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Canadian Live Stock AND FARM Journal

Vol. XII. No. 8.]

TORONTO, AUGUST, 1895.

[WHOLE No. 141.

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INGLESIDE HEREFORDS

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HERD OF CANADA

A few choice young bulls for sale. Satisfaction guaranteed.

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Ingleside Farm, COMPTON, QUE.
G.T.R. Station 2 1/2 miles. 181

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A specialty made of breeding purebred Yorkshires of the most desirable type. A large herd of different ages on hand. Prices moderate, and quality of stock guaranteed to be as described.

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DOMINION PRIZE HERD PUREBRED AYRSHIRE CATTLE

RECORD FOR 1893

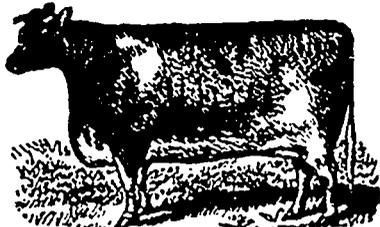
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WITH Gold, Silver and Bronze Medals
MONTREAL, TORONTO, LONDON AND OTTAWA

This herd has always taken the lead: they are of large size, and of good milking strains. JAMES DRUMMOND & SON, Petite Cote, Montreal, P.Q. 252

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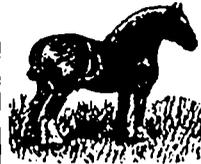


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Orders can now be booked for Shearling Rams, Ram Lambs and Ewes, sired by the celebrated prize-winning English ram, Bar None. Also rams and ewes of this year's importation.

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Choice young Heifers and Bulls by the celebrated Cruickshank bulls, Northern Light and Vice-Consul.

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H. CARGILL & SON, Cargill, Ont.

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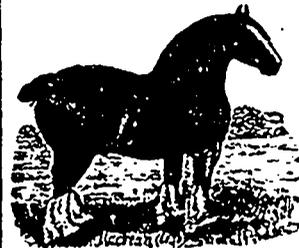


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The choicest animals that money and experience can buy, and well qualified to maintain the reputation of our stud for importing more first prize and sweepstakes winners at the leading shows in Canada and the United States than all other establishments of its kind in the Dominion. The Clydesdales have immense size, large flat bone, with style, quality, and choice breeding combined. The Hackneys have fine colors, style, quality, high knee action, and choicest breeding. The home of the Champions, Queen's Own, and Firefly. Also a few choice Welsh ponies. Parties wishing the best animals at reasonable prices are cordially invited to examine our stock. Catalogue free.

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Shorthorn and Aberdeen-Angus Cattle.
Dorset Horn and Shropshire Sheep.
Shearling Rams and Ewes
Ram and Ewe lambs of the best blood and quality.
M. H. COCHRANE,
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My breeding stock has been selected from the best English herds. Two imported boars, and eight imported sows all breeding. Pigs of all ages to select from.

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ASHTON GRANGE FARM.

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Young stock from prize winners at leading shows or pairs of either breed now ready for shipment.

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GLASGOW, as a centre for the disposal of American and Canadian horses, has proved by far the best market in Britain during the past season, and it is likely to continue so, as from its central position it commands buyers from all parts of Scotland and England.

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in the country?
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Twice Winner Over all Breeds.

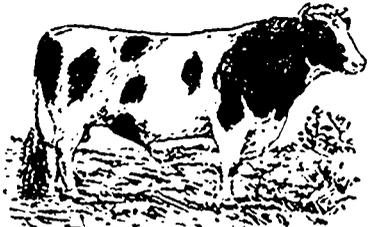
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for sale, all ages and both sexes. Won many prizes at World Fair. Prices reasonable.

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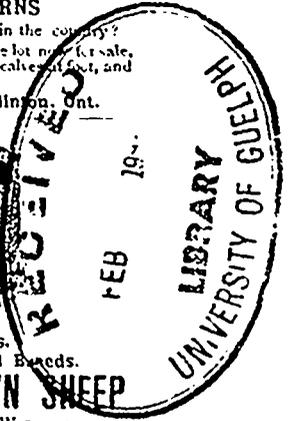
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Count Mink Mercedes at the head of herd. He is choicely bred and a superb individual. The cows are from the highest producing families and directly descended stock imported from Holland. Choice young bulls from dams with large milk records now on hand.

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NOTE: If you expect to secure the highest price for your butter and cheese, salt is the one thing you cannot economize on. Nothing but the best is good enough, and the best is

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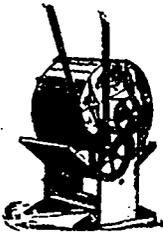
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MR. ALFRED B. OWEN,
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The Best Machine in the United States or Canada. This Machine takes Less Soap, Less Water, Less Labor.



And washes more clothes at one time than any other machine. Write for prices and terms to

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Manufacturers of Washers, Wringers, Churns, Mangles, etc.
144 FIRST-CLASS AGENTS WANTED.

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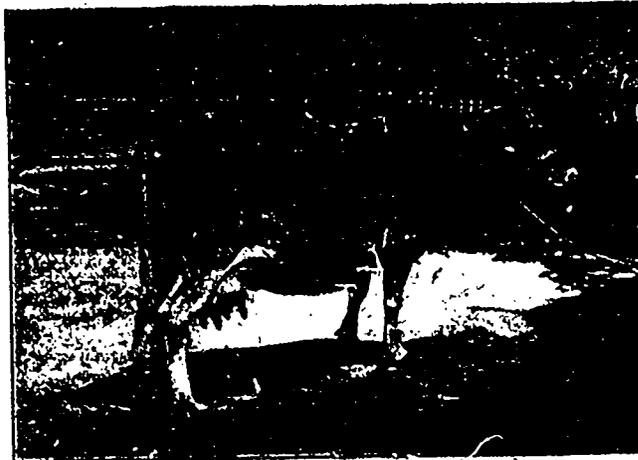
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to a distinct articulation.

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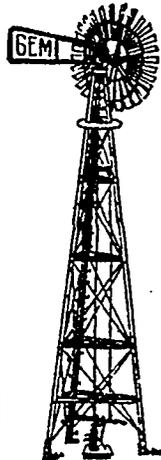
172 formerly the Linton Institute.

Have you read "Dairying for Profit," by Mrs. E. M. Jones, Judge of Butter at World's Fair, Chicago? If not, you miss a treat, which could save you hundreds of dollars. Only 50c. by mail. ROBT. BROWN, Agent, Box 324, Brockville, Ont., Can.



JERSEY COW MASSENA, PROPERTY OF MRS. E. M. JONES, Brockville, Ont., Can. 8,000 lbs. Milk, which made 654 lbs. Splendid Butter, all within her sixteenth year. My herd has won thirty medals—gold, silver, and bronze; over 400 cash prizes, besides diplomas, etc. Solid Silver Cup, value \$340, given at the Kellogg sale in New York for highest price on animals sold there; also Silver Tea Set at London, Ont., for three best Dairy Cows of any kind. Grandsons and granddaughters of this great cow for sale; also from Canada's Sir George, whose dam made 26 1/2 lbs. butter a week, and gave 57 lbs. milk a day; also from my Signal bull, whose dam made 60 lbs. 6 oz. butter a week on second calf. Chicago tests have proved the Jersey to be the farmer's best paying cow. MRS. E. M. JONES, Brockville, Ont., Can. 331

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Southern Manitoba

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Suppliers' Headquarters for Live Stock Supplies. Pressed Hay a Specialty.

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Agents wanted in every township.

HELDERLIGH FRUIT FARMS and NURSERY,
400 ACRES IN EXTENT.

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TORONTO, SEPTEMBER 2-14, 1895

INCREASED PRIZES AND IMPROVED ACCOMMODATION.

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Greater and better attractions than ever before.

There is more to see at the Great Toronto Fair than all others put together, and it is within easy reach of all.

CHEAP EXCURSIONS on all RAILWAYS.

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Visitors are coming from all parts of the Continent.

JOHN J. WITHROW,
President.

TORONTO.

H. J. HILL,
Manager.

THE Canadian Live Stock and Farm Journal

Devoted to the Interests of the Stock-Raisers and Farmers of Canada.

Vol. XII. No. 8.]

TORONTO, AUGUST, 1895.

[WHOLE No. 114



The Shorthorn Bull, William of Orange.

The property of Mr. Wm. Duthie, Collynie, Aberdeenshire, Scotland.

Our Illustration.

Since the retirement from breeding, a few years ago, of the grand old man of Sittyton, the late Mr. Amos Cruickshank, the most prominent breeder of the red, white, and roans in Scotland has been Mr. William Duthie, of Collynie, Aberdeenshire, who not only secured many of the best of the Sittyton Shorthorns after the dispersion sale there, but had, for years previously, been building up his herd by buying every year from Mr. Cruickshank the best young bull in his herd, having

arranged with him that he was to have the pick one year, and Mr. W. S. Marr, Uppermill, Tarves, with whom Mr. Duthie worked in concert, the next year, and so on alternately. In this way it was not long before Mr. Duthie had a grand herd of Shorthorns bred up, which it was worth while going a long distance to see.

No animal, probably, did more to bring Mr. Duthie's name prominently before the public than that famous stock bull of his, Field Marshal (47870), a bull of wonderful substance and merit, that had the honor of

being selected by the manager of the Queen's farm at Windsor to head the royal herd, and whose stock were most successful in the show ring. His untimely death, the result of an accident, was much to be deplored.

Of the bulls in use in the Collynie herd at the present time, one that is doing splendid work is William of Orange, the subject of our illustration. This bull is now in his thirteenth year, but is as active, healthy, and vigorous as a yearling.

He was purchased from Mr. A. Cruickshank by Mr. Marr, Uppermill, and did good

service in the latter's herd till a little while ago, when Mr. Duthie secured him. To our mind, he seems somewhat too heavy in the horn, but this is partly explained by the fact that the photographer placed the bull's head nearer the camera than his body, thus giving the head too much prominence. William of Orange is the last surviving son of the famous Roan Gauntlet, and as such is much valued by Mr. Duthie. At the joint annual draft sales of Messrs. Duthie and Marr the young bulls from William of Orange invariably make some of the best averages of the different lots.

THE CANADIAN Live Stock and Farm Journal

PUBLISHED ON THE
FIRST OF EACH MONTH BY

THE BRYANT PRESS,
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F. R. SHORE, - STOCK EDITOR.

Representative for Great Britain and Ireland:
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A monthly illustrated magazine, devoted to the ladies and young people of the household.
Furnished to subscribers to THE CANADIAN LIVE STOCK AND FARM JOURNAL as a free supplement.
Subscription price to non-subscribers 50 cents per annum.

A Farmer Wanted.

The resignation of the portfolio of Agriculture at Ottawa by Hon. Mr. Angers gives the Premier of Canada an opportunity of showing his appreciation of the important part played by agriculture in this country by appointing a farmer to the vacant position. Considering that this country is chiefly an agricultural one, and must remain so, for many years at least, it is not only advisable, but imperative, that we should have a farmer at the head of the Department of Agriculture, and not a mere figurehead. The late minister was a kindly gentleman, who, no doubt, did his best, but had not any great knowledge of agriculture, and was, therefore, dependent on his subordinates for advice. What is wanted for the position is a good, practical farmer, who is alive to the requirements of agriculture, and who will do all he can to encourage it. Such a one it should not be hard to find. Look at the success that has attended the Department of Agriculture in Ontario, presided over as it is by a farmer like the Hon. John Dryden, who is in touch with his fellow-agriculturists throughout the province, and who, knowing their needs, does his best to serve them. The same result can be found wherever a good, practical farmer has filled such a position. It will be the farmers' own fault if they do not make their voices heard at once through their representatives on this question.

Loss of the S.S. "Mexico."

In our dairy columns will be found particulars of the arrangements made by Professor Robertson, as Dominion dairy commissioner, with the railway and steamship lines for a cold storage service for butter destined for Great Britain. The steamship *Mexico*, of the Elder-Dempster line, was one of the first boats fitted up for this service, and left Montreal for Bristol on July 4th, only to be wrecked on Belle Isle in a fog three days later. Her cargo, comprising cattle, cheese, butter, grain, and other commodities, valued at about \$220,000, is a total loss. This is an unfortunate beginning for what we expect will be a good butter trade between this country and Great Britain.

The Outlook for Farmers.

The prospects for farmers are not without hope, in spite of frosts, drouth, and other discouragements. It is true that frost and drouth combined have worked enormous damage, in many parts ruining the hay crop, and generally lessening the grain and other crops, but, nevertheless, it is only in a few districts that the damage is such as to cause any great distress. The recent rains have improved the crops and pastures considerably, and, with seasonable rains and favorable weather, much can be done by farmers before winter in the way of getting a supply of fodder to take the place of hay, and in getting stock into the condition that they were in before the drouth cut down the pasture.

A great deal of corn and millet has been sown all over the country to take the place of hay, and provident farmers everywhere are planning how best to meet the deficiency in crops.

In some parts the drouth has not prevailed to any extent. In the eastern part of Ontario and in Quebec plentiful showers have brought on the crops well, and there is plenty of hay for export. In Manitoba and the Northwest crops are good and plentiful, and farmers are jubilant. If only frost keeps off a large quantity of wheat will be assured for export. In the States drouth has affected many parts of the country, but a fair wheat crop is expected, while the corn crop is expected to be immense, and to be many millions of bushels larger than any crop of corn previously raised.

Pleuro-Pneumonia Among Australian Cattle.

We do not believe that the live cattle export trade from this continent to Great Britain will ever have any serious opposition from Australia. For one thing, the distance from Australia to Great Britain is too great, and the freights that are charged are too high for such ventures to be profitable, and it is probable that only a dead meat trade can be carried on to advantage between those two countries. That this branch will expand largely, there is every reason to believe.

Another discouragement to the live cattle trade is the discovery on board the steamship *Pertshire*, bound from Queensland to London with a load of cattle, of two cases, at least, of pleuro-pneumonia. The discovery was made when the steamer called at the New Zealand ports of Bluff and Lytleton to complete her cargo of frozen mutton. Two government inspectors and the government veteri-

narian recognized the symptoms in one of the cattle which died, and in another which was killed and submitted to post-mortem examination. The vessel was allowed to proceed, and the carcasses were to be thrown overboard. The cattle were reported to be in a most deplorable state, and it was expected that others would die on the voyage. The neglect of the Australians in failing to properly inspect their cattle before shipping will do much to damage the cattle trade from that country.

Water for Stock.

After the prolonged drought with which we have been visited, it may seem hard to those farmers who have been for some time at their wits' end, owing to their unfortunate geographical position, to know what to do for water for their stock, for us to once more insist on the necessity of stock receiving a good supply of pure water. In spite of this, however, we must do so. The number of those who are unable to provide their animals with clean drinking water all the year, if only they go to work about it systematically, is very small in proportion to those who can. How few of those who have natural advantages in the way of watering privileges use them to the best advantage! Where springs or ponds are the watering places, they are too often so tramped up and dirty that it is only because there is no other water to be obtained that the animals will drink at them. If only an other place with pure water were available, the stock would soon show which they preferred. The writer has a case in mind where a large number of stock were running on an extensive pasture alongside a river, and yet used to journey to the extreme end of that pasture to drink, because there a small, fresh, cool spring bubbled out and was always clean.

Where springs provide water for stock, they should be, if possible, conducted into a trough set high enough so that the cattle cannot foul them, and an occasional visit should be paid them to see that they are in good shape.

The use of windmills for forcing water into tanks, in fields where no water can be found near the surface, should be largely extended. In some parts this is the only method of watering stock possible. The price of windmills is now so reasonable that no farmer should grudge investing in one in order to benefit his stock, and the benefit in the shape of pure water is simply incalculable.

In some sections of the country there is always a shortage of water about July and August, and, oftentimes, cattle have to be driven many miles to get water, consequently returning as thirsty as they were when they went. In those districts, where it is feasible, much may be done in the way of securing water by damming up streams and forming ponds before these streams dry up. Another way would be to take a leaf out of the book of Kentuckians and others living in some of the southern states, who excavate large underground cisterns and run into them all the rain water from the roofs of the buildings during the rainy season. From these sources drinking water is obtained for both man and beast, and, as the cisterns are well built and kept perfectly clean, this soft water, which would seem to us unpalatable and nasty to take, is much relished, and is preferred by them to well water. Cisterns of this kind could be built and filled in this way with ease in many of these dry districts to which we have reference.

Private Herd Registers.

The value of a private register or registers to every breeder must be apparent to every one who considers the matter. Just what that value may be depends on the care with which the register is kept. To be of full value, prompt and immediate registration is required, and this, it is to be feared, is not always done. The breeder may be busy when the colt or calf is dropped, or when the litter of pigs is farrowed, and defers entering the particulars to some future time. When he comes to enter the birth, perhaps some months later, he is not very sure as to the exact date of birth of the animals to be recorded, and, in the case of swine, he may even be in doubt as to the sire and dam, where the herd is made up of several animals. In such cases the value of the register is greatly lessened. Even the best of memories are apt to be at fault after the lapse of some length of time, and it is here where the private register comes in as an invaluable aid. Even where the breeder sends in his pedigrees for immediate registration to the register office of the breed, it is still advisable to keep duplicate private records at home. The necessity for this was made manifest last winter, when the flames consumed all the entries at the Agriculture and Arts office in Toronto, necessitating the secretary's writing to breeders all over the continent to ask them to make fresh entries to replace those lost. Where records had been kept at home, this was an easy matter; but, where no records were kept, it was difficult, and perhaps impossible, to comply with the request. Of course, such an occurrence may never happen again, but we give this one example of the value of private records.

Private records need not be expensive. Those who wish can buy books printed and drawn up all ready for use, but those who do not wish to go to this expense can take an ordinary blank book and rule and fill it in as they wish. When this is done, besides recording the births, pages should be reserved for noting down the date and particulars of any deaths, sales, or purchases in the herd or flock. All these items will be found of value later on; but, as with births, it is important that they be entered promptly, without unnecessary delay.

To aid the register, ear-marks will often be found useful, especially in the case of sheep and swine, or where animals all of one color—such as Polled Angus, or Galloways—are kept. These ear-marks should be put in before there is any danger of confusion between animals closely resembling one another. They should be replaced at once, in case they get lost, or different ones inserted, and a note made to that effect in the register.

The Future of the Horse Industry.

We certainly live in a marvellously progressive age. One of the most marvellous introductions of the age is the bicycle. The rapidity with which this implement of locomotion has been introduced has been simply astounding. In our towns and cities every one who can afford it now rides a bicycle, and, indeed, many of those who can't afford it. The law in some cities has had to step in, and to say where the riders of bicycles may go, and where they may not go, so as to prevent injury to the citizens. In some places a tax is being put upon them as a source of revenue, and in all places they are fast revolutionizing

the modes of transit and the various ways of doing business. Many travellers take them now as a regular part of their outfit, and use them in visiting places remote from the railways, instead of engaging horses at a livery stable.

All this has an influence which is going to have a bearing on the use of a certain class of horses. Horses for travelling are not likely to be so much in demand as they have been, hence those who are raising horses will do well to shape their work accordingly. But it does not follow that road horses will not be wanted. They will be as long as the world lasts, but they will not be wanted in such numbers relatively as they have been. All the people in the world are not going to ride on bicycles, even though they should be able to do so. Some are going to use horses. Those, therefore, who breed road horses should aim to breed only such as are first-class, for, when the demand for anything becomes limited, the customer is certainly more particular as to the quality of his purchase.

But there are certain classes of horses which will always be wanted, at least until some mode of distributing goods in our cities has been invented. We refer to dray horses, animals that can draw heavy loads. With the increase of population there is a corresponding increase in the transit of goods, and this always means a demand for heavy horses. There should, therefore, be a call for such horses in the future as in the past, so that those who breed good ones may expect to reap their reward.

But it is on the farm itself that the greatest need is felt for horses. There they are indispensable, and they are likely to continue so. It may be that some time in the future discovery may so come to the assistance of the farmer that he will be enabled to till his lands without being so completely dependent on the aid of horses as at the present time, but, judging by the signs of the times, that day is far away, if indeed it ever comes.

It is well, therefore, to give every attention to the breeding of this class of horses. It would be impossible to say just what their characteristics should be, as these will vary with the character of the soil to be cultivated. On some soils heavy, strong animals are wanted, and on others animals of a much lighter build. On stiff clays the farm horse should approximate to the draught horse in his proportions, and on loose, light soils his dimensions may be nearer those of the road horse.

It would seem to be true, however, that farm horses are oftener too light than too heavy. When, for instance, three horses are required to draw a plow which two heavy horses can pull without difficulty, it would seem to be the better way to use the two than the three. We never could see the advantage of using three light horses at farm work in preference to two heavy ones. The two should certainly require less food than the three, they want less grooming, and should be less expense in every way.

While we must have horses and should have good ones, we require to exercise much careful discrimination as to the kinds of horses which we raise, and also as to the extent to which we raise them. When there is an excess in the numbers of these they become a burden and a tax upon us. We cannot turn them off as we would cattle or sheep, or any of the kinds of live stock that are eaten. They must be kept, or sold as a drug upon the market and at ruinous prices.

Those who are still minded to breed horses

would probably do well to extend their operations at the present time. Horses have been low for years, and, though they may not again reach the boom prices of former times, they will certainly bring better prices than they have brought in the recent past. The low prices which have prevailed have sent many persons out of the business, and, as every one must know, a scarcity will follow. To meet this scarcity breeders should be at work.

Raising Winter Lambs.

There is room for the extension of this work in Canada, more especially in the neighborhood of our large cities. We can readily see how it would be possible to overdo such a business, but it is not likely to be overdone for some time to come. The breeding habits of sheep cannot be quickly transformed. The only pure breed which drops lambs in the autumn, in this country, are the Dorsets, and these are not present in sufficient numbers to appreciably affect the winter lamb market for some time to come.

In the United States the practice is common to use Merino grades on the side of the dam, and to cross these with Dorsets, or with some other kind of mutton sheep. The Merinos seem to have a tendency to breed earlier in the season than other varieties of sheep, hence one reason why they are chosen for this use. Another reason is found in the fact that they are numerous in that country, and, therefore, more easily obtained. In Canada we cannot adopt this plan if we would, as we have not sufficient foundation stocks of Merino grades. Nor should we regret that it is so. Merinos are not the best mutton sheep, and, moreover, they are not first-class breeders, and many of them are indifferent nurses. We can get a much better class of sheep for raising winter lambs by using Dorset rams on good grade ewes and saving the female progeny from generation to generation. By such a plan we shall get excellent breeding stocks, but we cannot get them all at once. Such a process will take time.

