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THE CANADIAN

DECEMBER 1890.



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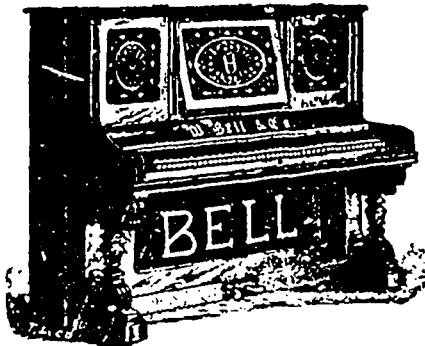


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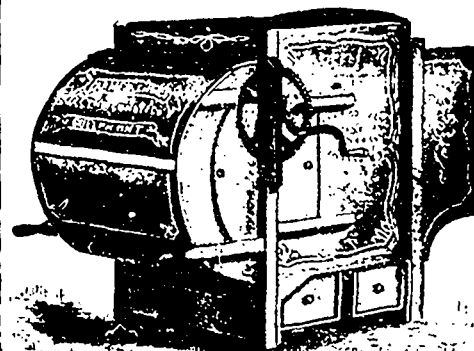
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| 3 The Little One's at Home | 123 The Old Log Cabin on the Hill | 245 Nobody's Darling but Mine |
| 4 Soe That My Grave's Kept Green | 124 Conkuk Thru' the Eye | 246 Put My Little Shoes Away |
| 5 Grandfather's Clock | 125 Must We, Then, Meet as Strangers | 247 Darling Nellie Gray |
| 6 Where Was Moses when the Light | 126 The Kiss Behind the Door | 248 Blue Bird |
| 7 Sweet Br and By (Went Out | 127 You May Look, but Mouth's Touch | 249 Good Bye Sweetheart |
| 8 When You and I were Young | 128 Mass's in de Cold, Cold Ground | 250 Sade Kay |
| 9 When I Saw Sweet Nellie Home | 129 Say a Kind Word When You Can | 251 The Plinigan's Wake |
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| 11 A Model Love Letter | 131 North O'Keel | 253 The Sweet Bannity South |
| 12 Wife's Conspicuous | 132 Waiting, My Darling, for Thee | 254 Once Home Father |
| 13 Husband's Commencement | 133 Remember the Flower on Avenue | 255 I'm a Healer's May |
| 14 Little Old Log Cabin in the Lane | 134 The Lonely Alice My Mother Died | 256 Bally in O'er Ally |
| 15 Marching Through Georgia | 135 Tossing on the Old Camp Ground | 257 Poor Old Ned |
| 16 Widow in the Cottage by the Sea | 136 We'll Go to the Sun | 258 Men in the Moon is Looking |
| 17 Minstrel Boy | 137 Over the Hills to the Poor House | 259 My Little One's Waiting for Me |
| 18 Take Back the Heart | 138 Don't be Angry with Me, Darling | 260 I'll Go Back to my Old Love |
| 19 The Faded Coat of Blue | 139 Minstrel of the Fair | 261 The Butcher Boy |
| 20 My Old Kentucky Home | 140 Why did She Leave Him? | 262 The Gwine Back to Dixie |
| 21 I'll be all Sines and Nights Love | 141 Thon' Hast Learned to Love An | 263 The Pine Tree Dixie |
| 22 Listen to the Mocking Bird | 142 There's None like a Mother | 264 Tell me Silver Moon |
| 23 After Eight Years I was at St. Hill | 143 You Were Fair, but I'll Forgive | 265 Meet me in Moonlight Alone |
| 24 The Gypsy's Warning | 144 Who's so Softly Mother's Dying | 266 Yellow Rose of Texas |
| 25 The But a Little Paed Flower | 145 Will You Love Me, When I'm Old | 267 Starry Night for a Rambler |
| 26 The Girl I Left Behind Me | 146 Am I Languid | 268 Starry Melody |
| 27 Little Bittercup | 147 You'll Never March to the Sea | 269 Hagar's in de Air |
| 28 Carry Me Back to Old Virginia | 148 I'm a Birdie, Come | 270 Pull Down the Blind |
| 29 The Old Man's Drunk Again | 149 Love Am ing the Roses | 271 SLIDE, KELLY SLIDE |
| 30 I Am Waiting, Nale Dear | 150 The Arm Chair (sung by Barry) | 272 DOWN WEST MCKINNY |
| 31 Take Me Back to Home and Mother | 151 The Sailor's Grave | 273 LITTLE ANNE ROONEY |
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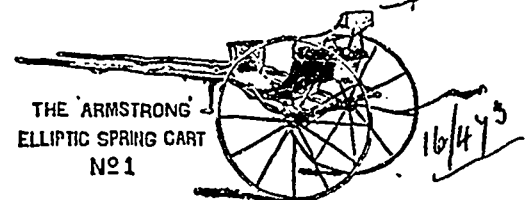
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Vol. VII. No. 12.]

TORONTO, DECEMBER, 1890.

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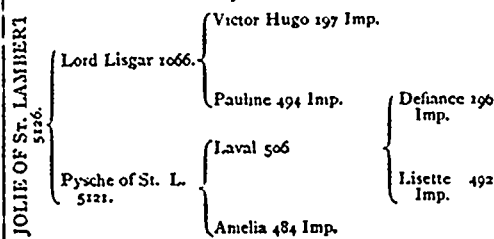
A Trio of Prize Winning Jerseys.

Owned and Bred by Mr. W. A. Reburn, St. Anne de Bellevue, Quebec.

Our Illustration.

The Jerseys portrayed in our front page illustration of this month are from the noted herd of Mr. W. A. Reburn, of St. Anne de Bellevue, Que. These cows have been brought prominently before the dairy world by their recent victory in the milk test conducted at the Toronto Industrial Exhibition last September. As this is but one of a long series of victories in such contests, we are pleased to present such a sketch to our readers, and draw attention to the blood lines from which these cows have derived their valuable tendencies. Jolie of St. Lambert is a cow of remarkable capacity, and it is through her strong prepotency that her owner hopes to build up a family possessed of rare dairy qualities. She has tested 15 lbs. 13½ ozs. of butter in seven days, and has given 48 pounds of milk at flush on winter feed. She has won many medals and a multitude of diplomas in competitions of all sorts, and may be said to be the champion dairy cow of Canada. As may be seen in the tabulated

pedigree given below, she is of the Victor Hugo strain of the St. Lambert family:



Jolie of St. Lambert 3rd, her oldest living daughter, was dropped March 3rd, 1883. She began her career by winning first prize and diploma at Quebec in 1887, as the best cow of any breed, in competition with the best representatives from noted herds of other breeds. Her score of 99.31 points was the highest made by any Jersey that year. Next year she had to be satisfied with a second place, but only did so because her dam, old Jolie, took first, and also won the silver medal as best Jersey milch cow, and the sweepstakes

silver medal as best milch cow of any breed, in competition with 14 others. Jolie of St. L. 3rd is the counterpart of her dam. She milks as high as 40 lbs. per day, and keeps up a steady flow from year to year. She is always thin and a heavy feeder. In type she is a perfect dairy cow, sharp at the withers, with long, lean neck, and broad across the hips, giving her great barrel capacity and plenty of udder room. This cow is of the Victor Hugo Pride of Windsor strain of the St. Lambert family, as her sire was Lord Banff 1110, by Jack Frost of St. Lambert, dam Empress Carlotta. Jack Frost of St. Lambert was of Pride of Windsor descent, his dam, Pride of Windsor 483 imp., being a noted member of that useful strain, and his sire, Buffer 2055, traces through one remove to Victor Hugo 197 imp., and Pride of Windsor 483 imp.

Jolie of St. Lambert 4th was dropped May 12th, 1884. This is the first time she has taken part in a dairy test, for in former years she was never fresh in time for the exhibitions. In 1887 she won first prize in the two-year-old class, and the same in Ottawa in

1880, as the best Jersey female. This year at Toronto she captured the first prize in the four-year-old class, and silver medal as best Jersey female any age. Again, at Ottawa this fall, she took first as the best aged Jersey. She is in every respect a worthy daughter of Jolie of St. Lambert. She is a strong cow of vigorous constitution, carrying an udder perfect in form. She is strongly bred in the best lines, as she is of the Victor Hugo Stoke Pogis Pauline strain. Her sire was Orloff's Stoke Pogis 11157, got by Orloff 3143, out of Cheerful of St. Lambert 8348. Through Orloff 3143 comes direct the blood of Lord Lisgar 1066, a son of Victor Hugo 197, and Pauline 494; while through the medium of Cheerful of St. Lambert comes through her sire the blood of Stoke Pogis 1259, and Majoram 3239 and from her dam's side the blood of Victor Hugo 197, and Pride of Windsor 483. It will be seen from this and the pedigree of her dam, old Jolie, that Jolie of St. Lambert 4th is bred strongly in the best blood lines.

Jolie of St. Lambert 5th was calved September, 1886. This immatured daughter of Jolie is thought by many to be the equal of her dam in dairy points. Although only four years old, she has won many honors, amongst which may be noted, first at Quebec in 1887 as heifer calf; second at Kingston, where she was shown as a yearling in the two-year old class; first at Ottawa in 1889; second at Toronto this fall; and competing with her sisters at Ottawa in the aged class, she took third. She is an inbred Victor Hugo. Her sire is Hebes Victor Hugo 16353, a son of Lorne and Hebe of St. Lambert 5117. Lorne was sired by Lord Lisgar 1066, by Victor Hugo 1, and was out of Hebe of St. Lambert, also by Victor Hugo 197 imp. She is a cow of striking appearance from a dairy point of view, while at the same time she is rich in the best blood of Jersey performers.

It is a fact worth noting that all these cows are by different sires, yet so strong is the prepotency of old Jolie that they alike possess, in a striking degree, her appearance and rare qualities. This is the fourth time the members of the Jolie family have succeeded in winning the dairy prize. A family of such a foundation cannot but become prominent in the future history of the Jersey, and likewise become a living monument of what intelligent breeding can accomplish.

An Extra Illustration.

The artistic group of sheep which appears on page 400 of this number represents a selection from the widely-known Cotswold flock of John Snells' Sons, of Edmonton, Ont. Mr. J. C. Snell has won a wide renown for his flock, and this trio from it may be accepted as evidence of the fact that their popularity is based on intrinsic merit. The flock at Willow Lodge Stock Farm has been bred for years with great skill and care, and neither expense nor trouble has been spared in bringing annually from Great Britain choice selections of rams and ewes from the foremost flocks at present to be found there. The claims of the Cotswold upon public favor are many, and we feel justified in saying that there are few existing flocks in which it is possible to find the valuable qualities of the Cotswold so firmly fixed and distinct as in the flock at Willow Lodge. The flock has been greatly strengthened recently, so that no difficulty will be experienced in meeting all demands that are likely to be made upon it. As it is made one of the leading aims to keep all the members of this flock in the most healthy and thriving condition, selections from it never fail to prove vigorous and prolific breeding stock.

THE Canadian Live Stock and Farm Journal

PUBLISHED MONTHLY BY

The J. E. Bryant Company (Limited),

58 BAY STREET, - - TORONTO, CANADA.

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All communications should be addressed THE J. E. BRYANT COMPANY (LIMITED), 58 Bay Street, Toronto, Canada.

TORONTO, DECEMBER, 1890.

Original Plans, Devices, and Ideas.

If you have an original plan, device, or idea, that you think would be of benefit to your fellow farmers or stockmen, turn to our March number and see how we will pay you for it if you send it to us for publication. Space forbids us printing the whole scheme in full, as usual. We would refer those desiring to know more of this to our January, February, and March numbers, where the premiums are given in full with complete particulars.

Mixing the Blood of Families

A correspondent of the *Mark Lane Express* heralds with delight what he proclaims to be a new era in Shorthorn breeding. He bases his predictions on three Shorthorn sales that occurred in Cumberland last September, at which highly bred Bates stock sold for less than those of mixed descent. If from them, he states, we are to feel the pulse of the procedure of the future, then the line of embargo between the Bates and Booth which for so many years, in his view, has been a stumbling-block to the breeding of the very best utility Shorthorns, has, he claims, broken down, and a new departure has been inaugurated, in which Bates and Booth blood will freely mix, and he ventures to think that each will be all the better for the infusion. While not even desiring to question the soundness of the judgment which leads one to proclaim from the housetops a revolution in Shorthorn breeding because of the results from these three sales, we will venture a word as to the advisability of maintaining families intact, and the influence of such a practice upon the progress of the breed. The separation of breeds into families, which is a prominent feature in the history of all breeds, and must in the nature of things ultimately result, has a strong influence upon the development of the various breeds. It leads to a generous rivalry amongst the breeders which acts with more or less vigour upon the general progress, but we should also bear in mind that such old time rancor as that which split the early Shorthorn breeders into opposing Bates and Booth factions has an influence far from beneficial. Apart from the stimulating effect it has upon the progression of breeds, this tendency to establish and continue families has a value hard to estimate in the eyes of the breeder. Finding that a certain female of his herd possesses qualities of great worth, under his circumstances the breeder seeks to fix and accumulate these desirable tendencies by line breeding, so that they

may be more certain of transmission and more prominent in the progeny. There are so many instances of favorable "nicks" being made by the inflow of blood from sources beyond that of the family that it is not advisable to adhere rigidly to any line of procedure which forbids the entrance of new blood when such would bring with it increased vigor. There is an uncertainty attached to the blending of families from the first, and this remains attached to the progeny if used for breeding purposes. That uncertainty is more pronounced in cross-breeding, and becomes less so as the animals mated approach nearer together in blood lines and conformation. An instance of the fusion of Bates and Booth blood is to be found in the work of Mr. Bolden, a Shorthorn celebrity of early days. He mixed the Bates and Booth elements in such a masterly manner as to produce Duchess 17th, stated to be an unusually fine cow by the observers of that day. She is the founder of the Grand Duchess tribe of which there are some representatives in America, but more by far in England, where they are highly prized.

Herefords on the Ranch.

The recent arrival at Liverpool of 500 head of ranch stock from the ranch owned by Hon. Senator Cochrane has excited considerable interest in British live stock circles, owing to the high finish and quality of the cattle. In 1881 this ranch was stocked by the purchase of a large draft of well-bred grade Shorthorn females, and on these were used choice Hereford bulls of high breeding, some of them being sired by the famous Hereford bull, Lord Wilton. The *Canadian Gazette*, commenting on the draft, says: "The shipment just landed shows conclusively the enormous benefit which has been conferred on the territories by the introduction of such valuable bulls. The steers now arrived are of exceptionally fine quality; indeed it is admitted by American and other importers that the quality has never been equalled by the cattle from any of the other ranches in the United States or Canada. This opinion is borne out by the fact of their being immediately snapped up at the highest market prices. The venture must have proved a profitable one, and we are informed that next year, and each succeeding year, the quality will improve further. A prominent dealer remarked to Mr. Cruett, of Messrs. Pritchard, Moore & Cruett, the cattle salesmen, that when these cattle left the range they must have been equal to the best Scots." This is a practical instance of the importance that is attached to quality in export cattle. If beeves of such a character made up the greater portion of our export cattle, the beef industry, with all its annexments, would prove more profitable as well as progressive. It is unwise, it is folly, to seek to foster and build up an industry of any nature with Great Britain without making quality the first object to be obtained. Their markets demand it, and they willingly pay for it. This incident also forcibly endorses the merits that friends have claimed for the "white faces" as rustlers on the range.

The Export of Dressed Beef.

We publish elsewhere in this issue Prof. Robertson's views in respect to the advisability of supplanting our present trade in live cattle by shipments of dressed beef. He arrays with admirable logical precision the arguments for and against this scheme. Our estimate of the question constrains us to say that the impediment, now to be seen in the British market against such a trade would grow into durable and almost insurmountable obstacles. The export of dressed beef would differ

chiefly from our present system in that the butchering and bye-product manufacturing would be done in Canada instead of in Great Britain as at present. That, in fact, means that the knights of the block and others who now materially assist in furthering and fostering our trade in finished steers would withdraw their support and throw their forces against an industry which would lessen their trade and bring them in competition with foreigners. The possibility of placing dressed beef on the British market in a form that will be not only thoroughly acceptable, but very attractive to the foreign consumer, is another barrier that would be difficult to surmount.

A feature of the question overlooked in the interview, and which we desire to lay stress upon, is that at present Canada has an open field with practically no competitors in the export of matured live beef; but once the trade takes the trend suggested, she comes into keen competition with such enterprising and vigorous rivals as United States, Australia, New Zealand, and those other nations that have been for years pushing their live stock export trade in the direction of dressed products. We are making the most of our superior circumstances for the rearing of vigorous and healthy stock by adhering to our present system. If we replace it by a trade in dressed beef, we annul the benefits that have resulted from the healthful conditions which have given our live stock products a strong hold on the British markets, we bid as a novice for a trade against active and matured rivals, and we seek obstacles attached to that market which are now unknown to us.

The Development of the Trade in Lambs.

The development of the trade in lambs to the American market is of late years assuming very large proportions. It is comparatively recent in its origin, but it has grown rapidly. It originated and extended in the face of a twenty per cent. tariff, and is still carried on against a duty of 75 cents on each lamb. It is easily apparent, therefore, that the present tariff as compared with the old one, will only injure the trade in lambs of a poor quality, which should in no wise be regretted.

In order to meet the demands of this trade it is not absolutely necessary to have the lambs dropped before the grass period. If the dams feed on good pastures the lambs will be sufficiently advanced to wean by the end of August, when they may be turned into a field of rape, and where there is enough of this, may be allowed to feed on the same until the snow falls. If they get a small grain ration while feeding on the rape they will push ahead more quickly. During the interval between the falling of the snow and the shipment of the lambs, they must get a plentiful supply of hay and grain.

Where rape may not be grown, the lambs may be put on good pastures and fed a grain ration. They may be well prepared in this way, but the cost will be more relatively than when they may be fattened on rape.

This trade in lambs may yet assume enormous proportions. It is at present largely confined to Buffalo, but there are many other centres in New England where it might be carried on, as Boston and New York, were our people so minded, and had we the lambs in sufficient numbers. Instead of sending to this market 300,000 lambs, we may just as well send 1,000,000 head.

There is at present one serious drawback to this trade in lambs, and our people have it in their power to remove it altogether. Up to the present the

farmers have given little or no attention to the castration of the ram lambs, and oftentimes to the cutting of their tails. This negligence is the outgrowth of the custom of selling lambs to the local butchers; who did not care to give more for those castrated and docked than for the others. When thus sold they went earlier into the market than now, and therefore the annoyance and injury arising from the neglect were less.

These are two sore evils in connection with the trade, as it is now carried on, which should receive immediate attention at the hands of the farmers. When the tails are left long the lambs must be tagged, which is an operation that is often both troublesome and offensive. When castration is neglected the lambs will not grow nor fatten so well. When put upon the pastures it is sometimes difficult to prevent them from breaking in with other lots of breeding ewes. They not only render the sale of the wethers and ewes in the same flock less remunerative, but when sent into the Buffalo market they will not sell at all in a dull time but at a heavy discount, and in the most favorable market periods this discount is no less than 50 cents per head.

The time is near at hand, unless we greatly err in judgment, when those who will not give due attention to these matters will not be able to sell in these markets at all. There is another phase of the lamb industry which should not be overlooked. If we have lambs of the right kind ready for the early spring market, they will easily command a good price. In this case of course, they may come very early, but the attempt should not be made to raise this class of lambs by those who have not good quarters for their sheep. If the older ewes are used for rearing lambs for this purpose, they may be fattened and sold early in the season, when it is easier to obtain a good price for them.

Early Lambs for Market.

The rearing of early lambs for the spring market is a feature of our sheep husbandry that is under most conditions extremely profitable and capable of great expansion. There is not a town or city in Canada but what has a market, more or less profitable according to its size, where an increasing number of lambs could be sold from year to year, by attention being given to its cultivation and development. In placing the lambs on the market early in May, there is a saving of time, trouble, and risk, and an increase in the profits; for young lambs from three to six months old will add one pound to their weight at one-half the cost of increasing their weight to a similar extent when they reach the age of nine or twelve months. It is a very noticeable fact that the fall management of the ewes and their subsequent care has a very marked influence upon the crop of lambs, not only as to numbers but as to their size and robustness. It is best to leave the ewes out as long in the fall as it may be compatible with good health, and at all times during the winter give them every chance for exercise in the open yards during the clear and dry days. It should of all things be the shepherd's aim to bring the ewes forward to lambing time in strong, vigorous condition, not, however, in high condition, for there is not a more fertile cause of weak, puny lambs and udder disorders than this. Little grain food should be given before lambing, but the ration should consist mostly of good clover hay. It is to be remembered that the ewes require water and salt as much as any other animals on the farm. Bran is one of the best foods that can be given to ewes

that are suckling lambs, and that in conjunction with a half pint or so of chopped oats, and a small quantity of linseed, makes the ideal grain ration. Ground peas give rise to such a feverish condition of the system, if fed in quantities over half a pound, that it is almost best to omit them, as troubles in the udder quickly follow any feverishness. After a prolonged strain in lambing, it is an excellent plan to give the ewe a warm drink of bran-tea or gruel.

In the rearing of early lambs the greatest difficulty that meets the shepherd is the trouble that arises over weakly lambs. If, however, the ewes have been given proper care, and have kept in good thriving condition, there is seldom much trouble with the lambs. The lambing folds must be comfortable, dry and moderately warm. Unless the fold is so protected that the rigors of late February or early March fail to affect the lambs, there is but little hope in having them on the market in such condition as to command the best prices. In attending weak lambs it is best to never take the lamb away from the ewe, as great difficulty will oftentimes arise in persuading her to own it again. The ewes should be fed well and given every care. It is advisable to shear them as early in the season as possible. A marked improvement in the growth of the lambs is sure to result if the ewes are shorn in April or early in May. The sustenance which they had to give to a heavy fleece, they are now able to give to the lambs, and further, shearing early is one of the best means available for keeping ticks from passing from the ewes to the lambs.

The young lambs must be pushed ahead as rapidly as possible. A plan sometimes adopted in the case of twins, is to send one to market at a couple of months of age, and keep the other on the ewe and dispose of it in the fall. In this way the trouble of weaning is greatly lessened. The best system to follow in feeding early lambs is to have a separate pen for them, close by the large pen, with an entrance so small that only the lambs can enter. In a trough in this pen keep a small quantity of chopped stuff and some clover hay in a small rack. Lambs have a great fondness for the clover heads which sometimes gather on the floor where the hay falls, and if these can be given them, it makes a splendid addition to their ration. In a short while they will visit this pen frequently. They should be encouraged in this by feeding them the choicest bits of clover hay and the best of other food. When about three or four weeks old they should be docked, and a little later, castrated. Lambs given the above care and food should tip the scale beam at forty or fifty pounds when about six or eight weeks old. They are then fit for the first market. Lambs in as good condition as these would be, should have no difficulty in bringing five or even six dollars apiece, if offered during the forepart of May.

The Early Market the Best for Pork.

The profits of farming very largely arise out of little things. A little more for a pound of butter, a pound of meat, or a bushel of grain, makes a very great difference in the aggregate returns of the farm at the end of the year. It is because of the difference in quality of products rather than that in quantity that one farmer is enabled to outstrip another in the race of production. And the ability to have the product in the market at the best season always makes a difference in favor of the seller which is generally very considerable.

The growing of pork is rapidly on the increase in Canada. This is as it should be, for there is money in making pork of the proper quality.

Professor Shaw has recently issued a bulletin on the subject, which we published last month. In this bulletin the losses arising from inconsiderate feeding are dealt with in a way that should lead our farmers to consider. In the letter to the press which preceded the appearance of this bulletin, he dwells upon the difference in prices paid for pork in July and August, as compared with October.

We have also been furnished by Mr William Davies, of our city, with a list of the comparative prices paid for pork on foot during the six months of 1889, ending with October. They stand as follows.

June.....	\$5.60 per 100 lbs.
July.....	5.60 ..
August.....	5.70 ..
September.....	5.50 ..
October (early in month).....	5.40 ..
November (early in month).....	5.00 ..

From the list of prices for the summer months of the present year, furnished by the same gentleman, we publish the following:

May.....	\$5.58 per 100 lbs.
June.....	\$5.25 to 5.00 ..
July.....	5.25 to 5.75 ..
August.....	5.25 to 5.37 ..
September.....	5.38 to 5.65 ..
October.....	5.37 to 4.62 ..

These figures are exceedingly instructive, and should prove of much interest to the farmer. By them we learn that the difference paid in 1889 for June pork, as compared with that of November, was 60 cents per hundred on foot, the same amount for July, 70 cents for August, and 50 cents for September. During the present year they show a difference of the price paid for May pork as compared with that of November 1st of 96 cents per hundred. The difference for that of June is 80 cents, that of July, 88 cents, that of August, 69 cents, and that of September, 89 cents.

It follows then from these figures, that the farmer who can sell his pigs before the month of October, and more especially before the month of November, will get much better prices for them. From the opening of spring until October, the leading packing houses have to buy American pork in a greater or less degree.

Our farmers should certainly endeavor to supply the demand during these months. The packers pay much higher prices for Canadian-fed hogs, for the reason that they make better pork, and the demand is always so brisk during these months that sales are easy to effect.

As young pigs cannot be made to attain the most profitable weights under six months, it would not be easy for us to furnish pigs for the May and June markets except from late autumn litters. Some of our farmers could, however, supply pigs from early litters for the months of July, August, and September, and thus obtain the top prices. Those of them who have warm pens could have the young pigs come in January, February, and March. These would be sold in the months named above. The autumn litters would then come early, which would be a great advantage to them on the approach of winter. This plan would obviate the glut in pork in November which commonly takes place, and the farmer would therefore also get better prices at that season.

Those of course, who have not warm houses for their swine cannot have the young ones come thus early, or they would be likely to lose them by freezing. Here again the well-equipped farmer has the advantage of his less fortunate neighbor.

Our farmers will surely try and stop the importation

of pork from the United States. They should certainly try and keep at home the money that goes abroad for pork, since making it judiciously is profitable. There is no live stock industry which gives returns so large in a period so short.

Economy in Feeding Stock.

Canada is a cold country, and has winters during which the live stock requires to be housed and fed on food which has cost much labor, both in growing and in harvesting it. It is, therefore, a matter of grave importance that the farmer should study economy in feeding his stock during this period.

Some kinds of feeding are practised which are far from economical. When a growing animal is put into winter quarters and fed upon a ration which does not increase its weight, the farmer gets no value for the food thus fed. He is no better off than he would be had he thrown this same food into the yard and allowed it to turn into manure in that form.

Another form of extravagance is found in the keeping of unproductive cows on the farm. We do not so much refer to the practice of keeping cows as milk producers which are not adapted to this purpose, as of keeping them on a maintenance ration during long periods when they are not productive. A cow may fail to breed regularly. The farmer, however, continues to milk her for a whole season in the hope that she may breed again. It would be much better in all such cases to turn the animal into meat and supply her place with another, unless her value as a breeder is quite above the average.

