates. Hence, I see no theoretical reason why, a fair amount of fat being supplied in other forms, the pigs should not do well, as they seem to have done on Mr. Child's farm. The question of course is: what grain should be given? In practice, I should recommend cotton-seed meal, with, perhaps, pease. (1) The meal should contain 5.8 per cent of ash; 18 per cent of fat, 41 per cent of albuminoids, and 24 per cent of carbohydrates apart from fibre. The pease would supply more albuminoids and plenty of carbohydrates, but would be chiefly useful in correcting the looseness of the bowels induced by the laxative effect of the whey and clover. The large percentage of ash in the meal, consisting as it does of lime, potash, soda, etc., is just what is wanted to build up the bones and frame of the young pig. A quarter of a pound of cotton-seed meal to each gallon of whey, with a pint of pease a day to each pig when, say, twelve weeks old, increasing the quantity gradually as they grow older, should be sufficient.

As to young pigs being kept in a sty, there can be no doubt about their ripening faster in confinement than at liberty, especially in this country, where it is not the custom, as it is in England, to *spay* all the sow pigs not intended for breeding. In sties, they can be kept separate; at large, they get into periodical frenzies, and keep all the herd in an uproar. But here, again, the question of labour intrudes, and it is doubtful whether or not it would pay to eat the

(1) Not corn, for it has too large a proportion of starch and too small a proportion of flesh-formers (albuminoids) to make up for the deficiencies of the whey. I have never tried the *New process* husked meal, but the analysis reads well in everything, except the fat, of course, which, but 2.5 oyo, is all extracted.

clover (vetches are quite as good), and cart it to the yards; my own impression is that the practice would pay when wages are moderate, and a regular system followed out.

But for breeding sows, I am convinced, liberty is the grand point, and I would take a good deal of trouble, and not grudge a few dollars, to give my breeding sows full liberty. A clover field, with the wash of the house and some middlings, is the proper place and the best food for them.

ARTHUR R. JENNER FUST.

SCIENTIFIC BUTTER-MAKING.

BUTTER-WORKING AND SALTING.

The object of working butter is to free the butter from buttermilk, or water, to give it a more solid consistency for immediate table use, or for the tub, and to mix the salt in it evenly. Butter is sometimes re-worked for the purpose of thoroughly mixing different lots, and giving the whole a uniform character and color.

The following are the conditions of the scientific working of butter:

1st. The hands must not be allowed to come into contact with the butter.

2d. There must be applied the force of *pressure*, the most careful and direct possible, and the butter should not be over-worked.

3d. The butter should be worked at the proper time and at the right temperature.

4th. Butter should be worked in quantities, if possible, of one package at a time.

5th. The work should be done with the minimum of labor, a condition, of course, of every process of working.

(1) Not only does the touch of the hand by heat injure the grain, but it imparts a taint. Some persons have cold hands, and think they can work butter without doing the butter injury. It is a question if it is well to risk the chances. If a person be in a state of health, the hand will be too warm, and in health otherwise there are emanations from the pores of the skin that should be kept away from so extremely sensitive a thing as butter. The material to be brought in contact with butter is wood, sponge, cloth, &c. For working very small quantities a wooden bowl and ladle, or a table and paddle, may do; but for general dairy purposes, where butter is to be packed, a "butter-worker" is very necessary. The lifting of the butter from the churn, when it is at a cold temperature, is a work so quickly performed that it may, perhaps, be done by the hand without any appreciable harm to the butter; but there is no need of even this much of hand contact; a ladle, a paddle or a strainer dipper is quite convenient, and their use is thoroughly scientific. Not only the wholesomeness of the product, but the health of the operator will carry emphasis to this condition. Dairy women have admitted that they are aware of suffering physical injury from the old way of doing this and other dairy work.

(2) Prof. Arnold insists that "all rubbing, sliding, and grinding motion must be most carefully avoided, as it breaks the grain and makes the butter greasy." If butter has been properly washed in the churn, very little working will be required. It saves some strokes of the lever to press upon the butter, where the water gathers, with a damp cloth, or a sponge, which, of course, absorbs the water. After it has been salted, if it is allowed to stand over for a second working, the action of the salt will do something to draw out the water. A butter-maker, careful to follow out the scientific method, will

take advantage of these points, and be able to make the necessary working, for evenly running the salt in, to serve for nearly all the lever pressure the butter will need. There should not be given to the butter a single stroke that is not necessary. While there is water in the butter it bears the pressure comparatively well without affecting the grain. When it becomes freed from water, and solid, all pressure tends to its injury.