An experiment in raising winter lambs from Shropshire and Dorset ewes was lately conducted at Cornell. The Dorset ewes were the greater consumers of food, but they also made a better job of rearing their lambs. The Dorset lambs grew faster than the Shropshires.

The following summary is given at the close of the bulletin:

The Dorset Horn sheep have bred earlier and fatted better lambs than the Shropshires. Other things being equal, ewes that give the most milk breed earliest in the season. As a coarse fodder for ewes, and also for lambs, there is nothing better than good clover hay. As a rule, ewes respond more liberally to forced feeding for milk production the second year than they do the first. Ewes should not be forced for milk production until the lambs are a few days old. The market for lambs in the early season does not require such large lambs as the late market. The best early market commences as soon as the holiday poultry is out of the way, usually about the middle of January, and it is of the utmost importance that the lambs be fat. Dressed lambs should reach the New York market as early in the week as possible. As Saturday is retailers' day, the lambs ought to be sold before Friday noon. The manner in which the lambs are dressed determines, to quite an extent, the selling price. Neatly-dressed lambs are always preferred to those of like quality poorly dressed.

It seems that many of the American lamb raisers dress their lambs before sending them to the market. This plan of handling them effects some saving in freight. The mode of dressing them is described in the bulletin. The living lamb is suspended by the hind feet so that its head will not come near the floor. The blood is then withdrawn by making an opening on one side of the neck, immediately back of the head, and in front of the cervical vertebrae (neck bones). The stomach and intestines are then removed without disturbing the heart, lungs, or liver. As soon as the intestines are removed spreaders should be inserted to give the lamb a good appearance when offered for sale. It is important that all the animal heat be given off before the lambs are shipped. The body is wrapped first in a plain tough paper or muslin before it is shipped, and an outer wrapping of sacking is put over this.

But it is only when lambs are to be shipped a long distance that it will be necessary to prepare them thus. They may be sent to near markets while yet alive, and this method alone would suffice to meet the necessities of the case with us in the meantime. Raising winter lambs is a business that will call for the most careful attention on the part of those who engage in it. Any one not willing to pay the price should not undertake it.

Fattening Swine.

During the fattening period the food to be given and the management to be adopted will be somewhat dependent upon the kinds of food grown, and also upon the season of the year at which the fattening is to be done. As soon as the fattening season arrives, the pigs should be measurably confined. Too much liberty would prove wasteful of food, and too little liberty would endanger the health of the animals. A yard attached to the feeding pens will suffice. The size of the same will be somewhat dependent upon the number of the animals to be fed.

They should be confined for the purpose of being fattened from six to eight weeks before they are to be marketed. The shorter period will answer better for those of greater age, and the longer one for those younger and not so well grown. The younger animals will not take on fat so quickly as the older ones, as they will still produce more muscle. The proper age at which to commence the fattening process will be dependent to some extent upon whether one or two litters a year are produced. Where but one litter is reared, they may be kept until seven or eight months old before being sent to the shambles. Where the two-litter system is adopted, they may be also kept thus long, but if kept longer than six months much room is required for carrying on the business successfully, as the brood sows produce their litters before the pigs that are being fattened are sold.

When confined for being fattened in the west, where corn grows readily, the process in autumn fattening may be conducted somewhat as follows: The pigs would be enclosed in a yard from which there would be free access to the feeding pens when desired. In this yard there should be a feeding floor consisting of planks, and so low that the pigs can easily get on to it; although, where the ground is sloping, the lower side may be elevated, which makes it easier to secure the droppings in a wagon or cart to be conveyed away to the field, when many animals are kept together. As soon as the pigs are confined they may be fed corn in the ear upon

this floor. They will for a time eat both stalk and ear. Later on they may be given snapped corn, that is to say, the ears snapped off while the corn is yet standing. They should also get upon the same floor one squash or pumpkin, or one mangel apiece a day, but the squashes answer best where they are to be had. They are fond of squashes. Either of the foods named tends to keep the system in tone. The pigs are thus fed corn upon this floor three times a day, so long as the corn does not become so hard as to make the mouths of the pigs sore. Soreness of the mouth is indicated by the animals dropping one ear and then making for another.

They get the squash, pumpkin, or mangel, as mentioned, in the forenoon or afternoon of the same day. They also get what shorts they want morning and evening in a trough in the pens. The shorts are soaked for twelve hours, and are mixed to as thin a consistency as to pour readily. Water is also put into the troughs, so that the pigs can come for a drink at will.

As soon as the snapped corn gets too dry and hard, the corn should then be fed, cob and corn ground together. This may be mixed with shorts or ground oats, as the one or the other is the cheaper. Of this food two-thirds is corn. It also is soaked twelve hours, and fed three times a day. One-half pound of ground oil cake is also fed per day to each animal. The oil cake is first dissolved in water, and is then added to the meal when it is mixed to soak. The pigs only get what they eat clean at each meal. The meal is all ground fine.

The above is substantially the method practised by Theodore Louis, of Louisville, Wisconsin. It is best adapted to western conditions, but many features of the system may be adopted anywhere. In fact, the only feature which would not be adapted to eastern conditions would be the feeding of the corn ration.

In the east, however, a substitute would have to be found for this factor of the ration. The exact meal components of the ration would depend to some extent on the foods grown. The squash, or pumpkin, or mangel might still be given in the east, but there would not be the same necessity for using a feeding floor out of doors. The meal ration may be made up (1) of oats or shorts and barley in the proportions of one and two parts respectively, or (2) of oats or shorts, barley and peas equal parts of each, or (3) oats or shorts, and peas, in the proportions of one and two parts, respectively. One-half pound of oil meal, that is, ground oil cake may be added, or even a little more than that.

In fattening autumn litters due attention should be given to providing warm quarters. Squashes or pumpkins could not be had then, but in some localities there would be no difficulty in having a supply of turnips, mangels, or sugar beets. The roots should be given sliced or pulped. In the absence of roots, a little more oil meal may be given.

It is well to be in a position to weigh the pigs from time to time. When they cease to make gains worth more than the food given, they should at once be put upon the market, if it is possible to do this with advantage. Money may be rapidly, though unconsciously, thrown away by keeping animals that are being fed for the block after they have become ripe. They are said to be ripe when through fatness they cease to gain rapidly.

They should have access during the fattening period to a condiment, of which charcoal is the base. They will take large quantities

of this, no doubt, to supply a craving of the system. The charcoal may contain some other ingredients, as a small quantity of salt and sulphur, and sometimes other substances are added.

Experiments with Potatoes for Fattening Stock.

M. Aimé Girard, a member of the National Agricultural Society of France, has for some time been experimenting with potatoes as a fattening feed for stock, and the results obtained have been very encouraging. During 1894-95 further experiments were made upon some sheep and cattle, and, to render the experiment more general, the animals tested were selected from three different breeds. The cattle numbered nine head, three being of the Charolais breed, three Durham-Marceaux, a cross between the Shorthorn and a local breed, and the rest of the Limousin breed. Thirty sheep were entered for the experiment. They were of the Solognot race.

All the cattle and two-thirds of the sheep (twenty animals) were treated alike, and the system was the employment of a ration, carefully determined, of cooked potatoes and hay; the other ten sheep were fed with raw potatoes.

Knowing the results of 1893 and 1894, M. Girard did not hesitate upon the composition of the rations, which were composed in the following manner, per head per day:

	Cattle.	Sheep.
Potatoes...	55 lbs. 12 oz.	} Mixed {
Chopped hay . . .	6 lbs. 92 oz.	
Salt.....	13 lbs. 33 oz.	
Hay.....	13 lbs. 33 oz.	

In the rations of the nine cattle the potatoes were always cooked by steam. The sheep were divided into three lots; the first and second received, as did the cattle, cooked potatoes; the third lot were given raw potatoes cut up. Whether cooked or raw, in order to facilitate rumination, the potatoes, before being eaten, had the addition of hay.

In a large copper 5 cwt. 1 qr. 18 lbs. 4½ oz. of cooked potatoes (a day's rations), 2 qrs. 7 lbs. 15 oz. of chopped hay, and a little salt, were spread in successive layers. These were then mixed with a shovel, and the warm mixture was left until the next day. A slight fermentation was thus produced, and the mixture had an agreeable smell, which the animals liked. The day's rations were divided into three meals, and to complete each meal the animals received the two-thirds of the hay which was left of their ration, and this was given to them in loose bundles.

The sheep which were fed on raw potatoes were treated in the same way, by mixing the cut potatoes with the third of the hay of the ration, the hay having been cut before mixing.

The experiment commenced the beginning of November, 1894, and ended on January 16, 1895, for the cattle, and on February 5th for the sheep. The cattle experimented on were already in an advanced state of fattening, and it was not to be expected that any considerable increase of live weight would be obtained. The results, however, were more important than could have been expected from so simple a ration, the increases varying from 2 cwt. 2 quarters and 13½ lb. to 1 cwt. 2 quarters and 4½ lb.

In the case of the sheep the increase of live weight exceeded all that could be hoped. They were divided into three lots of ten animals each, the first being three-year-olds, the second four, and the third contained animals both three and four years old. The increase

of the first lot was 45.9 per cent., of the second 43.4 per cent., and the third 39.3 per cent. In the first two lots the increase of live weight was nearly half the initial weight, a considerable result, which shows the high value of this system of feeding. The figures show the inferiority of the use of the raw potatoes compared with that of the cooked.

The returns per carcass were good both for cattle and sheep. The three Charolais cattle averaged 56.92 per cent., the Durham-Marceaux 60.16 per cent., and the Limousins 61.94 per cent. These returns are exceptionally good, but those from the sheep are, perhaps, better still. Of these, lot one averaged 52.57 per cent., lot two 55.12 per cent., and lot three 52.90 per cent., a good percentage for sheep.

The quality of the meat, both of the cattle and sheep, was very superior. All who tasted it were unanimous on this point. It was fine and juicy, and equal to the best grass-fed meat, and gave a large percentage of lean.

The Charolais cattle made a clear profit per head of £5 4s., the Durham-Marceaux of £5 8s., and the Limousins of £9. The sheep gave the following profits: Lot 1, 8s. 10d. per head; lot 2, 9s. 10d.; and lot 3, 4s. 4d. The last figures again show the inferiority of raw potatoes for feeding, as compared with those cooked.

M. Girard in these experiments has thus demonstrated the value of cooked potatoes as part of the ration for fattening cattle and sheep. It will be noticed that there was no grain fed at all in this experiment, and, therefore, the results are the more surprising. Potatoes have hitherto been little used in stock feeding, except for swine. If, however, they are as valuable for other kinds of live stock as M. Girard states, they can be largely used for fattening purposes during years when they are cheap and plentiful.

Summer Care of Sheep.

By JAMES BOWMAN, Guelph.

In discussing this question, I shall commence with the first run on grass. I think it is better to let them have a run where they can get some while it is quite short, and feed them grain and bran twice a day while they will eat it up with a keen relish, which they will cease to do when grass becomes plentiful. When treated in this way, it is a very rare thing to have any scouring.

Washing.—This should be done as soon as the weather is warm enough, and I think it is better to have a large trough for washing a small flock in than to wait till a long spell of warm weather brings the river or creek water to proper temperature, or to drive a long way over a hot, dusty road to a washing place.

Clipping.—Clipping should be done about ten days after washing. By this time, if the weather has been moderately warm and dry, the yolk will have got sufficiently into the wool to give it the right lustre, and weight will also be added.

Dipping of Lambs.—This should follow in about a week after the ewes are clipped, or, if the whole flock is dipped, which is perhaps the better plan (as the bare sheep will require a very small quantity at this time in comparison to when their fleeces are on), a little later; but, if lambs only are dipped, they should be done about a week after the old ones are shorn, as by that time most of the ticks will have transferred themselves to the lambs, as there is more protection in their fleeces than on the bare sheep. If any one this

year has neglected to dip his lambs, he will find it a great advantage to do it yet.

Dry-Weather Care.—When haying, turning hoes, rape sowing, Paris-greening potatoes, and harvesting are all crowding on the farmer, be sure *then* not to forget the sheep. Be sure that they can get water and salt when they need it; and, if pastures are bare, feed them some green feed as well as to the cows, as they are fond of corn or green oats and peas. A week's starving is not made up by a week's good feeding, and a little care and thought just now may add quite a few dollars to the lamb crop in the fall.

It is the solid, steady attention which we are admonished to do in the Bible, where it says, "See well to the state of thy flocks and thy herds"—it is this steady, everyday attention to the small things as well as the large that tells in time.

Weaning.—If lambs were dropped the latter part of April or the beginning of May, they should be weaned about the fifteenth of August, and put on some good succulent pasture, such as second-crop clover, with salt and water to run to at will, and, if they will eat some oats and bran, it will pay to give them what they will eat up clean, at least once a day. This will keep them pushing right along till rape times. The ewes should be put on bare pasture till the milk flow ceases, and each day, for a week at least, any that require milking should be attended to. I have seen a very fine ewe have her udder entirely spoiled by neglecting this. When they are dry and the lambs contented, the flocks should be examined, and any ewes with broken mouths or other faults that make them unprofitable should be separated and put on good pasture with the lambs, and they will help to teach the lambs to eat grain and make them more contented.

These should be shod right along now, so that they will be in good shape to kill in the fall and early winter, without much expensive feed. If this is attended to each year, there will be no weak ewes dropping off about March, after having been fed all winter.

The breeding flock will now have the run of a number of fields. Think *now* about the buyer or manufacturer docking you for having burrs in the wool, and prepare *now* to have clean fleeces for next year by making a thorough search around fence corners for all rubbish that is likely to stick to a sheep's fleece, and burn it. This also will save a number of weed seeds from growing. This should be done before the sheep are allowed into the field. There is no danger of burdocks becoming troublesome where sheep have free access to them while they are young and tender, as they are very fond of them. With fair pasture now, ewes will be in good shape for breeding again when that time arrives.

The Management of a Breeding Stud of Farm Horses.

By LORD ARTHUR CECIL.

(Concluded)

The foal's bowels should be closely watched, and injections of warm water mixed with a little linseed oil freely given, till the color of the milk appears in the dung. Foals always have to get rid of a lot of black, scentless dung before the milk comes through them, and this becomes hard and, unless watched and removed, if necessary, is a most frequent cause of pain, constipation, and even death. Occasionally foals make their water through their

navels, and become constipated. This is a sure precursor of arthritis, or joint-ill. In this emergency and bleeding navel, I have found perchloride of iron—put on with a feather—most efficacious, together with oil internally; but when this is approaching, send for the veterinary surgeon. Once these dangers are past there is little more to fear. Both mare and foal should have unlimited exercise and food till the autumn, and when the foal is about six months old it should be given a little rough food along with its mother, and, when it has fairly learnt to eat, be removed from her.

There is, perhaps, one point I ought to refer to, and that is the occasional necessity for depriving the foal of its mother while she is in season for covering purposes. It should be borne in mind that her milk at such times is in a somewhat vitiated state at any rate, and that if it is kept up and heated, while the mare is sent any distance to the horse, it becomes almost poison to the foal, and will to a certainty produce colic, scour, and, if not corrected, death. Horse owners cannot be too careful in seeing themselves that their mares, after such a journey, are stripped absolutely dry before they are allowed to rejoin their foals. For myself, I should always strip them dry also before the horse crosses them, if she has come any distance to meet him. We will, however, suppose that all these details have been attended to, and that the foal is weaned. Now, I am very strongly of opinion that when it has fairly forgotten its mother, it should be turned out again certainly during the day, and fed outside once during that time, besides night and morning. It should not be allowed to stand on warm dung in a strawyard; it is simply ruin to the feet and ankles. A dry, hard bed in an open shed, and being out all day, makes the best horse. It matters little what the weather is, so that it has its belly full, and provided it lies dry and cool at night. Now, as regards its food. Plenty of chopped hay and straw, bran, and a little oats, with a few sliced roots, is best; not much at a time, but as often as possible, provided it has always finished before it gets more. I, myself, find it cheapest and best to give young horses at least one feed of boiled food, but this with judgment. It is the nearest approach to the rough grass in the boggy places they seek in a natural state in the winter time; but I say this requires judgment, and is perhaps hardly compatible with ordinary land culture, unless stock-raising is the main industry. One thing must be avoided in all young farm horses, and that is dry, raw oats in any quantity themselves; they are unnatural and unwholesome for them, and unless they are given along with them more exercise than by their growing condition they are able to endure, they will inevitably produce contracted feet, high heels, stiff and ugly pastern joints, and a greasy, round kind of appearance of bone.

Young horses kept as I have above hinted cost very little, and repay that little by their healthy, thriving condition, and there is no reason why, when kept on these lines, there should not be four or six about every farm place, which would become an extra source of profit with little or no extra outlay. I say a source of profit, for there can be no doubt whatever that there is a very large demand for cart horses of a good type in every large town in England and Scotland. I have been visiting lately among the stables of many great town horse owners, and I find that the horses which are *really* most appreciated are those weighing about 16 to 17 cwt., able and willing to move two tons, or 50 cwt., sharply and

quickly about the streets. The demand for great heavy, slow horses of 18 to 20 cwt. is rapidly becoming a thing of the past. Everybody nowadays has to be in a hurry if money is to be made, and lumbering wagons and slow-moving dray horses would not be tolerated for an instant obstructing traffic and deluging whole streets. The proof of this is to be found in the fact that even brewers are anxious to get horses nowadays that are able to move about rapidly, and they are discovering that it is best for these purposes to have them with hard-wearing bones and feet, even if they get them at some slight loss of size and weight. At the same time farmers should always bear in mind that, given two horses of equal activity and soundness, the one that measures 16.3 hands with a proportionate body will always command more than one measuring only 16 hands, and they should therefore aim to grow them as big as possible, so long as they do not sacrifice their activity and wearing power, and their well-balanced limbs and bodies. In this district I firmly believe, as I have before said, that we have the land, the climate, and the food to grow them, not only with plenty of size, but also with plenty of what is called quantity.

The Warlaby Shorthorn Sale.

(By Our Own Correspondent.)

This celebrated herd of Shorthorn cattle, the property of the executors of the late Mr. Thomas C. Booth, was, with the exception of a few old cows and bulls, offered for sale by auction at the well-known and world-renowned old homestead of the Booth family on June 22nd, 1894. The sale caused a world-wide interest, and, when Mr. J. Thornton, the celebrated Shorthorn auctioneer, mounted the rostrum, he found himself supported by all the leading British breeders, besides those from France, the United States, New Zealand, Canada, South America, South Africa, etc. The sale, which was commenced punctually, was a very successful one, and shows how valued the animals were. The prices obtained will also put fresh spirit into all Shorthorn breeders, for it will be to the satisfaction of all to know that good stock of the right description is of great value. That there is a market at good prices for the best is proved by the great average prices made. The yearling heifers were a sight to be remembered. A truly grand lot they were, as were also the cows. The weakest section was that of the younger bulls. These were, perhaps, in a few instances, not quite as good as one would have expected, but the great average they helped to make clearly showed how much value breeders put upon this grandly bred herd.

The history of the herd needs no description from my pen. All Shorthorn breeders know it. It will suffice to say that it was started some time in the eighteenth century. At any rate, records go back to 1790, when a Mr. Thomas Booth had a herd of Shorthorns, and from that date each succeeding Booth has kept to the work and continued it on the same true lines of pedigree breeding as were practically started in 1790. The demand for Booth bulls has been constant, and few, if any, countries of the world have not, at some time or other, sent buyers to this one of the homes of pedigree Shorthorns. We are pleased to understand that Warlaby will still continue to be the home of a herd, for the son of the late owner will now start with the old cows and stock bulls that were reserved and not offered at this sale. A grand lot they

are, and no mistake, and in wishing continued success to Warlaby we know we are expressing the wish and hope of all Shorthorn breeders.

The highest figure, 360 guineas, was made by the cow, Lady Magdalen Rihy, but this was only five guineas more than was paid by Mr. Talbot-Crosbie for the bull Sir Gilbert Studley. 255, 250, and 230 guineas were also brought by some of the females.

Thirty-seven cows and heifers averaged £139 10s. 2d. each, or a total of £5,161 16s.; and 11 bulls and bull calves averaged £121 7s., making a total of £1,334 11s.; the total receipts from the sale being thus £6,496 7s.

Notes from Great Britain.

(By Our Own Correspondent.)

This month's letter must perforce be an account of the results of our two great English summer shows, and the trade resulting therefrom, which, I am bound to say, has not been what we should have liked. Only a very few orders have been sent over, and but one or two buyers have put in an appearance. Have our cousins on your side got all the improved cattle, horses, and sheep or pigs they want for sires and dams? We, on this side, unhesitatingly say No; for, from the specimens we see of the live stock sent us, we know that there is still plenty of room for the best in your country. Then why is this dullness or slackness of trade? From want of pluck, energy, or enterprise, or is it because of slackness of cash? We fear it is from the latter cause, and hence we trust it will now revive; for it is perfectly clear to all thoughtful, intelligent farmers here that, if it does not pay to keep the best, it will not pay to keep second-rate animals. A few very excellent sheep have been bought for your country, and a very large demand existed for Shorthorn bulls at the Royal Show for France and the River Plate. A very good trade has been done in pigs for Russia, Finland, and Sweden, whilst for horses the home demand has been good, but very little foreign or export demand has been found.

The Royal Counties Show.

(By Our Own Correspondent.)

The date of this show, which was held at Bournemouth, was June 11th to 14th. Sheep at the Royal Counties Show always take the leading place, and their schedule commences with the Hampshire Down breed. These sheep made a grand exhibit. Shearling rams were a very big and good class, and worthily headed by a very good sheep of Professor Wrightson's. For old sheep over one year Mr. T. F. Buxton headed a very useful class with a very grand sheep, which was first last year at the Cambridge Royal. Three shearling ewes were headed by an excellent trio of Mr. J. Flower's. For single ram lambs Mr. J. Flower, in a class of thirty-one, took the premier position with a good lamb of beautiful type and character, this lamb having been first at the great Wiltshire show. Mr. T. F. Buxton came a very close second. For ram lambs and ewe lambs (pens of three in each case) Mr. T. F. Buxton's well-known flock supplied the first-prize winners, and excellent lambs of beautiful character they were. Mr. J. Flower came in a very close second.