In fattening live stock it is extravagance to continue to feed them for any lengthened period after they have become ripe for marketing. The cost of feeding an average three-year old bullock per day, was 20c according to the bulletin issued last May by the Ontario Agricultural College. If the animal ceases to gain proportionately, because ripe for the market, the loss of money to the farmer in the food thus fed soon becomes a serious item. In fattening pigs this feature of the process is worthy of the most careful study. The fattening period is not nearly so long as in the case of cattle. Unless, therefore, it is carefully watched, before the farmer is aware of it he will be feeding food to them which they are not making the best use of.

Again, unless the relative prices of the foods fed is carefully considered, the stock cannot be fed economically. It may pay the farmer well to feed bran, for instance, to his milch cows, and even to his fattening steers, in limited quantity, when it is not more than twelve dollars per ton, whereas, if he had to pay eighteen dollars per ton he might not be able to get his own out of it. In such a case it would be well for him to look about for some substitute for bran.

When hay is cheap it may be the best thing for the farmer to feed it freely to his store stock, but when it is dear it would probably be the most economical course for him to adopt were he to feed straw and roots if such were on hand, and sell the hay.

When the farmer pastures the aftermath of his meadows so closely that the next year's crop is much reduced thereby, he is not practising true economy. He would injure himself no more were he to put in his yard to decay as much hay as would equal the difference between the value of the aftermath eaten and the hay not grown in the next crop because of this.

Then there is that source of waste which arises from careless feeding. It may consist in putting the feed into the mangers in excessive quantity, or in throwing

it in carelessly, where much of it goes under the beast for its bed, or in feeding it in mangers ill-adapted to the purpose. The amount of food thus wasted annually is very large. It is perhaps the great sin of feeders, who are not at the same time the owners of the cattle, to give them more food than they require. The tendency is to create loathing for the more concentrated foods, and general ill-doing as a consequence. The practice is a most reprehensible one, although it is oftentimes a most difficult one to remedy.

In these days of comparatively low margins and low prices, it becomes us to study carefully the practice of economy. It is in the constancy of the little gains and accumulations that our profits consist, and when, instead of this, there are constant leakages, however small and insignificant, our profits must proportionately diminish.

The merchant can easily tell you what his goods cost him, and consequently the margin of his profits. The farmer cannot do this so easily, because of the greater difficulty he finds in ascertaining these things. Because of this greater difficulty he should give the subject more thought, as it is to him a great matter to know what his marketable products cost him as approximately as this can be ascertained.

Our Trade in Store Cattle.

We have taken every opportunity to place ourselves on record as being strongly opposed to the trade in store cattle that has been carried on with Great Britain during recent years. Viewed from every standpoint our farmers are making a grievous mistake in attempting to cater to this trade in the lean line that drains the profit in the cattle industry from their pockets and farms to those of others. In interviewing Prof. Robertson, Dominion Dairy Commissioner, a reporter on one of our city papers inquired of him if he had found that the animals being shipped from Canada are in a fit condition to make the most profit for our farmers and give the best reputation to our cattle in the foreign market. With a thorough and practical comprehension of the conditions of this trade, Prof. Robertson expressed his views as follows: "I dare say," was the dairy commissioner's reply, "that a very large percentage of the fat cattle being shipped from the North-West go out in about as good condition as they can be put into there. The larger proportion of store cattle, however, that go abroad—that is, cattle with the frame only, and not sufficient beef to make them fit for butchering—go from Ontario and Quebec, from the farms of those who ought to know better than to continue that deplorable practice. The bulk of our trade in cattle with the United States has been made up of that class, not counting in thoroughbreds. The most intelligent and prosperous farmers of Ontario, who have made profits from cattle feeding, have made them by finishing their cattle for the butcher before they were offered for sale. Many of them had even gone into the back townships of Ontario and Quebec and purchased store cattle, which they have fattened with profit upon their high-priced lands and upon grain dearer than the same quality in the sections from which they brought the cattle. The shipping of lean cattle does not merely remove from the farm its fertility for a small return in cash, but it implies the selling of the coarser grains direct, from which more money could be obtained through the cattle than by marketing. Beef is a very concentrated product, and a smaller per cent. of its value, as paid for by the consumer, is absorbed by the transportation charges than when bulky and cheap products like grasses, grain, or hay, are sent abroad. The shrewd farmers of Scotland and England have not been slow to profit by the mistake of our stockmen in sending their store cattle across the Atlantic. The fact that upon the exceedingly high-priced lands of the British Isles, with their more costly grains, the feeders can make a profit above the value of their grains through finishing our cattle, ought to enlighten our farmers to the conclusion that the larger profits should be gained and retained by themselves here."

FOR THE CANADIAN LIVE STOCK AND FARM JOURNAL.

The Merits of the Devons.

Having been asked by some of the admirers of Devons to give some of my experience with their favorite cattle to the press, I ask space for the following:

I have bred Devon cattle for a long time, sufficient for me to have become acquainted with their good qualities on the farm and also on the range, and from my experience with them and other cattle, I am prepared to champion the reds with a hearty will. It has been seventeen years since my acquaintance with them began. During that time I have seen them handled with profit for the dairy, and with unexcelled results on the range. Some of the Devon breeders give special attention to milk and butter, and by proper selection attain most gratifying results. Other breeders pay particular attention to beef points, and attain results similar to that reached by Morse Bros., at the last Fat-Stock Show in Chicago, when the champion on the block was their Devon steer. Now it is to the Devon as a beef-producer on our Western ranges that I wish particularly to call attention. The Devon always takes the butcher's eye on account of the good loin and high-priced all-around cuts. They kill right for the retailer who has a good city trade, carrying as small a percentage of offal as cattle of any breed. Their quality is as fine as it is possible to produce, and is attested to by the fact that the Christmas roast for the Royal table of England was cut from a Devon. They hold their own on the rockiest mountain range that our country affords, and I have seen them come from grass in good killing condition, when good Shorthorn grade steers of the same age from the same range could only be sold as feeders; and anyone who has ever pushed the Devon in the feed-stall knows his worth as a feeder. I grant they are looked upon as smaller cattle than some of our beef breeds.

Now right here arise hosts of questions. There are Devons in the New England States that have been bred for generations for dairy purposes. Their beef points have been neglected and sacrificed to development for milk and butter. Inbreeding has been resorted to, and there we find a class of cattle excellent in any dairy, but, it is true, rather undersized compared to some of our cattle equally as strongly bred for beef alone. I know this, for I have seen and handled cattle from good New England breeders, and have heard men, who should know better, compare them with Herefords and "muleys" from families celebrated as beef-producers. When the same men are brought around to a good, well-filled Devon, from an English or Canadian herd, where the beef points have been strongly developed, their argument is fully met and words are useless. A few years ago I was talking the Devons to a man who had been for a long time connected with me in the range stock business. He admitted that the Devons excelled our other high-grade stock in quality, but said their size was against them. A short time after that, we sold in Salt Lake City, a bunch of sixty steers, all grass fed. They were a good bunch of steers all around, and were sold to White & Sons, who killed them for their city trade. There were two steers that attracted general attention. One, a good, showy Shorthorn grade, the other a low-set, trimly-built, seven-eighths Devon; both three years old. My friend's favorite was the Shorthorn. Mr. White favored the Devon, saying he carried a greater amount of high-priced beef. Considerable interest was taken in how the steers would kill. Guesses made on their weights placed the Shorthorn 100 lbs., or over, heavier than the Devon. After they were killed the Shorthorn's quarters weighed 760 lbs. The Devon's weighed 740 lbs. The Devon was fleshed half an inch thicker on the ribs where he was quartered than the other four ribs back. This surprised everyone, but gave us the secret that made a convert of my friend.

Messrs. White & Sons pronounced the Devon the finest grass-fed steer they had ever killed, and told us that when we got our herd well graded to Devons they would guarantee us one cent a pound for our steers over market rates. We unfortunately did not weigh the steers alive, consequently did not get the percentage net. We have killed cows, dressing over 60 per cent., and they were not corn fed. In considering the Devon as a range animal it will not do to

forget that they breed very regularly. I have never owned a Devon that did not prove a breeder at maturity. This is a very strong point with the breed, and one that the most prejudiced must admit. The propensity of the "rubies" makes them admired by all who value uniformity in the herd. I have never seen among our stock cattle a cow of any color with a calf sired by a Devon that was not a solid red.

In writing what I have about the Devon cattle, I have given such facts as I thought of general interest. They are the facts as I have found them, and I am never tired or worn out on the topic of Devon cattle. I admire good cattle of all breeds, have animosity toward none, not even the scrub when he is in the right place. I have tied to the Devons because they filled the requirements I had to meet. I have no controversy with anyone.

BRN. R. ELDRIDGE.

Provo, Utah.

FOR THE CANADIAN LIVE STOCK AND FARM JOURNAL.

Breeding Sheep for Our Markets.

BREEDS ADVISABLE TO USE AS CROSSES.

The question,—What is the most desirable breed of sheep for Ontario? is sometimes asked. The answer is not easily given. The climate suits nearly all the British breeds. It is drier than the European, and the cold, chilly fogs of an English winter are almost unknown here. Epidemic disease is very rare, and no part of the world enjoys such freedom from disease. The Ontario farmer is not restricted as is the British sheep owner to some particular breed which alone will suit his land. The soil here is good, and the grasses rich enough for the heaviest breeds. On the other hand, the limited size of the farms and the six months fodder to be provided has prevented any large flocks being kept. But all farmers can keep some sheep, and it is a branch of live stock industry that deserves more attention than it has received in the past. For several years our live stock statistics show a decline in the number of sheep kept. This should not be. There is profit in sheep. To answer at all the question of choice of breed requires a look at the branches of sheep husbandry in Ontario, and an indication which one of these the farmer wishes to follow.

The sheep breeders may be grouped into three classes: (1) Breeders of pure-bred sheep; (2) breeders of mutton sheep for butcher or breeder; (3) breeders of lambs for the market. As to the first class it includes, in long wools, the following breeds: Cotswold, Leicester, and Lincolns; in Downs, South-downs, Shropshires, Oxford, and Hampshire. Latterly Dorset Horns have been tried by some. Those already breeding pure-bred sheep have their choice made, and those about to begin will probably be guided by fancy and the outlook for profit. For many years the breed of long woolled sheep were the most popular, and about the time of the American war a great deal of money was made by those in this trade. Of recent years the short and medium wools have taken a start, and the different breeds of Downs have been popular. The great market for pure-bred sheep is the United States. The local demand is limited, though it is growing year by year. The past year has seen a decided revival in the demand for long wools, and they may be considered on a par with the Downs as far as the American demand is concerned.

In regard to the second class of breeders, namely, breeders of mutton sheep, it may be said that there has been very little systematic breeding. What there has been of sheep breeding in Canada has been for mutton. Wool is merely a by-product—a very valuable one—but not the important item that mutton is. Hence the Merino breed, with very fine wool and poor mutton, has never had a chance in Ontario. A large part of the mutton is for local markets; the balance is shipped to Britain, and a very miscellaneous lot it is—old ewes of various degrees of fatness and of very mongrel breeding, and wethers of various kinds and colors. It might be supposed that when mutton is the chief object the sheep of Ontario would be mostly Downs and their crosses. Such is not the case. The bulk are still long-wool grades, though in some sections there is a large admixture of Down blood in varying proportions. Canadians are not a mutton-eating people. It is the best and most wholesome

of animal food. The taste for it is growing, but we are far behind the English in this respect, and lack generally the discrimination which can place at once the quality of a gigot, and name the breed from whence it came. For the English market it might be thought that Downs would take the lead, but buyers and shippers do not give more for them than for others; and as they often lack the size of the long wools, the latter have frequently the best of it in a sale. Weight tells specially well when the Atlantic freight is counted at so much per head. In choosing the breed for mutton sheep, it is desirable that a country section should as far as possible go upon the same lines, so that buyers might get a uniform lot for shipment.

Breeding lambs for the market is a growing trade. The demand is good. The prices paid are increasing year by year. The United States market has taken large quantities of lambs from Western Ontario. The new tariff does not affect this trade. It rather helps it, making a specific duty of 75c. per head. There is a chance here for a large and profitable trade for the sheep breeder. Most of the lambs bred for mutton in England and Scotland are cross-bred. They feed better and grow larger bred in this way. Good grade ewes—long wool grades from Cotswold or Leicester ewes, crossed with Down rams—will bring fine lambs for either the British or United States markets. This trade requires two sets of breeders. One to breed the dams and keep them till they are shearlings; the other to breed the lambs and feed and sell off the entire crop of lambs every year. The ewes alone would require to be wintered by the latter. If bought in while shearlings five crops of lambs could be raised from them. Use for crossing first time a Southdown sire, and perhaps for the second year; then change to a Shropshire for the next two years; and last try an Oxford Down. If you can more easily get a stock of grade Down ewes, then use first a Leicester and then a Cotswold for crossing. Feed all the lambs. Keep no cross-bred ram lambs for breeding. At weaning time they should be worth about \$4 per head. If kept and well fed till Christmas, \$7. For early spring lambs there is a great demand in the cities. Breeders of the Dorset Horns claim that they are the breed specially adapted for this purpose, and that earlier lambs can be raised from them than from any other breed. They certainly bring good lambs; and where farmers have the housing required for keeping ewes and lambs through the winter, the spring lambs will bring a good stiff price, enough to pay well for the extra trouble they need through the winter. In both these lines of breeding for the market there is a good chance of profit to the farmer, and any of the standard breeds or their crosses well cared for, and liberally fed, will give good returns.

D. McCRAE.

Dressed Beef or Live Cattle for Export.

IN A FULL DISCUSSION OF THE SUBJECT, PROF. ROBERTSON FAVORS THE FORMER.

The possibilities and future of our export cattle trade is a question wide in its application and of vital interest not only to the greater number of our stockmen, but also to every Canadian who is desirous of assisting in developing the greatest of our country's resources. We take pleasure in placing before our readers the views of Prof. Robertson on this subject, as expressed by him in a lengthy interview which appeared recently in one of our leading city dailies. Though the question is discussed in the most liberal and thorough manner, yet so many sides has it that no one person may hope to present a full statement of the subject. In answer to the query as to whether or not it would pay better to ship dressed beef than live animals, Prof. Robertson said: "I hardly know well enough the present prejudices and preferences of the British markets, which, apparently, will be the main destination for our cattle and their products for a long time, to express a decided opinion. The relative profits from both methods of export depend in a large measure upon the market demand and price that can be obtained. Fresh dressed beef is complained of as losing its color and flavor in some degree by its keeping. The expectation on the part of the English consumers that meats imported in the carcass, or cured,

shall be purchasable cheaper than meats from animals slaughtered in the vicinity militates against a dressed beef trade, and in favor of live cattle. Then as our cattle are admitted to the British Isles without quarantine detention, British butchers and middlemen make larger profits from the purchase and slaughter of our live animals than they would make on the sale of our dressed beef. Their influence would all go against the dressed beef. The meat buyer for the family in England, as elsewhere, can be prejudiced in favor or against meats by a few words of the seller. An illustration of this can be drawn from the provision trade. When the profits of the retailers of hams, bacon, or cheese, are small and the profit on jams, jellies, etc., are large, the sale of the latter is pushed while the former are neglected. The contrary is also noticeable. These are two adverse factors that may be expected to oppose a development of the dressed beef trade where it curtails the export of live animals. However, I think time will overcome the prejudice against dressed beef from healthy cattle like ours, when it is transported in conditions suitable for keeping it pleasing in appearance and wholesome in quality. A judicious fostering of the distribution of some Canadian products to the consumers in Britain and elsewhere, would help to checkmate the slightly hostile activities of the great army of retailers, and ultimately ally them to our interests.

An inquiry as to the direct benefit that would accrue to Canada, drew the following reply from the Commissioner: "Canada has mainly a twofold interest in the cattle trade, and both would be benefited by a gradual change to, and an extension of, the shipment of dressed beef, fresh and cured. The interest of the shippers—I mean the men who buy the cattle and take the risks and losses as well as the profits of shipment—and those of the farmers I count identical. The carrying companies have a secondary interest only. All past experience points to the fact that profits to transportation companies come mainly from the increased volume of business which they are able to do rather than from rates maintained at high figures. If then farmers can get enough extra profit from the change to dressed beef to encourage them to keep more stock—by and by many times more cattle per farm—the enlarged traffic would pay railway and steamship companies better. Every branch of productive industry must seek profit for those engaged in it through economical methods in the application of labor. The labor and actual expense involved in carrying live cattle from the point of feeding to the butcher's shop in England, through the shambles in that country, is necessarily greater than for transporting the dressed carcass from the abattoir near the farm. Jaded cattle, bruised and tired from a long railway and steamship journey, suffer more damage and loss, both in weight and quality, than beef in refrigerator compartments properly prepared. In the far west especially, abattoirs and a dressed beef trade through to England would be a boon and the beginning of better things. I took occasion to suggest and recommend that in the course of my addresses in the cattle raising districts in the west during the last two months. The getting of our beef before the consumer in the best condition, in the way that involves the least labor and expense in transportation, is the main matter. Then the competitions of trade will certainly ensure the farmers every cent of value that is in their cattle. The present practice in many ways is wasteful and expensive. All the losses ultimately come out of the producers—the farmers."

"Do you think of any other benefit that would come to the farmer from the plans you have outlined being carried into effect?" "Yes, the feeding of cattle to the very finish of tip-top condition and fatness would be encouraged. That would mean more money per head and more profit per head also. A more discriminating buying of cattle would be induced and the close market contact between the farmers and the customers would give an impetus to the breeding of cattle of finer breeding qualities. Then the new industry of extensive and numerous abattoirs would keep more money in circulation in our own country. The farmers would get their share of it. Besides the by-products of hides, tallow, horns, and other offal, would give rise to many paying businesses which singly may not be of great importance, but collectively would add to the country's prosperity."

J. D. LHAMAN, Charlottetown, P. E. I., writes: "You are doing much to improve the agricultural interests of the Dominion and even down in the little isle by the sea is your influence being felt."

FOR THE CANADIAN LIVE STOCK AND FARM JOURNAL.

Improvement of Stock.

I would rather," said Lord Spencer, of agricultural renown, "breed a cow of no breed to a pure bred bull, than I should a poor pure-bred female, and the worse bred the female is the more likely is the offspring to resemble a well bred sire." At first sight this seems an anomaly and a statement in complete opposition to prevalent ideas, but on consideration one cannot but arrive at the conclusion that his opinion, though often lost sight of by many, is nevertheless very important, and rests to a very large extent on a foundation of fact. It is a well known fact that the first cross with a pure bred male on a female of mixed breeding, effects the greatest amount of improvement in the offspring, but it is not so generally recognized that a cross between two pure bred animals, more especially if of two well established breeds, is not nearly so marked, as that between a male of such a breed and a female of mongrel ancestry. This fact has most conclusively been proved in the case of sheep, by experiments conducted by Monsieur Malingie Noel, director of the Agricultural school of Caen, France, in an endeavor to improve the French sheep, which were, as he said, in almost deplorable state as to both mutton and wool. Several attempts had been previously made by importations of English sheep, but it was invariably found that English sheep would not thrive even in a country only so far south as France, while repeated crosses on French ewes by English rams were usually pursued not only without profit, but with heavy loss. The French sheep were principally Merinos, a breed whose origin is lost in the night of ages, or else possessed a large proportion of Merino blood in their veins, and it was found that when a ram of any of the English breeds was bred to a French ewe, the lambs presented the following results. Most of them resembled the mother more than the sire, some showed no trace of the father, and very few represented equally the features of both. Encouraged by the beauty of these last, the ewes when old enough were put to an English ram, and the progeny, having 75 per cent. of English blood, were generally more like the father, but it was found that when weaned their constitution was unable to stand the climate, and they either dwindled away or else remained inferior even to the native sheep. These results arose equally with the rams of each English breed employed, but the influence of the sire was more marked in the product of the New Kent or of the pure Southdown, than in that of the less pure New Kent or Downs or Leicesters, these being of very modern origin in comparison with the French breeds, especially the pure Merinos. In fact, says M. Noel, the principle of antiquity or purity of race is what has the most influence upon crosses; thus when a Leicester ram, a mixed New Kent, or a Southdown that is not pure, is put to a pure ewe of any French race, very little English character is impressed on the offspring, never less than when the ewe is a pure Merino, if, on the contrary, the same ewes are put to very pure rams of the Southdown or New Kent breed, the English character is much more marked than in the former case. M. Noel having ascertained (1) that sheep in which English blood exceeded one half did not thrive on French soil, and (2) that one cross by a ram of any of the English breeds effected very little improvement, next attempted to diminish the resisting power, namely the purity and antiquity of the ewes, as he could not increase the purity and antiquity of the rams; with this purpose in view he selected some of the finest rams of the New Kent breed, these he bred to ewes combining the blood of four distinct French races, which, although without decided character or fixity and of little intrinsic merit, yet possessed the advantage of being used to the climate, while their resisting power was almost annihilated by the multiplicity of their component elements. The result was remarkable, all the lambs strikingly resembled each other, and even Englishmen took them for animals of their own country. It is interesting to note that by interbreeding the lambs thus obtained, the offspring not only retained the excellence of their English ancestors, but stood the climate and were as easily reared as any of the French breeds, and by subsequent careful selection, M. Noel succeeded in establishing a breed which reproduced itself with uniform and marked features. Such was the origin of La Char-

moise breed of sheep, a breed which became fancied in France. A better explanation and corroboration of Lord Spencer's remark could perhaps not be given than the experience of M. Malingie-Noel, and there is no reasonable doubt that in like manner the offspring of an inferior pure-bred cow, more especially if descended from parents of little or no merit, would not be influenced to the same degree as that from a cow of no fixed type of breed. Two deductions may be drawn from Lord Spencer's assertion that are worthy of the attention of the stock raiser, the first, that it is a waste of money to purchase inferior pure-breeds, especially if of inferior ancestry, and that it is better to expend a little more in order to obtain animals of individual excellence, or else to limit oneself to one of really good points, than to purchase a number of animals of no merit; the other applies more to the breeder, and were it strictly practiced would necessitate the observance of the first. Steer all bull calves unless they are really first-class animals, and fatten all females that are under the average. A strict adherence to these two rules would soon effect a great improvement in the stock of the country, and would also put money into the pockets of both breeder and purchaser. Although the depression in the price of stock of late years has been to a great extent caused by the overproduction and marketing of cattle from the ranches, which in turn necessarily affected the prices of pure-breeds, yet it cannot be denied that the sale of inferior pure-breds has likewise contributed to it. The outlook for the future is however, brighter, and although seasonal prices are not to be hoped for, or indeed desirable, as they lead to speculation and denote an unhealthy state of the market, still there is every reason to believe that good stock will bring remunerative figures. The ranches are slowly but surely being entered on by settlers, and although under cultivation, more cattle could be kept on an acre than at present, yet a considerable proportion will be required for crops which will necessarily reduce the number. Population is likewise rapidly increasing in beef-eating countries, while others are acquiring the taste, and will provide us with additional markets for our beef.

AGRICOLA.

The Shropshire Sheep as a Factor in the Mutton and Wool Product of America.

Read by Hon. John Dryden before the American Shropshire Registry Association at its annual meeting in Chicago, November 18th, 1890

Shropshire sheep, so called after the name of the county in which they originated, are descended from a hardy variety found in Shropshire and adjacent counties in England for the past two or three centuries, and formerly known as the "Grey-faced Sheep." According to the best authorities now living, these sheep have not been brought to their present state of perfected development by the crossing of other breeds, but by judicious selection from the best of its own species. They were first exhibited as a distinct variety at the Royal Show at Gloucester, England, in 1853, since which time they have attracted attention from all quarters of the globe, and are still increasing in popularity. A more marked uniformity was produced by the action of the Directors of the Royal Society of England consenting to appoint for several years the same judges, who were among the most prominent breeders, and were thus enabled to establish what in their opinion should be considered the distinctive features of a typical Shropshire sheep.

As seen in the best flocks of to-day, they have deep symmetrical bodies placed on short legs, a genteel appearance, well-covered heads, and every part of the body covered with a uniform quality of wool of the most valuable kind. These sheep are adapted not merely for one particular locality but do equally well in almost every country in Europe and America. They certainly have the power of thriving where any other sheep can live. In a marked degree they combine all the characteristics which are essential in producing the very best returns in both wool and mutton.

They are especially adapted for a country where close confinement is not desirable nor practicable. The open air is their delight. They are not easily affected by storms, and instead of standing with

arched backs shivering from its effects, they are at once ready to "get up and put on a hustle." They are most prolific; 150 per cent. is a common return in lambs, and not unfrequently 200 is reached. The writer knows of an instance near his home where a flock of ten ewes owned by one man, produced twenty-three lambs, which when sold in the autumn realized \$33 for each dam. They have great power of food assimilation, and mature early. The writer has produced lambs this season, dropped early in March, which weighed on November 1st, from 140 to 150 lbs. Some of these on easy rations gained in weight the last month fully one pound per day. These statements are given not to prove the great weights reached by Shropshire sheep, but to show that the average weight of Shropshires is reached at a very early age. The quality of the mutton is not excelled by any breed. They are light in offal, and carry a large amount of lean meat in proportion to fat.

The ancestry of these sheep have been noted as wool producers as far back as the history of live stock will take us. In the 14th century the market reports show the wool from Shropshire county as commanding the highest price of the lot. It is neither very fine nor very coarse, but of that quality best adapted for general purposes and most likely to be in continual demand. A flock well cared for will produce annually eight pounds of wool per head. The wool is commended by manufacturers as being strong and tough in its fibre, standing spinning, and capable of being twisted tighter than most wools without breaking. One manufacturer declares that in this respect it is the best wool in the world.

Such are some of the characteristics of this popular sheep. We believe that their increasing popularity is due to their intrinsic merit, their profitable qualities, and their hardy character. Yet their value cannot alone be determined by their own inherent qualities, but will depend largely upon their power to impress these upon inferior grades upon which they are crossed. Among cattle, Shorthorns have not achieved their high position because of their inherent qualities alone, but because they are capable of improving any class with which their blood is mingled. Whether these sheep would improve the ordinary breeds of America could not have been answered a few years ago. Experience alone must decide such a point when the trial has been made. But enough has now been done in testing this to prove that they are now a most potent factor in improving both the wool and mutton product of America. Their power to improve the common stock of the country of whatever origin is frankly conceded everywhere. Not long ago I listened to a discussion at a Farmers' Institute meeting as to the best cross for mutton purposes. One farmer argued for a Leicester foundation and the other for a Southdown, but both were decided and emphatic as to the Shropshire sire.

I have taken the trouble to enquire from some of the feeders and dealers in sheep in our large central markets, as to the value of the Shropshire as a cross on other sorts for mutton production, and I now propose to give some of the opinions expressed by these men. I have had difficulty in acquiring information from some quarters because of the fact that no distinction is made as to what are called "Black-faced" or "Down" sheep of whatever variety; still enough has been learned to indicate the trend of public opinion in favor of this popular breed.

Alderman Frankland, one of the prominent butchers of Toronto, Ontario, and the pioneer exporter of live cattle from American shores, completes a valuable paper on sheep breeding as a profitable industry, recently read before a meeting of the Dominion Sheep Breeders' Association, in the following terms: "What I would recommend would be the establishment of large flocks of ewes, and the use of a Shropshire ram. This would improve the mutton, and give more size than the cross with the Southdown. Shropshire sheep, too, are very hardy, and thrive on land that would kill Leicesters or Cotswolds."