(3) With regard to temperature, Prof. Arnold says that "it should be 58 deg to work with the best effect and with the greatest facility. If more than a few degrees either above or below 58, the work will not be so perfectly or readily done, and the grain of the butter will be affected, in one case by being too soft, in the other too hard." Says the *Maryland Farmer*: "When worked at a higher point (than 60 deg.) the butter gravitates towards stickiness, and when worked at too low a point, the butter becomes mealy, and the texture is destroyed." As to the time of working, Prof. Arnold's directions for salting are quite to the point: "As soon as ready, the salt should be evenly incorporated, always doing it with the least possible labor, and then the butter set away for 6 to 12 hours for the salt to dissolve, and then worked again with a light working. Some dairymen are in the habit of working but once, and packing as soon as salted. This treatment will not spoil good butter, but when finest quality is desired, and the butter is to be long kept, the practice is not advisable. When the salt is added to the butter, it absorbs the water of composition, and leaves the butter a little porous. A short second working makes it more solid. A firkin which will hold 100 pounds of butter worked once will hold about 102 pounds of butter worked twice. The second working should be barely enough to press the mass firmly together and get out a part of the brine. To remove all the brine makes it too dry, but not to work out any leaves too much in and the texture a little spongy."

(4) The scientific method here cannot be too strongly recommended. The main advantage hitherto possessed by the creamery over the dairy was the churning at one time, in the one case a quantity sufficient for one or more packages, and in the other case of only a few pounds at a time—it taking several

churnings to fill a single package. This may be overcome by the simple method of washing the butter in a granulated state, and keeping each churning unworked, and consequently still in small particles, in a covered receptacle of brine, until a sufficient quantity would be gathered to pack one or more full tubs at a time. This will enable the operator to choose a favorable day and season for packing, to save time and labor by doing up the work at one time, that otherwise would be done at many times, both inconvenient and unfavorable, and will result in the production of packages uniform in every point—color, salting, consistency, &c.

(5) The use of a suitable butter-worker, and the adoption of the scientific method, as suggested, will reduce to the lowest point the labor involved.

With a few words now about salting the ground will be covered. The salt should be of the purest quality. It will not do to rest upon the claims of salt dealers. If the general testimony is in favour of a particular salt, try to get it, even if at extra cost. Give it careful trial and every test that you can. There is no economy in using salt of an inferior quality to the best that can be obtained. Prof. Bell gives a simple test that is doubtless a good one: "Expose a portion of the salt in a thin layer on a flat plate to the outer air for a few hours at night. If, on examination, the crystals, or grains of salt, are found to move freely, like sand, it may be considered pure, and used without hesitation, but if the particles adhere together in lumps, or if any moisture is apparent round the edges, it may be at once condemned as unfit for use.

The following extract from the *Maryland Farmer* should be given prominence:

"If at the last working there is additional salt required, care must be taken that the salt has not become dry, so that it will not be dissolved, and many dairymen throw a few quarts of water into the worker, at this stage, to aid in dissolving the salt, and carry with it the particles or buttermilk that have remained over from the previous working."

W. H. LYNCH, Danville, Q.

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A splendid farm at Shawenegan, of 360 acres area, nine miles from Ste. Flore, the terminus of the Piles Ry, known as the Cyrille Magnan farm. About the hal is in good state of cultivation, and the rest in timber, together with a house 40 x 36, barn 120 x 26, shed 30 x 24, dairy and ice house 56 x 15, also a saw and grist mill with a water power that can be used the year throughout.

The river Shawenegan flows through this farm, which is especially suitable for stock raising.

The water power and mill permit the establishment of a butter and cheese factory at a small cost. The buildings are mostly new and well constructed. Apply to Alf. Brunet, No. 34 St. James St., Montreal.



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Every one who has raised that magnificent Cabbage the **Fottlers** or **Brunswick**, has regretted that so fine a cabbage did not make a thicker head. The **Alleys Early Deep Head** is the successful result of years of careful selection and high cultivation to obviate these defects. As early as **Fottler**, it is as large, is thicker and heavier, bulk for bulk, and brings more in market than any other drum-head; per package 25cts.; per oz. 75cts.