Southdowns followed next in order, and what a sight they were!—small in size, but great in value. In shearling rams Sir W. Throckmorton took first with a sheep of very beautiful character and flesh. Pagham Harbor Co. were a very close second with a grand

typical Southdown of beautiful type. The Prince of Wales was third. In old rams Mr. W. Toop's grand sheep, Royal Cambridge, was an easy first. The class for three shearling ewes was worthily headed by Mr. W. Toop's very good pen. Second to these came Mr. E. Ellis' pen; Mr. James Blyth's pen obtaining the R. N. Ram lambs (single) were very strong, but it is questionable if the decisions given were correct. Size seemed to be the great point with the judges, and hence the biggest lambs won. Mr. A. Heasman was first, Mr. W. Toop second, and Mr. Hugh Penfold third. For pen of three lambs Mr. A. Heasman again led the way, Mr. H. Penfold being a very close second, and Mr. W. Toop a good third. For ewe lambs Mr. E. Ellis was clean in front, Mr. W. Toop being second and Mr. Penfold third.

Kent or Romney Marsh sheep made not only a big show, but an excellent one as well. Shearling rams were headed by a grand pair of Mr. W. Millen's, who took first and second. Old rams were a very useful class, and these were headed by one shown by Mr. H. Page, an excellent specimen of this very hardy and useful breed.

Dorset Horns made but a poor display, there being only eight entries in three classes. Messrs. W. R. Flower, Herbert Farthing, and W. C. Groves were the winners.

Shropshires made a very fair display, shearling rams being headed by a useful ram shown by Mr. A. E. Mansell. Shearling ewes were a very nice lot, and were well headed by a fine pen from Mr. G. L. Foster Harter's rapidly rising flock, Mrs. M. Barrs being a good second.

HORSES.

These classes were divided into "Shires" and "other than Shires." Shires, generally speaking, were of fair average merit, but not as numerous as one would have liked to have seen.

The mare classes were small, but the class for fillies foaled in 1893 had a capital entry of ten, and they were headed by a very beautiful filly from Lord Rothschild's stud, Princess May, a daughter of Bar None. This filly has, all being well, a big future before her. Horses other than Shires were a mixed lot, but Lords A. and L. Cecil took a very large proportion of the cash with their grand Clydesdales, which, wherever they go, are always well to the fore.

CATTLE.

In the class for aged Shorthorn bulls, Her Majesty the Queen took the lead, with an animal of grand character and type, Fairfax, a son of Field Marshal. Bulls under two years old were headed by Mr. Deane Willis' grand bull, Count Victor, and the second place was filled by Mr. T. Cookson's very useful bull, Alarm Bell. Bull calves were a very good class, which was headed by Celt, an excellent calf from the Prince of Wales' herd.

Cows in milk were also a very good class, and here again the Bampton herd led the way with that truly grand cow, Miranda, Mr. Foster Harter's Rosedale Georgie making a good second. For heifers under two years, Mr. Deane Willis again took the lead, this time with Victoria Countess, a very beautiful specimen; Her Majesty the Queen having here to rest content with second honors. In heifer calves Mr. Deane Willis was once more at the top with Cactus.

Sussex cattle were a very good lot, and a credit to this beef breed of cattle. Mr. F. Ward's Headly led in the aged bull class,

Lord Derby's representative making a good second. Bulls under two years were a very useful lot, Mr. L. Huth being first, and Lord Derby second, both with most typical bulls. The cow classes were fairly good.

Devons made a small but meritorious display.

Jerseys and Guernseys were also well shown.

PIGS.

There was an excellent lot of pigs shown, and Mr. E. Buss fairly may claim to have come out a leading winner here, for in strong competition he won first for Berkshire sows under eighteen months, and the championship for the breed, first for white boars under two years, and first and second for white breeding sows. The champion Berkshire sow has, we understand, been sold at a very high figure, for export to America, we believe.

The Royal Show at Darlington.

(By Our Own Correspondent.)

Once again this great show has come and passed away. Such a gathering of the leading and most prominent men of the agricultural world must have been of the greatest possible good to the great business they represent. There were representatives there from all over the world; at any rate, the writer knows of Canadians, Americans, New Zealanders, Frenchmen, Germans, Russians, and Asiatics, who were present. The attendance was very good.

Horses here take the lead. The classes for Hunters, taken as a whole, were fairly well filled, and were, generally speaking, of useful quality. Yorkshire coach horses were a grand lot and well shown. Hackneys made a truly fine display. For stallions foaled before 1892 there were seven entries. Mr. Wrench took first with Clovelly; Mr. Galbraith came second with Danebury, a very excellent horse of great merit. For stallions born in 1893 there were fourteen entries, and Sir Walter Gilbey took the lead with a very promising colt, May Royal. The 1894 colt class was worthily headed by that very grand and beautiful colt, Prince Henry, owned by Mr. A. Kelsey; second to him came Birdsall Connaught, the property of Lord Middleton, whilst Mr. F. Cook took the third premium. Hackney mares with foal at foot were a class, taken as a whole, to be pleased with. Particularly was this the case with the foals. Heavy or draught horses were divided according to their breeds, and we first come to the Shire horses. These classes were fairly well filled, and an excellent all-round exhibition may be said to have been the result. There were many very good individual horses and mares exhibited. The chief prize-winners were, for old stallions, Mr. T. Charnock's Seldom Seen; stallions foaled in 1893, Lord Middleton's Calamite, who also took the champion prize; stallions foaled in 1894, Lord Llangattock's Hendre Harold; mares with foals, Rokeby Fuchsia again led the way.

HORSES.

Clydesdales.—This breed made a truly grand show, and one which every Scotchman could truly be proud of. Not only were the classes well filled, but the competition was most keen, and, what was of far greater value and credit to the breed, not a single animal sent to the veterinary surgeons for examination was rejected as being unsound. The following were the first-prize winners: Stallions foaled in 1892, J. D. Fletcher's Maceachran; stallions foaled in 1893, W. Graham's Bride-

groom; stallions foaled in 1894, W. H. Lumsden's Balmiedie Royal Engineer; mares with foal at foot, W. Graham's Royal Rose; fillies foaled in 1892, J. D. Fletcher's Lady Patricia; fillies foaled in 1893, W. Graham's May Queen; fillies foaled in 1894, T. Smith's Jessie Macgregor.

Suffolks made a very good show when one considers the great distance they were from home, and it certainly was one of a very satisfactory nature to their breeders.

CATTLE.

Classes 70 to 76 were allotted to Shorthorns. We found (as was only to be anticipated, as the show was being held in Durham) a truly grand display of this breed. The entries were large, and there were few absentees. We append a list of classes and the first-prize winners. Bulls calved in 1890, Lord Polwarth's Nonsuch, which was also champion of the yard; bulls calved in 1893, G. Harrison's Champion Cup, bulls calved in 1894, J. Deane Willis' Count Victor; cows in milk, G. Harrison's Warfare; heifers in milk or in calf, J. D. Willis' Miranda; heifers calved in 1893, Her Majesty the Queen's Frederica; heifer calved in 1894, J. D. Willis' Setaph.

The Hereford classes were well filled with an excellent exhibit of these handsome cattle. Devons, with four classes, made a very good display. The numbers present were not as large as we have seen in years gone by, but still the quality was here as of old.

Sussex cattle made a better display than we expected, the leading breeders being well represented and the competition very close; in fact, here, as in most of the other classes, the Royal Show has become the battle ground of the best of the whole country. First-prize winners at the smaller shows all meet here for the final tug of war. Some of the other breeds represented were Welsh, Red Polls, and Aberdeen-Angus, which later, by the way, made a grand exhibition, the classes being well filled with animals of exceptional merit.

Galloways were another breed that came well to the fore with an excellent lot of cattle, worthily showing the very great value of this breed.

Highland cattle only had one class, and that for cows, with but three entries. Ayrshires had four classes, and made a small but very creditable display, whilst Jerseys and Guernseys, Dexter Keries and Keries, were all well represented.

SHEEP.

The Leicesters classes were well filled with very good typical sheep, Messrs. T. H. Hutchinson, G. Harrison, and E. F. Jordan taking the leading places.

Cotswolds made but a poor display, so far as numbers were concerned, but the entries present were excellent sheep, and showed that those exhibitors who sent were still to the fore. Messrs. R. Garne and T. R. Hulbert took all the prizes awarded.

Lincolns, with three classes, made a very good display, Mr. H. Dudding winning for both shearing rams and ram lambs, and Mr. J. Pears for shearing ewes.

Oxford Downs had four classes, and the sheep shown reflected very great credit upon the breed. For old rams Mr. J. C. Early came first; for shearing rams, ram lambs, and shearing ewes, Mr. A. Brassey repeated his former victories, and took both first and second places in each of the above classes, except for shearing rams, where he took first and third, the second place being filled by a fine sheep of Mr. H. W. Stilgoe's.

Shropshires made a very good turnout, especially in the classes for shearing rams,

shearing ewes, and ram lambs. For shearing rams there were 38 entries. Here Mr. A. E. Mansell led the way, taking both first and second with two very good sheep, worthily heading a very grand class; Mr. W. F. Inge being an excellent third. Ram lambs were again headed by a pen of exceptional merit belonging to Mr. A. E. Mansell, and sired by the same sheep that sired the first and second prize shearing rams. Mr. Foster Harter got number two place with a beautiful pen of ram lambs, whilst for shearing ewes Mrs. M. Barrs led, Mr. P. L. Mills being second.

Somerset downs were good—not so numerous as the Shropshires, but still the entries were of very great merit, and, although the decisions of the judges were not quite what we should have liked, we may say that the sheep were placed fairly well as a rule. Mr. J. J. Colman, the Pagham Harbor Co., and Mr. Toop were the principal winners.

There was a very fair class of Hampshire Downs, the lambs of Mr. J. Flower and of Mr. T. F. Buxton being particularly good. In the shearing rams class Mr. Wrightson's unbeaten shearing again was first, and for the shearing ewes class Mr. J. Flower's unbeaten ewes led the way and the same breeder was first for ram lambs.

Suffolk sheep made a small but excellent entry. Lord Ellesmere took the lead here with a vengeance, taking the whole of the four first prizes, the champion prize given by the Suffolk Sheep Society, and the second prize with sheep of perfect Suffolk type, Mr. J. Smith being the other leading exhibitor.

Wensleydales came out in great force, and a fine lot they were. These sheep are not much known abroad, but they are a very useful and paying sheep. Messrs. J. Rhodes, W. Rhodes, executors of J. Willis, and Mr. T. J. Other took the leading prizes. Somerset or Dorset Horns, Kent or Romney Marsh, Lonks, Herdwicks, and Welsh mountain sheep were also shown. There were no pigs exhibited.

Toronto Industrial Fair.

Preparations for the Toronto Industrial Fair, which opens on the 2nd of September, are unusually forward for the season. In every department there are more applications from exhibitors for space than were ever known at this date before. The display will not only be on a more extensive scale than on any previous occasion, but much more elaborate and choice. The leading exhibitors, inspired by the expectation of an active fall trade, are vying with each other as to the attractiveness of their respective showings, and some beautiful and tasteful designs in arrangement will be presented.

All the departments allotted to manufactured products are full even to overflowing, including the main building, machinery hall, implement, stove, carriage, and bicycle buildings, so that it will be a matter of considerable difficulty to provide facilities for showing many of the exhibits. Many who have deferred making application until the last will be disappointed.

In the live stock, dairy, and agricultural departments the exhibition will be exceedingly full, and will furnish a better and more comprehensive idea of the fertility and resources of the Dominion than could be gained by months of travel. The liberal inducements held out to live stock exhibitors have attracted many who have not hitherto had a place on the list, while nearly all the former exhibitors will be in evidence, most of them with

increased exhibits. The representation of choice dairy breeds will be very large, and the horse department will include strings from the most noted stables in the Dominion, as well as many from the United States. Sheep-raisers have shown by the number of their entries their appreciation of the improvements made for their benefit. The interest in the horticultural display will be increased by the showing of fruit from the five fruit experiment stations of Ontario, which will be specially valuable as indicating the fruit-growing possibilities of different latitudes, and showing what the stations have done in the introduction of foreign varieties of fruit which have been found adapted to the climate and soil of this province. Another special collection of a very instructive character which has been secured is the exhibit of the products of the Northwest Territories, which is exceedingly comprehensive and well arranged, and cannot fail to impress the visitor with some idea of the natural wealth of that vast, but little-known area.

Among the brilliant special attractions provided will be the splendid and realistic military presentation, "The Relief of Lucknow," with 500 performers, ending with a grand display of fireworks. The great international bench show of dogs, the art exhibition, under the management of the Ontario Society of Artists, trotting, running, and hurdle races, bicycle contests, and various other features which we have not space to particularize, will provide enjoyment and satisfaction for the most varied tastes. Every indication points to a most successful show and an enormous attendance. Intending exhibitors should not forget that entries for live stock close August 10th, and for agricultural products on the 17th.

The Western Fair.

The annual advertisement of the Western Fair has been received, and appears in another place in this issue.

The directors are determined to give the people of the province such an advanced and educative exhibition as has not been witnessed upon the grounds.

It is their aim to so change the fair in every possible particular that it shall be devoid of any stale or worn-out repetition of former years; but, on the contrary, to make it a live, progressive show, replete with new and interesting exhibits, and special features that are pleasing and entertaining, because of their immense proportions and rarity. The prize list has been carefully and thoroughly reviewed, revised, and amended, and is now complete. The wants of the exhibitors have been carefully studied, and concessions made wherever the exhibition could be proportionately strengthened; and liberality having been displayed in the prizes offered, with a view to the expansion of the number and quality of the exhibits, it is reasonable to expect that the show will be one of unusual high order and merit.

The accommodations provided for holding the fair are second to none. There are plenty of well-arranged stalls and pens, good water and plenty of straw for exhibitors of live stock, spacious buildings for the displays and exhibits, and the most beautiful grounds, with the best arrangements for public comfort. Cheap railway and express rates will be in force, and electric cars will convey visitors to the grounds. Live stock, machinery, and goods of all kinds are delivered by the G.T.R. cars in the grounds. It is the very best live stock market available, the choicest animals

will be for sale, and a large number of buyers will be in attendance.

The secretary states that special attractions have been carefully selected and contracted for without regard to cost, and the very best available have been procured, the aim of the management being to satisfy the people.

The "Great Wild East Show," consisting of fifty people, first-class artists in their respective lines, Arabians, Turks, Syrians, Bedouins, and ladies of the Turkish palace with their horses, camels, and donkeys, will be a special feature of the fair. The programme will include "Ajax," the diver, who dives from a tower seventy-five feet high into a small tank of water; Alvini, fired from a cannon attached to a balloon; Partello Comedy Company; Martella, the swinging wire artist; Sampson, the strongest man in the world; trained animals, etc. There will be a most elaborate display of fireworks each evening.

Those who desire prize lists or programmes, giving complete information, should address the secretary, Mr. Thomas A. Browne, who will be pleased to send them free to any address.

Questions and Answers.

A Young Mother.—Subscriber, Bedford Que: (1) A Jersey cow of mine calved this spring when nineteen months old. She is strong and well, and gives six quarts of good, rich milk a day at present. Had she better wait for another year before being bred, or would it be all right to breed her this year? (2) Can you give your readers some remedy for the horn-fly? We cannot manage the horn-fly trap.

Ans.—We see no reason why you should not breed your heifer again this year, under the circumstances. She might, possibly, grow more, if allowed one year's rest, but she will bring you in more profit if you breed her regularly. Many dairymen have their heifers come in when two years old. As a general rule, however, they do better if the time is extended till they are approaching three years.

(2) The only other remedy for the horn-fly, besides the fly-trap, is spraying or dressing the cattle with oil or some preparation made for the purpose. Prof. Fletcher, of Ottawa, advises a mixture of soap and coal oil, or sour milk and coal oil, twice the quantity of coal oil to the milk or soap, the whole to be reduced by ten times its own measure of cold water. This mixture can be applied with a spray pump, or sponge or swab, and will not do any harm to the cattle.

Special Stock Reviews.

Elmhurst Shorthorns.

Having heard much regarding the newly imported bull, Royal Don, that Mr. Biggins has recently purchased and placed at the head of the Elmhurst herd, during a visit to that locality we called to see him, and must confess that we were by no means disappointed after inspecting him. Royal Don carries an amount of natural flesh, has a capital, meaty top, good ribs, and is particularly stylish and handsome. We have no doubt but that he will nick well with the cows in Mr. Biggins' herd. Royal Don was bred at Kinellar, and was sired by Royal James, a bull that did good service in that establishment.

We counted something over twenty females of different ages. The Matchless of Elmhurst, which have furnished some of the best breeding and show cattle, and have played such an important part in the history of many of our best breeding herds, have the largest number of representatives. Mr. Biggins has not only a choice lot of individuals of this family, but he has been especially careful in their breeding, since he brought in Matchless 19th, by Senator (imp.), General Booth (imp.), and Excelior (imp.). The two last bulls in service were of orthodox breeding, and were specially selected to top out the Sityton-bred Matchless.

Then there were several of the noted Village Blossoms, which have also been carefully bred, as well as Kinellar Minas. Then there are two or three of Messrs. Cruickshank's Booth families, that at one time were bred at Leitheny. The calves were promising, and some neat, good-fleshed young heifers are coming on to take their place in and to uphold the reputation of the herd.

Sunnyside Berkshires.

Mr. T. A. Cox, whose post office is Brantford, from which he is distant about three and a half miles, while he is within four miles of Paris, is, therefore, conveniently situated as regards both stations.

Mr. Cox is an all-round stock fancier, and is as fond of a good horse as he is of breeding high-class sheep and swine. A capital farm team of his will probably be brought out to the Industrial and other shows, if, as now intended, he exhibits in the other classes.

Berkshire swine have been bred for several years, and in this department Sunnyside is well equipped.

The boar, Bright Prince, by imported Enterprise, dam Heatherbloom, is by that grand pig, Royal Winner, which many breeders contend was the very best English Berkshire boar they have yet seen. With such top-crosses as Enterprise, which boar won first for four consecutive years, and Royal Winner next, and his dam, one of those good ones of the Moultsford family, one might expect something good, and in this we were not disappointed, for Bright Prince is a first-class pig. Even should he be out-classed at the big shows, yet we fancy he is nearly good enough to get a portion of the honors at any show at which he may appear. For an assistant, Mr. Cox has Manner Boy, by Royal Herbert, dam Royal Lady, which sow won first in her class, and was one of the family that won first prize at last autumn's Industrial.

Among the sows, Inglewood Belle has bred a goodly lot of pigs, several of her daughters having been retained in the herd. She was sired by Miner, dam Lowland Lassie, of the Beauty Bewitched family. Inglewood Belle is a particularly good sow, and her litter, farrowed last March, are a very good lot, and have lost no time in developing to date. A daughter of hers, farrowed last fall, by Bright Prince, is a handsome young sow, which looks as though she might safely be forwarded to the fray next autumn. Several other good young things were pointed out to us, but we were especially pleased with a yearling sow, about fourteen months, a daughter of Royal Lady, and sired by Royal Herbert.

The Sunnyside flock of Shropshires have only recently been added to the establishment. Some good ewes have been selected, and we observed some capital lambs running by their sides.

Mr. J. C. Snell's Jerseys.

These little butter cows have made many friends during the last decade, and within the last three or four years many new herds have been founded. In furnishing the material for carrying out the good work Mr. J. C. Snell has contributed his quota, as may be proved by visiting any part of the province where Jerseys have been introduced.

During a recent visit a delightful surprise awaited us on finding so decided an advance in the number and quality of the individuals since our last visit to the herd, eighteen months ago. The herd now comprises over forty head. The breeding bull is Jetson's Dollar, a son of Mighty Dollar, which is, in turn, a son of the St. Lambert bull, One Hundred Per Cent., while his dam is imported Jetson. Jetson's Dollar is a grand individual, which would give a good account of himself if he were brought out to show. He is assisted by the young bull, Signet Seal, whose dam has a record of 40 lbs. of milk per day, which tests 6.5 butter fat, and has given 16 lbs. of butter in the week. He was sired by Mighty Dollar.

Among the cows is to be found a variety of breeding, the most popular strains being represented, while no one can inspect the herd without being impressed with the fact that the selections have been made with a view to retaining uniformity in color and handsome form, while still adhering to the useful business type. A very handsome cow is Martha Dana, bred by Mr. A. C. Burgess, Carleton Place, and sired by Carlo of Glen Duart, a bull which has won honors in the highest company at Ottawa. Martha Dana's dam is Rosy of Hillhurst, imported from the Island of Jersey by Hon. M. H. Cochrane. Canada Pogis, a daughter of Canada's John Bull, is rich in breeding and handsome in form, and Signal's Moss Rose is also richly bred and an especially good individual. Massena's Bessie is by Massena's Son, dam Bessie of Malone, which was in Mrs. Jones' first-prize herd at Toronto in 1892, and is a good performer to boot, as she has a record of 14 lbs. of butter per week as a two-year-old.

One of the many good things in the herd is the four-year-old cow, Gramam Princess, which is out of the same cow as Mighty Dollar. She is by Elmhurst Stoke Pogis, while Madam Bubble and, by the same sire, is a three-year-old cow which some would prefer. The heifers in the herd are in beautiful form, and he who could not admire these would be sadly lacking in taste. A two-year-old just coming to calve, by Nabob of St. Lambert, dam by Nell's John Bull, we admired greatly. But we must call a halt, and ask those who want choice Jerseys to call and see the good things for themselves.

The Cotswold flock is also well kept up. A number of choice shearing rams have been wintered, while the breeding ewes and lambs are in fine growing form.

Berkshires are chiefly of, or descended from, Mr. Snell's last importation, in which several of Mr. Benjafield's best families, and those of other English breeders, are represented.

Brockholme Holsteins.

Mr. R. S. Stevenson, Ancaster, has been steadily increasing his herd of Holstein-Friesians until he has now over twenty head of purebred cattle, almost all of which are descendants of cows in the advanced registry. Ideal, which was imported from Holland, is a particularly rich and heavy milker, as her record of 14 lbs. 1 1/2 ozs. of butter in seven days in her two-year old form would lead us to suppose. She is a fine looking cow, and won third prize in a class of twenty-two cows at Toronto, while she has been quite as successful in breeding, as four fine heifers of hers born in the herd attest. Two of them are by Netherland Komulus, while a heifer calf by Royal Canadian Netherland is particularly promising.