Messrs. Williams & Hall, of Bowmanville, Ontario, who are practical butchers and shippers of live stock, in a private communication, addressed to me, use the following language: "We have been thinking of writing to you for some time in order to ask you to use your influence with the farmers in regard to the most suitable sheep which the consuming public require, and which they are willing to pay for if the farmers will produce them. We require sheep that will produce the largest quantity of flesh, and in our experience we have found the Shropshires and Southdowns of the finest quality and selling for the highest

prices. Our experience dictates that no breed of sheep gives better results as to lambs than our common Leicester as foundation with a Shropshire ram as sire; the lambs are just what we are anxious to buy for the New York markets."

Mr. J. Willett, of North Lewisburg, Ohio, writes as follows: "I have fed all kinds of mutton sheep and lambs, Shropshires, Oxfords, Southdowns, Leicesters, Cotswolds, and Lincolns, and I pronounce Shropshires as the best I have fed or handled in any way. I have never fed any sort that would put on the pounds as fast as a Shropshire. I like them for the following reasons. 1st, They are easy fatteners; 2nd, they will feed and fatten at any age; 3rd, they have more high-priced meat to their weight than any other mutton sheep; 4th, their meat is marbled with fat and lean all through; 5th, they sell the best in eastern markets on account of their even and marbled fattening qualities; and 6th, they are the best dispositioned sheep."

Frank D. Bartlett, of the Union Stock Yards, Chicago, writes that his experience with these sheep has been that of a commission salesman only. He says: "A cross of a Shropshire and a Merino, or any moderate woolled sheep, is a good one. The product is smooth, round, evenly fattened and a good selling weight, not too heavy, as when crossed with long woolled, or very heavy bodied sheep. A Shropshire buck crossed with our western sheep of Oregon and Montana gets nice lambs, running even in size and quality; and such lambs will sell with the best of our merchant sheep. A few years since I had a deck of lambs, which were the produce of fine woolled ewes and a Shropshire buck. They were as attractive a bunch as I ever saw on this market; they weighed 95 lbs. and sold for 7c. per pound. The same day another lot of lambs were sold on this market at the same figure. They were the product of long woolled ewes crossed by a Shropshire buck. The latter lot were very fat, but uneven as compared with the former, and weighed 113 lbs. each. Both lots were sold for the Pittsburg market, where they attracted considerable attention among butchers, and their killing qualities were closely watched. I was assured that the fine woolled cross was in every way the most useful to butchers, being very smooth, with the fat evenly distributed, and the carcass of a more saleable weight. On the whole, I am inclined to consider the Shropshire as one of our most useful breeds, considering it from a salesman's standpoint, with which a valuable cross may be made either with fine woolled or with our western close woolled sheep."

Further information has been received from Mr. John Benstead, one of the live stock commission merchants of Buffalo, N.Y. I presume it will be conceded that Buffalo is one of the largest sheep markets in the world. Mr. Benstead, I am told, sells in that market about one-third of the entire number disposed of. He and one of his partners have also considerable land outside the city upon which they annually fatten large numbers of sheep. His evidence, therefore, as a breeder and feeder, is valuable. Mr. Benstead writes: "I advise all my friends to use Shropshire sires entirely to cross with our common sheep, and they seem to knock just right with everything. I never yet saw a Shropshire cross that was not an improvement, and I have frequently said that the Shropshire sheep has done more for this country than anything that has ever been imported from across the water. At the Buffalo Stock Yards we think the full-blooded Shropshire is the best all-around sheep. They are the best for early lambs, the best for mutton, the best shearers, and cross good with everything. One of my partners and myself are feeding this winter 3,500 sheep at one time, and we shall procure all the Shropshires possible, as we find that everything which has a little of the Shropshire blood in it will always pay well for the feed. When we cannot get Shropshires we get Southdowns, and next, any good coarse woolled grade; but the best sheep we get to feed are, say, half Shropshire and half grade Leicester, or Cotswold. They have style, shape, and quality, and the mutton is well proportioned with plenty of lean flesh. In later years the demand for good mutton has been rapidly increasing. When people find that they can get that which is good, they will ask for it. The trouble in the past has been that our sheep did not fill the bill; the Merinos were all lean and the Cotswolds and Leicesters were all fat, but the Shropshires fill the bill and are just what will make our people mutton eaters and our farmers sheep raisers."

In addition to what is thus given by these practical men, I have only to remind this association of the

fact that in 1889 the best carcass of mutton shown at the Great International Fat Stock Show, held in the city of Chicago, was declared to be that produced from a Merino ewe crossed with a Shropshire ram.

What I have thus given is surely sufficient to show how important a place the Shropshire sheep must take in the near future in the mutton and wool product of this great country. No doubt, among Shropshire sheep here will be good, better, and best, as among all others. Those who insist on procuring and breeding only those of this breed which are inferior and should be culled out altogether, will not succeed in proving to persons who are unaccustomed to the breed that they are superior. The practical point to be considered by the breeders here assembled is, how shall we increase the potency of these sheep as impressing their inherent qualities upon the mutton and wool product of this country? I submit that it will not be achieved by rigid laws passed by our own Association which shall exclude from our shores sheep bred in other countries; nor will it be done by the declarations of governments intended to deprive us of the privilege of choosing the best wherever it may be found. It will rather be done by giving to enterprising individuals the right and privilege of going anywhere the world over, wherever they may secure that which will enable them not merely to hold their own, but to improve on that which they already possess. Let the best man win. We do not say that there are no other good breeds of sheep, but we do say that no breed has in so short a time been scattered over so wide an area in the civilized world as the Shropshire has; and we do say further that no breed to-day has secured so strong a foothold or more numerous and more ardent admirers in every state and province on the American Continent than this popular breed. As proof of this I have but to draw your attention to the fact that the 6th volume now being published by this Association contains no less than 7,500 pedigrees, a number, I believe, in excess of all other breeds combined. Their invaluable qualities have only to be brought to the attention of the discerning public to at once merit constant admiration. Every lover of this country is interested in the continued progress of this breed of sheep. Their product is required and will be sought after by those who wish the choicest mutton and the best grades of wool which can be produced in this country. We believe that no breed of sheep has done so much to produce a demand for choice mutton as has been accomplished by the importation of the Shropshire sheep to this American Continent. We believe that the demand has but commenced and that it will grow and increase as the years go on, especially if our breeders and farmers will only continue to produce that which our best customers desire to buy.

FOR THE CANADIAN LIVE STOCK AND FARM JOURNAL.

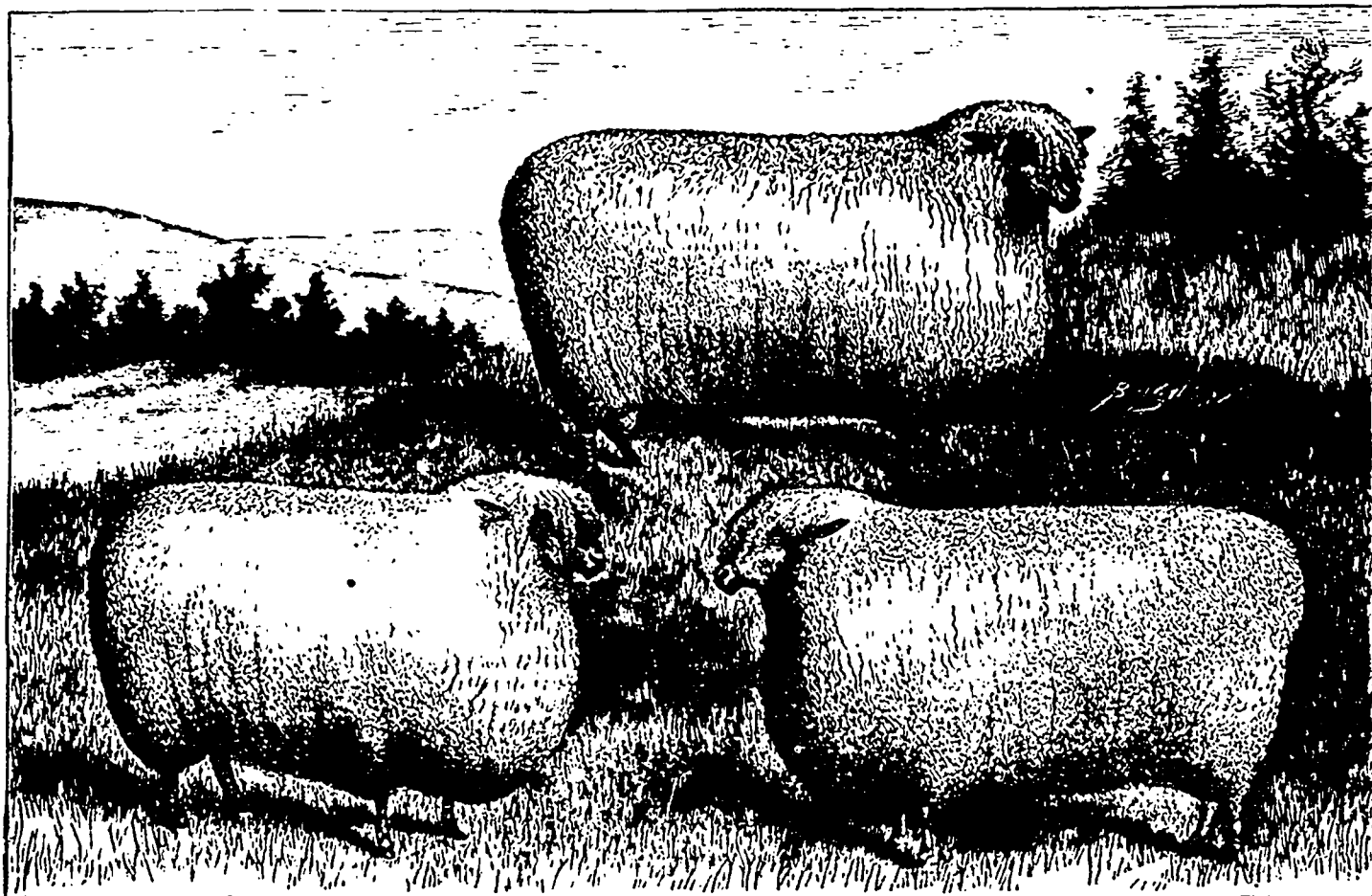
The Pure Breeds of Cattle.

By PROFESSOR THOMAS SHAW, Ontario Agricultural College.

[SIXTH PAPER.]

SHORTHORNS IN CANADA.

Of the beefing breeds introduced into Canada, the Shorthorn far outnumbers all the others combined. Whether we regard the representatives of the breed as pure or as grades, it may be said of them that they have taken possession of the land. While it is true that they were introduced earlier than some of the other breeds, or perhaps than any of them, this does not afford a sufficient explanation of the cause of their numerical superiority. The Hereford was introduced into Canada many years ago. The same is true of the Aberdeen-Angus and the Galloway. While each of these breeds has intrinsic merit of a high order their relative increase as a matter of history cannot compare with that of the Shorthorn. The pure Shorthorn is still almost exclusively used for grading purposes in beef production, inasmuch that nearly every hoof of the sixty thousand head of bullocks sent annually to Great Britain supports the body of a Shorthorn grade. This is all the more remarkable when we reflect that pure Shorthorns were not to be found in Ontario much beyond sixty years ago. The province of New Brunswick led the way in the introduction of Shorthorns into the Dominion, as stated in that admirable summary of the earlier importations of Shorthorns into Canada from the pen of H. Wade, the secretary of the Dominion Shorthorn Breeders' Association. In



A Group of Cotswolds.

Imported and Owned by Mr. J. C. Snell, of Edmonton, Ont. (See page 391.)

1825 or 1826, the New Brunswick Board of Agriculture imported four pure Shorthorn bulls into that province. The work of improving the common stocks of the country thus early begun by New Brunswick was not well sustained, for pure Shorthorns of the more valuable sorts are not very numerous in that province to day, nor indeed are many of them to be found in any of the maritime provinces. It may be that it is well for these provinces that Shorthorns do not fill the land there as in Ontario, owing to the difference in the conditions that govern the agriculture there as compared with that of Ontario. In stocking a country with any breed of cattle, *adaptability* is a prime consideration. It is more than probable that Shorthorns are not so well adapted to the heritage growing on the uplands and declivities of these provinces as they are to the more luxuriant pastures of Ontario, and that the preference shown for the lighter breeds by the people of these countries by the sea is well founded.

The Shorthorn has followed the settler of the great North West to his prairie home, and more than any other breed is utilizing the pastures of the great prairies on which until recent years the buffalo fed. That Shorthorns will retain their numerical superiority on these new homesteads is highly probable, but that they will do so to anything like the same extent relatively as in Ontario is equally improbable. Adaptability here as in the provinces by the Atlantic opens up avenues for the introduction of other breeds, though of different types and indeed for different purposes. The conditions along the eastern seaboard call for milking strains, as do those probably along the western, while the wide prairies traversing the centre of Canadian America call for the introduction of beefing animals in the main, as indeed all prairie countries do. Then the longer period devoted to pasturage, and the less convenient facilities for building, pave the way for the introduction of the Hereford, and the low temperature of the still keen frosts of winter days in many

sections will demand the presence of the Galloway with his well covered hide, and of the Kyloe with his weird majestic look and shaggy locks.

The agriculture of Ontario has for many years held a foremost place on the continent of America; and if her sons show but half the vigor of their dead fathers, so it shall be in the future. The live stock interest has for some years past been the prominent feature of her agriculture, and the prominent feature of the live stock interest has been the numerical supremacy of Shorthorns. The number of these imported into Ontario has been very large indeed compared with the importations to any one state of the American union. The export of Shorthorns to the United States from this province during the last twenty-five years may be compared to the waters of a stream, ever increasing in volume with their onward flow. Its history would be the story of wonderful success on the part of many of our breeders, and also that of the foundation of many of the most prominent herds at present in the United States. Shorthorns were first imported into Ontario from Great Britain and the United States the same year. In 1832 Judge Robert Arnold, of St. Catharines, imported the valuable breeding cow Countess = 782 = and her first calf, from the herd of Mr. C. H. Hall, of Harlem, New York State. The same year, Mr. W. G. Smith, of St. Thomas, imported the cow Susan, by Dutchman (3669), which was sold almost immediately afterwards to the Hon. E. Prentice, Albany, New York, thus early foreshadowing the splendid trade already referred to between Ontario and the United States.

The first importation of Shorthorns from England, of real benefit to Ontario, was made by Roland Wingfield, of Guelph, which consisted of two bulls and six females. The descendants of this admirably selected lot are even now the pride of a large number of breeders both in the United States and Canada.

Prominent amongst the names of succeeding pioneer importers, now numbered with those who were, stand

the names of the Hon. Adam Ferguson, Woodhill; Ralph Wade, sr., Port Hope; George Miller, Markham; and William Miller, Claremont.

The excellent work now being carried on by a number of Ontario breeders of much prominence has nearly all been done since 1860. This company includes a long array of names which will be held in grateful remembrance in that golden live stock age when scrubs will have become as rare as formerly they were numerous. The work they have done and which they are still doing is so chronicled in the Shorthorn herd-books that, like kind words, it can never die.

Though each one of a number of breeders who might be named has accomplished much in his particular line, for the extent of the work done the herds of Hillhurst and Bow Park must be assigned a foremost place. If Canada had never possessed any other Shorthorn herds than these, she might still have been proud of her record in the Shorthorn line. The sales from the Hillhurst herd exceed in value those realized from any herd of Shorthorns in the Dominion, and the prizes won by the Bow Park Shorthorns in foreign show-rings are without parallel on the continent. For the Tenth Duchess of Airdrie and fifteen of her progeny bred at Hillhurst, the Hon. M. H. Cochrane, the owner, obtained \$175,000, and it was the same enterprising breeder who sold in 1877, the two Hillhurst heifers, Third Duchess and Fifth Duchess, at Millbrook, Bowness, Windermere, England, for 4,100 gs. and 4,300 gs. respectively. The auction sale at which these animals were sold was one of the most successful Shorthorn sales ever held in England, and the major portion of the Shorthorns there disposed of had been bred on Canadian soil. It was from the Bow Park herd that Clarence Kirklevington was sent, which, in 1882, won the grand sweepstakes prizes over all comers in the living and dead meat classes in Chicago, a feat that has never been achieved before or since, and that may never again be repeated. He was a pure Shorthorn. It was from the same place that the

herds were selected which in 1888 and 1889, obtained easy victories over the best animals that all America could produce. The story of their exhibition in the leading show-rings of the great republic is one of continued triumph, notwithstanding that there was marshalled against them herd after herd in long array.

The number engaged in breeding pure Shorthorns in Ontario must embrace several hundred farmers. It is probably less now than formerly, as with the decline in prices, those who bred inferior animals found they did so at a loss. The decline in beef values during recent years has also had its influence. The future of the Shorthorn interest here will probably be more affected by the future prices of beef than by any other influence. If our shipping operations increase, we will want a still larger number of sires; if these decline, there will not be the same need for them, owing to the greater prominence that will then be given to dairying.

Veterinary.

FOR THE CANADIAN LIVE STOCK AND FARM JOURNAL.
Navicular Disease.

BY DR. GRENSIDE.

The discovery of the condition termed navicular, or coffin-joint disease, was the sum total of a lengthened period of intelligent observation and investigation.

For many years educated veterinarians, or those that were abreast of the times in those days, frequently confused diseases of the foot, particularly navicular disease, with shoulder lameness.

Those that are unexperienced and uninformed in such matters naturally fall into the same error now-a-days. This is the result of the natural tendency to confuse symptoms with the disease itself.

One of the results of chronic lameness of a limb is the shrinkage of the muscles, the result of not being used as freely, as naturally in the attempt to save as much as possible a member, the use of which causes pain. All the muscles of the limb under such circumstances shrink equally, but the wasting is more perceptible in the region of the shoulder, from the fact that the layer of muscles in this part is comparatively thin, and underlying them is their bony foundation, the prominences of which soon become conspicuous when the muscles shrink. On this account attention is drawn to the shoulder, and the lame animal is said to be sweetened.

The disease called sweeney does consist in the shrinkage of the muscles of the shoulder, the result of a strain of some of the muscles, but there is not the same general wasting as occurs from lameness lower down, for in sweeney, pure and simple, the shrinkage is confined usually to two or three muscles, and the depression is so well marked that there is no reason why it should not readily be distinguished from the general muscular shrinking that is the result of lameness lower down.

It will be an aid in coming to a correct conclusion for those who are placed in a position in which there is a chance of confusing true sweeney with the general shrinkage that occurs from chronic lameness in other parts of the leg, but particularly the foot, to remember that the lameness resulting from sweeney is almost always very slight, even when there is a considerable hollow in the shoulder; and on the other hand, there requires to be fairly well-marked lameness from the foot to cause shrinkage of the shoulder to any extent.

The reason that navicular disease so long remained a mystery as to its true nature, is from the fact that the changes that occur in the bone and joint of which it forms a part, are so slight that it requires a very intimate knowledge of the minute structure of the bone affected, to enable one to discover the change that occurs from the disease. Another difficulty in locating the trouble, is from the fact that the coffin-joint, of which the navicular bone forms a part, is so deeply seated in the hoof that local indications of the trouble are difficult to detect.

In some instances the lameness is very slight at first. The horse may take a few lame steps occasionally or be lame for a day or two, and then go sound for a short time, when lameness recurs. There is a stubbing of the toe, the toe of the shoe wearing more

than any other part of it, and a tendency to stumbling. The subject of this trouble generally goes out of the stable lame, and improves more or less on exercise. In other cases the lameness is continuous from the first, though of varying intensity. There may be some heat detectable in the foot, particularly at the heel, or some tenderness may be shown on tapping the foot about the middle of the sole or directly over the joint.

Pointing, or the advance of the lame limb in front of the sound one in standing, is another plain symptom in cases in which the lameness is well marked; of course pointing is observable from other forms of lameness the seats of which are low down in the fore leg.

A horse lame from navicular disease for three months will show some narrowing of the foot, and if the lameness persists the contraction increases.

This disease is usually confined to one foot, but occasionally both fore feet are involved, and in some instances a hind foot is the seat. In cases in which both fore feet are affected the step is short and stilty, the toes are stubbed, and the heel grows deep and upright.

The disease previously begins in the interior of the little bone called the navicular, that is situated at the back part of the coffin-joint, that is placed in the interior of the hoof. This bone forms a pulley over which one of the back tendons glides, it being inserted just in front of it into the main bone of the foot. The inflammation in the interior of this bone, if not checked leads to ulceration of the hard, smooth plate on the outside, and excites irritation of the tendon, and the surface over which it glides. In an old case, considerable change of structure is sometimes shown *post mortem*.

The most fruitful cause of this disease is hard and fast work on hard roads, particularly if the shoeing is bad, or in any way tending to alter the direction of weight. It is also an hereditary disease. Horses with small feet, deep heels, short, upright pasterns, are predisposed to this trouble.

It is very important to check this disease at its onset, for if change of structure takes place it then becomes incurable. As soon as lameness is noticed, rest should be given at once, for work aggravates the condition. Cold fomentions applied by standing the patient's fore feet in cold water a couple of times a day for an hour or so, will tend to check the inflammation.

If there is no perceptible fever in the feet, apply a Spanish fly blister around the coronet, and if, after all the roughness of the skin has disappeared, the result of the blister and the lameness still continues, apply another blister.

A run for a length of time either at pasture or in a straw yard after the lameness has disappeared, will aid in preventing its return. In cases in which there is a tendency to recur, slow work on a farm is preferable to driving. It is a disease much more frequently met with in light, than in heavy, horses.

In chronic incurable cases which are not convenient to relegate to a farm, the operation of nerving is resorted to with benefit, but of course, requires to be done under competent veterinary advice and by a skilled veterinarian.

Questions and Answers.

This feature of our Veterinary Department is for the free use of our subscribers. Answers to all questions sent us coming within the scope of this department, will be given by Dr. Grenside, of Guelph, Ont., a veterinary surgeon with a large practice and professor of Veterinary Science at the Ontario Agricultural College. Address all queries on paper separate from all matters of business, and write only on one side of the sheet. Give symptoms as fully and clearly as possible.

Worms.—G. P. B. B.: A mare of mine has been greatly irritated by the worms. A few come from her every day, about an inch and a half long with dark heads. All of the other horses keep in good order. Kindly let me know of a remedy. [If the mare is not in foal give her a purgative ball of aloes. If in foal purge gently with raw linseed oil. After purge has operated, give two tablespoonfuls of cream for three or four mornings before feeding.]

Swollen Legs.—B: I have a horse whose hind leg suddenly became swollen all the way up to the udder, and part of the latter was affected slightly also. She has been working in the binder next to the grain, and I could not prevent her eating it. I also fed her on green sheaf oats, and an over-feed of these is the only cause I can offer. She showed a tendency to swell on that leg before and had also a little scar on it which

seemed to be the seat of the swelling. The swelling has gone down on the upper part of the leg above the hock, but the hock and all below it still remains badly swollen. [The mare should be regularly exercised every day, and her bowels kept moderately open with small quantities of warm mash or roots given in the evening. The kidneys should be stimulated gently with two drachm doses of nitre, given every evening for a week in the food. Apply a woollen bandage to the swollen part immediately after work, and leave on several hours, or until the mare is taken out to work again.]

The Farm.

Injured Wheat for Seed.

Sometime ago W. M. Hays carried on a series of experiments with wheats that had been injured for market purposes in various ways, with a view of testing their value for seeding purposes. Wheat that had been bleached through exposure to rains and the heat of the sun after harvest, until the outer covering of the grain was opaque and brittle, he found to be uninjured for seed purposes. Rusted wheat, which was more or less shrunken in appearance, and of a deeper amber color than is normal, he states may be used for seed if not too much injured. Wheat that is blistered, giving brittleness to the hull, through the action of frost and other causes, may be safely used except in extreme cases. It is stated that wheat well in the dough stage, if subjected to a temperature below freezing, may be blistered, but when in the milk the same temperature produces frozen wheat, and on this he bases his distinction in using the terms. In the experiment with frozen wheat it was found that in the majority of cases the frozen seed germinated, but the wheat produced retained the badly shrunken appearance of the seed from which it sprung. As the conclusions of the whole experiment, the experimenter states that rusted and blistered wheat, if well cleaned, is safe to use for seed, while frozen wheat, which is asserted to be utterly useless for milling purposes, is likewise of no value for seed, as it cannot produce a good crop.

Prevention of Smut in Cereals.

Elaborate and thorough experiments, conducted at numerous experimental stations, confirm the faith that has been placed in Jensen's treatment of grains for the prevention of smut. At the Kansas Station fifty-one different methods were tried, and of these the most effective method was found to be Jensen's hot water treatment. In this process the seed is put into loose baskets through which water may readily strain, and these are first dipped into water heated up to 110° to 120° Fahr., so that when they are dipped into the scalding water soon after, at a temperature of 132° to 135° F., the temperature of the latter will not be very much reduced. When dipped, the seed should be thoroughly stirred so that the water may reach every grain. It is only necessary to immerse the seed in the first vessel for about one minute, as that is sufficient time for the seed to become warmed if stirred. It should then be immediately plunged into the second bath and well shaken and stirred about. Immediately after removal from this, plunge it into a vessel of cold water and then spread the grain out to dry. Stress is laid upon the importance of maintaining the proper temperature (132° F.) of the water for the second immersion, so that it may never rise above 135° F. or fall below 130° F. It is stated that the grain may be immersed in the scalding water for fifteen minutes without injuring it. The above is the method pursued in treating oats, wheat, and rye. In the case of barley, Prof. Jensen asserts that it must be previously soaked in cold water eight hours, otherwise the smut is not prevented.

Ripeness of Roots.

As the ripening process goes on in fruits, we know that the changes that are made in the character of their composition has a very noticeable effect in making the fruit more nutritious, principally because of the increased digestibility which is imparted to it. In roots the ripening is brought about in an artificial way through storing, but it is none the less beneficial. The time it takes to produce ripeness in roots varies, the two extremes, perhaps, being observable in the common turnip and the mangel. It is one of the common mistakes to feed mangels early in the winter before they have reached their highest nutritive value for feeding purposes. The experience of feeders in Great Britain places the feeding value of a ton of mangels at 7s. in November, whereas if kept until the following May they estimate their worth for feeding purposes at 10s. per ton. The mangel in early fall has a raw acid taste which, through the lapse of time spent in storage, becomes mellowed into a pleasant ripened flavour. For feeding in early spring no fodder will bear comparison with ripened mangels for keeping the stock in splendid condition, or for carrying them forward to grass with the least risk and most progress. A chemical change takes place in the storing during the winter, which increases the proportion of sugar and digestible albuminoids, while the acid taste becomes eliminated. The best practice in the light of experience and science is to utilize the turnips for fall and winter feeding for all kinds of stock, and reserve the mangels until late winter and early spring.

Points in Wheat Sowing.