Early Etamps Cabbage (new) earliest of all; 10 cts. per package. **Guerrand Carrot** (new), remarkably thick at the neck; per package, 10 cts.; per oz. 30 cts. **Perennial Onion** (new), lives in the ground without protection all winter and is ready for use weeks earlier than any other kind; per package 15 cts.; per qt. 80 cts. **Solid Ivory Celery** (new) nearly self blanching; per package 15 cts. **White Bonnie Cucumber** (new), a mammoth white variety of extraordinary diameter; per package, 15 cts. **Dwarf Green Early Lettuce** (new) from France; per package 15 cts. **Banana Melon** (new), it resembles in color and form a huge Banana, and has strikingly the same fragrance; per package 15 cts. **Kentucky Wonder Pole Bean**, I have not found in 60 varieties one so prolific, a capital string bean; per package 15 cts. **Marblehead Early Horticultural**, probably the earliest of all beans, and yet a true horticultural; per package 15 cts.; per qt. 80 cts. **Marblehead Early Sweet Corn**, the earliest of all, giving growers a complete monopoly of the early market, original stock; per package 10 cts.; per qt. 60 cts. **Sea Foam Cauliflower**, decidedly the finest variety of all; per package 50 cts. To those taking packages of the entire collection, I will present a copy of either one of my four books on the raising of **Onions, Cabbages, Squashes, Mangold Wurtzels and Carrots**. THE PURCHASER TO MAKE THE SELECTION.

I OFFER \$1000 IN PREMIUMS, for vegetables raised from my seed. Please find details in my seed catalogue; sent **FREE** to all. **FLOWER SEED**—I offer one package each of choice mixed selection from the following varieties, for 45 cents, the retail price of which would be 90 cents: **Asters, Balsams, Nasturtiums, Dahlias, Drummond Phlox, Salpiglossis, Sweet Peas, Hollyhocks, Petunias, Abronia Umbellata**, (very beautiful.)

JAMES J. H. GREGORY, Seed Grower, Marblehead, Mass.

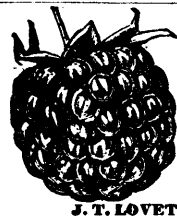


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EXTRA, because grown by myself from the very choicest onions, selected from a crop which took the first premium in Essex County, Mass., famous for raising the finest onions in the United States. Early Yellow Globe Danvers, per lb by mail, \$1.65, Danvers Early Red Globe, \$1.65, Early Red and Yellow Flat or Cracker, \$1.65, and Large Red Weathersfield, \$1.40, Danvers Early Red Globe is both the earliest, the greatest cropper and the handsomest of all the **Red Onions**. Seed of my own raising for premium stock. Try it farmers! My Seed Catalogue FREE to all.
James J. H. Gregory, Marblehead, Mass.

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James J. H. Gregory, Marblehead, Mass.



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AT MONTREAL HORSE EXCHANGE
We beg to call the attention of Agricultural Societies to the importation of fourteen Stallions and Mares of the famous Clydesdale breed, which are now on view at the Exchange. They have been specially selected for this province, and are offered at reasonable prices. We shall have much pleasure in showing them to representatives of societies. C. M. ACER & CO.

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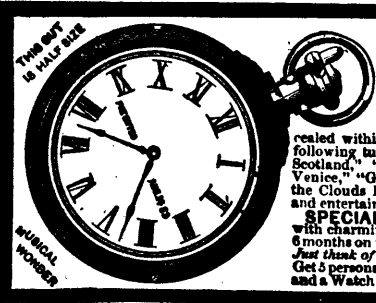
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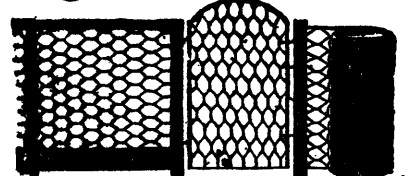
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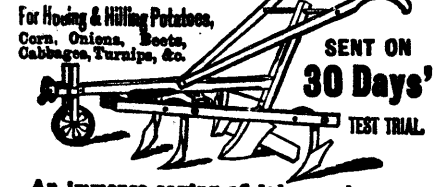
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