Another cow in the advanced register is Modest Girl, also imported from Holland. She, too, is a fine individual, and has done well for the herd. Antji Houter is another imported cow sired by Wilhelm III., who was by De Kol and, whose blood is now so popular among Holstein-Friesian breeders. She has a fine heifer that should give an account of herself, as she is exceedingly promising. Johanna Tensen was also imported from Holland. She gave 75 lbs. of milk per day on grass, and is probably as good a cow as any brought into the herd. She has five female descendants, all of which are neat in form and good performers at the pail.

The young heifers are a uniformly good lot. We greatly admired a pair of yearling heifers, one from Ideal and another from Catherine Tensen, both by Netherland Komulus, while a handsome heifer calf from Ideal, by Royal Canadian, should yet make its mark in the show ring. In fact, one of the good features of the herd is that the heifers bred on the farm appear to be up to the standard of the imported cows, which may be attributed to the good bulls which have been used. One of them is Netherland Komulus, bred by Smith, Powell & Lamb, whose dam, Fatinita, was in the advanced register with a butter record of 13 lbs. 12 1/2 ozs., and a milk record of 14,157 lbs. in a year as a two-year-old. Netherland Komulus' six nearest female ancestors had an average of 18,000 lbs. of milk a year, and a butter record of 18 lbs. per week, therefore, it is not surprising that this bull should have left behind him such a good lot of heifers.

The present stock bull, Royal Canadian Netherland, is the only son of Netherland Prince in Canada, while his dam is that capital cow, Princess Margaret. It will be remembered how many times Royal Canadian has won at Toronto and other shows.

Mr. Stevenson still continues to breed Improved Large Yorkshires, and many a good one has found its way into other herds to their benefit. The herd is principally of Sanders Spencer extraction, and is now made up of daughters of Holywell Victress (imp.), while more recently Walker Jones' strain has been introduced. One can always find something good in the Yorkshire line at Brockholme, as Mr. Stevenson has been especially careful in his selections.

Mr. S. K. Beck's Holstein-Friesians.

Mr. Beck resides about seven miles southwest of Dunnville, at which place he has bred up a useful herd of Holsteins. If we may be allowed to judge by the way they filled the pails one evening last May, during our visit, they are entitled to be numbered as a herd of No. 1 dairy cows. The cows give every evidence of having received careful attention. They have been well fed, or they would not have kept up their size. We too often find that cows and heifers bred in the herd are small compared with those first introduced. The first cow obtained was purchased at one of the sales of Messrs. B. B. Lord & Son. This was the cow Nettie and, imported from Holland. Although now getting up in years, she still looks fresh, and carries a wonderful udder. Her first calf, Nettie, by the imported bull, Huron, the first bull purchased by Mr. Beck, is also a good cow. The bull Huron, we were told, was a very fine specimen of the breed, and that he was an exceedingly good getter the many good cows in the herd testify. Mr. Beck appears to have been uncommonly fortunate in getting heifer calves during the first few years, and, the first selection of cows having been good animals, he has come very easily into as good a herd as one can find. We were told that the first cow produced three heifers in as many years, and, as these heifers were put to breeding at two years old, Mr. Beck found himself in possession of a herd of over twenty beautiful purebreds at the end of eight years from the date of the first purchase. The cows have proved satisfactory in every particular. Not only are

they heavy milkers, but we are informed that their percentage of butter fat was also high.

Mr. Beck's example should be a guide to the numerous farmers who are content to continue to breed scrub cattle. If they would only select one or two purebred females, they would soon have a valuable purebred herd, which would not only answer their purpose better, but would sell at much higher prices in case they were offered for sale.

Maple Leaf Yorkshires and Berkshires.

Mr. Thomas Watson, whose post office is Springdale, lives about eight miles north of Jarvis. He has been many years breeding swine, and swine of a very superior type and quality. In order to supply his customers with first-class specimens in either line of breeding, he has selected some capital breeding stock in both Berkshires and Yorkshires.

The Yorkshire boar in service is Raleigh's Ideal, very appropriately named, we should say, as this pig is much the pattern that is being sought after. He has plenty of length and depth of rib, smooth shoulders, and neat finish, while he has sufficient size to meet the modern demand. Raleigh's Ideal is also richly bred. He is by Holywell Manor (imp.), bred by Mr. Sanders Spencer, while his dam, Mitchell Beauty, was bred by Mr. Denston Gibson, Rotten Row, Birmingham, England.

Waterwitch, by Holywell Victor (imp.), dam, Holywell Pearl, is one of the best sows, and is almost altogether of Sanders Spencer breeding. Watson's Choice a daughter of Dairymaid (imp.), is a sow of combined Ashworth and Denston Gibson breeding. She is a good pattern of a breeding sow, and produces the sort that sell. We have seldom seen a better lot than those of her spring farrow. They were nicely grown, and were particularly smooth and handsome.

Coming to the Berkshires, the stock boar, Royal Oxford and, at the head of the herd, was sired by Baldwin, while his dam is a daughter of Enterprise (imp.) and Oxford Girl, by Gladstone (imp.).

May Belle is a choicely-bred sow, by Sovereign Hope, which was a grand individual of the Sally family. The blood lines run through such noted sires as Rare Sovereign (imp.) and Windermere (imp.), as good as any in their day, combining such breeders as Tombs, of Bampton, and Henry Ruck, of Castle Hill. Haldimand Queen is a daughter of the last named, by May Duke. Bred along such lines they are certain to give good results, and the pigs show it. Mr. Watson has some choice pigs of last fall and spring pigs, of both breeds, which are worth looking after.

Mr. Leask's Grade Shorthorns.

During a visit in the county of Ontario we received no more forcible lesson than that which we obtained while overlooking the beautiful herd of grade Shorthorns owned by Mr. James Leask, of Greenbank. For several years the prize lists of the Industrial and other shows speak of the trophies that representatives from this herd have won, but it requires a personal inspection to give one any idea of the superlative excellence of these cattle. Mr. Leask purchased the cows that founded the present herd at the extraordinary sale of Mr. Ross, who occupied the farm during his minority, and in coming into the farm he exercised a wise discretion in purchasing several of the cows at probably the highest-priced sale of grade cattle that ever took place in Canada. Since they came into the hands of Mr. Leask he has been especially careful in selecting such sires as would best suit his purpose, and many a bull that would be counted good enough to head a herd of purebred Shorthorns has been passed by by him.

To give an idea of the weight of these cattle, one of a pair of roan cows that were breeding regularly was placed on the scales, and tipped the beam at 1,660 lbs. She was as handsome and as beautifully finished as she was big in scale. Another cow, which Mr. Leask hardly considered good enough to retain in the herd had been fed for the export trade, and, as we were there the morning that the fat cattle were to be shipped, we noted her weight of 2,050 lbs., which, at five cents pound, made not a bad price for a cow that has done breeding.

Mr. Leask's steers were also exceedingly good. Some of these went 1,660 lbs. while yet not three years old, and others at two years weighed 1,300 lbs. to 1,400 lbs. It was a splendid bunch that was being shipped that May morning, and a goodly lot of money they brought.

Mr. Leask makes ample preparation for cattle breeding. He has one of the best barns we have seen, 145 x 70 feet, with ample room for feed and cattle. He informed us that he grew something like 10,000 bushels of roots last season, to the goodly supply of which may be attributed the grand cattle he is producing.

Mr. James Rennie's Cattle.

Mr. Rennie, whose farm is near Wick, which is his post office, is another breeder who knows how to feed

a good beast, as those who attended the last two annual Fat Stock Shows at Guelph know. At each of these shows he had as good a maiden heifer as was ever brought out. At the former he won sweepstakes for the best beast in the show, while last year, though he only got first in the class, he was fairly entitled to the same honor. Mr. Rennie has the white son of Nonpareil Chief, of Messrs. Nicholson's breeding, that won third at Toronto as a yearling last year, and second at London, in his herd. He has some prime young things coming forward for another show campaign which look like carrying a goodly share of the right-colored ribbons to the credit of the herd.

Mr. Rennie is breeding carefully, but has sold off so many of his best things finished that his older cows are hardly as large as those in the last-mentioned herd, but none could help admiring the handsome young steers and heifers, both calves and yearlings, that are now coming on.

Veterinary.

Lameness in Horses and Its Location.

Common as lameness is in the horse there are few persons who can diagnose it correctly. It behooves the veterinary surgeon to make a most careful examination of the animal before treating it for lameness, says a writer in *Our Animal Friends*. Naturally the first point to be considered is in which limb the horse is lame; for, unless he is markedly lame in a particular limb, the most careful examiner will mistake the seat of the trouble. A horse may appear lame in one hip, or hind leg, when he is in reality lame in a shoulder or fore leg. For example, a horse trotted from the observer may seem to elevate and lower one hip unevenly, but, when he is turned around and trotted back again, the unevenness of his gait appears due to trouble in his shoulder. Lameness of such nature is commonly termed "cross-lameness."

Another difficulty is to detect the lameness when it is situated in both hind legs or in both fore legs. A horse so afflicted betrays little by his gait. Gypsies take advantage of that fact to dispose of horses which are lame in one foot. They produce lameness in the fellow foot by driving a piece of iron under the shoe, or by paring away the toe almost to the quick, and then fitting a shoe to press on the tender part. This is technically called "beaming."

When a horse is lame in both fore feet he probably will not drop in his gait, but will take much shorter steps than is natural, putting his feet down carefully and picking them up quickly, like a cat walking on hot bricks. When the lameness is in both hind legs they will be stiff, with little or no flexion of the hocks.

Care should be taken not to confound some peculiarity of a horse's action with actual lameness. A colt led on a short rein, or with his head pulled to one side, will drop in his gait; he may drop somewhat when he is first bitten, particularly if the rein is too tight. This latter condition is known as "bridle lameness," and will disappear if the animal has free use of his head.

Some forms of lameness disappear upon slight exercise and are apparent only in the stable, hence a horse should always be examined as he stands in the stable. A horse that points at rests should be condemned. "Pointing" is the manifestation of a soreness, which, later, will give rise to more serious complications. In some cases the lameness is more marked when the animal is standing still. He will elevate or "point" the afflicted foot, with the pastern straight up and down, or he may even swing the foot. That always indicates foot lameness. On the other hand, he may be

driven out from the stable seemingly sound, and may suddenly go lame; or he may start out lame, and when he warms up under the exercise the halt in his gait will entirely disappear. Again, some horses will show their lameness only when they are turned around suddenly or sharply.

When trying a horse it is a good rule never to take him away until he has stood at rest fully three hours; for the warranty expires the moment the horse leaves the stable. Always be suspicious of a horse which points in the stable, which steps short when walking, or when he is turned carefully by the attendant in trotting. When a young horse, led on the halter, drops in his gait, have the attendant give him a freer head, and see for yourself that he goes sound.

In shoulder lameness the pointing is characteristic. The knee and knuckle will be flexed, and the foot, projected behind its fellow, will rest on its toe, the shoulder hanging limp. When the lameness is in a hind limb the animal will flex the hock knuckle at the pastern, or stand with the foot off the ground. A horse with acute pain in both front feet will extend them both and carry the hind feet well under the belly, as in founder. If the pain be in the hind feet he will carry the fore feet well under the chest, giving the appearance of falling on his nose.

In diagnosing lameness, remove the shoe and examine the foot thoroughly. If there be no elevation of temperature, press around the sole of the foot with pincers, and should you fail to get any response, then manipulate the limb with great care, and determine whether or not there is malformation. If you find any localized heat, manipulate each and every articulation, and the animal will flinch when you disturb the seat of pain.

Broken Bones.

It used to be supposed, writes Prof Mayo, in the *Industrialist*, that if a horse, cow, or pig was unfortunate enough to break a leg the injury was fatal; that under no circumstances would the bones grow together again; hence no time was lost in destroying the animal and thus ending its misery. It is now known that, under similar circumstances, no reason exists why an animal's bones will not unite when broken just as readily as a person's bones.

As it is impossible to control and care for animals, and keep them as quiet as human subjects, the treatment of broken bones is not attended with such good results. In many cases, however, with little treatment animals with broken legs can be rescued from an untimely grave. Sometimes it is difficult to detect a broken bone; in other cases it is too evident to need any directions. Some of the most important symptoms are the following: Severe lameness, or total inability to use the injured limb. Sometimes, when the bone is not displaced, if each piece of the broken bone is grasped and twisted slightly, a slight crackling sound, known as *crepitus*, can be felt, being caused by the broken ends grating on each other. If the bone is broken in more than two pieces, or if it protrudes through the flesh and skin, or if it is broken near the body where it is deeply covered with muscles, domestic treatment is, in most cases, not successful. If the bone is broken only once in two, and not deeply covered with muscles, the following treatment, which can be applied by any intelligent person, will often save an animal's life: First, get the bones in proper

position. This often requires pulling when the broken ends have slipped by each other. This done, wrap the part smoothly with a flannel bandage, which should extend six or eight inches above and below the fracture. The flannel and plaster of Paris bandages should be prepared previously. The flannel bandages should be made from strips about three inches wide, and five or six feet long, wound into neat, firm balls. Plaster of Paris bandages are made of strips of cheese cloth of the same dimensions; but, before rolling up, it should be well covered with dry plaster of Paris and thoroughly rubbed into the meshes of the cloth with a case knife, and then wound carefully into neat rolls. At least ten of these should be prepared for an ordinary case of fracture. Just before using, the plaster of Paris bandages should be placed in a bucket of water and allowed to remain until bubbles cease to rise, when they are ready for use.

After the flannel bandage has been put on, the plaster of Paris bandages should be taken from the bucket of water and wound firmly and smoothly on the outside until a jacket is formed one-half inch thick, at least. The plaster of Paris bandages should be wound from below upward, and care taken that the flannel bandages extend both above and below the plaster of Paris jacket, so that the edges of the latter will not cut the flesh or skin. The animals should be kept quiet for half an hour, or until the plaster cast has thoroughly "set."

The plaster cast must be carefully watched to see that it does not chafe or "cord" the leg, or change its position, or cause the leg to swell. If it does either it must be removed and rearranged, and another put on.

The flannel bandage is put on first to allow for slight swelling, which often follows, and prevent the stiff plaster cast from hurting the leg. Bandages should not be put on over a part that is discharging pus or matter, as they would only aggravate the case.

I have known several cases where farmers have followed these directions with excellent success.

Questions and Answers.

Swollen Sheath.—Subscriber: What can I do for a stallion that has a swollen sheath?

Ans.—This trouble is generally due to an inflammatory condition of the system, caused by indigestion and unsatisfactory working of the bowels or the kidneys, or, perhaps, both. Give the animal a pound of Epsom salts, and repeat the dose two days after. Inject a solution of hypsulphate of soda into the sheath three or four times a day, using enough to wash it out thoroughly. Feed lightly for a time, using bran mashes and green food.

The Farm.

Autumn Cultivation.

In some parts of Ontario it is the regular practice to plow much of the land twice in the autumn. The first plowing is very light, it is sometimes called "skinning" the land, and the use of the term will very well show the nature of the process. It is just turning over enough of the surface to bury the weeds that may be growing, and as a means of destroying these it is very effective. The ground is again plowed later and more deeply on the approach of winter. In other parts of the province this process is unknown. It is a fact that where the land is thus plowed twice it is in a better condition as to cleanliness, and it also bears better crops, than in those sections of the country where it is only plowed once.

There are, however, some objections to this mode of dealing with the soil. First, there is the extra labor. This labor must needs be done early, that is to say, soon after harvest, to be sufficiently effective, and it must be done, in consequence, at a very busy season of the year. That it is practicable, however, to plow at the season named is certainly evident from the fact that in some localities plowing just after harvest is commonly done. Secondly, there is the further objection that if the autumn should prove very wet, there would be a serious loss from the leaching of nitrates down through the soil. If the ground were covered with some kind of vegetation, even though the same consisted of weeds, this loss would be in a great measure prevented.

And it may be prevented by sowing some kind of quick-growing seed just after the plowing has been done. White mustard, for instance, could be sown, or rape, or fall turnips. The cost of seed would not be very great. The food produced would doubtless far more than compensate for the outlay, and the loss from leaching would also be hindered. But when any seeds are thus sown the ground must be moist enough to germinate them, or there is the danger that much of the seed would be lost.

The value of this process in destroying weeds should be very evident. It will not, of course, be equally effective with all kinds of weeds, but it will in some seasons accomplish much with other varieties. The most good arises in connection with the destruction of annuals. When the ground is skinned thus early the weeds growing are buried, and are, in consequence, prevented from maturing their seeds. Other seeds in the soil spring up, and these, in turn, are buried by the second plowing. It should be remembered, too, that when a catch crop is sown after the first plowing, the destruction of weeds is as much secured as though no such a crop had been sown.

Nor must we leap to the conclusion that plowing the land twice in autumn, as indicated, means twice as much labor as plowing it only once; for it certainly does not increase the labor so much. Plowing the land the first time is quickly done, as the plowing is shallow. And, certainly, it tends to make the plowing much more easily done the second time than if the land had not been thus stirred the first time. This will be effected to a greater extent in dry seasons than in those of an opposite character, and in stiff soils than in those which are naturally friable.

It has been mentioned that the first plowing should be given early. Several reasons may be assigned why it should be so. First, it is necessary to prevent weeds from maturing their seeds which may be growing in the soil; second, to give ample time for other weeds to germinate before the second plowing; and, third, to give opportunity to grow one or other of the catch crops named when it may be desired to grow them thus. It would not pay to plow the ground late and then to plow it again later, with only a short interval between the two plowings. The labor of the first plowing would in a great measure be lost.

It should not be necessary to urge upon our farmers to try to have clean farms. The advantages of a condition thus beneficial should be so apparent that such an end would be eagerly sought by all. And yet it does not seem thus sought by many. They seem content with keeping the farm only half clean, when greater watchfulness and effort would make it entirely clean, or, at least, so clean that the noxious weeds which grow in it would not do any serious harm.

Crimson Clover.

In this practical age the value of everything, whether in agriculture or in the other professions, must be judged by its ability to properly fulfil the claims made for it by its inventor or discoverer as filling a long-felt want. When it comes to cereals and grasses, the necessity of careful discrimination becomes yet more pronounced, because so many of these will flourish in certain latitudes and be failures in others. We find an example of this in crimson clover, which is so much prized in some of the states of the Union for its yielding and lasting qualities. In the Province of Ontario, however, where it has been tested, it has been only fairly successful when sown in the spring, giving an average yield of about a ton to the acre. When sown in the spring here, it produces a crop of hay the same season, and the plants then die out. Further south of us, however, it will stand the winter. As mentioned in our last issue, it has not proved a success here when sown in the fall on wheat, and, therefore, its special purpose, in this province, at least, would seem to be as a catch crop. For instance, if a farmer found that his red clover was very badly winter-killed, he could sow a plot of crimson clover in the spring to supplement the red clover crop, and thus have plenty of good clover hay for his stock. Until this clover gets acclimatized to this country, this will probably be its chief use.

After Harvest.

The harvest season, as every farmer knows, is one of anxiety and toilsome work. The physical man is much worn when the harvest is over, as a rule, but probably less so now than in the days of the past, when invention had not yet done nearly so much for the agriculturist. But, in any case, it is with a feeling of relief that the last sheaf goes into the barn, and that the last gleanings from the stubbles are put in a safe place. We need not wonder that there should be joy at the harvest home that follows the close of the toilsome season.

It is natural for those who have toiled so hard to seek some relaxation, and they ought to have it. If they have it not then, or at any other season, life becomes a drudgery. It is less worth living than if it could be otherwise enjoyed. Relaxation should be taken, and it is a matter of some consequence how it shall be taken. There is relaxation amid an entirely different line of life, as from city to country. There is relaxation in a quiet retreat, and there is relaxation in visiting the homes of other people in the same line of life. This is usually a profitable way of enjoying rest, or at least it may be made so, more especially if the places visited are known as places of progress. Ideas may there be picked up which are helpful if properly utilized. We can choose the good from what comes beneath our notice, and we can embody it in our own experience.

After harvest is the season of exhibitions, and we can profit much by visiting them. Of course we can attend them and be but little wiser and no better. Young men especially may easily visit fairs and go home poorer rather than richer in more senses of the term than one. The speeding ring, around which so much time is spent, is not a place where agricultural knowledge is readily picked up. Much useful knowledge may be gleaned by those who spend their time in the cattle sheds, the sheep pens, the horse stalls, the swine pens, the agricultural hall—in fact, amid nearly

every feature of the exhibition. Less, perhaps, can be learned around the speeding ring than in any other place, and yet that is where the crowds assemble. The lessons which the exhibitions bring to those who are really in earnest in the search for knowledge are very great, and we do well to learn them when we can. Recreation may at the same time be obtained, and we are fortunate when we can combine recreation and the search for knowledge.

But while relaxation after the hard work of harvest is good for us, we must not carry the idea too far. Too much time must not be spent thus, for another harvest is on the way, and, if we are to reap a bountiful harvest the next time, we have a duty to perform, or we cannot hope for such a harvest. The character of next year's harvest will depend very much on what we do between now and next winter. We do well, then, to be careful as to how much time is to be spent in recreation after the toilsome reaping of the harvest.

Sometimes there is much waste, not only during harvest, but after harvest is ended. We may not be able entirely to prevent the former when the harvest is very bountiful, and when the weather is very adverse. In the former instance, it may be beyond our power to take care of it, and in the latter no skill that we can use may be able to prevent the loss. But, after harvest, waste should cease. Produce should not then be allowed to spoil, for it is in our power to take care of it, and we are in duty bound to do so. The gifts of a superior power to man should not be wasted. The man who allows produce to waste after one harvest is over should not complain if the next harvest proves unproductive, on the principle that the man who does not value gifts enough to take care of them is not deserving of other gifts.

Let the season after harvest be spent, then, as though another harvest were to be prepared for. Lands are to be plowed, obstacles to cultivation are to be removed, ditches are to be dug, drains are to be laid, fences are to be repaired, and buildings are to be made ready for winter; hence, after some relaxation has been enjoyed, there is no season of the year probably when it pays us much better to be busy. We shall find that labors will crowd us, and as winter draws near they will thicken.