Though wheat is a crop that has been cultivated for centuries there are yet many questions connected with its culture awaiting solution. The Ohio Experimental Station has endeavored to solve some of these by carrying on from year to year experiments in respect to the quantity of seed that should be sown per acre, the time of seeding, and also the depth at which it is best to put the seed. Their results briefly summed up are as follows: 1. Changing the variety of wheat used in the thick and thin seeding experiment, does not indicate that former conclusions were wrong, but the duplication of this test with another year's experiment, confirms the work of previous years in showing that five pecks of good clean seed will yield almost as much per acre as seven, while more than seven and less than five have produced fewer bushels per acre. 2. In general, as the seed per acre is increased the total yield of straw is augmented. Exceptional years do not warrant this conclusion, but the average of a series of years shows this to be generally true. 3. After seven years' trial we have found that, with a single slight exception, the highest yields have been produced from seeding during the last week in September and the first week in October. 4. For 1890 the product from the land seeded November 1st, was almost as high as where the seeding was a month earlier. This was probably due to the unusually open winter of 1889-90. 5. Seeding from 1½ to 2 inches deep will, in most soils, give better results than deeper or more shallow drilling. 6. Five years' experiments with the roller or wheel following in the track of each drill-hoe indicates that the practice may be a good one; at least it is worthy of a more thorough test.

Wary of Grain-Growing.

A leading local paper in Manitoba has this to say in advising the farmers of their province to give greater attention to live stock husbandry: "When the deductions for machinery, horse hire, rent of farm, labor, etc., are made from the price of the farmer's grain, he will find at end of the year

that his hog pen will, dollar for dollar invested, return him as much. We have individualized hog raising, but sheep and cattle raising, and horse breeding, are of equal importance. For our own part we are becoming heartily tired of the all-wheat growing style. It is virtually three months of feast and nine months of famine to farmers and merchants alike. There is at best too much risk in it. The districts which are most noted for diversified farming have the most ready money at all times. We have it from the lips of a gentleman who imported oats into Manitoba this year, that the stock-raising farmers of Strathclair and Silver Creek (Binscarth) could and did pay him more ready cash than the wheat growers of the rich Portage plains." These words have the ring of true metal, and we hope that they may catch the attention of those who have heretofore turned a dull ear to the possibilities of money-making in stock-raising. Regular, unbroken and profitable employment is given the stockmen, and that is far from the condition of affairs which surround the grain-grower. Further, the stockman rotates the fertility of his soil, but the grain-seller weakens his capital with the close of each season. Diversified agriculture is the best resource of our farmers, and on the latter the other members of our commonwealth more or less rely for prosperity.

Branch Agricultural Experiment Stations.

It is an apparent and deplorable weakness of experimental work with grains and fruits that the results obtained are only of use for the guidance of those in the vicinity in which they are made. Crops of all kinds are surprisingly influenced by the conditions of soil and climate which surround them, and for that reason it is an unreliable practice to draw conclusions as to the practical merit of any grain or fruit for one district based on its conduct in another. Specific instances could be given without number of unlimited trouble being given to farmers, and of even heavy losses being experienced by them through accepting too hastily and unconditionally the reports of success of different varieties in other districts. Our readers will assuredly have heard of many such experiences. This being so, the results from the work of experiment in grains and fruits must be confined in application, so as to be of use only to those residing in the near neighborhood of the station. Little progress can be made under such conditions, for as the conditions of different districts vary greatly, so do the results of the trials.

It must be clear to those giving the matter any consideration that the only way of surmounting this difficulty is to establish small branch stations in different sections of Ontario, to carry on work inaugurated by the central and leading station at Guelph. This is not a new idea, but the transplanting to our soil of a scheme that has been in vogue, and found successful by like institutions to the south of us. In some cases on the other side of the line, the different societies have taken the matter up and have secured with government assistance, ten acre plots of ground in various parts of the states, suitable for experimental work and at these they endeavor to duplicate the work that has been done in experimenting with grains and fruits at the chief station of the state. Under any circumstances it is apparent that the work of a single station with grains and fruits cannot be made an infallible guide for those residing in other parts of a province so diversified in natural conditions as ours. The results must be duplicated, and to do that efficiently there should be at least three or four stations of ten acres established in sections of the province as much

diversified in conditions of climate as possible. We trust that the different associations may see their way clear to pronounce upon the advisability of such a movement, and we hope that the proper authorities may give it that thorough consideration which we claim for it as a measure for making more widely applicable the results now obtained by our experimenters.

Drilling or Broadcasting.

The supremacy of either of these methods of seeding over the other depends upon the conditions under which they are required to work. For fall seeding the drill has the advantage, in that it buries the seed so deeply and uniformly that there is but little danger of winter killing. However, if the land is well prepared, and the seed harrowed well in after broadcasting, there is but slight danger of damage resulting on account of the rigors of winter. Another claim made for the drill is that by its use it becomes an easy matter to apply fertilizers at the same time that the seed is sown and in close proximity to the latter. There is certainly a saving of labor in this way of applying the fertilizers but we question whether the grain turns out any better through having special fertilizers applied so close to the seed. There is one thing sure, the broadcasted seed will tiller better than that which is sown with the drill. This may be partly due to the closeness of the seed in the rows when drilled, and it is no doubt due also in a small measure to the fact that the broadcasted plant has to send out its roots stronger and further in search for food, and that of itself tends to produce a greater tillering. In respect to the cost of the two methods, the labor and cost of seeding broadcast are less than in drilling. A good active sower will cover at least one-half the ground that a drill will, and in some cases, especially on heavy, clay, low land, he will do more. Then there is an expensive implement to keep over a season, and to make repairs, only to use it during a very brief period. The team's work also adds to the expense. Considering all sides of the question, and granting that under uncommon conditions the drill may be best, it must be conceded that the old method in vogue in the time of David, still keeps the lead for cheapness, quickness, and thoroughness.

Mixed Grasses.

The almost universal practice of sowing only timothy and red clover to furnish meadow and pasture, must be modified in the future if we are to get results that are equal to the possibilities that lie within our reach, in the line of future production. We must add to the list, lucerne and orchard grass if the aftermath is a matter of much consequence to us. And for the improvement of the hay in fineness, we must sow alsike clover. If we are only looking for hay we may leave out the orchard grass, which is inclined to monopolize the room and crowd the other grasses to the wall.

This, however, must be borne in mind: If orchard grass and lucerne form any considerable portion of the meadow, it must be cut early; so early that the timothy will not be in the best condition for cutting. In a meadow of this nature, however, timothy will not form a very large proportion of the bulk, so that the loss from this source will not be very heavy. Orchard grass and lucerne are both of a woody nature when ripe, and they ripen quite early. They should therefore, be cut at the proper stage for making hay, which will be at that period at which the red clover is also ready.

When orchard grass passes a certain stage it becomes very woody and will not be relished by the stock, and when lucerne gets too ripe it will shed its leaves in the curing, leaving the stalks bare and crisp.

After the meadows are mown there will then be a race between the red clover, the lucerne, and the orchard grass. The lucerne will make the most rapid growth, and the red clover will come next. Unless the season is very dry, the aftermath will be both abundant and nutritious.

Where the hay is the principal crop sought, the orchard grass had better be omitted. Red clover will prove an important factor in the first year's crop, but in the later crops timothy and alsike clover should be given the lead.

It should be borne in mind that the greater the variety of the grasses grown the more nutritious will the hay be. This is owing to the difference in the composition of the grasses. As food factors, the one is complement of the other. Their weight will also be greater, and they will also be finer and therefore more relished as hay.

It should also be remembered that in making a selection of mixed grasses the nature of the soil should be duly considered. For instance, alsike clover is best adapted to clay soils or to soils containing much humus, while lucerne is best adapted to soils that are loamy and possess a dry, deep subsoil.

On an average soil, which may be termed either a clay loam or a rich sandy loam, with a well-drained subsoil, the following grasses may be sown with profit:—

Red Clover	per acre	3lbs.
Mammoth Clover	"	1 "
Alsike Clover	"	1 "
Lucerne	"	2 "
Orchard Grass	"	2 "
Fall Oat Grass	"	1 "
Meadow Fescue	"	1 "
Meadow Foxtail	"	1 "
Red Top	"	1 "
Timothy	"	3 "

16 lbs.

The results from sowing such a mixture will usually prove very satisfactory for the first two years. After that period several of the grasses will disappear. The most prominent of those remaining will be lucerne, alsike clover, and timothy. These will form the principal portion of the bulk of the crop of the third year.

The question of grasses has not received that attention which its importance demands, either at the hands of our experimental stations or of the farmers. There are at present over four hundred varieties of grasses, and of these but a limited number have as yet been introduced into this country. Enough of these, however, have been introduced to give us good results if we grow them in best form. To try and do this is our more immediate duty, and others will in due time be introduced.

Prices of Farm Produce.

The prices of farm produce are already considerably dearer than they were a year ago, and that there will be a somewhat further advance before another crop grows is more than probable.

Not many years ago there seemed to be a glut in the world's production in agriculture, as in other things. This year it is somewhat different. In several countries the general yield of farm crops is under rather than over the average. This is notably

true of the United States. In September, a month during which a very sure estimate of the season's crop can be made, the corn crop as compared with that of other years was put at 70.1 per cent.; wheat, 75.5 per cent.; oats, 64.4 per cent.; barley, 78.6 per cent.; and potatoes, 65.7 per cent. The returns for October confirm this gloomy forecast. In these, the general average of wheat is put at 11.1 bushels per acre; that of oats, 19.8; barley 21; and the estimate for the corn crop was about the same as that made in September.

In striking contrast to these figures are the returns from Ontario, where, however, there is also in several respects a light crop compared with that of other years. The average of fall wheat in Ontario the present year was 15.8 bushels per acre; spring wheat, 14.3 bushels; barley, 26.7 bushels; oats, 33.5 bushels; peas, 19.1 bushels; potatoes, 98.5 bushels. These returns do not compare favorably with those of other years, hence with a constantly increasing home consumption we will have but little to dread abroad, unless it be barley.

The returns from several of the countries in Europe are not over encouraging, including Great Britain, where the usual story of damaged crops is being told this year again. Russia has not more than an average crop, and the wheat product of India is not apparently increasing.

In view of all these facts there must be a stiffening in prices of grain. We do not mean a rapid rise, but a gradual stiffening. This to the Ontario farmer means increased returns. Even though we have but little produce for export our home prices are in a measure controlled by those of other countries. When the prices for food for man and beast are good, the prices of meat of the various kinds cannot be low. We conclude, therefore, that the outlook for the Canadian farmer is better now than it has been for several years past.

We would guard our readers against expecting extravagant prices for produce which they may have to sell. The inter-communication between the various countries of the world will prevent this; that is, a pronounced shortage in any one country will soon be supplied by the surplus of another.

Extravagant prices are not good, for they introduce an unsettling element which leads to extravagant undertakings. When prices generally are firm, then it is that the farmer is in the way of well-doing.

Because of what we have said we hope our readers may not be influenced to store their surplus grain for higher prices, for the elements of shrinkage and waste and the interest on the money must all be considered. It is well, however, that farmers who have seed to buy should look well ahead and secure it before it is too late. In the line of potatoes for instance, it is difficult to see how they can fail to rise in value. The crop in the United States is only 61.7 per cent., that of Ontario is only 98.5 bushels per acre, and that of Great Britain has suffered very much from the blight. Potatoes were selling at Niagara Falls, on November 1st, for \$1.00 per bushel, and on the American side of the river for \$1.25 per bushel. It seems difficult, therefore, to expect any decrease in the prices paid for this crop, but rather an increase. The Maritime Provinces have a good crop and no doubt the people there will be glad to furnish seed to any who may desire it.

The stiffening prices of grain should more than ever lead farmers to look well to their methods of feeding it. They cannot afford to feed it extravagantly, nor in any other way than that which is likely to give the best results.

It may be objected that the prices of meat here are controlled by those of Great Britain. To a certain extent that is true, but this should not prevent our looking for good prices next year, since a large portion of the supplies of meat required by the people of Great Britain comes from the United States, where the supplies of food for producing meat are quite under the average.

Two-Rowed Barley for Export.

LESSONS TAUGHT BY OUR EXPERIMENTS, WITH COMMENTS ON THE TRADE OUTLOOK.

A somewhat disheartening outlook would now be before the barley growers of Canada, were it not for the foresight and activity shown by the Dominion Government in directing the attention of our farmers, long before the McKinley tariff was bruited, to the possibilities of developing a profitable export trade in two-rowed barley with Great Britain, and in accumulating facts in respect to the requirements of the British brewers, and best methods of producing the quality of grain in most demand. The imposition of a duty of thirty cents per bushel is an embargo on our trade with the American buyers which cannot fail to at least limit our market there, if not do away with it completely. Canada is endowed with natural facilities for the production of the highest quality of barley, and it was with a full knowledge of this and also of the reliance of our farmers upon this crop that led the Dominion government to direct attention to the markets of Great Britain—the only country in the world besides the United States that consumes more barley than she produces. Believing that the movement started under way by the Dominion Minister of Agriculture was wise and timely, and in the interests of a large portion of our farming communities, we were glad to assist in this work, by forming and stimulating a competition in growing two-rowed barley amongst two hundred of our readers in the various parts of our Dominion. We offered valuable prizes with the end in view of securing reliable information in respect to the possibility of producing under our conditions a barley suitable for the British market.

The highest results obtained. As intimated in our issue of last month, the winner of the first prize, E. Lewis, of Burford, Ont., grew from his sample, a crop that yielded at the rate of 46 bushels to the acre, weighing 55 lbs. per bushel. Moreover the sample forwarded us was very bright and plump. The second prize-winner, S. Smith, of Belmont, Ont., obtained a yield at the rate of 44 bushels per acre, weighing per bushel 56 lbs. The highest weight per bushel of cleaned grain, namely, 57 lbs., was obtained by the third prize-winner, B. Lawrie, of Mongolia, Ont., with a yield of 40 bushels per acre. The fourth prize returns sent in by Louis A. La Pierre, of Paris Plains, Ont., gave a yield at the rate of 40 bushels to the acre, weighing per bushel 51 lbs. Besides these there were twenty-one others who obtained weights varying from fifty to fifty-six pounds per bushel. Considering the large yields per acre that the winners obtained, and the general unfavorableness of the season for barley-growing, we feel safe in saying that the results are exceedingly encouraging.

Methods of the most successful growers.—In order to grow this crop it is evident from the knowledge we have been able to glean from the results of our competition, that the matters to give most attention to are the previous cropping and manuring, preparations of the seed bed and time of sowing. In regard to the preparation necessary for this crop, without the evidence before us, we would in the light of past experience in barley-growing, say that the best method of procedure is to precede the barley land with a crop of roots. This crop not only cleans the land but it affords an excellent opportunity to apply farm-yard manure, with the advantage that before the barley comes on the richness of the soil will be tempered so as not to induce too rank a growth of the barley straw. In the case of all the winners, with the exception of one who chose land that had been previously cropped with onions, roots preceded the barley, and in the greater number of instances this is true also of those

who obtained fifty pounds or over to the bushel of cleaned grain. Another point clearly brought out is the necessity of sowing the grain as early in the season as possible. As two-rowed was found to be about a week later in ripening than the common variety in most instances the need of this is apparent. We learn that at the Dominion Central Farm experiments bearing directly upon this were conducted during the past season. A series of experimental plots sown with the prize prolific variety, with a week intervening between each gave the following results per acre: 1st week, 40.5 bushels; 2nd week, 24.6 bushels; 3rd week, 16.3 bushels. These facts in conjunction with the data we have collected, lead us to emphasize strongly the importance of growing the grain as early in the season as possible. The first prize-winner, who obtained a remarkably fine, plump sample, and an exceedingly large yield, was the first to get his seed in the ground, he having sown it the 12th of April.

The possibilities of developing an export trade.—The most vital questions bearing on this are, have we the facilities, natural and otherwise, to profitably produce a class of barley suited for the British market; and if the right article is produced, will the demand be such as to cause it to make up a large portion of our exports? As six-rowed barley will not yield as much extract as two-rowed, and as the six-rowed cannot be mixed with the two-rowed in malting, owing to the fact that the kernels of the two-rowed are plumper, and hence longer in germinating, it becomes fixed that we can only hope to gain entrance to the English barley market by producing the two-rowed variety possessed of the attributes which the buyers in that market require. Can we do this? As we have before observed, reports from all sources are very much in favor of the two-rowed variety, some even asserting that they have found that it did better in their districts than the six-rowed. Passing from the producers' point of view to the consumers', we find that the samples hurriedly collected and sent by the Dominion Government to the Brewers and Malsters' Exhibition in London were very favorably commented upon by the best of their experts, and in one case a cable dispatch has been forwarded to a produce company in Toronto inquiring if a quantity of the Duck-bill variety of the same quality as that at this exhibition could be purchased. From this and other data to hand, we feel assured that we have the facilities for producing barley of the quality they desire to secure; and as Professor Saunders says the lowest price at which any sample of the barley of last year was quoted was 30 shillings, and the highest 42 shillings per quarter of 48 lbs., it is self-evident that the market will prove a profitable one when secured. We must remember that there are other competitors for this market, and that only the best product will secure it. Denmark is the strongest rival in the field and it will not be amiss for us to point out the moral of her efforts of recent years in this direction. What they have accomplished clearly show the value of change of seed combined with careful selection. Only a few years ago, states an authority, the barley production of Denmark was practically confined to a coarse, thick-skinned native grain, suited only for distilling or grinding; and the change is mainly due to the energetic action of the Danish Royal Agricultural Society with the assistance of the Government. The revolution in barley culture in Denmark is stated, by those who are in a position to know, to be due to the practice followed by them of importing, year by year, small quantities of the finest English and Scotch barley for seed, and now Danish barley ranks as one of the best malting barleys in the market. We have no doubt, with our excellent conditions for barley growth, that if our farmers gave heed to the facts brought to light by the authorities of the Dominion Central Farm, and by our own barley competition, there is every possibility of developing an exceedingly profitable trade with Great Britain in two-rowed barley. The facts of the present point that way, and we have no reason to doubt but those of the future will endorse the conclusions we have drawn.

THOMAS DEVLIN, Cairnmill, Thornhill, Dumfriesshire, Scotland, writes: "I look for your paper earnestly. It contains a lot of interesting news to people on this side as well as at home. My neighbors seem as anxious as I am for it."

MR. THOS. DICKSON, of Attwood, writes: "Your Stock Journal just to hand for this month. I must say it is improving every month. It is said the Farmers' Institute is a good thing for farmers, but I think your Journal is as good as an Institute itself. Your paper is certainly calculated to do a great amount of good to the country."

Wheat Crop and Export Cattle.

(From Our Own Correspondent.)

WINNIPEG, DECEMBER, 1890.

The past month has made a splendid change in our weather, but a rather unpleasant one in most other things. We had frost enough early in November to close up our rivers, and a slight flurry of snow, but now as I write the weather is perfect, dry and mild, with the possibility of the rivers again breaking up. The threshers are tearing through our stacked grain at a great rate, and in some places the quality is considerably improved, as sweating in the stack has cured it properly. Marketing has been going on at a still greater rate, as the country roads are in the best of condition, and the constantly increasing network of railroads is making long rides to market a thing of the past. Only in the remote south-west is there now any lack of facilities, but the development of the upper Souris river country is badly checked still. In Brandon especially there have been very extensive daily deliveries of wheat, most of it going at from too frosted to too hard. Perhaps the best district all over is the stretch from Alexander to Virden, where early rains did them good, and fewer drawbacks have since occurred to discount their yield.

But while the weather has come all right the markets have gone all wrong. The great financial shocks elsewhere have broken the Chicago market, and our own has of course followed suit. Before this is in print the shock may have been so far spent that prices have rallied, but in the meantime the farmer must sell at a sacrifice or lose the benefit of the good roads. A few may be able to make terms with the elevator men for space, and hold on at their own risk. The buyers have got badly hit already, as they have been taking all they could get at rather high figures for the sake of the lower freight by the lake route, and are loaded up just when instead of a living profit they must sell at a dead loss, or hang on to the risk. Those few farmers who sold out their crop at early figures have made a good thing, but the men who have just begun to market will feel very sick over the present turn of affairs.

The North-West must have sent out this summer and fall \$250,000 worth of cattle, and in this line too, I fear that there has been a very unsatisfactory return for our dealers. The export trade is comparatively a new one so far as our stock is concerned, and certain developments have taken place that must be looked into before another season. Our men when they go east with their train loads of stock find when they reach Montreal that they can hardly escape falling into the hands of a ring of local harpies, who do their best to collar any profit that may be in the business, and leave the western men in the hole every time. Every beast that leaves this section is weighed in its very worst condition, just when off the cars, after a journey, it may be of 2,000 miles, and the local registers know the weights to an ounce, while our men must buy on their judgment. Then every foot of space on the ocean-going boats is contracted for, and here again they have us where the hair is short. If the markets are good in England, they refuse to sell space, but are quite willing to buy stock—at their own prices. If those prices are refused, these same parties get good pay for their yardage and feed. If there is a glut on the other side, the western men may buy all the space he wants, on the eastern contractors' terms. In this way our dealers have, as a rule, got badly "stuck" this last summer. But we don't intend to do business on this principle any longer than we can help; and though we do not see our way through just at present, we have got all this winter to find it out. These eastern men are tolerably smart in their own way, but we are not exactly fools; whatever damages our dealers damages us as a community, and we are bound to keep out of the hole. There must be free trade in both yardage and ship-space, or to parody the old English song, "Twenty thousand western men will know the reason why."

There are some far-seeing men here who, instead of selling at present very low figures for unfinished beef, will feed on till Easter, when about the only really good figures of the year are going for first-rate beef. As our southern neighbors are selling every thing that the canning factories will give money for

there is just a chance of our selling across the line if you eastern people will not come up to a decent figure for beef.

The prices going these last two months for wheat will perhaps give you an opportunity of seeing a good many of our people back in their old homesthis winter. That is a pretty accurate idea of how things have gone with us the last season. We have had a good few capable men from the Old Country of late, to see what we can do. Of these, the farmer delegates are the most conspicuous, and the only trouble is that it must be impossible for them within moderate limits to give any but the most meagre report of the vast stretch of country over which they have been conducted. The low prices ruling for beef has led a good many more to think of sheep. One of our best flocks is that of Messrs. Riddell, on Tobacco Creek, of which three-fourths are good grade Shropshires, the rest pure Leicesters and Shropshires. The Leicesters are little too soft and open in the wool for us, and the Shropshire with its grades, I look upon as the best we have yet handled. The Tobacco Creek flock are kept by constant weeding out of aged ewes in the best state of breeding efficiency, and give good returns of both lambs and fleece. Pigs would pay still better, but we have been so much carried away after the chances of a good crop of wheat that we have had no time to look after such small deer.

The First Principles of Agriculture.

The construction of a text-book to present the vast subject of agriculture in comprehensive, concise, and simple form, is a task requiring of the authors a close acquaintance with the fullest details and the ability to take a wide survey of such an exceedingly broad subject. In a work such as that which we have under review, the sacrifice of minor essentials in favor of those of most intrinsic worth is justifiable; but in the book which Prof. Mills and Prof. Shaw have given to the agricultural public, we may truly say that the subjects bearing upon agriculture which they have not written upon in this manual are exceedingly rare.

In the opening chapter, "Definitions and Explanations," Prof. Mills, in a direct, clear, and logical style peculiar to all his chapters, initiates the reader into the simplest rudiments of elementary chemistry. This is followed by the same writer by a chapter on "The Plant," in which the composition of the plant is touched upon and the reader is also given an insight into the nature of the seed, and the process of germination. The chapter is completed by explanations having reference to the growth of plant, methods of their development, and seed formation. The chapter on "The Soil" is one of unusual interest, as the subject is treated of in a very comprehensive and thorough manner. The formation of soils through the action of air, frost, water, plants, and earthworms, is a part that holds the interest of the reader throughout. The composition of soils, both from a practical and chemical standpoint, is fully discussed and in a practical manner this topic is brought into such prominence as it rightly deserves. Remarks follow on: "Plant Food in the Soil," "Active and Dormant Constituents of Soil," "The Best Soil," "Exhaustion of Soil," "Restoration of Fertility," and a host of other live topics, which in all make one of the best chapters on soils that has ever come under our notice. It has undoubtedly entailed much research and deep thought on the part of the author.

A series of chapters by Prof. Shaw are then commenced, in which "Tillage" is thoroughly discussed in an energetic and practical way, including extensive instructions as to "Drainage" in all its details. "Manures and Their Application" is made a very interesting and valuable chapter. "The Preparation of the Soil" is next dilated upon, in which plowing, cultivating, harrowing, and rolling, all come in for a full share of attention. Following the chapter on the "Rotation of Crops" comes a chapter on "The Crops of the Farm," which contains a mass of information of great practical value. It is a chapter that in itself would make a creditable work for reference and study. All the crops of the farm, "Hay," "Pastures," "Wheat," "Rye," "Barley," "Oats," "Peas," "Turnips," "Corn," etc., etc., are treated of in a manner which makes this chapter very useful and instructive. "Crops for Soiling" is full of useful hints and helpful suggestions, and after

it follow two chapters, one on the "Weeds of the Farm," and the other on "Insects," by Prof. Mills, and these are the only ones, with the exception of the chapter on "Forest Trees," by Prof. Shaw, which reflect in their incompleteness the effects of the condensation which was necessary to make the work as wide in scope as possible. "The Principles of Feeding" is the longest chapter in the book, in which the scientific principles of feeding are discussed at great length. The subject is analysed very minutely, and being written in pleasing style, it will be found interesting-reading to those desiring to obtain an insight into the science of feeding. Amongst the topics discussed are such as these: "Construction of the Animal Body," "Composition of the Animal Body," "Functions of Food," "Feeding Stuffs," and "Feeding Standards." Chapter XIV. on the "Feeding, Care, and Management of Horses, Cattle, Sheep, and Swine," is one of the best treatises on this subject that the Canadian farmer could obtain. After a short chapter on "Breeding," Prof. Shaw contributes a valuable chapter on the "Breeds of Live Stock." This chapter, fully illustrated by engravings of animals representing the different breeds of horses, cattle, sheep, and swine, is written in that clear style which has its birth in a masterly grasp of the subject. The early history of the various breeds and their present characteristics and qualities are treated of in the light of ripened experience and thorough research. Prof. Mills follows with a chapter on "Dairying," in which the best methods and latest views applicable to that industry are presented in a very practical way, as all our readers are aware, through our reproduction of that chapter in our November number. The chapter on the "Silo and Silage" will satisfy the interest of a host of progressive farmers. The book is brought to a close by a chapter on the "Cultivation of Forest Trees."

This work, besides meeting the many requirements of a thoroughly useful text-book, will prove a mine of useful and reliable information for those engaged in Canadian farming. The authors are to be congratulated on the way they have completed their arduous task, and the publishers also for presenting to the reading public the labors of these authorities in a pleasing and useful form.

Agriculture in Public Schools.

A MORE INTELLIGENT SYSTEM OF FARMING WOULD RESULT.

The following letter addressed to The J. E. Bryant Co. (Limited), written by one who has long publicly advocated agricultural instruction in public schools, will be read with interest by our readers: DEAR SIRS,—Please accept my hearty thanks for copy of "Public School Agriculture." I have examined the book, read the greater part of it, and am of opinion that it is well suited for the purpose for which it is intended.

In Canada, agriculture is by far the most important of all industries, yet the tendency of the teaching in public schools has heretofore been to educate pupils for every business and profession except agriculture.

I think "elementary agriculture" should be made a regular subject in all rural public schools, because to the young farmer of this age it is of more importance than mathematics, geography, history, or grammar. For the last thirty years I have publicly advocated this movement, and have met with but little opposition to my opinions on the matter.