After harvest it is particularly fitting that we should be careful as to our outlay. Some do not need caution in this direction and others do, and more especially, if the harvest has been bountiful, we are apt to conclude that the thing that hath been is that which shall be. After reaping one bountiful harvest we become strongly possessed with the idea that we shall soon reap another like it. The opposite idea should rather possess us, for it seldom happens that two unusually bountiful harvests follow each other. Under this false feeling of security there is danger with some of us that we shall be lavish of our money, while the next year's harvest is far away, and when it comes it may prove a light harvest. It is easy, indeed, to throw away the entire proceeds of a bountiful harvest by foolish investment, prompted by the feeling of security which a bountiful harvest is prone to beget.

Handling Corn Fodder.

Unquestionably, all things considered, corn can be most satisfactorily cured in the silo in all the provinces, from Ontario to the Atlantic seaboard. And probably the same is true of Manitoba and the Northwest. But in the dry winters of the Northwest the same ne-

cessity does not exist for curing corn in the silo as in the provinces which have more of snow and rain and sleet in winter. The question of corn for fodder is not a very pressing one in the Northwest provinces, but it will become more so as dairying extends, for we must remember that in these localities clover will not grow so as to form a reliance for food for live stock. Mr. Belford and Mr. McKay, the very capable managers of the respective government farms at Brandon and Indian Head, have done what will some day be a great matter for the farmers of these provinces, in that they have demonstrated that good corn ensilage can be made in both districts.

When corn is grown for fodder in Ontario and eastward, the aim should be, as far as practicable, to get it under cover before the deep snows of winter arrive. In fact, it is well, when the farmer feeds his corn early in the season, reserving more of the other fodder for a later period, as a saving in handling may thus be effected, since he can draw directly from the field until the snow period arrives. If, however, the fodder can be stored away in the various mows of the barns and sleds, it will keep perfectly if placed upon end, one tier deep, and it will then be safe from all vicissitudes of weather.

Stacking corn fodder does not usually succeed well in our climate, for the reason that it is too humid. It is very common to stack corn in the Northwestern States. The stacks are usually made oblong in character. A little straw is thrown on the ground. Two tiers of corn are used in building the stack. The butts are placed outward. The tops overlap far enough to elevate the stack somewhat along the line of the centre. A little marsh hay weighted down completes the stack. In a very dry autumn the same method of stacking may answer with us. But in this climate of much precipitation there is nothing like getting the fodder under cover, so far as this may be practicable.

In the Western States the methods of threshing and shredding corn are becoming somewhat popular. The corn is threshed by simply running it through a separator. It is shredded by running it through what is termed a shredder—that is to say, a machine which husks it and leaves the corn undisturbed on the cob. The corn straw is torn into shreds, and is stored away in a mow or loft, or some other receptacle under cover. It is then fed to various kinds of stock, and, when thus torn into shreds, the animals consume more of it than if it were fed in the long state.

But neither of these modes of handling corn is likely to become popular in Ontario, for the reason that the corn fodder will not readily dry out enough to admit of its being thus stored. But, if any way can be devised by means of which the stalk would not spoil, then it would be different. It would be quite possible, perhaps, to so mix the shredded corn fodder with straw of some kind that it would keep perfectly.

But, in Ontario, there is, probably, no better plan of using corn fodder than that of running it through a cutting-box without first husking it. If fed in this way, after having been mixed with some other kind of fodder, the results will be satisfactory. The chief difficulty consists in keeping it stored until it is thus wanted from time to time.

Corn fodder is being more and more used, and this is as it ought to be. Its value as a food is high, more especially when we consider the large yields that may be obtained

per acre. But, in our climate, it is much more liable to take harm than in those with less of precipitation. When the shocks fall over, or even when they sag to one side, they will soon take harm from rain. Great care should be taken, therefore, to prevent the fodder from being wasted after we have succeeded in growing it. As stated previously, it is usually an excellent plan to feed corn fodder freely in the autumn, saving other fodders until a later period.

Pasture Crops.

We do not know as much yet as may be learned about pasturing off crops. We have too readily taken it for granted that the only crop that cattle can eat off to advantage is rape, in addition to the various pasture grasses. It may yet turn out that we are mistaken. Corn has not been so fully tried as a pasture as it ought to be, till we know certainly whether or not it will pay to use it in this way. And the same is true of vetches and oats. Of course, corn will break off after it has reached a certain height, and it will not sprout up so readily again after it has jointed, but it will grow up again and again if eaten off when young. And tares or vetches readily sprout up again after they have been eaten down. Of course, if left till they have attained any great height before turning in the cattle upon them, they would be badly trampled, and there would be much waste, but it would be far better to put the cattle on them early and eat them down oftener.

In the Northwest, and more especially in the dry parts of it, as, for instance, west of Indian Head, growing foods for cattle to pasture upon will, one day, be relatively far more valuable than the same would be in Ontario. There the grasses get very dry, and they cease to grow, practically, during the summer months. On the large summer fallows of that country fine forage crops for cattle could be grown, since the soils there are very favorable to the growth of forage crops which may be sown upon them.

Sheep may be pastured with advantage on a great variety of crops. They do well on tares and oats sown together, and when thus grown and pastured there is not much waste. If the sheep are put on early enough, and if they are not allowed on when the ground is wet, there will be practically no waste, and, as soon as the sheep are taken off, the tares begin to grow up again. In this way a large quantity of fine food can be grown for sheep. If it is thought best to cut the tares, the food may be carted to the sheep and fed in racks or on grass. A large quantity of feed per acre may thus be obtained, and the pasturing off the crop by the sheep is good for the land. And why should not corn answer for sheep? It will grow a very large quantity of food. If eaten off early by sheep, it will soon grow up again, and thus it may be pastured two or three times. Of course, where good pasture is plentiful and abundant, there will not be any necessity for sowing corn for such a use, but oftentimes pasture is very scarce indeed. The sheep may not relish the corn at first, if they have not been used to it, but they will soon grow very fond of it.

Millet, also, should serve the same end. But millet must be eaten off when young, if we are to get the best results from it. If not eaten then it will soon joint, and after it reaches that stage its power to produce pasture is practically gone. The millet will break down somewhat, but not very much, and it

will grow up again quite fast if eaten down when young and tender.

But the greatest of all forage crops for sheep after the pasture grasses is rape. Our farmers are getting more and more to know its value. It is certainly a fortunate addition to our forage crops, and it is growing more and more in favor every day. Large quantities of it are grown in Ontario and Quebec. In the Maritime Provinces it has become firmly established in some neighborhoods, and in Manitoba it is becoming a favorite pasture on summer-fallows. We can reasonably expect that it will be very largely grown every year henceforth in all the provinces. It is not a little surprising that a plant so valuable was so long in being introduced. It was grown for years in some of the counties of Ontario, while its merits remained unknown in nearly all the other counties of the same. Thanks to the good work accomplished by the Ontario Agricultural College at Guelph in thus bringing the rape crop prominently before the notice of the country, it has done much to improve the mutton industry of Canada.

Other forage crops may yet be introduced. We should watch for them. If we can grow food for live stock without the necessity of harvesting it, we shall thereby save a large amount of labor.

For The Canadian Live Stock and Farm Journal.

Crimson Clover.

The question of crimson clover is being much discussed by the agricultural papers in the United States, particularly those of the east, and I find that in Ontario some are reporting that crimson clover has come to Ontario to stay. Perhaps it has. I trust that it has, and if it can be turned to good account by our farmers I shall be glad. But, in the meantime, while it may be well for them to try crimson clover in small quantities, I feel it my duty to advise much caution in the work. It is exceedingly doubtful if crimson clover will ever be grown extensively in any part of Canada for forage or fodder purposes, except, possibly, on the slopes of the Pacific.

Several reasons may be rendered in support of this view. First, crimson clover is an annual, and has to be sown every year. This in itself is a strong objection to our sowing it for fodder in the presence of so many other varieties which are more durable. Our common medium clover is a biennial. The same is true of the mammoth, although both of these will live for a longer period under some conditions. Alsike clover, which grows well with us, will live for many years. And alfalfa will grow indefinitely when it is once started. Therefore, so far as this one feature is concerned, the varieties named have a decided advantage over crimson clover.

In the second place, it has to be sown in the summer or early autumn. This means that there will always be some risk that the seed will be lost when the weather is dry, and it is much liable to be dry at that season of the year. In the Eastern States many report that crimson clover has failed to make a good stand because of dry weather, and even in these states, when it does not grow much in the autumn, it is much liable to be killed in winter.

Thirdly, it does not stand our winters well. The results of experiments conducted by Professor Shaw at Guelph, as published in the annual reports of the Ontario Agricultural College, were not of a character to give much encouragement to the Ontario farmer. In those experiments it was found that it did no.

winter well. Of course this does not prove that it would not stand the winter in other localities, and under the most favorable conditions; but it does prove that crimson clover cannot endure low temperatures as can the other varieties named.

Even though crimson clover stood out winters perfectly, we should have more or less difficulty in curing it for hay. The work of curing would have to be done early rather than late, that is to say, it would have to be done in the damp weather of late spring, and before the dry weather of the summer season. It would, therefore, be much more difficult to cure than other hay.

The only strong reason that we should have for a desire to grow crimson clover is found in the fact that if we could succeed in doing so, we should have an excellent plant for manuring our land. It could be plowed under in time to follow with corn, potatoes, roots, or rape. And it would be grown at a season when other crops are not occupying the land. If it could be relied upon to stand our winters it could thus be made to render excellent service, but it cannot be depended upon to come through safely unless the winters were exceptionally mild.

Crimson clover is an inestimable boon to the eastern and southeastern states of the American Union. It is so because it provides the farmers there with fertility in a form that is less costly than when fertilizers are purchased directly. In those states, or in some of them, garden produce is grown to a very considerable extent, and crimson clover furnishes a cheap means of manuring the grounds while they are unoccupied with garden produce. But even in these states it has been found that, unless it can be made to enter the winter in good condition, much of it is liable to succumb during adverse weather, and that much of that which does survive makes but a feeble growth.

It may be that with us crimson clover could be sown with advantage in orchards from which no crop was taken from the land other than the fruit produced. In these it might prove a good plan to sow the seed in the spring. The clover would make a fairly good growth by midsummer, and it could then be plowed under.

The testing of crimson clover should, therefore, be done with a prudent caution. It would not be wise to expend much money in seed until it has been found that this plant has given a better account of itself with us than in any of the trials with it, the results of which have been given to the public. While it may be well to give crimson clover further trial we should not reckon on great results, for we cannot make a plant to flourish in our midst which does not seem to have any marked adaptation to our conditions. S.

For The Canadian Live Stock and Farm Journal.

The Soil of the Prairie.

The soil of the prairie is a study in itself. Of course it varies as do other soils, but usually it is of a dark color. Almost invariably it is loose in texture, so loose that it may be pushed aside with the foot when under cultivation. Moreover, it is so light and spongy, that it is tiresome to walk over it during the processes of cultivation. There is a sinking, as it were, beneath every tread. And if the land has been but newly and deeply plowed, the footprints of the horses go down deeply into the same. Consequently a very heavy class of horses is not usually sought or to till these soils.

The man whose life has been spent previously in farming clay soils, and who then locates on a prairie, has to leave much of his old-time practice behind him, if he is to make a success of his work. He very soon comes to know that he has not learned everything about farming. The aim in the east is to plow deep, as a rule, and to make sure of a fine pulverization. The aim in the west is to plow shallow, except under certain conditions, and to render the ground as firm as possible. With this object in view, some are now advocating the impacting of spring plowed land by running heavy rollers over it, so that it will be impacted, and will also be left in creases or little ridges, as it were, to prevent the wind from blowing it away. And this system of cultivation is advocated in the autumn as well as in the spring.

The roller is but little used on prairie soils in the sense in which it is used in the east, that is, for purposes of pulverization. When a crop of grain is sowed on the prairie it is seldom rolled. There is no doubt but that on the prairie the use of the roller would bring about a quick germination just as it does in the east, more especially when the supply of moisture is not over-abundant, but if prairie soils were rolled just after the harrowing of the grain, the winds would be apt to uncover much of the seed. The soil would drift over the smooth surface, on the principle that the less the friction which a moving object meets, the more easily does it move. But there is no doubt that the roller could be used with much advantage on these soils after the grain has reached the height of two or three inches.

Owing to the light, spongy character of prairie soils, they suffer readily from dry weather, more especially when warm winds blow over the surface of the ground. The particles of the soil lie loosely. The interstices between them are certainly larger than in soils of clay texture, hence, when a warm, willing wind blows over the soil for two or three days in succession, it carries away much of the moisture into the atmosphere, and the more deeply and the more recently the plowing has been done, the more rapid the evaporation. Many of the processes of cultivation are planned to meet this difficulty.

Prairie soils are wonderfully responsive to the influences of moisture. A succession of light showers in the growing season is followed by the most luxuriant growth, and the rapidity of the growth is simply magical. Last spring we took well grown radishes out of our garden on May 5th, which had been sown on March 31st. Peas sown April 4th were a foot high and in blossom on May 21st, but the season was, of course, an early one. In the season of growth corn pushes ahead with wonderful rapidity. One can almost fancy that he can see it growing, although in some instances the low temperatures of midnight tend to moderate growth in these prairie countries, and perhaps it is well that it is so. The moisture in the west is not so abundant as in the east. When rain does fall in the summer season it is in the form of showers, usually more or less local in character. It is seldom, indeed, that a soaking rain comes down in the summer which extends over a whole province or state.

Prairie soils are, as a rule, rich in the supplies of plant food which they possess. They will stand an astonishing amount of cropping, and, as a rule, they get all they can stand. Imagine a farmer in Ontario growing twenty grain crops in succession on his land without applying manure in any form. Very frequently land is cropped thus in this western country.

Of course, there are now many exceptions to this mode of handling land on the prairie, and these are becoming more and more numerous. But, in too many instances, the style of farming on the prairies may be compared to the driving of the willing horse; it is made to produce regardless of what the end may be, simply because it will produce.

When the day comes that these wide prairies will be given a fair chance they will grow much heavier crops than they produce at the present time. I speak of averages. In addition to the grain and corn which they now produce, they will grow immense crops of forage and fodder. At present the number of the live stock kept is relatively small to the acreage, but all this will change in time. The ease with which the soils of the prairie can be tilled is a great point in their favor. The harrow and the cultivator in the west may be made to do much of the work which, in the east, can only be done with the plow.

THOS. SHAW,

University Experiment Farm,
St. Anthony Park, Minn.

Management of Farmyard Manure.

By JAMES MILLEN, Brougham, Ont.

This is a subject that requires the most careful consideration by the farmer and market gardener. Farmyard manure is the most valuable and the most perfect within itself of all known manures. Others are of greater value when some particular purpose is to be accomplished.

The majority of farmers have, up to the present time, neither spent thought nor labor in the proper care of the manure heap, which may and does depreciate in value in two ways, namely, leaching and evaporation. If the heap gets too dry it burns, gets fire-fanged by the forming of carbonate of ammonia, which very readily escapes into the air. This is what is taking place when a strong smell arises from the heap, which is the escaping ammonia. Again, a great waste will take place if the manure heap be so situated that not only the excessive rainfalls penetrate it, but also the leakings of the eavetroughs from above saturate it, especially if there be a hard bottom and a natural drainage from it. This is, perhaps, the most common and greatest system of waste, sometimes even reducing the heap to one-half its original value. All of this can be easily controlled by a little forethought and care, and at little expense, if in no other way than by placing all the manure in a basin filled in the first place almost level with earth.

One of the best ways for the Canadian farmer to keep manure would be to build a skeleton house with merely a roof upon it, or an open shed, where the frost could have free access to it (for I believe in freezing the top and sides), and out of the rain, but first placing plenty of swamp muck, leaves, sawdust, or anything handy that will absorb and hold the liquid manure, in the bottom. Make a shape in the form of a basin, as before, and allow the animals to race over it, keeping up the sides, to make it solid.

Some farmers are now commencing to feed their cattle, as well as their colts and sheep, in loose boxes. This is to be commended, for I have yet to see the manure taken out of a loose box either fire-fanged or leached. If such manure be at once taken to the field when removed it will be at almost its full strength. In the loose boxes the straw is evenly spread over the box, preventing evaporation, and the liquid from the animals, being

so gradual and not excessive, is taken up and absorbed by the decaying manure. The cattle would have first to be dehorned.

The winter is not so hard upon the manure under any circumstances. It is during the fall and spring that the waste takes place when evaporation and leaching is the most active.

Farmyard manure of different kinds should be mixed together, not so much on account of their different values, but because of the peculiar characteristics of each. For instance, horse manure is not so moist as cow manure, and therefore heats more readily. How often the farmer, in hauling out the manure from in front of his horse stable, has noticed that it is just white, mouldy straw, fire-fanged, and of very little value. This is also noticed in pure sheep manures. The nitrogen and its compounds, which are the very virtue of manure, have all evaporated. But overheating very seldom takes place in the cow manure heap, so that if the whole be thoroughly mixed together the entire heap will be preserved, other circumstances being favorable.

In my humble opinion, the best way to keep manure is in the form of a compost. This is done by mixing all kinds of vegetable and mineral substances with the farmyard manure, and thoroughly rotting the whole together. The farmer could either form his heap near his buildings, or he could take all his material out to the field that he next required to manure. This would depend upon his time in the winter season. Some farmers on 100 acres make it a practice to engage a farm hand for only eight months of the year, perhaps paying him \$140, whereas if they engaged him for the year they would only pay him perhaps \$160. He could make double the difference and his board in proper management of the manure heap alone. He could haul the sawdust from the nearest mill, the ashes from the nearest town and village (and not let the New England farmers buy them for a mere trifle and pay freight in addition), the lime from the nearest kiln or station, the leaves from the woods, etc., etc., all of which are of the greatest value as manures. The lime, gypsum, salt, etc., could be mixed in the compost instead of spread upon the land in its pure state. We could also use lime, sawdust, or ashes in our stables to sweeten and make them more healthy for both man and animals, and to the great advantage of the manure. Otherwise, lime should not be mixed with clear farmyard manure, on account of its producing a too rapid decomposition and the different elementary substances produced being allowed to escape, as there would not be sufficient absorbents in the pure yard manure to take up and hold these escaping organic substances. Ashes or sawdust could, perhaps, be used with safety, but neither would absorb the ammonia so readily, nor have the same cleansing power, although their use, from a sanitary point, is to be commended in the absence of lime and the compost.

The compost should be made in a square shape, rather hollow along the centre, and the different manures of which it is made should be in alternate layers, such as ashes, swamp muck, leaves, tanbark, and any scrapings to which the farmer has access, even to throwing in a dead animal that he may be unfortunate enough to lose during the winter.

After the heap becomes thoroughly heated start at the end first, put up and turn it over, but leaving it in the same shape again, thoroughly mixing the whole. This should be repeated until you have a fine black, spongy

manure, and in such a condition that the whole will at once be available for plant food, and made ready for the following crop. This condition of the whole is chiefly brought about by the action of the lime, of which it should receive a liberal quantity. Make calculations for about twenty bushels to the acre, if the land wants lime, or ten in a regular five years' rotation.

Rather than allow the manure to leach and evaporate in the yard, it would be much more profitable for the farmer to take it out and spread it over his land when first made. He would obtain the whole liquid, or nearly so, which is half the value of the farmyard manure.

By taking advantage of the above hints the farmer will add much to the present value of his manure, and at very little extra expense.

Underdraining.

In the present period of our agricultural history, when we are studying how best to produce a larger quantity and better quality of farm products, we must ask ourselves what are the essentials necessary for successful production of crops.

These may be classed under three heads-- Drainage, Tillage, and Manures. The first place must be given to drainage, for every one will admit that, in order to grow crops successfully, we must have a dry soil.

There are farmers who still assert that draining heavy clays will injure them, and to any one who is unacquainted with the action of draining on land it appears to be a contradiction to say that drained land is drier in wet weather and more moist in dry weather, but experience proves such to be the case.

The object of draining is not to get the water off the land, but to get it to pass through the land, so that the land may retain what fertilizing properties it contains, and what the soil does not require passes off through the drains. When passing through the soil the water leaves channels, through which the air passes, and assists in the decay of whatever vegetable matter there is in the soil, and renders it available for plant food, while in undrained land the water is stagnant, and fills up all the pores of the soil, and the land remains cold, as the heat cannot penetrate the soil until the water is evaporated; hence we find that the temperature of a drained soil is higher than that of an undrained one.

Careful experiments conducted in England resulted in finding a difference of seven degrees in favor of the drained land.

The advantages of draining are:

It enables us to get on the land much earlier in the spring; the advantages of early seeding are evident to every farmer in this country of short seasons. Experiments have shown a gain of nearly twenty per cent. in favor of early seeding compared with that sown ten days later.

The land dries more rapidly after heavy rains in summer, which enables the farmer to cultivate the corn crop more thoroughly, and other grain crops are not so liable to rust or blight, and are less liable to be injured by summer frosts.

An earlier harvest and a better quality of grain are secured.

Where fall wheat is grown it is not so liable to be heaved by the action of the frost; a catch of clover is more likely to be secured, and is not so apt to be thrown out by the alternate freezing and thawing.

Tillage is rendered much easier on heavy

clay soils, as nothing is so injurious to such soils as working them in wet condition.

We can apply manure on the surface and have its fertilizing properties washed down in to the soil.

There is greater comfort in all our farm operations, and the health of all animals on the farm is improved.

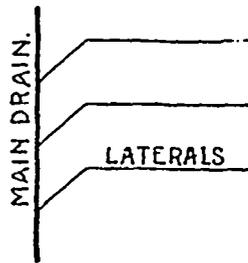
In draining, thoroughness is essential. Every tile laid down should not only be of sufficient capacity, and laid at sufficient depth for present requirements, but should have capacity and depth enough to carry off what ever water will be brought through it in future. It is an excellent practice to use one size larger tile than we think absolutely necessary.

A good outlet should always be provided. This may be an open ditch, but it should be of sufficient depth to allow the tile to discharge the water freely into it.

Never have an open drain where an eight inch tile will carry the water.

The outlet should be secured with flat stones or a wooden box, as tiles that are exposed will crumble from the action of the frost.

Do not bring laterals into the main drain at right angles, but turn in the direction in which the water flows in the main drain, thus:



The junction may be either in the side of the main, or, if depth will allow, the lateral may be laid on top (a hole being cut in the centre of the lateral, and laid above a corresponding hole cut in tile in main drain, a brick being laid at the end of lateral that projects over) and the water allowed to fall into the main. The joint should be carefully secured with pieces of broken tile.

The depth and distance apart must depend entirely upon the soil. In heavy clay soils the depth should be less than three feet, and the distance apart from sixty to one hundred feet.

For lateral drains use nothing smaller than three-inch tile.

In digging it is an excellent practice in level land to plow a furrow each way as deeply as possible, and throw out with a shovel. This enables the operator to get a depth of seven or eight inches more expeditiously than by digging with a spade. Only first-class tools should be used. Half-round spades and scoops the proper size for different tile are essential. Be most particular about levelling the bottom of the drain. At least one inch should be removed with the scoop in bottoming for three-inch tile (more for the larger sizes), in order that the tile may lie perfectly solid. Water should be used to get the bottom perfectly solid. Tile will work perfectly in very level land, if laid correctly. A fall of one inch in two hundred feet is sufficient, if the work is properly done.

In laying tile the operator first lays one tile at the outlet, and stands upon it, and then continues laying, each tile as put down receiving a sharp blow from the heel of his boot, which drives it close up to the one previously laid. Surface soil should be used to fill the drains for the first six inches. Then they may be plowed in.

Use a long doubletree, and place a horse on each side of the drain.

It is in quicksand soil that the beginner is apt to experience the most difficulty. By selecting the driest time of the year for such work, and allowing the water to run out after each successive spading, there will be no difficulty in getting through a bed of quicksand. These soils should be drained as deeply as possible. If the outlet will allow, and it is possible to reach a clay bottom at any reasonable depth, it is better always to do so. The drain will accomplish more the deeper it is put. In laying (if unable to reach solid bottom), after the water has been allowed to run out use sawdust, and by putting a couple of inches in the bottom you will be enabled to lay tile satisfactorily. Cover joints of tile with a tough sod.

To ascertain if tile is properly laid get down into the drain and walk through it, stepping on each tile. If they remain perfectly solid, you may pass the job.

The price at which tile may be obtained varies in different localities.

In sections where there is a brisk demand, and the output is large, the price is less than where the output is limited.

One thousand tile will lay sixty rods of drain. Cost of digging and laying is twelve and a half to fifteen cents per rod, with board, for ordinary size tile. In quicksand soils the price would be greater.

As regards the percentage of profit that money invested in draining will return, it varies in different soils. Cold, springy soils will return a much greater profit than heavy clays, but on the latter, after an experience of fourteen years, I have invariably received a good fair percentage of profit on the capital invested.—Prepared by Mr. Mungo M. Nabb, Corwal, Ont., for report of Institute meetings.

The Experimental Farm System.

Address by PROF. FRANK T. SHUTT, M.A., Chief Chemist, Dominion Experimental Farms, to the Eastern Dairywomen's Association.

I purpose availing myself of the opportunity afforded me this morning to present to you a very brief account of the work, the functions, and objects of the Experimental Farms. I trust I may be able to make clear to you, as practical farmers and dairymen, that there are distinct and direct advantages to be reaped from the experimental work in agriculture that is being carried on by the Dominion Government.

This work, so varied in its character that it embraces all the branches of agriculture, is conducted at five different points in Canada: at Nappan, Nova Scotia; at Ottawa, Ontario; at Brandon, Manitoba; at Indian Head, Northwest Territories; and at Agassiz, British Columbia. These centres of operation allow investigations and experiments to be prosecuted under the varying conditions of soil and climate found in this country.

At Ottawa—the Central Farm—there are several departments, presided over by the following officers: Director, botanist and entomologist, agriculturist, chemist, and horticulturist. These constitute what might be called the scientific staff. It is their province to investigate the problems related to or in any way connected with Canadian agriculture that may arise in the course of their own work, or in the work of farmers throughout this Dominion.

I can only very briefly epitomize in speaking to you of the character and extent of these in-

vestigations; it is only possible for me now—with the short time at my disposal—to mention some of the more important features that characterize the labors of those who have this vast work in charge.

In the various branches of agriculture proper we find, among other investigations, the following lines of research being followed: The economical feeding of farm animals, of milch cows, steers, and swine; the lessening in cost of the production of pork and milk; dairy experiments in the better and cheaper manufacture of butter and cheese; field experiments in growing nutritious fodders at a minimum cost; investigations by practical trials of the relative values of various manures and commercial fertilizers; trials with all varieties of roots and cereals.

In horticulture, perhaps one of the most prominent features of the experimental work of recent years has been the devising of fluids and methods of operation for the checking of fungous diseases of fruit and fruit trees. This protective process here referred to is commonly known as spraying. This work has of late been crowned with such a measure of success that grape growers and orchardists have widely adopted spraying for the preservation of their fruit.

The testing of all varieties of fruit—small and large—for hardness, prolificness, and general suitability, as well as experiments in vegetable growing, in ascertaining the vitality of seeds, in propagating new varieties of fruits and shrubs, in the growth of forest trees, and in the matter of tree protection for orchard and general farm crops—all these receive attention, and are being carefully and systematically worked out.

We are all aware of the ravages made annually by insects. There are insects injurious and insects beneficial to agriculture. The farmers are instructed how to distinguish between these two classes. They are further told what remedies to apply to rid their crops of these insect pests, and how to apply them. The destruction to fruit, to garden and field crops, by insect foes can only be estimated by thousands of dollars yearly. The parasites that affect farm animals do an amount of harm by reducing strength, and the quantity and quality of flesh and milk that can scarcely be calculated. Methods for the prevention and the extermination of these pests are the study of the entomologist.

And what am I to say regarding my own department—that of chemistry?

Chemistry is the science that lies at the foundation of all agriculture. It studies the composition of all matter; it ascertains the requirements of plants and animals; it shows the intimate relation that exists between soil and plant food, and the production of milk, flesh, and wool; it tells how and why our soils lose their virgin fertility; it explains how plant food in the soil may be converted into assimilable forms, how cattle foods differ in nutritive qualities, how manures and fertilizers supply nourishment for plants, assigns their relative value, and tells how they should be preserved and used; it makes clear why milk should be tested and valued for butter and cheese making.

By the aid of chemistry we analyze well waters, finding out which are good and which are bad; we learn the value of absorbents in and about our farm buildings, both from an economic as well as an hygienic standpoint; we know the best time to cut grass and corn fodder; we detect fraud and adulteration in commercial fertilizers and dairy products.

Thus in a thousand ways chemistry sup-

plies the why and wherefore of our farming operations, and allows us to conduct farm work in a rational, economic, and profitable way.

At Ottawa we have splendidly equipped chemical laboratories for studying these problems, and the reports and bulletins of the last eight years will convince you that true and lasting benefits—general and special—have been conferred upon Canadian agriculturists by the efforts of the department of which I am now speaking.

I must not forget to mention the poultry department. The poultry and egg industry is one that is now attracting general attention. The merits of the different breeds for table use and egg production are being ascertained, and experiments in breeding are being pushed forward to meet the demands for this branch of agricultural knowledge.

The results of all this work, at Ottawa and at the other farms, are published in bulletins and in the annual reports. This literature may be had for the asking. No intelligent and progressive farmer can afford to ignore this source of knowledge. Get the reports, read them, and then endeavor to put into practice the suggestions therein contained for better and more systematic farming.

The experimental farms are now bureaus of information. Farmers may send enquiries, postage free, regarding soils, fertilizers, farm products, fruit trees, cattle, insect pests, fungous diseases, cattle foods, indeed on any question relating to agriculture, and they will receive answers at the very earliest possible date. By the recent increase in this class of correspondence it is very evident that our farmers, dairymen, and fruit growers are fast learning throughout the country to avail themselves of the valuable assistance thus offered them.

Further, you are asked to visit the experimental farms. We invite inspection of the work, in the hope that much good will result from the actual observing of the improved methods there in vogue. I may assure you of a welcome, whether you present yourself in person or by letter. We wish to assist you in any way possible; we wish to help you to make your work more profitable and more interesting.

Swamp Muck.

Swamp muck, writes R. C. Keldie in Bulletin 115 of the Michigan Agricultural Experiment Station, is formed by the imperfect decomposition of vegetable matter, consisting of the more or less decomposed remains of marshy plants, together with the materials which have been blown in or washed in from the surrounding land. These materials, when covered by stagnant water, undergo a slow and incomplete decomposition, forming what is known as peat in Europe and muck in America. In cool and moist climates it is more abundant than in warm and dry climates, where vegetable decomposition is more rapid.

There are two varieties of muck, which differ in their properties and uses:

(1) Powdery muck, found on the surface of the muck bed, which is of a deep brown color, does not stick to the fingers, has no acid property, and closely resembles the mould or organic matter of the soil. If pressed upon moist blue-litmus paper it does not redden the paper, thus showing the absence of acids.

(2) Under this superficial layer of powdery muck is a variable depth of a nearly black, sticky, adhesive mass that cuts like cheese, and soils the fingers when handled. It is

usually quite acid, and when a slip of blue-litmus paper is pressed against it for a time the paper is reddened, revealing the presence of an acid. This cheesy muck contains a large amount of water, from 50 to 80 per cent., and if rapidly dried it shrinks and cracks, and forms a peaty mass that is fit only for the fire. This is the coaly humus of European writers, and is as useless for the land as so much stone coal. It may remain for years, a useless encumbrance on the ground.

If this muck is thrown up into long piles or windrows in the fall and left to the action of frost and weather during the winter, it will break down into a soft, crumbly mass, like the powdery muck found on the surface of the swamp, and will have lost its acid property, and much of its water. Six months' weathering in sharp winter weather will change its character almost entirely, and fit it for use on the land without fear of forming useless lumpy masses. The evaporation of its water will save about half the cost of moving it to the field.

Besides a variable amount of water, muck contains an organic or combustible material, a quantity of ash, and an uncertain amount of soil carried into the swamp by wind and water. The ash consists of carbonate of lime, magnesia and potash, sulphate and phosphate of lime, and oxide of iron; or the usual ash materials found in vegetable matter.

The organic matter of muck consists, for a large part, of a mixture of organic acids, and is distinguished for the relatively large amount of combined nitrogen it contains, from one to two and one-half per cent. A part exists as ammonia in combination, which may be set free by heating the muck with caustic potash or lime, but the greater part is inert or inactive. It is a great problem in agriculture how to make this inactive nitrogen of muck and of the humus in the soil active and available for the use of plants. In part, this is effected by the action of alkaline substances to promote decomposition, such as wood ashes, caustic lime, etc., and by promoting the process of nitrification to bring the inert nitrogen into the soluble and active form of nitrates.

The use of muck on the farm may be comprised under two heads:

- (1) To be applied to other lands as manure.
- (2) The reclaiming of a swamp and converting it into a field for raising usual farm crops or special crops, like celery and cranberries.

The powdery muck found on the surface of muck beds, or the cheesy muck made powdery by the action of frost and weathering, and free from acid property, may be applied to any soil deficient in organic matter, and be worked into the soil with benefit. The material may be made more active and beneficial by mixing with each ton of the dry muck two bushels of wood ashes or slaked lime. The muck is especially valuable for making compost with fresh stable manure, using equal parts of muck and manure. Even offensive material, such as night soil, the manure from the hog pen, and putrid animal remains, may be deprived of all offensive properties by mixing with muck. But in no case should the cheesy muck be used either for direct application to the land, or for composting. Let frost and weathering break down and sweeten this muck before using.

Serious mistakes have been made by the attempt to break up and cultivate a muck bed and putting in ordinary farm crops. The first step in reclaiming such a swamp is to thoroughly drain it to the depth of three feet, removing surplus water, and causing the muck

to settle and consolidate, changing its spongy texture and making it a firm soil. In this way it becomes capable of holding moisture, and loses its "frostiness" by becoming a better conductor of heat from the sub-soil. This drainage and consolidation of mucky lands are necessary conditions for reclaiming and preparing for successful cultivation. The evidence of improvement is seen in the settling of the soil, the gradual disappearance of wild grasses and sedges, and the appearance of boneset and redtop and June grass. These changes are promoted by a top dressing of wood ashes; even leached ashes, if applied in liberal doses, will make a great improvement. Sometimes by sowing seed of redtop on the surface of such consolidated swamp, and lightly scratching it in with a light harrow, a good meadow may be secured, giving a fair crop of hay for a number of years.

When it is decided to plow up a partially reclaimed muck swamp, this should be done late in the fall, and only a thin slice of the cheesy muck brought to the surface; thirty bushels of slaked lime should be scattered over each acre, and this incorporated with the soil by harrowing.

It is a matter of importance what kind of crop to raise on such land at the outset. The truck crops, cabbages, onions, white turnips, and potatoes, usually succeed well; also beets and mangels. Corn often does well, but oats and wheat often give a large growth of straw, and but a very small crop of grain. The hay crop—timothy and redtop—often gives large returns, and some farmers have grown rich by raising timothy hay on reclaimed tamarack swamps. The meadow often prepares the ground for grain crops. If the muck is not very deep, the time required for bringing such soils into condition for raising grain is much shorter. In fact, the application of one or two inches of any kind of soil to the surface of a muck swamp will greatly increase its productive capacity.

Special crops, such as celery, cranberries, and peppermint, have given the largest profit in muck farming. I have had no experience in these special crops, and must refer inquirers to those who devote special attention to these crops. One fact has aroused my attention, viz., that peppermint farmers place little value on their peppermint hay or the material remaining after the peppermint oil has been distilled, whereas analysis of peppermint hay shows that it is nearly as valuable as timothy for stock food.

Eradicating Weeds.

If the weed, like many of our most abundant kinds, is an annual, reproducing itself from the seeds only and dying root and branch each year, it may be subjected by preventing seed production. The seeds of many annuals retain their vitality for several years, so that if they once become abundant in the soil they are likely to germinate at irregular intervals, and thus cause trouble for a long time, even though no fresh seed is introduced. In this case merely preventing the production of seed will gradually reduce the quantity of weeds and will prevent any further spreading.

For permanent pastures, lawns, and roadsides, this is often the most practical method, and it is quite sufficient if persistently followed. In cultivated fields the land thus seeded should first be burned over to destroy as many as possible of the seeds on the surface. It may then be plowed shallow, so as not to bury the remaining seeds too deeply in

the soil. The succeeding cultivation, no deeper than the plowing, will induce the germination of seeds in this layer of soil and kill the seedlings as they appear. The land may then be plowed deeper and the cultivation repeated until the weed seeds are pretty thoroughly cleared out to as great a depth as the plow ever reaches. Below that depth—8 to 10 inches—very few weed seeds can germinate and push a shoot to the surface. A thousand young seedlings may be destroyed in this manner by the cultivator with less effort than a single mature plant can be destroyed, and every seedling killed means one less weed seed in the soil. Barren summerfallowing is often practised to clear out weedy land by the method just described: but usually corn, potatoes, rape, cabbages, or beets may better be grown, giving a profitable return for the extra cultivation. The best results can be obtained, of course, with crops that allow cultivation during the greater part of the season, and that do not shade the soil too much, as the direct rays of the sun heating the surface of the soil aid materially in the germination of many seeds.

As annual seeds usually thrive best in soil that has been broken but is not occupied, it is evident that broken land should not be permitted to remain idle. Abundant crops of annual weed seeds are matured every fall on potato and corn land, and in stubble fields, where a profitable crop of crimson clover or winter oats or rye might have been grown. A little grass seed raked in on bare hillsides will often keep down annual weeds, and will, at the same time, prevent washing. Mowing the roadside two or three times during the summer will subdue the dog fennel and ragweed. Mowing the stubble about two weeks after harvest in grain fields that have been seeded to grass or clover will check the annual weeds, and, at the same time, produce a mulch that is very beneficial to the seeding during the August drought.

Biennials, such as burdock, wild carrots and bull thistle, store up nourishment in thickened roots during the first year of growth, and during the second year they produce seed and die. Many species which are ordinarily true biennials will live three years, or possibly longer if seed production is prevented by mowing or cutting the stem above the crown of the root. In fact, mowing or cutting off the main stem often induces it to branch out at the base, and send up several stalks in place of the one. Cutting the roots below the crown usually kills them. If this work is to be done by hand with a hoe, grub hoe, or spud, as is often the case with bull thistles on new ground, it can be done most effectively and with least labor in the fall, during the first year of growth. The stools or rosettes of leaves, close to the ground, often give little suggestion of the prominent seed stalk to be grown the following year; but they are sufficient to indicate to the observing eye the presence of weeds. The root at this time is more tender, and hence more easily cut than in the mature plant, and one does not have to strike so deep to be sure of killing it. In sod ground a spud may be used to much better advantage than a hoe for cutting thickened roots below the surface.

Biennial weeds are readily killed by cultivation such as is given to hoed crops, and the seeds may be cleaned out of the land by this method. The weeds of this class are usually most abundant in old pastures, along roadsides, and in waste places where the soil is seldom disturbed. The weeds must be destroyed in these places if the work of clearing

the seed out of cultivated fields is to be made effective.

Perennial weeds reproduce themselves by seeds, and also propagate by some form of perennial underground stem, as the rootstocks of Canada thistle and couch grass, the corm or solid bulb of the nut grass and chufa, and the bulb of the wild onion. A few plants, sometimes classed as noxious weeds, have runners above ground, as Bermuda grass and cinquefoil. To destroy perennial weeds, seed production must be prevented, and the underground portion must be killed. Seed production may be prevented by mowing when the first flower buds appear, the same as in the case of annuals or biennials. The best methods for killing the rootstocks vary considerably according to the soil, climate, character of the different weeds, and the size of the patch or the quantity to be killed. In general, however, the following principles apply:

(1) The rootstocks may be dug up and removed, a remedy that can be practically applied only in small areas.

(2) Salt, coal oil, or strong acid, applied so as to come in contact with the freshly cut roots or rootstocks, destroys them for some distance from the point of contact. Crude sulphuric acid is probably the most effective of comparatively inexpensive materials that can be used for this purpose, but its strong corrosive properties render it dangerous to handle.

(3) Rootstocks may be starved to death by preventing any development of green leaves or other parts above ground. This may be effected by building straw stacks over small patches, by persistent, thorough cultivation in fields, by the use of the hoe or spud in waste places, and by salting the plants and turning on sheep in permanent pastures.

(4) The plants may usually be smothered by dense and sod-forming grasses, or by a crop like clover or millet, that will exclude the light.

(5) Most rootstocks are readily destroyed by exposing them to the direct action of the sun during the summer drought, or to the direct action of the frost in winter. In this way plowing, for example, becomes effective.

(6) Any cultivation which merely breaks up the rootstocks and leaves them in the ground, especially during wet weather, aids in their distribution and multiplication, and is worse than useless, unless the cultivation is continued so as to prevent any growth above ground. Plowing and fitting corn ground in April and May, and cultivating at intervals until the last of June, then leaving the land uncultivated during the remainder of the season, is one of the best methods that could be pursued to encourage the growth of couch grass, Johnson grass, and many other perennial weeds.—From Bulletin of U. S. Department of Agriculture.

Questions and Answers.

Grasses for Muck Land.—Subscriber, Sebringville: What kind of grasses are the best to sow on muck land for pasture, and what is the best time to sow them?

Ans.—By Prof. Thos. Shaw: Much will depend on the degree of the moisture of the muck. In some instances such land is covered much of the year with water. In other instances water saturates it only in the late autumn and early spring. But I will base the answer on the supposition that the land is not covered with water for any lengthened period at one time. I would recommend for pasture timothy, orchard grass, and alsike clover. Sow, say, six pounds of orchard grass, four pounds of timothy, and three to four pounds of alsike clover per acre. Sow as early as the ground will bear up a team in the spring. If the object were to grow hay, I would recommend red top to take the place of the orchard grass, but red top does not seem to

stand pasturing so well as orchard grass. Before muck soils will grow pasture in good form, they sometimes require to be reduced by growing on them such crops as flax or rape. When thus managed the soil becomes more impacted, and it is, in consequence, better able to retain moisture in summer.

Wireworms.

Editor Canadian Live Stock and Farm Journal:

SIR.—I noticed an enquiry in *THE JOURNAL* for a remedy to kill the larvæ of the wireworms and wireworms. I have had some experience in the old country in farming, and have known a good crop of mustard plowed under before coming into bloom to have the desired effect. Sow thickly on early stubble with very shallow cultivation. Another good plan is to mix gas lime fresh from the purifiers, about one load of it to eight or ten of earth. Turn it over occasionally in the spring and apply in the fall, giving about ten loads to the acre. J.W.

Charlottetown, P.E.I.

Orchard and Garden.

Nature of Fungi.

PROP. JOHN CRAIG, in Bulletin 23 of the Central Experimental Farm.

Fungous diseases, in accordance with natural laws, will in all probability increase in number in proportion as the food plants upon which they prey are multiplied, and as climatic conditions are favorable to their development.

In order, in this age of keen competition, to obtain from a given area the largest possible product of the highest quality, the best means of preventing injury from these pests must be adopted. After giving good cultivation, spraying, therefore, must be resorted to in order to secure this result. If we would derive the greatest benefit, it should be generally practised. The value of the efforts of one man who faithfully sprays his orchard is greatly lessened if his neighbor neglects this preventive measure, and so allows his orchard to serve the purpose of a breeding ground for the spores of fungous diseases, of which we have such well-marked examples in the "scab" of the apple and pear.

A brief consideration of the principles underlying the practice of spraying may enable the grower to understand the nature of fungous diseases, and this will be of service in directing an intelligent application of the remedies which are recommended. A glance at the character and habits of parasitic fungi will throw light upon the system of treatment.

The word *fungi* is used to designate an exceedingly numerous class of plants of simple organization; we must never lose sight of the fact that they belong to the vegetable world, and are therefore subject to the ordinary conditions of plant life. Some of them derive their nourishment from living plants or animals, others from dead plants or animals. Those which draw their food from other plants more highly organized than themselves are termed parasites, and it is with this class that the fruit grower is chiefly concerned. These plants (parasitic fungi) have not the power of assimilating food from the soil or atmosphere, and therefore must obtain it in a prepared condition through the agency of the higher plants upon which they feed. The vegetative part of a fungus—that part corresponding to the root, stem, and leaves of the higher plants—is made up of delicate thread-like tubes, usually more or less matted together; these collectively are termed *mycelium*. The term *hypha* is applied to a single thread-like tube. Parasitic fungi bear no seeds or flowers, but are reproduced by spores which are borne upon specialized branches of the hyphae. These

spores are produced in great numbers, and are the principal, though not the only, means of spreading disease. The hyphae threads of the parasitic fungi penetrate the tissues of the host plant—a name applied to the plant upon which they feed.