I think this book should be in the library of every farm home, because it would be more useful to the farmer's son in his business than any other book that I know of.

In Ontario, the number of acres judiciously farmed and producing with profit, is but small as compared with the great area which is being continually cropped at a loss of energy and capital. I know thousands of farmers (so-called), who are working hard every day, yet at the end of the year are worse off, financially, than the men they hire at one dollar per day.

There is an advanced class of farmers who are well worthy of being designated as progressive farmers. I would not be understood as trying to cast any aspersions on them; but I have no hesitation in saying that the whole of the cultivated area of land in Ontario, is not now producing nearly one-half of what it is capable of producing under a more intelligent system of farming. And I am sure the able and enterprising authors of this book know better than I do that such is the state of the country. They, as well as the Hon. Minister of Agriculture, are entitled to our praise, admiration, and gratitude for what they are doing for the advancement of agriculture, which must be a direct benefit to every individual of the community.

Cataraqui, Ont.

D. NICOL.

Education in Farming.

CONVINCING CLAIMS MADE FOR AGRICULTURAL INSTRUCTION IN PUBLIC SCHOOLS.

Editor THE CANADIAN LIVE STOCK AND FARM JOURNAL:

SIR,—The little work just published, entitled the "First Principles of Agriculture," prepared by President Mills, and Professor Shaw, of the Ontario Agricultural College, will bring the question of agricultural education in our Public Schools more prominently to the front. Before speaking of its use in the schools, let me say a word about the book itself. After a careful look over it, it strikes me as being admirably suited for the purpose for which it was got up, viz., a text-book on the First Principles of Agriculture, to be used in our public schools. That, however, was to be expected, for the Government had wisely placed the work of preparing it in the hands of men who were in every respect qualified for it. In it we find a great deal of useful information, but in that shape which will not only make it valuable as a text-book to be used in schools—but one which should be in the house of every farmer in the country.

It is not too much to say that there are very few of us farmers who are so well up in the subjects dealt with in that work, but might derive a good deal of benefit from the perusal of it. It is true that there is no knowledge more valuable to the farmer than the experience of practical men drawn from the concurrent testimony of those engaged in his own calling—but it is also equally true that if farmers had a more intimate knowledge of the nature and character of plants and soils, and if we knew a little more about entomology, chemistry, and those other sciences which bear directly upon agriculture, we would make better farmers and be less likely to have to pay dearly for our experience in many cases.

The question as to whether agriculture should form a branch of study in our public schools, may be considered in a large measure, settled—the majority of those farmers who have thought of and spoken on the subject have said, yes, the government, by authorizing a text-book has taken the first step in acceding to their wish. My own opinion is to say, at least, that it would be as useful to have a knowledge of the common things around us—plants, soils, stones, birds, insects, minerals, etc.—as some of the history and geography now taught. Agriculture might be taught as a branch of what might be termed "Knowledge of common things," including the elementary ideas of those branches of science bearing particularly on agriculture, horticulture, and arboriculture. If this was done, and care exercised that the teaching did not degenerate into a dull and lifeless routine of book-work, the instruction might be made, in the hands of a live teacher, not only useful but exceedingly interesting—and would do much to fit the pupils to study such subjects intelligently when they come to take them up systematically afterwards—and those who took no higher course than a public school one, could not fail to be the better of such instruction, and would be much better fitted to make observant and broad-minded farmers.

It may be taken for granted that for some time to come the subject will not be very well taught, but that would gradually pass away as the teachers gained in experience and knowledge of the subject. This raises another question—might it not be well for it to be made compulsory for all teachers to take a science course in the High Schools?

Taking it for granted that it should be taught, and will be taught, it would appear then that the best course to follow would be to make it a compulsory subject, otherwise it would be apt to be left severely alone, or if taught, would be often done merely to please a board of trustees, and in such a manner that little good would be gained by it, and might almost as well be left alone. Witness the so-called teaching of temperance. What would be the result if an option was allowed between agriculture and temperance in certain times and places?

Now I am well aware that the argument may be used that the programme is already overcrowded. My answer would be that while the three R's must be taught daily, other subjects might in a measure be dispensed with, or with agriculture taught on alternate days. What I wish to emphasize is this, that elementary agriculture should be taught as a regular subject of study in our country schools, and not merely an optional subject, and that it should have the same standing as any other, say grammar or history. Would it not be well for the farmers of the country to place their views unmistakably on record on this matter? I for one wish to do so, believing as I do, that the best and highest interests of the country are bound up with successful farming, and that national, as well as individual, prosperity will be mainly based on it; believing also, that the time is inevitably approaching, or rather that it has come, when farmers must look less to high prices for remuneration, than to improved tillage, and to meet these changed conditions successfully, so as to enable us to cope with the keen competition of other nations, what more powerful factor can be brought to bear in that direction, than instructing those who are

going to be the farmers of the future along those lines specially bearing on their own calling? It will assuredly make them better farmers and better citizens, and will do much towards adding to the material wealth of the country.

JOHN I. HOBSON.

Mosborough, November 17th, 1890.

Farmers, Educate Your Sons.

Editor CANADIAN LIVE STOCK AND FARM JOURNAL:

SIR,—Some of the farmers of Canada tell us in all seriousness that it will not pay them to educate their sons at a school of agriculture, and in many instances it is a vain effort to try and dislodge them from this position through any of the usual lines of reasoning. Like the ostrich when pursued to extremity, they deliberately shut their eyes to all argument conducted on the usual lines, and take it for granted that their position is impregnable. Fortunately there is still left one mode of reaching some of them which will be effectual when all other modes fail. It is this: It some young men settle in their midst who have been thus educated, and leave them in the race of successful farming, a line of argument is presented to them which there is no gainsaying. The young men who graduate from our agricultural schools should always keep this in remembrance. They are the milestones set up here and there in the land which will point to the farmers the way in which their sons should journey. It should be cause for inexpressible regret if they by their inefficiency should prove false waymarks.

Contrary to a widespread belief amongst farmers, I have good reason for concluding that most of the students who have graduated at the Ontario Agricultural College, and those who have thereafter turned their attention to farming, are doing good work. I have also good reason for believing that a large majority of the young men who have passed through our college have returned to the farm and are at present thus engaged.

My attention was arrested very forcibly by the evidence of the good work that our young men are doing in the Maritime Provinces, as presented at the St. John International Exhibition and at the Provincial Exhibition at Charlottetown, held respectively in the months of September and October. I think I am safe in saying that nearly one-half the good stock on exhibition at St. John was brought there by graduates of the Ontario Agricultural College, or by those with whom they are associated in business.

J. B. McKay, Stellarton, N.S., had by far the largest and best exhibit of Clydes upon the ground, and carried away the lion's share of the prizes. W. H. & C. H. McNish, Lynn, Ont., captured nearly all the prizes on Shropshire sheep—a large portion of them in Yorkshire pigs—nearly all of them in Suffolks—more than half of them in Berkshires, and all of them in Lincoln and Southdown sheep. In Holsteins, J. E. Page & Sons, Amherst, N.S., carried the chief prizes, including the herd prize. One member of each of these firms graduated at our college, and at the same exhibition a number of prizes were borne away by the stock of other college graduates, whose addresses I am not able to give with sufficient accuracy. Then, at Charlottetown, the only herd of Herefords shown, owned by Mr. Palmer, were brought from Ontario by his son William, now a three-year student at this institution. There, also, at Albert College, Charlottetown, Prof. Shuttleworth, one of our graduates, is engaged in teaching agriculture to the young men of Prince Edward Island. Others again who were not able to attend these exhibitions, as Paul C. Black, of Windsor, N.S.; N. S. & B. Hall, of Sackville, N.B., are rendering noble service in practical farming, and B. E. Patterson, B.S.A., is creditably conducting a newspaper at Sackville which is valuable to the farmer. On the principle of judging the tree by its fruits, all this is very satisfactory to those who are at present connected in any official capacity with this school; and should be very satisfactory also to the farmers of the Maritime Provinces.

It is also my conviction, and it is based on evidence, that numbers of our graduates are doing equally good work in other portions of the Dominion.

I ask you then, farmers of Ontario, is it your duty to give your sons an education at a school of agriculture, or should they be allowed to enter the race of this one life on the upgrade of defective preparation? Is it not simply cruel to ask your boys to begin their journey on this upgrade when you are able to place them in that position which will enable them to commence the race on an equal footing with those who enter the professions? Do not say you cannot spare them, for in ninety-nine cases out of a hundred you can. If you said you did not care to do without their services on the farm for two years, you would put the question in its true light. Allow me to say to you, fathers of the farm, give your boys a chance. It is a duty which, as parents, you owe to them.

I would also like to say to the young men of the farm, embrace the opportunity while you may of equipping yourself for future work on the farm. But few fathers of the farm would

stand in the way of their sons taking a course at a school of agriculture, if the latter ardently desire it. Young men of the farm, I would that every one of you could be favored with a course at a school of agriculture, for I know well the advantage it can afford you; and I hope you will leave no stone unturned to enable you to secure these advantages.

Young men of the farm, perhaps you do not know that you may almost put yourself through at our school of agriculture by your own exertions. It means hard work, but it may be done. It has been done by others and it can be done by you. When you read this paper remember, please, it means you; and give the whole question your most earnest consideration.

The Province of Ontario and other portions of this Dominion are growing great by means of agriculture. Agriculture will be the leading interest in most of these provinces for long years to come. Educated farmers, other things being equal, will take the lead in this great interest, and those who are not educated will fall behind. Ponder the words—*will fall behind*. They have a significance more sad than the poplar leaves in October. Since the world began it was never demonstrated that uneducated brain and muscle were equal to educated brain and muscle, nor is it likely to be so demonstrated now.

Consider well then, ye farmer fathers, the duty ye owe to your farmer sons in the line of education. Remember, please, I am talking to you. You must take this home to yourself or stop reading. If you are neglecting the education of your farmer son, I tell you to your face you are treating him as an alien and not as a son. Now don't throw down this paper angrily, please, and say the writer is a fool or something as bad, for reasonable people never take this course. The question is not whether the writer is foolish or wise; it is, are you trying to educate your farmer son? Are you giving the boy fair play? Now tell me, in all honesty, will not the reflection be to you unutterably sad, when your hair whitens a little more, that you have kept your son a hewer of wood and a drawer of water in the community where he might have been one of the foremost men but for the injustice done to him by you, when you neglected to give to him a proper education? The oak that fell last winter shall never rear its head again; the leaves that withered last autumn shall never flourish green again, likewise your chances for educating your farmer boy will soon be gone and will come again no more.

THOMAS SHAW.

Ont. Agr. College, Guelph, Nov. 14th, 1890.

Around the Counsel Table.

Where no counsel is the people fall; but in the multitude of counsellors there is safety.

Sheep Breeding.

1. Give briefly six definite reasons why you would recommend the farmers of Canada to use rams of the breed you are breeding.

2. Do you consider it a profitable and good practice to use ram lambs for breeding purposes?

3. In your view, what are the three most important matters an inexperienced shepherd should observe in establishing a small flock for breeding and market purposes?

4. Through what means might sheep husbandry be further developed in Canada?

The Shropshires' Chief Qualities—The Dog Nuisance Should be Checked—Better Market and Shipping Facilities Needed.

I. (1) To improve the quality of wool. (2) To improve the quality of mutton, so that we would have in the grades the kind of sheep suitable for the export trade, as shown by the veteran exporter, Ald. Frankland, in his address to the sheep breeders at Toronto last March. (3) To get the early maturing lambs, whose carcass contains a more than average proportion of lean flesh and of fine flavor, just what brings the highest price in leading markets. (4) To have a crop of lambs that give little trouble at lambing time, as they usually drop good and strong, soon getting on their feet, and very readily taking to suckling. (5) To work into a class of sheep which are in great demand, not only in their native place, but in North and South America, Germany, Australia, New Zealand, as

well as on account of their ability to adapt themselves to many different soils and climates. (6) Because by the use of a well-selected Shropshire ram on the flock, and with proper attention to the produce in fitting for the market, there is no ordinary line of farming; that I know of which will give so large and early returns for capital and labor expended.

II. Strong, early, and well-developed lambs may safely be used to a limited number of ewes—about 15, and there is the advantage of testing his breeding qualities previous to being used on a larger number, when a shearling; with the further advantage of being more saleable after two years use, the time rams are usually kept in the same flock.

III. (1) Suitableness of the farm for sheep husbandry. (2) The selection of the breed. (3) The market.

IV. (1) By making and enforcing laws, with a view of keeping the dog nuisance in check, as it is now nearly impossible to keep sheep near cities, towns, and villages, and I may add in the neighborhoods of many persons who keep numbers of half-starved brutes. (2) By getting access to near markets for our surplus butcher stock as cheaply as we now may with our breeding animals. (3) By railways giving better facilities and lower shipping rates. At present the importer from Michigan or Illinois will get nearly as low freight rates from Montreal to those states as we in Central Ontario will get from the same port; and when we want to ship a dozen sheep to a customer, we must go the expense of crating them all, or pay for a car, unless a special permit is sent for to headquarters.

JOHN CAMPBELL, JR.

The Improving Value of the Southdown—Experience Endorses the use of Ram Lambs—New Beginners Should Seek the Counsel of the Veterans.

I. The reasons why we would recommend the farmers of Canada to use Southdown rams are: (1) They are small consumers, and give a large return in weight for the amount of food consumed. (2) In point of early maturity they excel most, if not all other breeds. (3) They are prolific breeders, raising a larger percentage of lambs than most other breeds. (4) They are the most healthy, not subject to catarrh, etc., are hardy, and well adapted to stand the inclemency of all sorts of weather, let it be rain or snow. (5) Their mutton is of the very best quality (none to equal it), and commands a higher price than that of any other. (6) The fleece is of medium weight and quality, and brings the highest price of any wool in the market, being entirely free from dirt or cull of any kind.

II. In my experience the using of ram lambs has always been attended with good results, and I think it quite safe to use a well-grown lamb to a limited number of ewes, say 25 to 30. Owing to the fact that Southdowns mature earlier, it may be more practicable with them than with lambs of other breeds.

III. (1) To go to some successful and reliable breeder for his foundation stock. (2) To get all the advice possible from him in regard to their care and management. (3) To put in practice the advice so obtained as closely as possible, and make close observations of the progress made.

IV. Sheep husbandry might be further developed in Canada, (1) By exercising more care in selecting better stock rams. (2) By providing more suitable food and shelter for all seasons of the year. (3) By breeding the kind of sheep most suitable for the market. (4) By castrating all ram lambs not required for breeding purposes at an early age. (5) By obtaining a more thorough knowledge of the care and management of the flock to make it profitable.

JOHN JACKSON.

The Claims of the Merino—Use of Ram Lambs Not Profitable—Agitate Sheep Breeding through the Press.

I. In reply to the first question I would say: 1. Quality of wool. 2. Economy in keeping. 3. Hardiness. 4. Because of the scarcity of this kind of sheep there is not likely to be an over supply, hence they give a good return to those engaged in breeding them. 5. For a combination of wool and mutton producing qualities, as there is not likely to be a surplus of both at the same time, though there might be of either separately. 6. They will cross well on any

breed and not diminish the size of the offspring to any extent, while at the same time giving them plenty of bone.

II. I do not consider it profitable to use ram lambs for breeding purposes.

III. 1. Secure sheep of good quality. 2. Care in selection and breeding. 3. Good care in every way.

IV. By sheep-breeders meetings and by articles in the public press on the sheep industry, the people could be educated as to the profitableness of sheep rearing, and thus many would be encouraged to venture in this profitable department of Canadian farming.

ROCK BAILEY.

The Dorset Horned Sheep—Only Use Ram Lambs in Small Flocks—Advice to Beginners.

I. It gives us pleasure to answer the questions you ask: (1) The lambs mature very early for market purposes and are very fleshy. (2) They impart hardiness. (3) They will improve the quality of wool in most cases. (4) They will improve the quality of mutton. (5) The progeny of the cross will produce earlier lambs. (6) The Dorsets are exceedingly good mothers.

II. We do not advocate the use of ram lambs save only with very small flocks.

III. (1) Use judgment in the selection of the flock. (2) Avoid in-and-in breeding. (3) Pay every attention to the flock and feed them fairly in winter.

TAKEWELL & HECTOR.

Use Pure-Bred Rams—The Worth of the Oxford Downs for Crossing Purposes—Legislate Against the Dogs—Produce Mutton of the Highest Quality to Cultivate the Public Taste.

I. Of all things I would recommend breeding to pure-bred rams. It is not possible if it were wise for every farmer to be a breeder of pure-bred sheep; but in these times it is within the bounds of possibility for nearly every farmer who keeps sheep to mate a pure-bred ram of some one of the breeds with his ewes, for Ontario is particularly fortunate in having many breeders of the different breeds; and right here pardon me if I draw attention to a comparatively new breed, not only in Ontario, but in England, namely, the Oxford Downs, and as I am advocating the use of pure-bred rams, I briefly give a few reasons in favor of using rams of this breed. (1) They are among the largest breeds of sheep, not only in size but in weight, and are therefore capable of producing sheep that can be exported with the greatest profit. (2) As they are a dark-faced breed, and belong to the family of Downs their mutton will command the highest price in the British markets. (3) The wool of this breed is of medium fineness and of a quality suitable for the manufacture of cloths for general use. (4) From my observation they are as prolific as any other breed that has come under my notice; for example, a friend of mine has only two Oxford ewes, they were bred last fall to an Oxford ram, and produced six lambs (and raised five of them). (5) They are a hardy sheep, the wool being thicker and finer than some other breeds, and they are not as susceptible to disease brought about by sudden changes of climate, or being caught in cold rains in the fall. (6) And last but not least, our neighbors across the line, who are quick to take up with any thing that they may think good, have begun to recognize the merits of this breed of sheep.

II. It was thought not very long ago that the use of lambs as sires was not desirable, for the reason that their offspring had a tendency to be weak at the time they were dropped. But this notion is wearing away, and in England, where at one time nothing but yearlings or older sheep were used, the farmers now frequently use lambs; and my experience has been that with a lamb of good size and vigorous, not used with too many ewes, the results have been highly satisfactory. And then for the ordinary farmer, who owns say from ten to twenty ewes, the cost of purchase of a lamb is less than a yearling, and the lamb increases in value until it becomes a yearling.

III. The most important matters to be taken into consideration by the inexperienced who are about establishing a flock are (1) I would say, consider the locality as regards suitability for sheep-raising, for sheep will not be profitable if it is attempted to keep them on low-lying land that is naturally wet. (2) Use pure-bred males of whatever breed it is decided

upon to keep; and last but not least, have comfortable dry quarters arranged for them in the winter season. I do not mean by this that warmth is to be taken into consideration so much as dryness.

IV. There has been a good deal said and written by the agricultural press of the country advising farmers to keep more sheep, but to lay down any rules or the recommending of any legislation whereby this object might be attained is a difficult matter. It is true it would be unwise to attempt any legislation to compel farmers to keep sheep; but if we had some legislation to compel those who keep dogs to take care of them, that they be not allowed to roam the country without being in charge of their owners it would be one important object gained. And perhaps another means would be for those who do keep sheep to have a better quality, so that the taste for mutton might be increased, and thereby a better home market secured with its attendant consequence, better prices.

JAS. TOLTON.

(To be Continued.)

The Dairy.

Novel Way of Obtaining Milk for Calves.

A Canadian dairyman practises a novel method of securing warm palatable milk for his calves. The milk from each cow is divided into two portions, the first drawn being put into a vessel for the calves, and the last drawn is taken to the dairy. It has been found that the last drawn, as it would readily be presumed, contains from two-thirds to three-fourths of the cream. The calves are reported to thrive well under this system, as the milk is given to them warm from the cow. Further, they are reared at a slight cost as the quantity of cream the milk contains is but small; and in addition, there is a saving of time and trouble that otherwise would have to be taken to prepare the skim milk for the calves.

A Silage Distributer.

After the silage falls from the carrier into the pit there is always more or less labor required to evenly distribute it. John Gould, writing to the *Rural New Yorker*, mentions an idea adopted by him which, he states, worked like a charm during the past season, and made the work in the pits very easy. Two scantlings were laid across the top of the silo three feet apart. On these he laid a few short boards $3\frac{1}{2}$ feet long, so as to make a square platform of that size. This he placed under the end of the carrier where the ensilage fell directly upon it. This soon formed a pyramid, and the cut ensilage went with a slanting fall to the bottom of the pit where it was very nearly evenly distributed. It was forked up against the walls now and again. He states that the actual time spent in the pit was not over two hours per day until the silos were nearly full, when more time had of necessity to be devoted to inside work, as the oblique fall of the silage was naturally less as it fell a short distance.

Prize Cheese Made by Canadian System.

At the Kilmarnock Cheese Show, held recently in Scotland, the gold medal for the best cheese at the show was won by Mr. R. Wallace, on a cheese made according to the Canadian system as taught by Mr. Drummond, at the Scotland Dairy Institute, at Kilmarnock. This same gentleman also captured over £80 prize money on cheese made by the same system. The particulars as to the methods followed in making this cheese, which expert judges pronounced to be as nearly perfect as possible, are given as follows by Mr. Wallace: It was made on the 31st day of May; 162 gallons of milk; temperature of evening's milk in the morning, 68 degs.; time of ripening, 3 hours

quantity of color, 31 drs.; temperature at which rennet was added, 84 degs.; quantity of rennet, $4\frac{1}{2}$ oz., which was added at 10.35 a.m.; time of coagulation, 35 minutes; temperature heated to $100\frac{1}{2}$ degs.; time it took to heat, 70 minutes; cooked in whey, 120 minutes; quantity of curd, 172 lbs.; milled at 4.30 p.m.; salted at 5 o'clock; quantity of salt, $3\frac{1}{2}$ lbs. Weighed before being sent to Kilmarnock 1581 lbs. of ripe cheese, or nearly 10 per cent. of shrinkage.

Aeration of Milk.

While it is a fact firmly established by thorough experiments that milk fully aerated does not readily part with its cream, owing to the action of the air on the fibrin, yet this is inapplicable where the milk is to be used for consumption in cities, or to be sent to cheese factories. The New York Dairy Commissioners have looked into this question of milk aeration, and in their report they advanced the conclusion that milk will be better fitted for use and will bear transportation better by being aerated to the temperature of the atmosphere, than if lowered further in temperature and set on ice. Milk must be thoroughly aerated to stand transportation and reach the consumers right in odor and taste. There are many different devices for aerating milk, and their construction as a rule is such that anyone may pronounce upon their value. To free milk from tainting odors and give it keeping properties, aeration is the best disinfectant and preservative that could be employed. Chilling has not an effect nearly as beneficial as aeration, as the former only checks the changes that might occur, while aeration frees the milk of all possibilities of the common troubles. Milk should be aerated to dissipate the animal odors common to ordinary milk, and free it from any flavors that may have had their origin in the feed of the cow.

Preservation of Milk.

It is thought that a new, cheap, and effective method of preserving milk without the use of chemicals may originate from a series of experiments recently conducted by an Italian savant. The well-known effects of thunderstorms on milk led to these experiments. The souring that the milk undergoes during thunderstorms has commonly been thought to be due to the "electricity" in the air, but Professor Tolomer's experiments show that the passage of a current of electricity through the milk really prevents the development of acidity, as the milk so treated did not become sour in any case until from six to nine days had elapsed; while on the other hand, milk not so treated in three days became distinctly acidified. Continuing the experiments he found that the true cause of milk-souring during the occurrence of thunderstorms is due to the change in the atmosphere, which takes place owing to the generation of ozone. The *British Medical Journal* states that the souring of milk is generally attributed to the growth of a ferment (bacterium), which converts the milk sugar into lactic acid, and that it is possible that the presence of ozone in the air overlying the milk hastens the growth and multiplication of the bacterium. As the authority says, the first observation—the retardation of souring by the passage of a current through the milk—may be a point of importance to milk traders. Any method it truly states of preserving milk from its retrogressive changes, which does not involve the addition of extraneous substances (antiseptics) to the milk, and which is at the same time cheap, effective, and not likely to prove injurious to the consumer, is sure to be welcomed at a time when milk is sent long distances to market, and is stored for a considerable time before it reaches the consumer.

Butter Trading in Country Stores.

The greatest obstacle in the way of the development of our butter industry is the present system of butter trading so commonly in vogue in country stores. The merchant cannot, through fear of some exceedingly explosive termigant, pay for the butter according to its quality, and thus no incentive is given to those desiring to make progress in such work; and further, as the different sorts are massed in one strikingly mottled mixture, it is a hopeless endeavor to attempt to develop a profitable export trade in a commodity of such character. The strongest argument that can be used in favor of the creamery system has its strength in the fact that both of the impediments now in the way would be wholly removed. As there are many districts not far enough advanced in settlement to adopt that in full, we believe that it might be possible to follow other schemes with greater benefit. We are informed that dairymen in the near neighborhood of VirJen, Manitoba, have started a new system, which has since last spring given complete satisfaction. A meeting of dairymen and merchants and others interested in the dairy trade resulted in a uniform system of grading butter being adopted. The grading is all done by an inspector, and the merchants pay for it according to the marked grade, based on the scale decided upon, which requires that the price for number two grade be three cents lower than number one, and that for number three four cents lower than for number one, and the latter be regulated by the price at Winnipeg market. The style of tub, brand of salt to be used, and the various other details are also unanimously settled. The *Dairy World* suggests, as another means of surmounting these difficulties, that the farmers within a radius of five miles combine, contribute a few dollars each, erect a small but suitable dairy on the most centrally located farm, and buy a hand separator, and then send all their surplus milk to this station for conversion into butter. The cost of the outfit is put at \$500. The advantages would be those of the large creamery which would produce a uniform quality, and it could be shipped to commission merchants in large marts. There is not a vestige of doubt but that expansion of our butter industry must ultimately come through the establishment and patronage of creameries, but at the same time the statement cannot be set aside that many intermediate steps must be taken in many districts before the best results from the establishment of creameries may be expected, and some of these have been enumerated in the foregoing suggestions.

Dairy Schools.

The more minutely the success of our cheese industry is inquired into, the clearer it will appear that the prestige of our cheese in the British market to-day is the first fruit of the course pursued in imparting instruction to cheesemakers. The different associations were the first instructors; but as soon as it was realized that these did not effectually reach the most backward cheesemakers, the Western Association then appointed and sent out instructors to more thoroughly carry on the work. As the outcome of their efforts in the east and west, our cheese has a status in foreign markets that other nations are most strenuously emulating; and it is to be remembered that the high position of our cheese is not due to our conditions of soil and climate, but to the influences of the best and most thorough instruction that could be given the makers. It cannot be doubted but that there is room for further development. Believing there is, a num-

ber of active patrons of the cheese industry, in a meeting at London, passed a resolution recommending the Government to consider the advisability of granting a sum of money for the establishment of dairy schools in Ontario.

The chief supporter in this worthy movement is Mr. Thomas Ballantyne, of Stratford, and he in a short address sketched the work in instruction that has already been done, and dwelt upon the possibilities of still further advancing our cheese product. It was only a few years ago, he stated, when only two small areas—Oneida and Herkimer counties in York State—on this continent made cheese fit to eat, and these counties thought that they were the only places where good cheese could be made. Our cheese at that time was poor and was never thought of, until now, through improved methods, our Canadian cheese sold at 1c. to 1½c. more than the best made in Oneida and Herkimer counties, and Little Falls and the Utica markets. It was only through instruction in cheese-making that these results of superior cheese has been brought about. He wanted to further advance the quality, and that could only be done by superior methods which could only be taught by special instruction. This idea of special instruction he had taken from the large dairies in Scotland. When he first visited them he found some of the finest dairy districts in Scotland, in fact in Great Britain, making a poor quality of cheese. In fact these Scotch dairymen did not make a fine quality of Cheddars, and other brands which took prominence in the English market. The consequence was only a poor price was received, and dairying did not pay. He had suggested to these Scotch dairymen to form themselves into an association similar to those in Ontario and to employ instructors. This advice had been followed out, and at the present time these factories, instead of turning out poor goods, the best Scotch Cheddars were selling for sixty-two to sixty-three shillings per cwt., which before had sold for ten or twelve shillings less. To show what the dairy schools have done in elevating the standard of Scotch cheese, he stated that at a recent dairy show in London the same Scottish dairy sections to which he had recommended co-operation and instruction had taken the Lord Mayor's prize and all first prizes in the Cheddar class. They had beaten the English make, which was supposed to be the finest. This had been brought about by their superior dairy instruction, which had been accomplished by dairy schools. In the different dairy centres in England the question of dairy schools was absorbing the attention of the farmers, in how they should improve the quality of their dairy goods. In England, though the Government subsidized no agricultural colleges nor any agricultural societies, yet they have granted £5,000 for the aid of dairy schools. His idea was that special instruction at this stage of our progress was needed, for though we made some fine cheese, yet some of the present season's make would suggest an improvement. If there were schools where cheesemakers, farmers, and farmers' sons, could go to learn and improve their special knowledge in this important branch, we would have a better and more uniform quality. A school should be built and furnished with all the modern appliances, and equipped so as to make cheese in summer and butter in winter.

These remarks by Mr. Ballantyne were concurred in by the majority present at this meeting. We believe that all desirous of helping forward the major interest of our cheese industry will use their influence to further the establishment of dairy schools. As to the scope of these, we would like to have our readers favor us with their views. There is work to be done

in this direction; the only question for discussion is how to start it under headway and carry it on most effectually.

Butter for the Home and Foreign Market.

Canada has never done her whole duty in making butter. She exports less now than she did years ago. It was thought by many that when the Creameries Association was established some years ago, that the buttermaking of the country would soon be revolutionized. This has not, however, been fulfilled but in a very limited degree. The number of creameries is still very small, not more perhaps than thirty, and they do not appear to be on the increase.

One is naturally led to enquire into the reasons of this, more especially in view of the facts: first, that the cheese industry has attained proportions so vast, and second, that buttermaking should be more in accord with the genius of our farmers, owing to the facilities which it affords them in raising young stock, both cattle and swine.

That our butter has not captured the British market is not so strange, as it is a commodity that is easily affected by age. Some time must elapse before it reaches the British market, when it is not perhaps in that perfect condition in which it reaches our own people. This thought, however, presses itself upon our attention: Why should we not be able to secure a foreign market for butter of a quality that seems to satisfy the most fastidious of our own people? We find many of them buying packed butter from our creameries in the autumn which is intended by them for winter use. If this market can be secured it would be a great matter for this Province, owing to the greater returns relatively that we would get from our cows kept for making butter. Not much more than one-third of our cows are used in cheese-making alone, and these bring us in the cheese season a revenue of about \$7,000,000. The number of milch cows in the Province at present is 779,171 head. Of these 273,231 are devoted to cheese-making purposes. If then the revenue from 273,231 cows during the cheese-making season is about \$7,000,000, the revenue from the remaining 505,940 cows, which must of course be used in making butter during the year, should be at least twice that sum. Our revenue from butter, or from butter and skim milk, should be at least \$14,000,000 a year; that is, our revenue from butter should nearly equal the entire returns which we get at present for all our live stock and their products which we send abroad. This then should be by far the most important source of revenue to us.

Do we get a revenue of \$14,000,000 from the 505,940 head of cows used in making butter? We have no means of knowing accurately, but there can be no doubt that we do not realize anything like this sum. The cheese is made in factories, is made by system, is of good quality, and therefore produces a return, cow for cow, far in excess of that given by the cow whose butter product is often spoiled in making from defective knowledge on the subject, and is still further injured by not being properly kept.

When we think of the magnitude of the butter industry and of the great possibilities that lie before it, and when we contrast its present position with those possibilities, we cannot but feel sad at the thought of what is, in this respect, compared with what might be.

Even though it cannot be said of our farmers that they have a foreign market for their butter, they have a market for it somewhere, and the question naturally arises, are they making the most of this market? As-

surely not. The grocer who does a trade with the country has one great sorrow. He cannot avoid purchasing large quantities of stuff called butter and giving more for it than it is worth. Of course this does not apply to the principal portion of the butter-product of our farmers sold to the grocer, but it does to much of it. The result is that but low prices are realized, hence the revenues from this source are far short of what they should otherwise be.

How the farmers may be enabled to make a better class of butter is a great problem. It is a problem which may well engage the attention of every lover of his country. We have already shown that the revenue to the farmers from the product of their butter-making cows should be at least \$14,000,000 a year. Now, if this could be further increased one-fourth by the production of a better product, the additional revenue would be something handsome.

The individual who will teach and persuade the farmers generally to improve their practice in this respect, will accomplish a great work. How this may be done is as yet an unsolved problem. How long it will remain so, the future alone can unveil.

This, however, is possible to every reader of this article: He may realize twenty-five cents a pound all the year round for his butter. The way to do this is easily outlined and easily practised by any one of average intelligence. Let him inform himself of the best method of making butter, let him make butter according to the best method, let him look up customers in some convenient market who will pay this price, let him deliver it regularly and at stated times, and the whole thing is done.

The Ottawa Dairy Test.

The results of the milking competition held at Ottawa, during the holding of the Central Exhibition last September, have just been given to the public. The winners of the first prize, a gold medal presented by Sheriff Hagar, are Holsteins owned by Mr. Joseph Fletcher, of Oxford Mills. The second prize, a silver medal presented by the Association, was won by Jerseys selected from the herd of Mr. W. A. Reburn, of St. Anne de Bellevue. There were in all entered four herds of five cows. In addition to the winners of the prizes there were Guernseys from the herd of Hon. J. J. C. Abbott, and Ayrshires representing the herd of Mr. Jas. Drummond, of Petite Cote. Each herd was milked under the supervision of Mr. Wm. Rodden, of Plantagenet, and the milk was given over to Mr. Macfarlane, the Dominion Analyst, and Prof. Robertson, the Dominion Dairy Commissioner. The awards were made by these gentlemen on this basis: The butter fat was valued at 16c. per lb. and other solids at 2½c. per lb., with a percentage to be added for the length of the milking period. The results were as follows:

Holsteins, total value,.....	\$1.29
Jerseys, " "	1.19
Guernseys, " "	1.10
Ayrshires, " "	1.00

The Ayrshire cow, Viola III., gave the largest quantity of milk, the Holstein, Othello III., being next with 19.4 lbs. The richest milk was given by the Guernsey cow, Rosanne, with 8.08 per cent. of butter-fat. Her milk yield, however, was but poor, being 6 lbs. in the morning, 5.85 lbs. at night.

In a fuller report which has reached us, we notice that Mr. Rodden claims that the Holsteins were more favorably treated than the other breeds, both in respect to their quarters and feeds, as he complains and asserts that while the Holsteins were well situated in closed stalls, the others were in open sheds, and further that the fodder contractor furnished them with damaged hay and inferior ground grain.

JOSEPH STRATFORD, Brantford, Ont., writes: "I find my advertisement in your paper very beneficial, having sold all my Oxford and Shrop Ram Lambs this season, without any difficulty."

D. Derbyshire,

President Ontario Creameries' Association.

The present vigorous and stable condition of our dairy husbandry is due in a large measure to the enterprising and enthusiastic patrons of it, who nurtured it in its infancy, and gave with shrewd foresight direction to its growth. Prominent amongst those who were ever active and foremost in this good work is the subject of our present biographical sketch, Mr. Derbyshire. While being intimately associated with the progress of our cheese industry, and closely identified with our advances in butter production, Mr. Derbyshire has moreover contributed in no small degree to the welfare of our agriculture, by taking an active part in institute work.

That this brief sketch may not lack inferences for our young men, we shall endeavor to analyse and select those attributes that have contributed most to the success which has attended Mr. Derbyshire in his various public capacities. Nothing could be clearer than the reasons of such successes for the most characteristic traits of the subject of our sketch are those which have been possessed by all prominent public men in various degrees of predominance, and they may briefly be stated to be generous good fellowship, superior platform ability and appearance, and a diffusing enthusiasm that gives alertness to effort and spice to dry detail. Under the magnetic influence and guidance of President Derbyshire, it is a queer mass of humanity that does not become roused with enthusiasm, and feel that a mental revolution has occurred. "It is not so much what he says as the way he says it," is the trite expression of olden use, yet it is nevertheless peculiarly applicable to introduce it as a comment in a line with the foregoing observations.

Mr. Derbyshire is a Canadian, as he was born in the county of Leeds, in the year 1846. At the Athens High School, then known by the expressive appellation of Farmersville, Mr. Derbyshire was educated. For three years he followed pedagogics, and summarily brought his career to a close in that profession by marrying in 1869, Miss M. A. Cawley, also a school teacher. From the year 1874, Mr. Derbyshire dates his association with our cheese industry, for it was at that time that he assumed control of the Plum Hollow Cheese Factory, which from that era has been a pronounced success, as may be inferred from the fact that last season thirty cheeses were made each day. His election to the council was soon followed by election by acclamation to the reeveship, which, however, had to be given up after holding the office for a number of terms, owing to Mr. Derbyshire's removal to Brockville, to engage more extensively in the produce business there. This business has expanded greatly, and covers the whole dairy field in its scope. In 1889, he was elected mayor of Brockville by a majority of seven hundred, and in 1890 was again elected, this time by acclamation. Among other positions at present held by Mr. Derbyshire, besides those already mentioned, he is President of the Brockville General Hospital, Director of the Brockville Loan and Savings Society, Director of the B. & W. & S. S. M. Railway, Director of the Mann Manufacturing Co., and Director of the Brockville E.D. Farmers' Institute.

R. J. GRACEY, of Wellandport, proprietor of Wainfleet Poultry Yard, states that he considers the CANADIAN LIVE STOCK AND FARM JOURNAL a good advertising medium.

An Artificial Milk-Maid.

A Scotch dairyman has recently invented a process for milking cows whereby it is hoped the laborious work of milking as it is commonly performed, may become mellowed into a pleasant memory by being abandoned. It is stated by our British contemporaries that, on the estate of the Duke of Portland, the invention has been successfully tried, and that as a matter of economy from all points of consideration, it has strong claims for the patronage of dairy farmers. As in the case of most inventions of our day it is a combination worker as one connection, which can be attended by a single attendant, will abstract the lacteal fluid from six cows at a time during the flight of ten minutes. It is asserted that it is a cleanly milker, and that the cows take kindly to the innovation. We

is the nozzle which has been referred to, and on the opposite side are four similar nozzles, all of which are like the small connections upon the iron pipe. The solitary nozzle is for attachment to the long flexible tube from the iron pipe; the other four are for short lengths of tubing connected in their turn with specially constructed teat cups, each of which receives the teat of the cow under operation. The cups, like the pail, are made of tinned iron, and each one is provided with a tap or stop-cock. The milk pail has, in addition to its handle, a couple of hooks by means of which it is suspended a little in front of the cow's udder, a broad band of girthing being laid across the animal's loins for the purpose. The method of operating is very simple. When all is ready, the pump is worked by a lad, and the air is thus exhausted from the iron pipe. Then a pail, with its cups attached, is adjusted under the cow, the long tube is joined to one of the connections overhead, the stop-cock is opened and a partial vacuum is established within the pail. Next one of the cups is moistened and placed so as to embrace the teat; the stop-cock of the cup is then opened, the teat is thus brought under the influence of the vacuum, and the greater external atmospheric pressure at once causes the milk to begin to flow. After all four cups have thus been adjusted, four jets of milk can be seen flowing into the can immediately beneath the glass cover. In from eight to ten minutes the cow is milked dry."

Early Market for Pork.

Editor CANADIAN LIVE STOCK AND FARM JOURNAL.

SIR, The pork packers of the Dominion are indebted to you and others for your efforts to induce the farmers to raise and feed hogs more largely, and this they have done to a considerable extent, but not having followed the advice given as a whole, that is in having them for sale prior to first October, they now find that the market has gone dead against them and apparently in a panic they are killing off their young pigs—a complete slaughter of the innocents.

We see dressed hogs weighing from 140 lbs. down, on scales at the commission stores, and at the cattle market thousands of mere shotes are offered for sale with a result of a loss to everyone who handles them. The same course is being followed almost universally by farmers in the Western States. No less than 7,000 pigs as they term them, little bits of things, have been on sale there daily, and it is the opinion of competent observers that the pig population will be almost annihilated.

It is our opinion that the farmers of Ontario, instead of getting rid of their young pigs and stopping or lessening the raising of them, should go into the business more largely. We prophesy that next summer hogs will be as high as last, and perhaps higher.

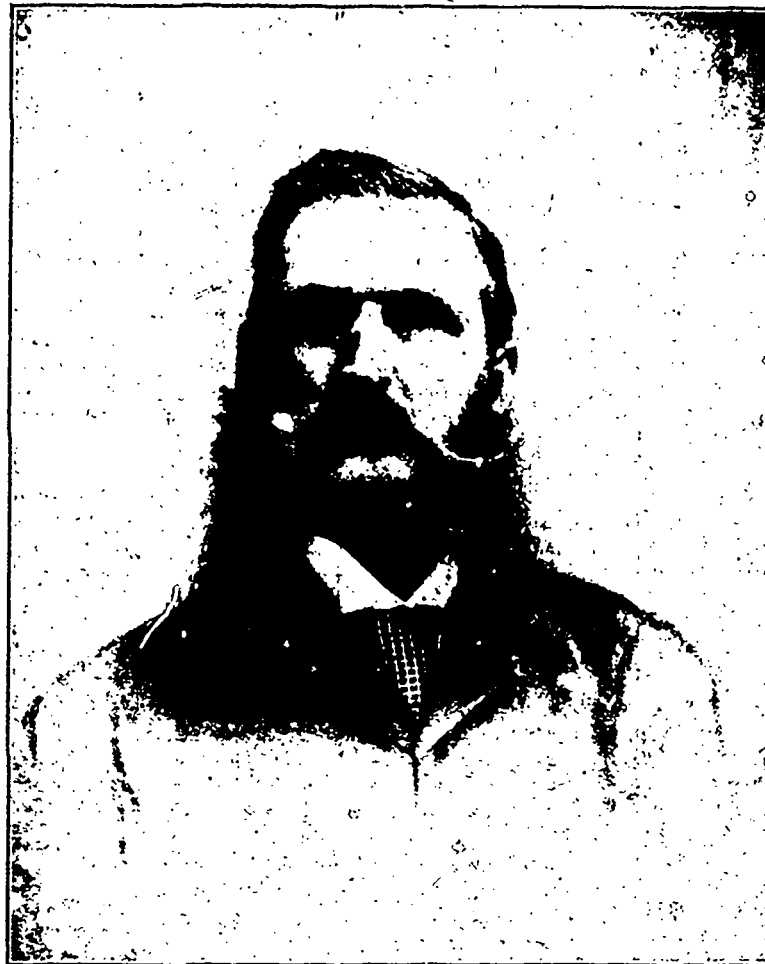
Again we urge farmers to have them for sale at a time when all concerned can make money, say from first May to first October.

WILLIAM DAVIES & Co.

November 27th, 1890.

J. D. SEAMAN, Charlottetown, P.E.I., writes: "I would not be without the CANADIAN LIVE STOCK AND FARM JOURNAL for twice the money. Your exhibition number is alone worth the price of subscription."

F. G. BOWLEY, Napperton, Ont., writes: "I may say that my subscription has been running as long as the JOURNAL, and will continue to do so as long as I am farming, which I hope will be indefinitely, because I think it cannot be beaten in Canada as a journal in the interest of the farmer."



MR. D. DERBYSHIRE,

President Ontario Creameries Association.

append a description appearing in the European press which will post our readers as to the latest sensation in the dairy world:

"An ordinary iron pipe, one inch in diameter, is carried around the cow house at a convenient height above the shoulders of the cow. It communicates with a hand pump, whereby the air is drawn from the pipe, a circular tank connected with a shallow well of water serving as a regulator of the vacuum. From the iron pipe project connections, one opposite the space between every pair of animals, each connection being furnished with a stop-cock. To any one of these connections is fitted a length of India rubber tubing, and the other end being attached to a nozzle near the top of the milk pail, which is of special construction. The pail is cylindrical in form, with a truncated conical top. Its opening, which is four inches wide, is closed by means of a thick glass dish, which rests inside flush with the outer rim of the pail, supported by a thick rubber band, held in place by a projecting ledge underneath. On one side of the shoulder of the pail

Poultry.

Rules for Dressing Fowl.

Parties at present extensively purchasing poultry in Ontario have asked those bringing fowl to them to observe these rules in dressing them: (1) Shut up your poultry twenty four hours before killing, or until the crop is empty. (2) Poultry should be killed by bleeding in the neck. After being dressed, remove the head, draw the skin over the neck bone and tie it and hang the fowl in a cool place, but do not let it freeze. (3) The entrails must all be drawn at the vent hole cut as small as possible; leave the heart, liver and gizzard. (4) In dressing geese and ducks you may scald them, as this method removes the down much cleaner than if dry plucked. But do not scald the turkeys or chickens as it reduces the prices at least two cents per pound. (5) Do not cut off the legs of poultry. You may cut off the wings at the first joint. Be sure to remove all feathers, wing and tail included.

Cold or Catarrh.

At all times during the winter, and more particularly in late fall, poultry are very liable to contract cold, which may ultimately develop into catarrh or even worse disorders. It is as common a trouble amongst fowl as in the human family, and it will be found that the symptoms also are much the same, as there is frequent sneezing and a discharge from the nostrils. The best preventative measures are warmth, dryness, and a variety of food with regularity in feeding. A neglect of these hastens the development of it until it becomes that troublesome and dangerous disease—roup. A poultry farmer of extended experience states, that if the patient is made to inhale steam from boiling vinegar, to which a few poppy heads have been added, the trouble will be at once checked. Good warm feed seasoned with cayenne pepper is an excellent additional resource. To prevent roup setting in, a fancier states that he has found it effective to wash the bird's face and nostrils with carbolic acid diluted in the proportion of one to sixty. The worst form of this trouble is that which is attended with diarrhoea through exposure to wet and cold. Perhaps to check this there is not a more effective agent than the feeding of boiled rice with a small quantity of chalk and cayenne pepper mixed added to it.

Breeds Classified by their Utility.

Three-quarters of the battle of success is fought and won by that breeder who becomes possessed of a full knowledge of the qualities of the different breeds, and is thus able to select that breed or cross which will best suit his purposes and conditions. It is clear to those who will give the question their consideration, that there are many different types and varieties of fowls required to meet the diverse demands that come from different districts, but at the same time it will be admitted that the following classification which has come under our notice makes the division of breeds as specific as possible. It is as follows: For egg farming—Leghorns, Minorcas, Andalusians, Anconas, Spanish, etc. For table birds—Brahmas, Cochins, Game, etc. For broilers—Crosses of the lighter breeds on these. For general purposes—Plymouth Rocks, Wyandotts, Houdans, Langshans, etc. There is no doubt but that as our informant, the *Germantown Telegraph*, says, there are many failures to be credited to the laxity with which varieties are selected. Commenting on the crosses for broilers it states that they have secured this year plump broilers from the Wyandotts in their party, but still feel satisfied that the

equals of the Houdan-Cochin cross they tried last year cannot be found. The Leghorn, they assert, makes a good cross on any of the Asiatic or American classes for broilers, but those who have tried Brahma crossed on Cochins claim they make the best roasters.

Vormin In the Poultry House.

Perhaps the most ordinary and frequent troubles that poultry flesh is heir to owe their origin to the presence of insect parasites. To prevent the possibility of vermin becoming abundant in the poultry house, it is advisable to give it at least two or three thorough lime washings during the year. It is very desirable also in coping with vermin to furnish the fowl with a couple of dust baths composed of fine, pure sand, or better still, of sifted wood ashes. Provided with these, placed so as to get as much sunshine as possible, and given clean, disinfected quarters, there is little likelihood of vermin appearing or becoming abundant through introduction by purchases. In most cases a dusting of sulphur or insect powder under the wings and thighs will be all that may be necessary besides the taking of the precautions mentioned. It has also been found that lime water, to which a small quantity of carbolic acid has been added, is an excellent mixture to sprinkle over the nest boxes and roosts. As a combined insecticide and disinfectant, the most effective and powerful of all is the practice of fumigating the building with sulphur. When this is performed, to be thorough, all openings into the house through which the fumes might escape should be closed. The best way to fumigate is to take a pan of live coals and upon these drop a few pieces of brimstone. As the fumes begin to rise the room should be vacated and tightly closed and left so for several hours. The building should be completely aired before the fowl are allowed to enter it again.

Sacrificing Warmth for Extreme Ventilation.

It is the winter management of the poultry which has the strongest influence upon the profits that will be made from them, and one of the most important matters relating to this is the question of ventilation. Some become so impressed with the need of ventilation in the poultry house as to construct elaborate ventilators on the roof, which are left open during the coldest season. Such arrangements are nothing less than death-traps for the fowl. The desirability of ventilation cannot be denied, but at the same time it is almost a matter of impossibility to secure ventilation which will not subject the fowl to draughts. With some method of artificial heating with stoves, it is an easy matter to secure healthy ventilation, but such a method cannot be considered in ordinary practice owing to the expense. It is questionable whether any plan of ventilation can be adopted which will supplant the old method of ventilating the house thoroughly during the day by opening the doors wide and purifying it by dusting the floor and roosts with some cheap disinfectant. It is certainly unwise in view of the susceptibility of fowl to diseases that result from chills and draughts, such as roup and swelled heads, to have large ventilators open in the fowl house during the coldest season. The most necessary feature of a poultry house, if the hens are expected to do their full duties as layers, is that of warmth, and it is not advisable to sacrifice that for extreme ventilation. The French poultry farmers limit the size of their poultry houses so as to secure that warmth which is essential to the production of eggs in winter. The common practice errs, we believe, in this matter, as shown in the many frozen feet and combs, the prevalence of such diseases as roup and swelled heads amongst our farm poultry.

How to Manage an Incubator.

The great reason why so many persons fail in hatching with an incubator is, instead of treating it as a machine that requires judgment and common sense in running it, they place too much confidence in its running and taking care of itself. Good results will follow good care.

When a machine is first started, if you are not acquainted with it, try it for a few days to see about what amount of blaze the regulator will control, then put in your eggs. Look out for sudden severe changes of heat and cold, and see that your heat does not go up or down too much. Be sure to test your eggs the sixth, and also the tenth day. If after this there should be a bad smell inside of the egg drawer, your heat has gone so high that some of the eggs are addled, or this may be caused by too much moisture rather than too little, or it may be that the eggs did not have enough vitality to carry them through and hatch, and hence they have died.

It is a certain fact that more eggs will start in an incubator than under a hen. The dead chicks will throw off carbonic acid gas, and they must be taken out at once or they will kill all the rest with which they come in contact. Test them over again, and take out the bad ones.

Incubators sometimes fail to hatch for the reasons that pertain to hens,—that is, eggs from fowls lacking in vigor will not hatch under hens, nor in incubators; eggs from immature pullets, overfat hens, or from yards in which the cockerel is too young or from stock inbred will not hatch, nor will eggs hatch that have become chilled in severe cold weather, or have been kept too long. Imperfection of eggs in size, shape, and shell, also cause failure. Temperature for hatching should be as near 102 as possible. Should the machine vary from 100 to 103, no harm is done; but a temperature above 104, and below 99, should be avoided.

Eggs should be turned twice a day; but avoid opening the egg drawer frequently, as it allows too much heat to escape. Place the bulb of the thermometer even with the top of the eggs,—that is, when it is lying down on top of the eggs in the drawer, the upper end should be slightly raised so as to allow the mercury to rise, but the bulb and the eggs should be of the same heat, as the figures record the heat in the bulb and not in the tube. Eggs that are fertile will, on the fifth day, show the chicks in motion; there will be red veins starting out in all directions; these will increase as the chick grows older, and by the tenth day will be all over the egg. Those that are addled will show a dark object with no red veins; sometimes a red ring around the eggs. Unfertile eggs will be clear. Take out all those found to be unfertile or addled. Eggs need not be turned after they begin to be pipped, but in the morning and at night they should be examined, if any are pipped on the under side (in which case the chicks will die if not turned) do not turn the hole on top, but on the side.

Do not attempt to help the chicks out of the shell, so long as they have pipped only a small speck of a hole. If they have opened a space in the shell as large as a silver quarter, they may be assisted by breaking the shell around the centre, but not unless the membrane seems dry. If everything seems moist, the chick will come out when it gains strength.

Having had some experience with moisture I will give it, hoping it will benefit my readers. Last spring I remodelled a small incubator, making it top heat instead of bottom. Heated air entered at the top, passed down through the egg chamber, and out through four half-inch ventilating tubes near the bottom. The result of first hatch was 70 per cent. of fertile eggs. Thinking I could surely do better, and that I did not have the right amount of moisture I got a moisture gauge, and again started my incubator. I urged no moisture the first four days. On the fifth day I put moisture gauge on egg tray, and the moisture pans below the eggs where I had them in the previous hatch. The gauge forced me to place the pans above the eggs near the source of heat, and yet there was not enough moisture according to directions on gauge. I then placed pans at the very top of incubator quite near the tank, and yet the gauge called for more moisture. I was then at a loss to know what

to do, but it seemed evident that there was already too much moisture, because of the large quantity of water evaporated in the pans, and by the moist appearance of the ventilating tubes where the air passed out from the incubator. Having by this time reached the seventh day of incubation, I patiently awaited results, although I did not expect much, for the bottom of the incubator had become quite damp, and large drops of water formed on the outer edges of the ventilating tubes. Still the water in the gauge fell at the rate of one inch in two and a half to three days; whereas it should fall one inch in four or five days. The result was 48 chicks out of 90 eggs. All the other eggs contained well developed dead chicks which almost filled the shells. I now placed the gauge in a larger incubator that had been hatching over 80 per cent., simply to see how it would act, for I had given up all hopes of regulating moisture according to its directions. Great was my surprise to see the water fall one-fourth of an inch per day, which was just right according to directions. This put me to experimenting still more with the small incubator. I then closed the four ventilating tubes to about one-fifth their former size, and again started the incubator. I used no moisture the first five days, then placed the pans below the eggs, when lo! the gauge was well satisfied with the amount of moisture. This trial resulted in hatching 72 of 85 fertile eggs.