The spores are exceedingly light and easily carried by currents of air. When one falls upon a leaf and is supplied with moisture, it germinates by sending out a slender tube, which effects an entrance into the tissues of the leaf through the breathing pores (stomata), or intercellular spaces. After the parasitic fungus has thus entered the interior of a leaf, it develops rapidly at the expense of the tissues of the latter. Pushing forward from one cell to another, the contents are appropriated, and fresh vigor is thus gained by the parasite. This goes on till the vigor of the host plant is much impaired, or its life destroyed. Some of the principal parasitic diseases attack both foliage and the fruit of the host plant, as in the case of the "mildew" of the grape, "scab" of the apple and pear, and "rot" of the plum and peach. They are thus doubly destructive. If this destruction were confined to a few cells, leaves, or even to a few plants, the loss would be trifling; but the extraordinary rapidity with which fungi multiply, and the ease with which their reproductive bodies (spores) are carried from plant to plant, renders their extirpation a very difficult matter.

This explanation of the methods of reproduction and growth of these diseases emphasizes the truth of the maxim that "prevention is better than cure." When the mycelium of the fungus has become established within the tissues of the host plant, any remedy applied to the exterior of the plant, it is readily seen, can at the best be only partially effective. The copper salts have long been known to possess valuable germicidal properties. One of the commonest and cheapest of them, copper sulphate (bluestone), has been used for many years to kill the spores of smut infesting seed wheat. *Bordeaux mixture*, which is composed of bluestone, dissolved in water, combined with lime, has proved to be the most effective and the cheapest preventive agent yet discovered. A very concentrated mixture was used at first, which was difficult to apply and rather expensive. This has now been abandoned for weaker mixtures.

Notes on Grapes in 1894.

Of black grapes, the Concord still takes the lead. It is an excellent all-purpose grape of strong, vigorous *Labrusca* blood, and withstands more than most varieties all insects and fungi. It originated with E. Bull, of Concord, Mass., who, they say, is now living a poor man, notwithstanding he gave to the world so excellent a gift. This grape was first exhibited at Boston in 1853. My Concord were harvested last year between the 12th of September and the 12th of October. During this time they were constantly improving in flavor, and after the 1st of October they were, to my taste, much superior to the Worden. The yield was seven tons, and although these sold at the low price of \$30 per ton, yet I cannot complain when I compare the profits derived from other lines of agricultural produce.

Of the other black grapes I may mention Wilder. With me so far it is one of the finest black grapes in quality, but a poor bearer, yet it succeeds so well with others that I shall yet hope to have better results in the near future.

Moore's Early I am much pleased with as an early grape to precede the Concord. This year it colored well and sold well in the markets.

Black Giant is a large, productive grape, but, in my opinion, very poor in quality.

Of white grapes, I do not yet know of any variety more profitable than the Niagara. It is like the Concord in productiveness, and nearly as healthy, but somewhat subject to *Peronospora*, which causes the berries to shell off, especially on poor land, and to become insipid. When well ripened I consider the Niagara an excellent general purpose grape, and, on account of its great yield, one of the most profitable; yet, when you speak of it as a dessert grape, it lacks quality. Indeed, it will surely be pronounced insipid by one who first tastes a Salem or Lindley.

The *Victoria*, one of the numerous seedlings raised by Mr. T. B. Miner, of Linden, N.Y., was last year a favorite white grape with me, and I am inclined to think that it will yet take the foremost place among white grapes. The bunches are well shaped, the skin has a fine waxy lustre and heavy bloom, and the berries are of a good size and fair quality. The vine is very productive. By some this grape is called a White Concord.

Eldorado greatly took my attention last season. It is one of Rickett's seedlings, a cross between the Concord and Allen's Hybrid. The berry has a beautiful waxy white appearance, and, when fully ripe, attains a golden yellow color with a thin white bloom. It shows beautifully when contrasted with red and black grapes on a fruit dish. The quality is, in my opinion, most excellent.

The Triumph (Campbell's Concord Hybrid No. 6) also took my fancy, but, unfortunately, it is too late for our climate, and does not ripen as well as the Catawba. Otherwise it is an excellent bearer, and the bunches are very large and fine. It is a cross between the Concord and Chasselas Musque.

Noah is another grape that is a little late for Ontario, but ripened very well with me last season. The bunches are fine, but the berry is small. It is a heavy bearer. This grape was first disseminated in 1876.

The Pocklington ripened well last season at Grimsby, and is, in my opinion, superior to the Niagara in quality, but is not nearly so productive.

Of red grapes, the Lindley is my favorite red grape for profit. The vine is very healthy and productive; the fruit is of good quality and beautifully colored. It packs well in baskets with the Concord and Niagara, and these three, so far, are my favorites for the vineyard, for they sort up well together when I wish to make an assorted package of red, white, and black grapes for dessert purposes. The Lindley was produced by Mr. Rogers by hybridizing the Wild Mammoth grape of New England with the Golden Chasselas.

The Delaware will probably rank as the choicest table grape, but I consider it scarcely productive enough to be planted largely for profit. Last year it produced a crop of fine bunches, but, as a rule, it averages less than the Lindley, and the vine is much less vigorous.

Woodruff Red was last year a most showy grape in my vineyard. The berries were large and of a bright carmine color, with a heavy bloom. It ripens earlier than the Concord. The quality, however, of this grape is not good enough to deserve much commendation. Still, for a fancy package of assorted grapes I would like to try, for a

change, Woodruff Red for red, Victoria for white, and Wilder for black. This grape originated with Mr. C. H. Woodruff, of Ann Arbor, Mich., in 1874.

The Brighton grape did fairly well with me last season, but suffered from downy mildew more than usual. Perhaps it was because it grew in close proximity to the Salem, which is quite subject to that form of mildew. The skin of this grape is almost too tender to make it very desirable as a first class shipping variety, and when fully ripe it is too dark in color to rank high as a red grape, but, of all the grapes I know, none please me better for my own table.—*I. Woodruff, in Report of Fruit Experiment Stations of Ontario.*

The Dairy.

No Cheese Branding this Year.

The Commons Committee on Agriculture and Colonization at Ottawa have not embodied in their final report any recommendation on the cheese branding question, but have simply embodied in it the evidence taken by them on the subject. Out of the total number of replies received in response to the committee's circular asking factorymen of Ontario and Quebec for their opinion on branding, 673 were in favor of it, only 64 against, and 41 were neutral. With such an overwhelming majority of replies in support of branding, we think that the committee should have recommended it. The question, however, is only delayed, and must be brought up again before long. We believe that branding the date of make and the name of the factory on each cheese made will do much to help our cheese industry, as, when that is done, other and inferior cheese cannot be foisted on the consumer as of Canadian make.

Dairy Notes from the O.A.C.

By PROF. H. H. DEAN.

The following are some of the experiments that are being, and have been, carried on in the dairy department of the Ontario Agricultural College during the past few months. We have been experimenting to see whether the quantity and quality of cheese produced is in proportion to the fat contained in the milk. So far, we have had results which indicate that the yield of cheese is not in the same proportion as the fat, and that a pound of fat in milk testing from 3 to 3.5 per cent. fat will make more cheese than a pound of fat in milk containing above 3.5 per cent. up to 4.5 per cent. fat. To give patrons their just dues at cheese factories we have suggested adding on 2 per cent. to fat readings, which we consider is more nearly correct than paying by fat alone.

We are also making experiments to determine the effect of different temperatures in heating the curd from rich and poor milk, and also the effect of different quantities of salt added to rich and poor curds.

During the month of April a number of trials were made in dipping curds with different amounts of acid, which showed that the whey should be run off when almost sweet, and that the curd should not have over one-eighth inch acid after being dipped. We also tried the effect of different quantities of salt for spring cheese. Cheese with one-half pound salt per 100 pounds of curd were flat and insipid, thus showing that salt has much to do with the flavor of cheese.

In the butter department we are comparing the separator, deep setting, and shallow pan

methods of creaming, the effect of washing butter once, twice, and not washing it at all. We are testing "cultures" for flavor on cream and butter, and are trying different temperatures in creaming, both in the separator and setting methods. Two milking machines are on trial, and we are also experimenting with butter obtained from whey.

Cold Storage.

Hon. Mr. Angers, who was till lately Dominion Minister of Agriculture, must be congratulated on having acceded to the requests of dairymen and those interested in dairying, as expressed in THE JOURNAL and other papers, for a system of cold storage for dairy products destined for the old country. Under the instructions Professor Robertson has arranged for a cold storage service on railways, in warehouse, and on steamships, for fresh-made creamery butter intended for export. Several steamships have been fitted up with insulated and refrigerator chambers for the carriage of butter from Montreal to the three ports of Liverpool, Bristol, and Glasgow, and a weekly or fortnightly service will be provided. At present ice is used for cooling, but it is intended to use the ammonia process should the shipments increase sufficiently to warrant it. Each vessel can take from 900 to 1000 tubs or packages of butter.

Refrigerator cars will be run every week on the main lines leading to Montreal from as far west as Windsor on the C.P.R. and Warton on the G.T.R., and butter will be picked up at points between those places and Montreal. Shippers of butter will be charged the usual "less than carload rates" without any charge for ice or for the special service, which will be provided for by the Dominion Government. The latter, however, assume no responsibility for the butter shipped. The following are the recommendations made to shippers by Professor Robertson:

No butter should be shipped from any creamery until forty-eight hours after it is packed in the boxes or tubs.

The use is recommended of the square butter boxes, holding 56 lbs. net each. They are made of spruce wood, $\frac{3}{4}$ inch or 1 inch thick, and 12 inches deep, 11 inches wide, 12 $\frac{1}{2}$ inches long, inside measurements. They should be lined inside with parchment paper.

At the same time butter should be packed in the style of package which is recommended by the merchant who ships the butter, or who usually buys the butter from the creamery. If the 70-lb. tub be preferred, those should be used having a double thickness cover, with the under thickness of the cover set in, and without any rim.

For the preservation of butter it should be stored at a temperature as near 32 degrees Fahr. as is practicable. At that temperature any change goes on very slowly; and the main danger of deterioration in quality is from the butter "going off in flavor" on the surface. To prevent injury in that way, the use of a preserving brine is very advantageous.

A preparation from which to procure a special brine has been imported by the dairy commissioner from Great Britain. It will be furnished at wholesale cost price to owners or managers of creameries.

It should be used in every creamery, and the parchment paper, or cloth linings for all butter packages, should be wetted thoroughly with the brine before they are used. The price is 18 cents per lb. As far as the limited supply on hand will go, on receipt of \$5, a

box containing 28 lbs. will be sent; and on receipt of \$10, a ke., containing 56 lbs. will be sent by express or freight, prepaid.

Directions will be sent with the material.

Butter which is intended for export in the refrigerators on board the steamships should be consigned to the care of the Montreal Cold Storage and Freezing Company, St. Paul St., Montreal, Que. It must be stored for at least four days at a temperature of 20 degrees Fahr. before it is put on board the steamships.

Arrangements have been made with the Montreal Cold Storage and Freezing Company, whereby fine creamery butter which is sent in on these cars at not more than ten days old, will be stored at a temperature of 20 degrees Fahr. for the first fifteen days or less, at a charge of five cents per 100 lbs. of butter.

(2) For the following thirty days or any less period the charge will be eight cents per 100 lbs. of butter.

(3) For the following thirty days or any less period, the charge will be eight cents per 100 lbs. of butter.

(4) For the following thirty days or any less period, the charge will be twelve and a half cents per 100 lbs. of butter.

(5) For any longer period, the charge will be twelve and a half cents per 100 lbs. of butter for thirty days or any part of thirty days.

These charges are much lower than the usual charges for cold storage, and apply only to shipments of butter which are sent in fresh-made every week, and which are intended for export to Great Britain, through the refrigerator service provided on board the steamships by the Government.

For butter which has been carried to Montreal in refrigerator cars, while still fresh-made, and which has been stored for at least four days immediately prior to the time of loading on board the steamship at a temperature not exceeding 20 degrees Fahr., the steamship companies will issue bills of lading at such freight charges as are current for that week on cheese and butter going by the same route, in the ordinary way, without the cold storage accommodation.

For The Canadian Live Stock and Farm Journal.

Milk.

The many useful properties of milk as a food are not sufficiently recognized in the present day. Most people are agreed on its suitability as a food for infants and children, but very few, comparatively, know, or, at any rate, give it the credit of being an exceedingly valuable food for adults. It is true that the stomachs of some persons, owing to certain conditions, cannot receive milk without causing derangement of the system, or dyspepsia, but the number thus debilitated from the use of it is not large.

To most people milk presents itself as a food easy of digestion and a builder up of the system. In case of typhoid or other fevers it is ordered, either boiled or unboiled, by many physicians, as almost the sole food, thus showing its soothing effect on the bowels. In cases of diarrhoea, too, boiled milk presents many advantages and will, in light cases, check that trouble without any other remedy. Where a person is subject to diarrhoea it would be well to substitute milk, either raw or boiled, for tea or coffee, especially at the morning meal.

A great deal has been written about the danger of milk drinkers becoming afflicted with tuberculosis because of its prevalence in some dairy herds. There is, certainly, the pos-

sibility but not the probability. It has been proved by actual test that, unless the tubercles exist in the udder itself, there is no danger of tuberculosis being communicated to the individual who may drink the milk from the cow affected with that disease. I do not mean to say that no precautions should be taken to prevent dairy herds spreading tuberculosis—on the contrary, I am in favor of government inspection of all herds supplying milk to towns and cities—but I do object to newspaper reporters and others frightening people unnecessarily about the risks of having tuberculosis communicated to them through the medium of milk. The risk is slight and can be reduced to a minimum. Let the milk trade be properly supervised and extended as much as possible. I, for one, shall always recommend milk to my friends who may ask my advice on such matters.

M. D.

How the Flavor of Cheese is Often Injured.

Canadian cheese has such a world-wide reputation, and has so often won praise for its excellence, that we are wont to imagine that our cheesemakers and factory men have reached the height of knowledge and have nothing more to learn. Unfortunately, this is not so. Many of them have a great deal to learn in many ways. Many things are allowed round cheese factories which work great injury to the flavor of cheese.

In a recent letter to the *Woodstock Sentinel-Review*, A. F. MacLaren, Stratford, mentions some of these. He says:

"What I find the greatest fault with is having hogs kept and fed too close to the factory. I may say that I visited over forty factories last week, and I consider at least ten of them were injuring the flavor of their cheese purely and simply by hog flavor from the piggers. Strange to say, the factory people become so accustomed to this that they do not seem to mind or notice it. But the milk and curd which is being made into cheese, so surely as the odor is there, becomes contaminated, and the sooner the health officers in the different localities insist on this line of business being improved on, so much the better for every patron of a cheese factory, and for every one who comes within smelling distance of a cheese factory, saying nothing about the eating of such cheese. I say to factorymen, get your hogs further away from your cheese factories. You will have better hogs, better cheese, more money, and last, but not least, better health.

"I also find at a great many factories, where they draw the whey back to patrons in the cans, that they have a large tank full of whey close to the factory. The milk haulers are allowed to go to these tanks for the purpose of pumping or running the whey through a pipe or conductor into the cans; in so doing a great lot of whey is allowed to fall and lie in pools around the tank. In a short time this whey creates a very bad odor, which should and could be prevented by a proper appliance for placing the whey in the cans in the first place, and then by careful handling on the part of the milk haulers in the second place.

"Another great trouble I notice is that when cans of whey are returned to the patrons by the milk haulers in the morning, I often find these cans full of sour whey on the milk stands at the roadside late in the afternoon. The cans should be emptied not later than noon, or the moment they arrive home, if possible, washed, scoured with salt, scalded, and

well aired, so as to be in shape to receive the night's milk.

"Then again, I often find the whey brought home in these cans is fed to pigs right close by the milk stand. This is simply terrible, and should not be allowed.

"I also find another great wrong, and that is the milking of cows in the evening in the barnyard, with the milk can on a stand close by. This in itself is, generally speaking, a necessity, but I regret to say many patrons allow the milk to remain in the can on that stand in the barnyard, perhaps close to a large heap of manure, all night, absorbing this odor.

"Afterwards you find the cheesemaker wondering why his curds are gassy, why his cheese are bad in flavor, etc. Now I don't want either patrons, cheesemakers, or any one to think I am scolding or fault-finding. I am simply stating what I have seen hundreds of times, and more than ever this spring. It is for the good of every one in and out of the dairy business that improvement should be made all along these lines. The patrons cannot have everything in connection with the milk too clean and tidy, cannot keep their milk over night in too pure an atmosphere, and cannot empty whey out of cans too soon after receiving it from the factory.

"The milk-hauler cannot be too tidy about his work, keeping his wagon, cans, straps, etc., in good shape, and loading up his whey in as tidy a manner as possible.

"And now to some of the cheesemakers. For goodness sake do take off those pants, aprons, shirts, and boots, which stand alone. Get nice clean, white aprons and caps, such as we find at the Guelph dairy school, and the whole world will eat more cheese, will love you better, and you will be money ahead. Have everything clean, neat, and tidy outside your factory; wood piled up, fences and gates in good shape, grass and weeds cut, old vats, sinks, presses, curd mills, cheese boxes, barrels, etc., etc., all burned or taken away from the factory. Then inside the making room have the vats, sinks, presses, weigh scales, weigh cans, conductors, curd knives, milk strainers, curd strainers, engine, boiler and boiler room, curd mills, and last, but not least, floor and gutter all clean as a new pin. Then again, pay more attention to your curing room. Keep it very clean and tidy; don't have a bag of salt in one corner, a bundle of clean cotton on one shelf, a bundle of dirty head cloths on another shelf, a pan of grease with a rag in it sitting on the top of a rusty stove, a pile of empty salt bags and broken boxes, etc., in another corner. Don't allow this. Keep it clean, neat, and tidy, and your cheese will look better, sell better, and people will eat more of it."

The Cow's Udder and Teats.

Dairymen are much troubled by injuries and diseases of the teats of their milking cows, caused mainly by rough handling on the part of the milkers, by lacerations from coarse litter or thorns, or by carelessly leaving the cows unstripped. Here, as elsewhere, a slight injury not infrequently leads to serious results. A bruise or crack on the teat, perhaps overlooked by the careless milker, is apt to become more serious, renders the cow fidgety, and induces her to hold her milk, which, when thus retained, undergoes fermentation, especially in hot weather, and gives rise to irritation. Through small abrasions on the teats, infective materials, chiefly

micrococci, derived from the dirty hands of milkers, from foul straw, or from manure heaps, enter the udder and produce some of the several forms of inflammation which affect that organ. It is, accordingly, very essential, says a writer in the *North British Agriculturist*, to observe critically the state of every cow's bag, keep it scrupulously clean by washing before each milking, treat properly every wound, however slight, and milk with especial care any animal with injured teats. Chapped or excoriated teats result usually from mechanical injuries, from cold, or from aptha. Such cases used to be frequent during the prevalence of contagious foot and mouth disease. Treatment consists in keeping the injured surface clean, and pressing with some antiseptic as boracic ointment, or one part zinc oxide to four of vaseline.

The teat duct through which the milk flows from the collecting sinus is sometimes blocked about three-quarters of an inch from its exit, at the point where the injured sink meets the mucous lining, and the little valve of muscular fibres intercepts any dripping milk. Rough handling or the ingress of micro-organisms which may find here a few

got blocked with an excessive amount of the epithelium scales which fill it before calving, and while the cow is dry, but which can easily be removed by the careful use of a probe or catheter. Some inflammatory thickening or adhesions of the lining membrane of the teat may, as above indicated, have occurred; some fold of mucous membrane may have fallen into the lumen of the tube, or the valve towards the teat mouth may be enlarged or indurated. It is not always easy, by mere external examination, to determine the precise impediment to the flow of milk, or the best means of its removal. Some special instruments may be requisite alike for diagnosis and for treatment, and hence it is wisdom to obtain the services of the veterinarian who, with probe or bougie, will readily ascertain where the obstruction lies, and also recognize its nature and extent. With a milk needle it may be needful to divide the adhesions constituting the stricture, and these will be incisal backwards in the front teats, so as to direct the milk stream properly into the milk pail. With a suitable syringe any needful injection will be made. Amputation of the point of the teat is sometimes called for. If a catheter or canula is subsequently



The Renfrew Creamery; one of the Largest in Canada.

drops of milk on which they thrive, are liable to develop at this point irritation and inflammation, with subsequent thickening, leading to partial or entire occlusion of the duct. The teat may become hot, tender, and swollen. The inflammation thus set up may extend along the mucous membrane and invade the sinuses and larger tubes, thus producing catarrhal or suppurative mammitis.

Warts in this region are sometimes numerous, and seriously interfere with milking, rendering the cow restive and troublesome. They do not so generally disappear spontaneously, as do those about the mouth and other regions. Those with narrow necks can be removed by knife, scissors, or ligature; any bleeding is arrested by a stick of silver nitre or other styptic, and while the parts are tender the milk may be withdrawn by a catheter. But warts with broader bases and that do not interfere much with milking had better not be meddled with until the cow is dry. Occasionally, at her first or subsequent calving, the cow, from one or more teats, yields no milk. The corresponding quarters may, however, be full and turgid, and evidently secreting milk, which cannot be got away. In such cases the teat duct may have

required, the veterinarian will recommend the sort and size to be used, and give due warning that it, and, indeed, everything else brought into contact with the injured udder, should be in a thoroughly aseptic state.

A Large Creamery.

Having recently read a description, in one of the American agricultural journals, of "The Largest Creamery in the World" (the St. Alban's, Vt.), I thought that perhaps your readers might be interested in a short description of what is probably the largest creamery in Canada, and one modelled after the St. Alban's, or, more properly speaking, "The Franklin County Creamery, located at St. Alban's, Vt."