The most difficult problem of these experiments remained yet to be solved,—that is, why the gauge should fall more rapidly in the first than in the second experiment, and yet the chicks seemed to be dead but a few days. Here is the result arrived at after some thinking. In the first case a large volume of air continually passed through the incubator, which required a large amount of heat to bring it to the required temperature. Hence the tank and the air near it were about 10 degrees warmer than the eggs. Warm air is capable of containing a large quantity of moisture, and as the moisture pans and gauge were near the top, a large amount of water was evaporated to satisfy the demand of the warm dry air; but as the moisture was continually carried away by the current of air that passed through the incubator, and a continuous stream of warm, dry air entered, a very large amount of water was evaporated. The eggs were 8 or 10 degrees cooler than the air at the moisture pans, and as the warm and moist air passed down through the eggs, it was cooled, and parted with some of its moisture which remained on the eggs, but in such a small quantity that it was not perceptible. Thus the eggs were in an incessant vapor bath. Below the eggs the air was cooled still more, and hence unable to contain so much moisture. The air, even before it left the incubator, was saturated, and left large quantities of moisture near the bottom, but when it came in contact with the air of the room it was further cooled, and utterly unable to contain so much moisture it was therefore deposited on the ventilating tubes.

In the second experiment the difference in the temperature of the eggs and the air at the top of the incubator was but a few degrees. The air, therefore, around the moisture pans and gauge, was not so warm as in the first experiment, hence less water was evaporated, besides, that which was evaporated did not pass out; therefore very little water was used, and the water in the gauge fell much slower than in the previous hatch. I give these facts to show that ventilation and moisture go hand in hand as do wind and rain. A building for brooders should be ten feet wide and any number of feet in length, boarded inside and out, with straw in between the tarred paper; divided into parts five feet wide with a brooder in each part, and a corresponding yard in front. If the house is made warm, with a glass front on the south, the lamps of the brooders will furnish enough heat except in zero weather, when a small oil stove in each part should be used.

A. F. WILLIAMS.

Bristol, Conn.

W. M. CHAMPION, Reaburn, Man., writes: "Although we have two good live agricultural papers in this country I feel lost without your paper."

JOHN THORNE, Amberstburg, Ont., writes: "I am greatly pleased with the continued improvement in the JOURNAL, your editorials are practical and concise. The mechanical make up of the paper is very creditable to Canadian industry and deserves the support of every farmer in Canada."

Incubator and Brooder.

A reader requests us to publish a plan of an incubator and brooder; one that may be home-made and easily run by means of hot water without the use of a lamp. The only plan that has come under our observation which appears to meet exactly these requirements, is one devised and described by Mr. O. Crane, of New York. We have prepared engravings of this plan, and give them here. Mr. Crane's description reads as follows. During the past five years I have been studying and trying to invent a machine that would completely do the work of the hen after the egg was laid, and not involve too much labor; which I believe I have at last accomplished. It is a combined machine, and does the brooding as well as hatching, and imitates the hen perfectly in both.

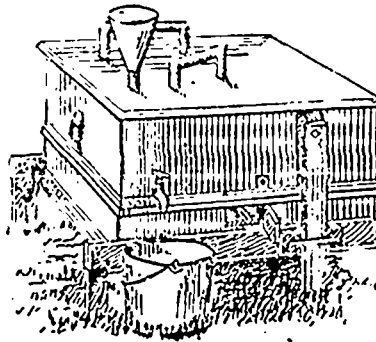


FIG. 1.

As seen by the sketches the machine is made in two sections, hinged and grooved together, and is so hung on lever as to nearly open of its own weight, thus doing away with heavy lifting and also egg drawers. The upper section contains a hot water tank, and is so protected in its construction that the water will hold its temperature for a long time, as the outside atmosphere does not affect it, and all the heat from the water radiates through the bottom of the tank, which is directly over the egg department or brooder. The tank has two filling tubes and two ventilating tubes, connected across the top by two movable connecting tubes which carry the steam that rises off the hot water down through the ventilating tubes into the egg department and helps to furnish heat and moisture. The lower section is the egg department or brooder, in time of brooding, which is provided with a tin bottom, a door in front and a window on one side.

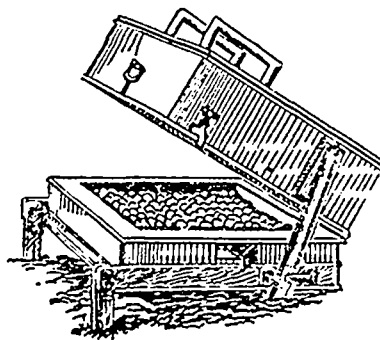


FIG. 2.

For hatching, I fill this department within three inches of the top with moist soil, and cover it with dry chaff or sawdust to keep the eggs clean, keeping the door and window closed. For brooding, I remove the soil and door and fill in about one inch of dry sawdust for bedding, and place an open rack over the department to keep the chicks, heads off from the hot tank that is directly above them; and disconnect the ventilating tubes to give proper ventilation.

The machine is run entirely by means of hot water and steam from it, and requires a drawing off at the faucet of about ten or twelve quarts of water, which is brought to a boil and replaced through the filling tubes twice in twenty-four hours in the 100 egg size machine, which can be heated on the cook stove at breakfast and tea time, or can be heated by steam alone if one has a heater. It requires no further at-

tention and does away with constant care and expense and danger of oil. This machine has been run very successfully for the past two years, and repeatedly hatched out 90 odd per cent. of fertile eggs, and for each two years it has been awarded the first premium as an incubator, and also as a brooder, at the St. Lawrence County Fair.

Horticultural.

Apple Seedlings for Pear Stocks.

As to the advisability of using apple seedlings for pear stocks, Prof. Brunk has found his observations and experiments to confirm the idea that they are even worse than the French pear seedlings to sucker, and the trees have proven to be short lived. He states, however, that as apple seedlings are plentiful and cheap it may be a good practice, on soils where the French stocks, the Le Conte and Keiffer, do not root easily, or where a profitable percentage of the cuttings do not grow, to use them or pieces of them to side graft on Le Conte cuttings, as a nurse to aid in keeping the cutting alive until it forms its own roots. In the fall when the trees are removed from the nursery, he states that the apple root can be removed and the tree left on its own roots.

Celery for Market.

Kalamazoo is noted above all communities in America for the production of celery of a superior quality. The growers there, instead of banking up the celery during hot weather to bleach it, as the common practice is, place a board one foot wide on edge at each side of the row, and these are held in place by bits of lath tacked across the top. They claim that celery bleached in that way will not rust and rot as it will when banked with earth, and further, it is much more easily washed for market. Of course the late celery can only be bleached by banking. The general practice adopted by these growers is to plant the early celery five feet apart by six inches. Later, another lot is planted between the rows of the first lot, and after the first lot is sold these rows are replanted, so that three plantings in all are obtained. As an early variety the Paris Golden is mostly grown, while the Grand Pascal, a new French variety, is stated to be of great promise.

The Yellow Hammer and Codling Moth.

At this time of the year, and especially in early spring, the wood peckers are usually to be found busy around the apple trees. The work done by them is commonly estimated as injurious, but before war is declared against them it is but proper that the question should be fully inquired into. In a recent issue of *Insect Life*, a note is made of some observations of a fruit grower in this direction. This person states that in looking over his orchard last spring, and examining all crevices and bark of the trees for codling moth larvae, he failed to find any where there were thousands last fall. He noticed an abundance of cocoons, but in every case the worm was absent. As it was too early for the worm to have developed into a moth, and as he found small holes in the bark scales which had been made by some bird, he concluded that the beneficial work had been done by "Yellow Hammers," which were to be seen by hundreds in his orchard during early spring industriously examining the trunks and larger limbs of the fruit trees, and also more plentiful around the sheds where he stored his apples. Their correspondent asserts that after several hours search he was able to find only one worm. In view of this statement it is apparent that the harsh reception given these birds by the boys and the shot gun, is neither justifiable nor in the interest of the fruit grower.

Culture of Window Plants.

There is nothing one particle as effective in lending cheerfulness to the home and giving it an air of culture as a wisely selected collection of common foliage and flowering house plants tastefully arrayed in the streaming sunlight of a big bay window. To be thrifty and appear at their best, most varieties of house plants require abundance of sunlight. In regard to the direction of the exposure, Vick is of the opinion the best is a southern one, and second only to it is an eastern; and in the first has found that such plants as geraniums, lantanas, heliotropes, and other varieties are fond of sunshine; while begonias, fuchsias, and plants of this character, which like the morning sun bÿtter than the more intense afternoon rays, make better progress in an eastern exposure. It is advised that if a west window must be used, that the intense heat should be weakened by a curtain of thin muslin which will permit vines being trained over the glass so as to temper the sun's heat. In a north window, it is stated that foliage plants may be successfully grown, such as ferns, palms, and others. English ivy will thrive there, as will also the hardy and rapid-growing tradescantia.

The Culture of Nuts.

The Washington Department of Agriculture has drawn attention to the possibility of much more being done in the direction of profitable nut culture. They state that by selection and culture, nuts are found to improve almost as readily as fruits. Thin shells and increased size are the most common results of improvement. It is a strange, unaccountable fact that such nut-bearing trees as the black-walnut, butternut, hickory, and chestnut, are not so popular as they should be, or so plentifully grown in plantations as they might be. Considering the high value of black-walnut, and even butternut, it is surprising that these trees have not been more extensively grown, even for their timber, not to say anything of the possible profit from the nuts. The Pomologist of the Department of Agriculture gives some advice on the planting of nuts which is timely, and also appropriate to add to our observations. Nuts for planting, that authority asserts, should invariably be selected for superiority of size, flavor, or thinness of shell. As early as possible after their maturity they should be placed in boxes of soil, the conditions of moisture and depth which are provided being closely patterned after those furnished by nature in the forests. The chief object of the box is to prevent mice and moles from disturbing the nuts before the tap-root has begun its growth. The boxes of imbedded nuts should be sunk to the level of the surface in some place protected from pigs, squirrels, and chickens. In the spring, when bursting open with the growing germ, the nuts may be transplanted to the nursery row or to the spot in which the trees are desired to stand.

Essentials of a Good Variety of Strawberry.

So numerous are the varieties of strawberries, and so great is the interest taken in the production of new varieties, that it is important to give some consideration to the qualities that it would be desirable to secure. It is evident that it is hopeless to endeavour to attach to one variety all the attributes desirable in a strawberry, yet a definite standard of major qualities may be attained through continued straining after an ideal. Mr. E. C. Green, of the Ohio Experimental Station, who has issued a comprehensive bulletin on strawberries, asserts that strawberry growers desire that a variety should be possessed of, first of all, vigor, health, hardiness, and productiveness. None of these attributes, in his opinion, can be sacrificed

except in a limited degree. Besides these qualities, others are required, but in a limited degree. He further states that one grower places productiveness first, another firmness, another size and beauty, while in certain cases quality is ranked first. As he says, given a healthy, vigorous plant, then whatever other qualities a variety possesses must be very marked so as to fit it to meet certain requirements as well or better than any other variety. He concludes his references on this topic by saying that if originators and growers will cease trying to find varieties that are suited to particular soils, and send out those only that succeed over wide areas, and the wider the better, and that have one or more marked characteristics, much annoyance and useless labor will be saved.

Strawberries for Market.

FIRST PAPER.

This delicious fruit will always be a favorite in this country as it is the first of our native fruits to ripen. It will always, therefore, be in demand. Indeed, the demand for this, as for all kinds of fruits, may be expected to increase with the increase of our population. The best method of cultivating will on that account be always a matter of much importance.

The best soil for growing strawberries is what may be termed a sandy loam. This should not be too light or the later berries will not ripen, and hence the crop will be small. A black loam is not so good, as it is liable to heave in winter, and a clay soil is quite unsuitable. Clay flams produce heavy crops, but much more care must be exercised in working them to obtain the best results.

The aspect of the plot has much to do with its suitability. If the situation is quite low it is much liable to suffer from frosts in time of blossoming. If it is quite high the winds are apt to blow away the pollen and thus the fertilization is imperfect, and in winter the bleak winds are prone to freeze the plants even when protected. A medium elevation is therefore best, and if somewhat protected by a belt of trees on the windward side, the situation is somewhat improved. If the inclination is toward the south the ripening process is hastened, but if toward the north it is retarded. It is therefore better to plant early varieties on a southerly slope, and the later ones on a northerly incline. If planted on a hillside with a steep inclination, the soil is much apt to wash away, which increases the difficulty of cultivation.

The soil should be thoroughly underdrained where the subsoil is not sufficiently porous to drain itself. When the drainage is perfect and the subsoil is suitable, the rootlets go down deeply, and the vigor of growth is thereby much enhanced.

As strawberries are a crop that require much attention, the preparation of the soil is all-important. It would be folly to plant them either in a poor soil or in one that is full of weeds or weed seeds.

In order to clean the soil and to manure it properly the following plan may be adopted: Manure the land heavily with farm-yard manure. As much as twenty to thirty loads may be applied to the acre. It may be put on sod, and it is then deeply ploughed in. A crop of corn is grown upon it and this is followed by a crop of potatoes. If the cultivation of both crops is thorough, the land will be clean. The strawberries come next. If the soil is not very foul with weeds, and if the weed seeds are not numerous in the manure, the only crop preceding the strawberries may be potatoes. Coming after a corn crop the roots of the corn stalks would be in the way. When the strawberries come after potatoes, following sod, there will

be more humus in the soil, which improves its mechanical texture and also furnishes food for the plants.

If two hoed crops are grown in succession after the manuring, there must then be added to the soil before planting the strawberries a heavy coating of wood ashes or a liberal supply of superphosphate. These may be applied after the ground is ploughed in the spring, previous to planting the strawberries, and incorporated in the surface soil by the use of the harrow. The effect of wood ashes is to induce a greater growth of fruit, and to render it firmer and of good color.

Phosphates and some kinds of superphosphates may be applied to the plants at various stages of growth prior to the period of blossoming. These should be sprinkled along the rows when the plants are dry, and if any considerable quantity is applied it may be necessary to brush over the plants with a broom lest it hit the leaves. It is usually considered better to apply these manures oftener and in less quantity at a time, than to put on a considerable amount at one time with long intervals between the applications.

(To be continued.)

The Export of Winter Apples.

Read by J. T. McBRIDE, Montreal, before the Dominion Convention of Fruit Growers.

Regarding the profits and drawbacks in connection with the export of winter apples, allow me, as briefly as possible, to give you a few facts gained by fifteen years' practical experience in British and foreign markets. The most profitable apples for export are: King's, Cranberry Pippins, Baldwin's, Gravensteins, Bishop's Pippins, Ribston Pippins, and Golden Russets. Occasionally Spies and Greenings make money abroad, but, as a rule, they sell for more money in Canada.

All apples should be picked and culled with the greatest care. We are advancing in this department yearly, but still there is room for improvement. The more care in this respect the better name will our fine Canadian apples gain, and they are second to none, and the more profit will be obtainable for either local or foreign buyers. Cease to purchase fruit that has been carelessly culled before being packed. Many a buyer has ordered his men away from an orchard where the grower has carelessly picked his apples, and wisely so, for no packer can make first-class shipping stock with such fruit. Only No. 1 standard sized barrels should ever be used. They ought to be kept perfectly clean, and when packed should be headed and distinctly branded. A fancy package will command more money than one with which less care has been taken. It is better to mark our apples No. 1 and No. 2; I mean, use a different stencil. No. 1 should be strictly choice apples; No. 2 ought to be good, clean, sound, selected apples; the balance should be dried, evaporated or made into cider, for all of which a market can be found.

All shipping apples must be carefully faced, well shaken and lightly packed. A barrel that shows the least slackness on this side the Atlantic will make no money for the shipper on the other side, where they often make and sell as slack, what here would be considered tight and in firm order. Now, we have our fruit properly gathered and packed, the question is, where had we better sell? Our advice would be to sell to some one on this side of the water. When we require foreign fruit we are compelled to buy. So, if Europe wants our grains and fruit we would say, Come across, examine, buy, and we will ship and draw for amount, allowing no claims whatever. Take your risks, as we are compelled to do when we purchase oranges, lemons, grapes, etc.

When consigning, our apples as a rule are shipped to Liverpool, London, Glasgow, and Bristol. They generally go into a dealer's hands, who hands the bill of lading to an auctioneer, by whom they are offered at first sale after being landed. The auction system is all right in itself, but the charges are far too high.

Sixpence per barrel to the consignee, sixpence per barrel to the auctioneers, to which they add cartage, dock and labour dues, postage, bill stamps, cables, etc., etc., which together make another sixpence. So it costs generally 1s. 6d. to sell a barrel after it is landed, to which we would have to add 3s. 6d. to 4s. 6d. per barrel freight. As a rule, we have to pay more freight from Montreal than our neighbours have to do from New York, Boston, or Philadelphia. Why is this so? Some of our worthy steamship friends will no doubt explain, but we hope soon to see a 2s. 6d. freight from Montreal to Liverpool. Another drawback in Britain is the law, which allows a buyer to refuse any number of barrels (out of any purchase in the sale room), which he calls slack. Almost any barrel can be made to give somewhat after the way they are piled on their docks, two and three high, on their ends; also, after a rainy night or heavy fog any barrel showing the slightest moisture is called damp and wet, and sells from 2s. to 10s. per barrel less than dry tight barrels. The Canadians who have made money by consigning apples can be easily counted; those who have lost money by the same practice, their name is legion. Our railway companies have done considerable for us by supplying better cars, in greater quantity, and granting through bills of lading; but still greater care could be taken in the loading and unloading. They should not be unloaded until the day the steamship company is ready to load, for frequently we have seen thousands of barrels on our wharves, some inside and often outside of the sheds, to be wet, pilfered and generally disfigured, sometimes frozen, which, of course, means a heavy loss to the shippers. Our steamship companies could also assist shippers in making profits by more careful handling and judicious stowing; many a thousand barrels of apples have been ruined by being misplaced in a steamer. Wherever possible, the steamers should be ventilated, and apples should have the coolest and driest compartment on the ship, because they require it; also, because they pay a first-class freight rate. We are not complaining of our steamer friends; they have improved greatly during the past few years, and are still willing to do all in their power to meet the wants of our ever-growing trade; but we demand better positions, better ventilation and lower rates, and I believe we will secure them. There is a British law against American apples being shipped under Canadian marks and names, but last fall thousands of barrels of Michigan apples were shipped and sold as Canadian apples. This ought to be stopped. Some Maine apples, shipped this winter in the same manner, were detained in Liverpool, and thereby a loss made. Next season this ought to be looked after and prevented. Let all fruit be shipped and sold under true colors. If so, our apples will command more money.

Our friends in Nova Scotia have grand apples and unsurpassed facilities for shipping. We think if they used a more modern, better barrel, their fine fruit would bring still higher prices. Their apples, as a rule, are shipped by local speculators and growers to London and Boston, to be sold on commission.

Regarding when to sell or ship apples, we would recommend, after a successful experience: sell as soon as apples are ready for shipment, or, if convenient, ship as soon as packed, and regularly. The first to market of all fruit makes most money, not the last. Then, if we wait until the close of navigation, and forward by Portland or Boston, there is great danger of frost. It is almost impossible to ship in winter without doing some damage to the apples. A frosted or heated apple will never make any money, either here or in other markets.

The Tariff on Fruits.

EDITOR CANADIAN LIVE STOCK AND FARM JOURNAL.

SIR,—Fruits are very delicious, and when used ripe and as nearly as possible in their natural condition are beneficial to the health. The country to the south of us produces them earlier than we can, and we might indulge more freely in their use early in the season were it not for the restrictions put upon their importation.

Last April our Government decided upon the following tariff in reference to the importation of these fruits: Apples, 40c. per bus.; strawberries, gooseberries, raspberries, and blackberries, 30c. per pound; cranberries, quinces, and plums, 30c. per bus.; peaches, 2c. per pound; grapes, 1c. per pound. These fruits formerly entered free of duty. The avowed object of this legislation is to protect the interests of our fruit-growers. That it

will accomplish this end is of course true, but while doing so it presses hard on the consumers of fruit, which vastly outnumber the producers. It may be the proper thing to legislate in this way, but if so the writer has not studied political economy on correct principles. It would be about as correct a thing for Great Britain to impose duties on agricultural produce entering that island for the protection of her farmers.

The articles enumerated above were formerly on the free list in both countries. The following enumeration gives the amount of the imports of the green fruits named which were brought in from the United States for the fiscal year ending 30th June, 1889:

	QUANTITY	VALUE
Apples,	70,921 bbls.	\$121,782
Cherries,	92,863 qts.	\$9,333
Peaches,	3,327,317 lbs.	\$138,270
Blackberries, Cranberries, Gooseberries, Raspberries, Strawberries,	1,741,507 lbs.	\$ 9,459

During the same period we exported to the United States, of fruits, free of duty:

	QUANTITY	VALUE
Apples,	144,618 bbls.	\$230,108
Berries of all kinds,		\$75,285

Total, \$305,393

We thus see that the barter in these products was not very far from equal, so that neither party had serious ground of complaint. However, now that the step is taken, we will not complain if our fruit growers will set vigorously to work and give an abundant supply of fruits to the dwellers in the northern cities of this great Dominion, and in all places where fruits will grow well. If we are not to have any more of the 3,327,317 pounds of the American peaches, give us an equal amount at live and live prices, and we will try and be content.

FRUIT CONSUMER.

The Apiary.

FOR THE CANADIAN LIVE STOCK AND FARM JOURNAL.

Destroying Bees in the Fall.

A good deal is being said by a writer in the *Canadian Bee Journal* about destroying bees in the fall, and the writer argues that it pays best to destroy bees in the fall, and purchase fresh colonies in the spring, thus saving the stores consumed by the bees during winter. That such a plan is not practicable it is not difficult to see; there would be a great accumulation of combs and hives from year to year unless the number of colonies kept would be doubled each year. Then many of our best bee-keepers have colonies they would not part with for three times the price of ordinary colonies, as they breed carefully for desirable qualities in bees. Again, if everyone would practise the destruction of their bees in the fall, the bee-keeping industry would soon be at an end.

The destruction of such colonies as are liable to perish during the winter is advisable. All colonies not in good condition are destroyed by me, as under such circumstances I consider it will not pay to run the risk of the bees consuming \$2 to \$3 worth of stores only to perish. In this direction we can to advantage turn our thoughts and prevent a considerable percentage of winter losses. Instead of introducing a queen late in the fall to a queenless colony, I destroy it.

R. F. HOLTERRMANN.

Jottings.

Sugar Beets or Corn.—The Ohio Experimental Station, after conducting an experiment to determine the relative worth of sugar beets and corn ensilage for feeding purposes, advances this conclusion: In respect to milk flow the results of this experiment confirm those of the one made a year ago, in indicating that beets are more favourable to milk production than corn ensilage.

Provincial Fat Stock Show.—At a recent meeting of the officials of the association controlling this event, the following judges were appointed. Cattle—Ald. Frankland, Toronto; John Hope, Bow Park, Brantford; Jos. Dingle, Hamilton; John Dunn, Toronto. Sheep—Henry Arkell, Arkell; W. G. Gow, Fergus; Wm. Thompson, Elora. Pigs—John McHardy, Guelph; John Allison, Galt; Jas. Laidlaw, sr., Guelph. Poultry—Jas. Guldie, Geo. Muston, and Geo. Tolton, Guelph.

Knabe Pianos.—Eugen D'Albert to William Knabe & Co. (Translated from the German.) During my sojourn here I had

frequent opportunities to make myself acquainted with the Knabe pianos, and from fullest conviction I declare them to be the best instruments of America. Should I return here for artistic purposes—which may be the case very soon—I shall most certainly use the pianos of this celebrated make. I give this testimonial with pleasure, voluntarily, and entirely unsolicited for by the house of Knabe.

EUGEN D'ALBERT.

New York, May 16th, 1890.

Canadian Cattle in Scotland.—Several lots of Canadian store cattle were sold in Scotland the last week in September. Prices were not so good as they had been during the summer, and much of the stock offered was of inferior quality. At Inverness, two hundred head were sold at an average of \$55.80. At Haddington 250 were sold at prices ranging from \$50 to \$75. At Dundee there were 660 offered. The trade here was dull, and prices lower than at any former sale. The average was for the better bred animals from \$60 to \$70. Inferior sold as low as \$37. Heifers from \$40 to \$63. A large number of this lot were bought for England.

Canadian Sheep at Dundee.—The *North British Agriculturist* informs us that the first consignment of Canadian sheep to be brought to Dundee were disposed of on Thursday, September 25th. The attendance was not large. The sheep brought from 25s. each for the poorer quality to 46s. for the better class, or an average of 7d. to 7½d. per lb.; or in our currency about \$6.25 per head for the inferior sheep, and \$12.50 for the highest quality, or 17 to 18½c. per pound. Considering that these were the first to be introduced, and likely of an inferior quality, the prices may be looked upon as encouraging. If more attention were given in Canada to the supplying sheep of the mutton type and quality, there is no limit to the development that might be made, and the revenue that it would yield to Canadian farmers.

Sheep Farming Profitable.—The days of importing mutton into the Canadian North-west are, according to the *Canadian Gazette*, practically at an end. The number of sheep imported last season was comparatively small, and these even met with a very slow sale. This year, though the season has been a very unfavorable one for stock, owing to the long winter, late spring, and scarcity of feed, the market has been entirely supplied with native Manitoba mutton, and the *Commercial*, of Winnipeg, assures us that there is expectation of a surplus for export next year. How profitable sheep raising in Manitoba really is, if managed in a businesslike way, is evidenced by such instances as these. Last winter a farmer at Manitou invested \$600 in a flock of 100 sheep. This summer he sold the wool for \$65, and sixty-five lambs at \$4 to \$5 per head, thus realizing over one-half the first cost of the sheep within a few months, and he still has the sheep. Another farmer told a city wool-dealer, when disposing of his wool at Winnipeg recently, that he had realized \$6 per head from his sheep in the sale of wool and lambs this spring. This represented \$5.25 per head clear profit for the year, as he reckoned the cost of wintering at 75c. per head, and in the summer he did not count that they cost him anything. Even the cost of wintering did not represent a cash outlay, but was merely his time and expense in putting up hay.

Stock Notes.

Horses.

Hackneys are in demand, as evidenced by the sales that have been held in Norfolk. Warlock, by Confidence, 158, brought about \$725, another stallion by the same sire went for \$575, and a third for \$525. The young stallion Rising Confidence, by Confidence also, sold for \$1,000. A yearling colt by Confidence brought \$475. At another sale the whole forty head averaged \$340.

H. H. SPENCER, Dorset Farm, Brooklin, Ont., writes: "On account of my ill health we have only exhibited at one show, Ontario Durham Exhibition. In Clydesdales we made five entries, and won and on yearling stallion; 1st for mare and three of her progeny. In the Durham class we showed four cows and heifers and a bull calf, out of which we captured two firsts, two seconds, and a third, also the prize offered by the McLaughlin Cattle Co., Oshawa, namely, one of their best road carts, which was awarded to the best four females and one bull. This was all our exhibit. In Berkshires we have 64 in number (21 were sold to go to Montreal this week), 33 of which are fall pigs, all from registered sows. Sheep doing well, not many on hand."

MR. JOHN KERR, Red Hall, Wigton, Cumberland, shipped three well-bred Clydesdale stallions last Saturday to the order of Mr. J. C. Ross, Jarvis, Ontario. One of them is a three-year-old, got by the prize horse St. Gatten, 3988, which gained the Buchan Club premium two years ago, and stood in the short list at Glasgow Stallion Show when a three-year-old. The other two are two-year-olds. One of them is out of Mr. Kerr's well-known prize mare Kate Macgregor, or the celebrated Macgregor; and the other is by the grand breeding horse Lord Lothian, a son of the famed Top-Gallant. These three horses are powerfully built and well coloured, and are likely to command a ready sale in Canada. *North British Agriculturist.*

By the Donaldson liner *Civet*, which sailed on Friday last Mr. S. M. Kay, Sainsfield, Ont., shipped one two-year-old stallion and three fillies purchased from Mr. Walter S. Park, Hatton Bishopston. The stallion, Sir Erskine, was bred by Mr. Craig, Ryesholm, Dairy, and was got by the famous breeding horse Lord Erskine, out of a mare by the well-known Darnley prize horse Sir Michael. He carried fifth prize at the Glasgow Spring Stallion Show third at Maryhill, third at Paisley, and first at Bishopston this year, competing with the best colts of the season, and was not excelled by any stallion of his year for weight of bone and soundness of feet and legs. With his substance and strength, combined with excellent quality of bone, he should be a very popular horse in Canada, and the combination of Lord Erskine and Darnley blood that meets in his veins should render him invaluable as a breeding horse. One of the fillies was a

Stock Notes.—Continued.

sold to A. Young, Esq., of Princeton, a grand specimen of the breed, got by a bull imported by us, and rich in the blood of the Netherland and Promoter blood. This calf will therefore possess the blood of three noted strains, viz., Aaggie, Netherland, and Promoter. Mr. Young knows from experience the benefit to be derived from the possession of this class of pure-bred stock, and selects a good one to use to the grade heifers, which he now has. Having made all these sales early in the fall, shows that good stock is appreciated, and that the popular strains in this herd are much sought after.

Sheep.

A number of Cotswold and Southdown ewes are wanted by an American buyer, as stated in an advertisement appearing elsewhere.

MR. J. C. SNELL, of Edmonton, Ont., draws attention to the fact that he has a grand lot of Cotswold farm lambs, ewe lambs and yearling ewes, bred to imported rams for sale. He also makes a specialty of importing and breeding Berkshire boars and sows. Notice advertisement.

JOHN DUNKIN, of Maple Ridge Farm, Brucefield, Ont., writes: I have sold a number of fine Shropshire Down sheep, including two imported rams, and fifteen young ewes and rams, to Mr. McRoberts, for Illinois; two ewes and one imported ram to Mr. Rowe, of Michigan; one imported ram and four ewes to Messrs. McPherson, of Forest.

MR. J. NEPH STRATFORD, of Stratford, Ont., writes: "I find my advertisement in your paper very beneficial, having sold all Oxford and Shrop, ram lambs this season without any difficulty. Mr. Stratford is breeding Yorkshires in pigs, and Shrops and Oxfords in sheep. He has always on hand registered stock of good quality of these breeds, which he is offering at farmers' prices. His advertisement should attract attention.

MESSES. TAZEWELL & HECTOR, of Port Credit, Ont., inform us that they have coming on the S. S. Ontario, which should land this month, 120 head of Dorset Horned sheep selected from the best individuals of the best flocks of England. They have made several shipments, five of small flocks to Pennsylvania U.S.A., within the past few weeks, and they have also sent several consignments to Ohio. They report a strong demand for Dorsets from their flock, and are using every endeavor to maintain the growing popularity of this breed.

J. CAMPBELL, of Fairview Farm, Woodville, Ont., writes: It would be too long a list to give a full account of the season's sales of Shropshires until now, Nov. 5th. While there is a cry of dull times, owing to small yields and low prices, the demand for good sheep has continued strong. I have shipped to many of the States, as far west as Minnesota. In Ontario I have sent animals to nearly every county westward, including three shipments to Essex; and eastward to Renfrew, many orders have been booked. Many of them were shown at fairs on both sides of the lines, with the result of such reports as this: "The ewe lambs arrived in time and won first at all our shows." "I showed the ram lamb you sent me at our county show where he was first winner." "The ewe carried the red ticket at three shows." Orders are now being received for in-lamb ewes, of which I have a few Canadian bred, and a choice lot of imported ones, and two show ewes still on hand, also some fine ewe lambs.

JOHN JACKSON & SONS, of Woodside Farm, Abingdon, Ont., write: The Woodside flock of Southdowns made the usual round of the shows this fall, and was good for 1st and 2nd on flock at Detroit, Toronto, and Hamilton. At six shows competed for forty-six 1st prizes and won forty-five of the number. The demand for good Southdowns has been in excess of supply. The Woodside flock go into winter quarters in a more select form than for any previous year since established, the oldest sheep being only four years, with a large percentage of ram and ewe lambs, to be ready for next season's trade. Since our last report the following list of sales have been made at prices that keeps the wheel rolling: To Lester Bashford, Hollowville, N.Y., 1 ram lamb; A. Teller & Sons, Paris, Ont., 1 ram and 2 ewe lambs (imp.); U. Pravit & Bro., Greensburg, Ind., 1 ram and 4 ewes (imp.); A. Simonton & Sons, Blackheath, Ont., 1 imp. ram; S. A. Metler, N. Pelham, 4 ewes; L. C. Bishop, Adamsville, Michigan, 1 ram and 2 ewes; J. T. Wilkinson, Chilliwhack, B.C., 1 ewe; Geo. Baker & Sons, Simcoe, Ont., 1 ram; T. C. Douglas, Galt, Ont., 1 ram and 2 ewes (imp.); T. H. Hubbs, Chisholm, Ont., 1 ram lamb; Jas. H. Johnston, Woburn, Ont., 1 ram lamb; Peter Metler, North Pelham, 1 ram lamb; Geo. Westcott, LeRoy, N.Y., 1 (imp.) ram, F. W. Fowlds, Hastings, Ont., 1 ram lamb; R. C. Lyburner, Detroit City, Minn., 1 ram lamb; Frank Mingle, St. Ann's, Ont., 2 ewe lambs; W. Johnston, Rosedean, 3 (imp.) ewes. Thus the good things are scattered from the Hudson River to the Pacific Ocean.

MR. ROBERT MARSH, of Lorrige Farm, Richmond Hill, Ont., in renewing his advertisement for another year, reported that his sales of Southdown sheep for the past year had been very good. He had sold a flock of twenty-seven in one sale, and had made no less than fifteen single sales, all at good prices. Mr. Marsh finds a demand for his sheep all over Canada. He formerly sold a great many to the United States, last year making no less than forty sales to that market, but he is of opinion that the McKinley Bill tariff will stop the sales of pure-bred sheep to the United States. While speaking on this topic Mr. Marsh expressed himself very strongly in favor of a sheep record for Canada. This record, he thought, should be for all breeds of sheep, and be somewhat similar to the Canadian Swine Record now kept for Berkshires and Yorkshires. He was of the opinion that the matter should be taken up by the Ontario Sheep Breeders' Association, and the record be put in charge of the Agricultural and A. S. Association. With respect to the Shortboms Mr. Marsh has also had some considerable success. Two of his young lulls, both being first-class animals and of high pedigree, viz., R. Pinkum and The Laird, of Lorrige, have lately gone to Muskoka. Mr. Marsh expresses himself as highly in favor of the Berkshires. He has made many sales of this breed during the past year. He says that many of his buyers who had for some time past left him to get other breeds, have now come back again for the Berkshires. Mr. Marsh's opinion is so strong

CLYDESDALES

FOUR REGISTERED CLYDESDALES FOR SALE.

Imported and Canadian bred: Craigie, (imp.) ten years old, Laird of Moray, (imp.), five years old, Bonnie Lad of Craigielea, two years old, Jamie Crawford, one year old. Pedigrees and other information, address, THOMAS TAYLOR, Harwick P.O., Ont.

I am OVERSTOCKED and Must Sell!

One Imported Polled-Angus Bull, 4 years old, (registered). One yearling Polled-Angus Bull, (registered). One aged Improved Yorkshire Boar, (in farrow), registered. One aged Improved Yorkshire Sow, (registered). One spring Improved Yorkshire Sow, (registered). One four months old Boar. Six fall Boars. Six fall Sows.

I am overstocked for the winter and I will sell the above on very reasonable terms. Correspondence will receive prompt attention. Address,

ANDREW GILMORE, Oakdale Farm, 20/572 HUNTINGDON, QUE.

THE COMELY COTSWOLDS

are coming to the front. They are wanted all over the continent. Hostile tariffs are powerless to stay the steady stream of good sheep. All the provinces are enquiring for them.

The Home of the Cotswolds in Canada is at Edmonton,

where, for forty years, they have held the fort. The flock has been regularly replenished with first class importations. We breed from the best imported Rams, and all our Sheep are Eligible to Registry.

We have a grand lot of RAM LAMBS FOR SALE, large and full of quality; also EWE LAMBS and YEARLING EWES (bred to imported rams.)

We ship to order and pay freight or express to any station in Ontario. We guarantee satisfaction. Visitors welcome.

We have also a fine lot of young BERKSHIRE BOAR and SOWS for sale.

Come and see, or write: J. C. SNELL, Edmonton, Ont.

BERKSHIRE BOARS FOR SALE.

Four Imported Boars, ten young Boars, 6 to 8 months old, by Imported Boars, bred straight from Imported Stock. A few young Sows of breeding age; also young Figs of September and October litters. Prices moderate for quality and breeding. Come and see, or write:

J. C. SNELL, Edmonton, Ont.

BERKSHIRE AND YORKSHIRE Boars fit for service.

Also a few first class shearing Southdown Ewes, For Sale on reasonable terms. Write to W. H. McNISH, Lynn, Ont.

POLAND CHINAS.

POLAND CHINA PIGS for sale—of April and October breeding—from imported (registered) stock of noted strains. Prices moderate. Address:

W.M. & F. ROW, Avon, Ontario.

FOR SALE.

A number of Berkshire Pigs from 6 weeks up to 6 months old. Boars and Sows. Two Sows to farrow in a month. All imported stock, Registered Pedigrees. Prices reasonable. Address, C. R. DECKER, Chesterfield, Ont.

HAVING more stock than we care to carry over winter, we are prepared to make exceptional inducements to those wanting Percheron Stallions or Mares, or Jersey Cattle. We have many to select from, and we would like to see you in person. In breeding we have secured the best lines, and are confident that in inspection of our stock you will be fully satisfied. We have a number of good ones to total number. We have stallions for sale ranging from one to seven years old but would call attention to those from five to seven years. A portion of them have been used and have a few in the hands of a few of our best breeders. The larger number are of the first class, and are of a special value for their breeding as good as the best, and few guarantee of their use. This is probably true of the man who has a half-bred bull and a number of cows of fashionable strain that we wish to dispose of. We will make prices on these animals that will secure speedy sale. The good ones at reasonable figures, much lower than we think the same quality could be had elsewhere. Our stock is of superior merit, but whose breeding is all right, at one price. We have a few of our best work horses, and so low that any one having few horses to breed and wishing to improve their stock can afford to purchase. We will extend any reasonable credit to insure cash sales but we will extend any reasonable credit to responsible parties. Address: LOG CABIN STOCK FARM, 1064 Woodward Avenue, Detroit, Mich., City Office, 4 Merrill Block.

Stock Notes.—Continued.

that we put it in his own words: "Unquestionably, I say, the Berkshires are the breed for Canada. They are good thrivers, good producers, and are early to mature. Their meat is of the choicest quality and has the fat and lean well intermixed. Their mothers also are careful nurses."

Swine.

J. E. BRETHOUR, Burford, Ont., importer and breeder of York-shire pigs, makes a change in his card of this issue.

C. R. DECKER, of Chesterfield, Ont., reports the following sales as being made very recently: 1 boar to C. Hasteller, New Hamburg; 1 sow to I. Hasteller, New Hamburg; 1 sow to Geo. Smith, Haysville, Ont.

MESSES. SMITH BROS., of Churchville, Ont., have established a breeding herd of Improved Large Yorkshires, by securing foundation stock some time ago from the noted English herds of Sanders Spencer and Mr. Jones. They have eight sows and two boars, all imported stock, and they now have a number of young sows and boars ranging in age from six weeks up, which they offer for sale as stated in their new advertisement appearing in this number.

DANIEL DECOURCY, of Burnham, Ont., writes: My herd of Ohio Improved Chester White swine is going into winter quarters in good healthy condition, and I must say that I have been very successful at our fairs this year. At Toronto, Canada's greatest exhibition, my herd took three first prizes and one second prize, namely, on 1st boar over two years' old, 1st on boar over one and under two years (he being only sixteen months old), and had to compete against boars almost two years old, and 1st on boar under six months and 1st on sow under six months. In fact my herd took more first prizes than any one herd that showed in my class. I find the demand for Ohio Improved Chester Whites good, and am not sold out of stock yet. I have sold over sixty head of Chester Whites during the last six months, scattered all through Canada, Nova Scotia, Quebec, and Prince Edward Island.

MESSES. J. G. SNELL & BROS., importation of Berkshires is commented on by the Mark Lane Express as follows: "We are pleased to hear that Mr. Edrey Hayter's consignment of Berkshires arrived out in capital condition, and justified the opinion formed of them in this country, by all taking top places at the leading shows across the water. Messrs. J. G. Snell & Bro. have written to Mr. Hayter expressing great pleasure at receiving such a valuable selection. We imagine the most prominent figure in the group was Eclipse, the young boar which took champion prize at the Royal Counties Show at Winchester, and which made a long way the highest figure at Mr. Hayter's sale at Woodgates. Of two brothers at the sale, John Mills, Esq., bought one to stay in the neighbourhood, and Mr. Benjamin the other, to send to California. One more brother Mr. Hayter had retained in the herd at his present residence, Whitechurch, in Hampshire, and this has since been purchased by Lord Northbrook, who is starting a herd of Berkshires, and may be congratulated on obtaining a representative of this excellent family. The pair of sows in Messrs. Snell's importation were, like Eclipse, sired by the boar Lord Curzon; one of them had not been shown here, the other West Woodgates Heroine, took second at Plymouth, and was champion sow at Winchester."

Poultry.

The Improved Excelsior Incubator is advertised in this number, by George H. Stahl, Quincy, Ill. Do not fail to see it.

W. G. BELL, of Branda, Ont., has forty choice Bronze turkeys to sell. Birds from the prize-winning flock should meet with ready sale. See advertisement.

R. J. GRACEY, proprietor of the Wainfleet Poultry Yards, states that he has had good success this season, as he has raised a large number of fine chicks of the White Wyandotte, R.C.B. Leghorns and Plymouth Rock breeds, also a lot of fine Pekin Ducks, this year. He says his prospects for fine stock are better this year than ever before, and his sales have been more than double those of any previous year. His Langshans are all gone. Of this breed he could have sold a great many more. He has made some A sales and considers THE LIVE STOCK JOURNAL a good advertising medium.

W. J. BELL, Branda, Ont., in sending a copy of advertisement, writes: "I have young Bronze Turkeys which weighed on Nov. 5th, exactly five months old, gobblers 20 lbs., and hens 18 lbs. He has sold his prize young pair at Toronto to H.H. Wallace, of Woodstock, to be sent to Scotland. This will make five of Mr. Bell's birds to cross the ocean for show purposes. Abbot Bros., the great poultry men in Hingham, Norfolk, wrote: "The gobbler arrived in splendid condition, and is one of the best Bronze turkey cocks we ever saw."



GREAT SALE OF SHORTHORNS

We will offer for Sale by Public Auction at BELVOIR, Delaware, Ont., on
Wednesday, DECEMBER 17th.

Our unsurpassed collection of richly bred Shorthorns of grand individual quality—including an Imported Duke Bull, Imported Waterloo Cows, Imported Booths and a number of the favorite Constance and Darlington Families.

The Herd must be sold to close out the partnership, and everything will be sold to enable a settlement. The Stock are in natural condition, not having been forced for sale, as it is only within a few weeks that it was decided to hold a Sale.

We would draw attention to the successful breeding of our Cows, how regularly they have bred up to fourteen years. In the Catalogue which will be ready in a few days all information will be given as to the number of calves each cow has produced and date of the last calving. We believe them to be well worthy the attention of intending purchasers as they are all breeding healthy, and in nice condition, and will bear transplanting to the North-West, as well as to the south, *Never having been pampered, or kept in close underground stables, they are as hardy as the hardiest.* Some SHROPSHIRE SHEEP and BERKSHIRE PIGS will also be offered.

GIBSON & BURCH,

DELAWARE, ONT.

MANUFACTURERS' LIFE INSURANCE COMPANY. TORONTO.

SIR JOHN A. MACDONALD, P.C., G.C.B., PRESIDENT

JOHN F. ELLIS, MANAGING DIRECTOR.

Insures lives on all approved plans. Rates lower than any other Company. Policies the most liberal.
Claims settled immediately on proof of death.

Live Agents Wanted in every Village and Town in the Dominion.

ONTARIO LODGE STOCK FARM SHIRE AND CLYDE HORSES



IMPROVED LARGE YORKSHIRE PIGS.

Herd headed by Imported Boars, Holywell Physician, (38) and Jumbo (62).



Orders promptly attended to. Send your orders or Spring Pigs. Stock all pedigreed.

E. M. JARVIS, Proprietor, OAKVILLE, or CLARKSON'S P. O. on G. T. R., Ont.

Shire Horses

We have sixteen head of Imported Stallions and Mares on hand, all registered in the Eng. Stud Book. We want to clear them out, and will sell at very low figures. They are the right kind, low set and blocky.

SHROPSHIRE, BRED FROM PURE IMPORTED STOCK.

Address—ORMSBY & CHAPMAN, THE GRANGE FARM, "Springfield-on-the-Credit."

Station and Telegrams: STREETSVILLE.

Improved Yorkshire Pigs

We have the Pioneer Herd of Pedigreed Yorkshire Pigs in America. All bred from the BEST ENGLISH STRAINS. Every pedigree guaranteed. Prices low. We are now booking orders for fall pigs. Also

Belvedere Stock Farm!

3/4 Miles from Alisa Craig on G.T.R. Line.



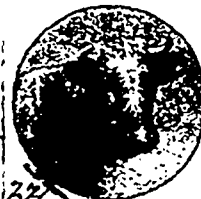
We Breed:—PURE BATES SHORTHORNS, AND LEICESTER SHEEP.

Our herd of Shorthorns is headed by Rasy Prince 6th, and it consists of the following families:—Coriander, Tilly, Chesterfield, Bertha, Rosettes, and Darlington. We have for sale a choice lot of young bulls. Also a number of young heifers bred to Imported Duke of Salisbury, and they, like the bull, are descendants of good milking strains. Any person looking for stock is always welcome and will be met at depot if notice is given when they are coming. Prices and Terms Easy.

GRAHAM BROS., Alisa Craig P.O.

Shire Horses

Improved Yorkshire Pigs



SHORTHORNS

I have for sale

Six female Shorthorns from 8 to 20 months old, also

Three Bulls.

These animals have been all bred by me from imported stock.

D. ALEXANDER, Brigen, Ont.

THE GLEN STOCK FARM

Innerkip, Oxford Co., Ont.,

SCOTCH SHORTHORNS SHIRE HORSES

Improved Large (White) Yorkshire Pigs.

A few young heifers and bulls for sale at reasonable prices. Our herd of Improved Large (White) Yorkshire pigs are imported from the Prize-winning Herds of Sanders Spencer Ashforth, Charnock, and F. Walker-Jones, who won upwards of \$10,000 in Prizes in three years. Orders booked for young pigs. P.O. and Telegraph Office at Innerkip. Farm is one mile from Innerkip station on the C. F. R. (Ont. div.) and a short distance from Woodstock station on the Canadian Pacific and Grand Trunk R. R.

GREEN BROS., THE GLEN, INNERKIP

HILLHURST HERDS.

HEREFORD, Aberdeen-Angus and Jersey

Helpers, Cows and Young Bulls for Sale

At reasonable prices. Send for new Catalogue.

M. H. COCHRANE, Hillhurst, Que., Can.



J. & W. B. WATT, BREEDERS OF SHORTHORNS CLYDESDALES AND OXFORD DOWN SHEEP and BERKSHIRE PIGS

SALEM, ONT.

"THE BRIARS,"

Stutton West, Ont.

Over 50 Head of Registered Shorthorns.

Including 12 bulls of various ages, incorporating the best blood of the Sittytton, Kinellar, and Killeby Herds. Also Horses and Pigs.

INSPECTION INVITED.

F. O. SIBBALD.

BREEDERS' ATTENTION! I guarantee I can give you a plan that you may change your stock to come either male or female, as you desire. Send stamp for particulars. G. TILGHMAN, Palatka, Fla.

SHORTHORNS.

BELVOIR HERD

Pure-Bred Shorthorns.



The Bates portion of herd is headed by imported 8th Duke of Leicester=9279= and consists of the following families:

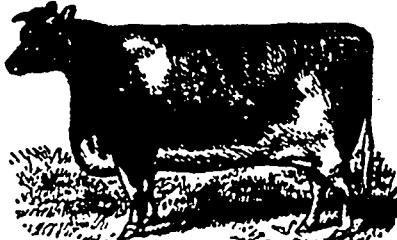
- Waterloo Princess
- Constances Charmers
- Darlington Filigrees
- Garlands Seraphinas
- Etc.

There are some imported Booth Cattle, and Scotch strains are also included. Purchasers can depend upon fair treatment and liberal usage.

KOMOKA STATION 3 MILES

Richard Gibson - Delaware P. O.

Arthur Johnston GREENWOOD, ONT., CAN.



Announces to his customers, and the public, that he is still doing business at the old stand, and has for sale the finest lot of young animals, of both sexes, ever offered by him.

Intending exhibitors can be supplied with first-class show animals of either sex and of various ages. New catalogues will be ready by January 20th, 1890. Send for one.

Claremont Sta'n, C.P.R., or Pickering Sta'n, C.T.R. Write or wire me, when and at which station to meet you. No business, no harm.

CLAREVILLE STOCK FARM



Lying between Canada Southern Railway, and Grand Trunk Air Line, Cayuga Stations.

I breed and have

FOR SALE

A-1 SHORTHORNS

- Marquis of Linwood and Lord Chesterfield 5th.
- Leicester and Cotswold Sheep, Berkshire Pigs.
- Thorough-bred and Heavy Horses of all kinds.

Young Bulls a specialty. Supply always on hand. Come and see.

J. R. MARTIN, CAYUGA, ONT.

BATES' SHORTHORNS

-AT-

HAZELRIDGE FARM SANDWICH, ONT.



THE undersigned desires to call the attention of Shorthorn Breeders to his very choice herd of finely-bred Bates Cattle, comprising the following well-known families, viz: Duchess, Oxford, Thorndale Rose, Barrington, Kirklevington, Wild Eyes and Red Rose; headed by that grand imported bull, Grand Duke of Connaught (56303).

Several very choice young bulls of the above families, fit for service, for sale on reasonable terms. For particulars write to or call on

W.M. WRIGHT, -or- W.A. WRIGHT, 36 Fort St. West, Detroit, Mich. Petit Cote, Sandwich, Ont.

MAPLE LODGE STOCK FARM.

SHORTHORN CATTLE, LEICESTER SHEEP, AND BERKSHIRE PIGS.



We have for sale now, a splendid lot of Cows, Heifers, and Bull Calves, a number from our best Milking Strains Also, a few Leicester Ram Lambs.

Stables one mile west of Lucan Crossing Station, on Grand Trunk Ry.

Come and see our Stock.

JAS. S. SMITH.

Maple Lodge P. O. 29/849 Ontario.

BOW PARK HERD



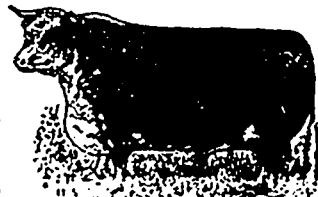
PURE-BRED SHORTHORNS

We have on hand eighteen young bulls fit for service, good animals and well bred, which we offer at reasonable prices and on liberal terms. Address,

JOHN HOPE, Manager, Bow Park, Brantford, Ont.

HEREFORDS.

THE TUSHINGHAM HEREFORDS



THIS herd is remarkable for the number and uniformity of the good calves that it produces. It has taken a 1 the Medals given in the Province of Quebec, at leading exhibitions the last three years. Breeders who are anxious to get bulls or females with plenty of hair and of good quality and good milk producers, should see this herd before purchasing elsewhere.

J. WALTER M. VERNON,

TUSHINGHAM HOUSE, Waterville, P. O. Waterville is on the main line of G. T. R., 110 miles east of Montreal.

HEREFORD AND ABERDEEN ANGUS BULLS AND HEIFERS.

WE have on hand for sale a number of Hereford Cows, Young Bulls and Heifers of the best of breeding. They are all from imported stock of the highest merit. The bulls are a robust, vigorous lot and cannot fail to get prime feeders. We also hold for sale a choice collection of young Aberdeen Angus Bulls from the best strains of the breed and they are all imported or from imported stock. A rare chance is afforded to get a superior sire of sturdy constitution

Prices Reasonable and Animals Right.

DAWES & CO., LACHINE, QUE.,

Importers of Herefords, Aberdeen-Angus and Jersey Cattle.

If you want to sell or buy cattle, advertise in the T.S.J.

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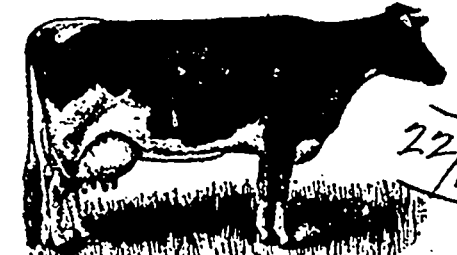
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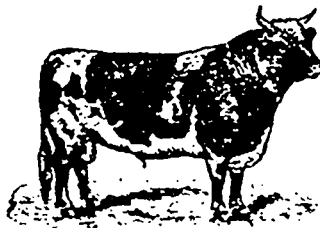
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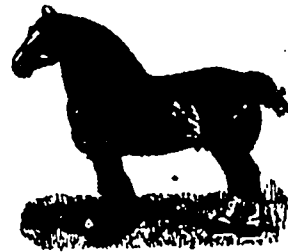
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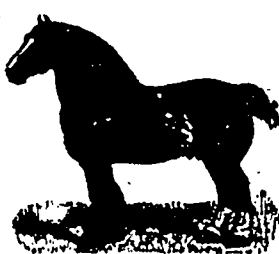
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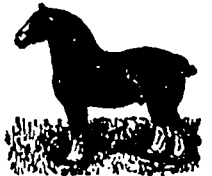


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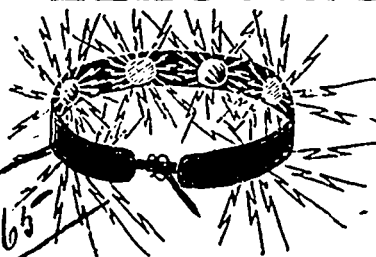
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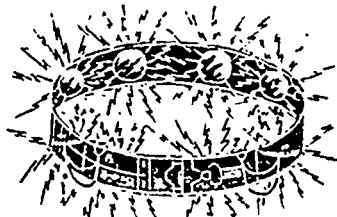
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