This Canadian creamery is located in the town of Renfrew, in Renfrew county, Ontario. It is on the line of the Ottawa & Parry Sound Railway, there being a switch from this line to the creamery. The town of Renfrew also has two other railways—the Kingston & Pembroke, and the C.P.R. It has thus excellent shipping facilities. The creamery is owned and operated by a joint-stock company—the farmers having about one-quarter of

the shares. Mr. A. A. Wright, "the butter king of Renfrew," as he is called, is the energetic manager. They have seven skimming stations, from which the cream is sent (from two by rail, and from five by vans) into the central factory. At the time of my visit (June 28th) they were making from 1,500 to 1,600 pounds of butter per day.

As one approaches the building the neatness in finish is the first thing that strikes the observer. The building has a metal roof, and is neatly painted in the emblematic color of a dairyman with appropriate shades for effect. The milk is delivered into a vat from the scales, from whence it is pumped into a heater and thence it runs to the three Russian steam separators. The skim milk is elevated to a tank and farmers are able to take it from there home. A partition divides the separator room from the cream and churning room. The cream runs by means of a tin conductor from the separators into the twin cream vats, where it is cooled and ripened without any starter. The following day it is churned in large box churns, which have a pulley in the centre of each instead of at the ends. The butter is worked once in a Fargo worker for six minutes, and then either packed in square boxes lined with parchment paper, or made into pound bricks, and placed in the cold storage. The butter had been sold locally up to the date of my visit, but they were making arrangements for a shipment by a government cold storage steamer to Great Britain.

The system of cold storage is somewhat as follows: Long cylinders, about ten or twelve inches in diameter are placed in a row in the cold storage room, and these reach from the floor to two or three feet above the ceiling. In the upper part of the building is a rope and pulley for lifting the blocks of ice from the ice house to a large bin, where the ice is broken finely, mixed with salt, and then filled into these cylinders. The temperature of the storage room was about 28° F., with ice on the tall receivers.

The maker, Mr. Betts, is an American. Plenty of room to grow appears to be the prevailing idea in nearly every department of this creamery. At present a good deal of the space is not used, but, as the business grows, it will be all needed. Wash-rooms for the men, and for washing cans, testing rooms, offices, shops, boiler and engine rooms, are here, in fact, nearly every requirement for a successful creamery is to be found under the roof of this large creamery.

All the milk is tested at the central creamery by means of a steam Babcock tester, and proceeds divided among patrons according to the butter fat.

The manager informed me that they ought to have a man to go round from one skimming station to another, and see that everything is in first-class running order. This they expect to have another year. They are also thinking of putting in the "ammonia process" for cooling the butter and work rooms.

It was a pleasant surprise to meet at this creamery Prof. Patrick, formerly of the Iowa station, who was picking up "pointers" in Canadian dairy practice.

On the whole, the management of this, which promises to be the largest creamery in Canada, are to be congratulated on the success attending their efforts so far in this the first year. We in the older parts of Ontario can learn lessons from this comparatively new, but enterprising portion of the Province.

H. H. DEAN.

Ontario Agricultural College, Guelph.

Some First Principles in Dairying.

We come here as dairymen, as factorymen or creamerymen, to discuss our great industry. I think that, as a rule, we talk too high. We forget that back of the factoryman, the creameryman, and the cheesemaker is the patron. Let us get back to first principles. If we are to have good butter and cheese, we must make sure that the farmer is right, for the man who milks the cow is the man who determines the quality of the product. I apprehend that the cheese and buttermakers in Canada and the United States, fortified as they are with the dairy schools and all that the governments are doing for them, are pretty well up in their trade. Even if they do not learn much more in the next five or ten years, we shall not suffer much. Even if we have to leave these people where they are, it will pay us to get back to first principles and talk to the dairymen. Even if we get down to the very A, B, C of our trade, I think we shall not be far out of the road. We must get hold of the average man, or even the man not up to the average. The good dairyman takes care of himself; but we must get hold of the other man and lift him up. We must show this man that he is a manufacturer, teach him the nature of the material he is dealing with, and show him how he can get the greatest results from it. If I were to buy a ton of coal and found that it contained 500 pounds of clinker and ash, I would not buy the same kind of coal again, but would try to find somebody that would sell me a ton of coal with only 300 pounds of clinker and ash. So I want this farmer to understand that there are two kinds of feed, and that one kind may be better than another, even though the chemist may find that both contain an equal proportion of valuable elements. For instance, I feed a cow timothy hay, and I find that she gets from it only 61 per cent. of the food value. You see, I am using coal that leaves 500 pounds of clinker and ash to the ton. But, if I give my cow cornstalks, I find that she assimilates 78 per cent. of the food value, and so I make a change to fuel which gives only 200 pounds of clinker and ash to the ton. And, besides, I find that that which costs me most is the feed that the cow gets least out of. Why should I draw a ton of coal five miles when I can get a better ton of coal that has to be hauled only one mile? Why should I spend much labor on a ton of feed for my cow when I can get a ton of what is better for her in the results it yields at a cost of less labor to myself? What will grow best on my land? What will yield the greatest food value? How can I get the greatest value off each acre? These are things we must study. I go to the city of Cleveland sometimes to see a friend of mine. He is a chemist, and all day he sits in his laboratory analyzing little specimens of iron ore that come from Lake Superior to find what per cent. of iron they contain. The treatment of large masses of ore is carried on according as it may be shown to be necessary by the chemist's report. The farmer who does not realize that he is a manufacturer throws all kinds of feed into the manger of his cows. Does the iron manufacturer throw all kinds of ore into his furnace without knowing exactly their value? No. He knows, before the ore is put in, that it contains so much phosphorus, so much iron, so much of other substances. If the farmer is to carry on his business as a manufacturer, as he ought to do, he must learn the feed value of what he gives his cows, and then see to it that he gets, as nearly as possible, that value

out of them. Another thing the manufacturer does is to provide for his factory the best machines. Did you ever think of it that the cow is simply a machine for the work of the dairy? But there is this difference—two machines can be made alike, and when so made will do equal work. But two cows are never alike. Even the same cow will give a different supply at one time from that she gives at another. We must, therefore, study the cow and learn how, through this machine, the best results can be attained. The manufacturer does all he can to save energy—to save heat. We must do the same. So you see we must get down to first principles and, coming back, bring the average man up with us. Some will say that this man is dull-witted, and that he ought to be prosecuted and persecuted because his brain is thick. But we can not get along without this man; it will do but little good if only a few advance and the great body of the people remain behind. We must not set up the standard for the advanced ones; the standard must be such as to stimulate the great body of people to effort. A few years ago I started entirely new in dairying, but determined to be bound by none of the old methods and traditions, and I was anxious to see if I could not set an example for the other fellows to pattern after. If I had had a bank to draw upon I could have built a ten thousand dollar barn; I could have bought the finest cows and plenty of them; I could have provided myself with separators and all that kind of thing, and at the end of the year I could have taken enough out of the bank to bring me out even. But I did not want to furnish an example for those who were in such a position. If I could show the average farmer how for a few dollars his barn can be made into just the place in which his cows will be comfortable; if I could show him how to raise the best feed on his own farm; if I could show him how to build a silo for less than a hundred dollars; if I could show him that he could buy good dairy cows at three for a hundred dollars—if I could do this I should feel that I had some hold on that fellow. One rainy day—one of those days when a man seems to try how like sixty he can look before night—I decided I would do some fixing up around the barn. Just when I looked most like a son of the soil in my work a stranger appeared before me. He asked if I was John Gould. I said I would be if I was clean. He said he had read some articles of mine in the paper and had come down to get some dairy instruction. I washed up and put on a clean pair of jeans; then we sat down for a talk. I asked him what his circumstances were. He told me he was in debt, that he had a farm pretty well run down, some horses worth nothing, and so on—and three cows. I said, "Thank the Lord for the three cows. When you go home shoot what else you've got." He complained that he was \$200 in debt. I told him I could hardly sympathize with him, for when I began dairying I was \$4,800 in debt, and that three cows ought to pull him out of debt quick. So we sat there and planned. In our minds we built him a barn costing two or three hundred dollars—it was a sort of nice lean-to with some windows in it to let in the light. Next year he was to plant a field of corn. Then he was to draw a few loads from the sawmill and make a silo ten feet square. He had three cows, and he was to run in debt for four more. We then went out to see how my cows looked. I beat it into him what dairy form in a cow was. If he would keep that form and certain signs in mind, I knew he could pick out a dairy cow

himself. I told him that the main test was whether a cow looked like a cow or a steer. Then in our plans we made a little creamery for him out of fifty-cent pails. We sawed a kerosene barrel in two to make him a deep-setting creamery. Altogether his barn and cows and outfit were to cost him not more than \$500. He said, "I can fetch her," and he did. If you will go down near Java, a little town in western Ohio, you can see him to-day. You will find him with a dairy of fifty cows and a great silo, and he is selling butter in Toledo for 33 cents a pound. You will hear the good old Methodists talking about getting together and "enthusing" one another. That is what we dairymen want to do. My friend, of whom I have just been telling you, W. H. Strong, is one of the greatest dairymen in Ohio, and he says to me sometimes, "The brightest day I ever saw was that rainy day down at your cow stables. You showed me what a dairy cow looked like; you showed me that I did not need \$10,000 to go into dairying." So I say we must get at these men and raise them up. And when everybody is interested, and everybody trying to outstrip his neighbor and improve his own practice, then Canada's dairying will be upon the best footing, and will be the glory of Canada's agriculture.—*Address of John Gould to the Western Ontario Dairymen's Association.*

Dairy Show at Guelph.

The following prize list has been drawn up for the dairy show to be held in connection with the Fat Stock Show at Guelph on December 10th to 12th:

Best Shorthorn cow, purebred: 1st, \$18; 2nd, \$10.

Best Ayrshire cow, purebred: 1st, \$18; 2nd, \$10.

Best Holstein cow, purebred: 1st, \$18; 2nd, \$10.

Best Jersey or Guernsey, purebred: 1st, \$18; 2nd, \$10.

Best grade cow, any breed: 1st, \$10; 2nd, \$8; 3rd, \$5.

Sweepstakes.—Special prize, value \$25, for the sweepstakes cow, any pure breed (registered pedigree). At least two breeds must compete. Given by *The Farmer's Advocate*, London, Ont. Second prize, plate, value \$10, given by F. W. Johnson, Superintendent of Farmers' Institutes, Guelph. Silver plate, value \$15, for the best grade cow, given by John S. Pearce & Co., London, Ont., seed merchants.

Andrew Pattullo, publisher of the *Sentinel-Review*, Woodstock, Ont., and president of the Dairymen's Association of Western Ontario, has kindly contributed \$25 towards the prizes in the regular classes.

J. W. Wheaton, secretary of the Western Dairymen's Association, has also contributed \$10 towards the prizes in the regular classes.

Judges.—J. W. Wheaton, secretary Western Dairymen's Association; T. B. Millar, inspector and instructor for Western Dairymen's Association; G. E. Day, B.S.A., Professor of Agriculture, Ontario Agricultural College, Guelph.

The Art of Milking.

The two main points to be attended to in the general treatment of the cow, in connection with the operation of milking, are gentleness and quickness; indeed, of the two, quickness is the chief, for a quick milker can seldom be a bad one. Where milking is done by piecework, and the tough cows are eliminated, it is customary for one person to do ten in an hour, a little longer time being required when all come together in full yield in the beginning of summer. Where it is not done by piecework, and the cows are of all sorts, it may take half an hour longer; but the more quickly it is done the more will the milk-yielding power of the animals be stimulated. If the milk is frothed in the pail, it may be taken for granted that the speed is all right, however; but if it is not frothed, then the milker is doing an injury to the cows, and, if kept to the one lot, would put them prema-

turally dry. But the quality of the milk, as well as the quantity, is influenced by the milking of the cows, and the manner thereof.

SLOW MILKING AND BUTTER FAT.

Dr. Babcock found, in some experiments he tried regarding this matter, that slow milking had a very decided effect in reducing the butter fat in the milk, there being an average decline of over 11 per cent., in his trials, as a result of slow milking, while there was also a decided diminution in the quantity; though in a prolonged trial, with cows naturally going dry, the differences tended to disappear. The total result over a season, however, is beneficial to the milk yield in the case of quick milking, not to speak of the saving of time. We do not yet know all about the secretion of the milk in the udder, but we are getting on that way. We now know that it is wholly through the result of nervous action that the blood, lymph, and cells of the tissue of the udder become "metabolized" into milk, and we further know that this formation of the milk largely takes place after the operation of milking has begun. This is why the gentle treatment of the animal has so much to do with her milk yield; if she is hunted with dogs to begin with, and afterwards roughly treated in the milking, the nervous excitement reacts on the tissues of the udder, and

PREVENTS THE SECRETION OF THE MILK,

and, in common language, she does not "let it down." Anything that excites her, or ruffles her temper, has the same effect, and she has not of herself the power to either let it down or hold it up, and the milk will only flow readily when she is treated in such a way as to make her pleased and contented. Professor Stewart compares the secretion of milk to the secretion of tears; the latter only flow when there is mental excitement of a painful nature, while milk secretion requires mental excitement of a pleasurable kind; or it may be compared to the sudden development of saliva in the mouth of a hungry man when he encounters the smell of roast beef with the usual "fixings." The pleasurable sensation, in the case of the cow, is due to having her teats handled in a way similar to the sucking of the calf, to the chewing of her cud, and, generally, to being in a pleasant, contented frame of mind. Gentle, kindly treatment conduces to this, while rough usage of any kind tends to the contrary, and the cow unknowingly "holds up" her milk, and goes down in yield.

While kindness and gentleness can do much in making a cow quiet and a good milker—especially when first in milk as a heifer—there are still always some which will kick and upset a pail when being milked. For such the strap or belt must be used on the hind legs, though often it can be dispensed with after a time. Holding by the nose is a good plan, but it requires an extra person to do so; while often, if one merely stands at the shoulders and pats the cow, it is enough. There is no milking-pail which can beat the one-handed, tinned iron one, either for milking restless cows or any kind—it is so easily kept in position, or moved out of the way. Milking should be done quickly, quietly, and thoroughly. There should be no milk left in the udder, as doing so tends to dry up the animal, and for this reason I am an advocate of stripping out—that is, some responsible person going round after the others, and squeezing out the last drops. I need hardly tell you these "strippings" are the richest part of the yield, while this plan ensures the animal being milked dry, and thus having her yielding power developed.

COWS SHOULD BE MILKED INDOORS.

It is more comfortable for them and for the attendants to do so, while they can be the more easily fed with whatever extra food they are getting. In the hot weather they ought to be put indoors during the afternoon, and either get some green forage or sloppy artificial food. This relieves them from the torment of the flies, as there is nothing that reduces their yield more quickly than galloping about in fly time with their tails up like cats. Washing over with sheep dip or carbolic soap helps the cows in this respect, and enables them to stand more quietly during milking, with less of the tail whisking practice, for a lash across the face with a cow's tail is apt to ruffle the attendant's temper, and react disastrously on the milk yield. Cows should be milked twelve hours apart, but an hour or so backwards or forwards in the time is really of very little consequence, so long as it is kept to regularly.

REGULARITY IN MILKING.

Regularity is the main point in this connection, for the cows are very much creatures of habit, and look to have certain things done at certain times, and irregularity fidgets them, with a consequent fall off in yield. The milkers should change their animals every meal, so that each has a turn at the tough ones. The animals very soon get to know those that work about them, but a continual change of attendants would do great harm. For this reason it is difficult to see how beginners can be taught at a dairy school. A continual succession of 'prentice hands tugging away at a cow would disgust any self-respecting animal, and effectually prevent her from yielding copiously. In ordinary practice, a boy or girl is introduced, from time to time, to the honorable company of milkers, and put on to animals which are going dry. After some practice on these, and when licked into shape a little, and their natural tendency to lick the cows somewhat curbed, they are put on to better ones, and so brought forward; but where a number are being so introduced to the work, the effect on the cows must be disastrous.

MILKING AND DEVELOPMENT OF MILKING POWER.

There can be little doubt that the milking of cows has done a very great deal towards the development of their milking power. In a state of nature, a comparatively small quantity of milk is required by the calf, and it is drawn out at irregular intervals. When the tissues and vessels of a cow's udder become swelled with material ready to become transposed into milk, and the transposition is not allowed to take place by the withdrawal of some at the teats, this material becomes reabsorbed by the lymphatics back into the general circulatory system of the cow, and the secreting power of the cells of the udder becomes weakened, and the cow would gradually dry up. This is what happens when a calf sucks its mother, and thus suckling prevents the development of deep milkers, and checks those which are deep to begin with. We intentionally put this principle into practice when we "dry off" a cow; we do not milk her at all unless and until she is distressed with a distended milk bag, and the secretion of milk soon stops altogether. In the artificial milking of a cow we draw off all that she can possibly produce, and far more than any one calf could need, and thus give the secreting tissues free play; and, from the action of the natural law that exercise develops the exercised part, either in the milk vessel of a cow, or in the calf on the leg of a man bred among the hills, the udder is stimulated to yield more. Quick-

ness, quietness, gentleness, and other conditions relating to the art of milking all help this development; while our artificial treatment in the way of selecting the individual animals, housing them, feeding them well, and so on, are other influences improving the milk secretion.

MAMMITS OR GARGET.

One great source of dread to a milker is some form of mammitis, or garget. This is generally the result of a chill, and in the initial stages is simply catarrh of the udder, or "weed," but ending in curdling of the milk. Cows lying on damp, low fields, or turned out too soon after calving—when the udder is in a full or swelled state—are most apt to contract the trouble, while a blow or inefficient milking may also cause it. A mixture of one part of turpentine to three parts of tincture of camphor is the most efficacious remedy I have yet come across, well rubbed into the affected part. For sore or chapped teats vaseline is the best application. For tough milkers the small ivory cones for distending the orifice of the teat are valuable; while in very bad cases the teat bistoury may be used for actually cutting a wider opening; but these have to be used with great care, for if the air is allowed into the teat, or the operation done in a bungling fashion, there is sure to be curdling and gathering of offensive matter, with consequent loss of the quarter. The same remarks apply to the siphons or milking tubes, which are often of great value where the milking of a teat gives pain to a cow.—*Primrose McConnell, at the Dairy Conference.*

Poultry.

How to Get The Best Results From Farm Poultry.

Second Prize Essay, by R. L. HOLDSWORTH, Port Hope.

This essay is intended not so much for the professional fowl breeder and fancier (a large number of whom, between what knowledge they have and what knowledge they consider themselves in possession of, are above taking advice) as for those farmers or others who have a few fowls, and are desirous of obtaining as satisfactory a return as possible for feed and labor expended. Many such persons have in their possession a flock of poultry which have been collected without much thought or attention, and they very naturally ask the question: "Am I to get rid of all these fowls and invest a large sum in procuring some expensive ones at fancy prices to take their place? If so, I think I will go on as best I can with what I have got." I answer, by no means begin in that wholesale way. Go to some reliable breeder who has a reputation to maintain and purchase from him, say, two or, better still, four or five females and one male, not akin, of whatever breed you may fancy; put them with your flock at home until about the first of February; then put them by themselves in a warm and clean place, and arrange that they can run out in the sun for an hour or two in the middle of the day. Keep the eggs from these, and these only, for setting, and let your other fowls do the laying; keep no rooster but your thoroughbred on any consideration.

In the fall, pick out the very finest pullets you have. Sell or, if you cannot sell, kill your rooster, and buy another that you are sure is in no way related to your flock, and let nothing tempt you to buy a mongrel, no matter how fine he may look. Kill off some

of the poorest of your common fowls each season, and in a very few years you will have a choice lot of fowls without, at any time, being without a sufficient number to carry on your business.

One word more on this head. If you are a person of limited experience and have only ordinary conveniences, select the breed of your fancy and stay there. Few, very few, make a success of raising a number of different breeds.

The next thought is the poultry house. Three things must be ever before us on this head, warmth, light, and cleanliness; I do not lean much to underground buildings for fowls; they may be warm, but they are seldom light and often damp.

The best building, in my opinion, is one of frame, double boarded and stuffed with saw dust or cut straw, then lathed and plastered inside, and having plenty of windows on the south side. Whitewash at least twice a year, and twice as often if possible, using fresh slaked lime. Have your roosts movable, if you can, and seal them with boiling water frequently during the warm weather; in colder weather dust them thickly with dry wood ashes.

Collect a barrel or two of dry road dust early in the fall; keep a large box, about a foot deep, about half full of the dust and wood ashes, about one part ashes to two parts of dust, and keep another small box filled with fine gravel in a corner with a slanting cover, so that the hens can pick the gravel, but not get into the box and dirty it; or, better still, place a wire screen in front of both the gravel box and water trough for the same purpose. Sweep out your henhouse every day if you want the best results. A little straw or chaff sprinkled on the floor helps this process and also keeps the fowls busy scratching, and furnishes them with needed exercise. Fowls confined in the above-mentioned surroundings will not be troubled with vermin to any great extent.

The next thought is feed. We read and hear so many varied opinions about feeding fowls that it is small wonder that the ordinary person turns away from the subject in despair, and concludes that the "game is not worth the trouble."

The feeding of fowls, like the feeding and care of any other stock, requires the exercise of common sense.

The food of fowls, if left to themselves, consists of grain, grass, pure water, meat in some form, insects, worms, etc.

Any kind of grain that is dry and sweet will do (musty or mouldy grain should never, however, on any account be allowed), but a mixture of two or three kinds together is preferable. Feed sweet clover hay chopped fine when grass is not obtainable, and a few mangolds or carrots, raw or boiled, as may be convenient; a feed or two a week of some meat, not very fat, milk, if you have it, if not, pure water, which should be warm in cold weather, and your fowls will enjoy perfect health and supply you well with eggs in the bargain, providing your house and surroundings are kept as above suggested.

A word with reference to the raising of chickens. If you have one of the small breeds of fowls, leave chicken raising alone, except such as you raise to improve your flock. If, on the contrary, you keep one of the large breeds, you will always find a ready sale for your good fat chickens. In my opinion, however, there is more money in eggs than in chickens, unless you are in the neighborhood of a large city and have special customers at fancy prices.

Poultry at Agricultural Shows.

By JOHN J. LENTON

Shows are being arranged to be held in nearly every city, town and village, not only of Ontario, but, we might say, America. The several committees are hard at work at prize lists, and are trying to make their own the best, by offering the most substantial cash prizes, as well as many specials. It is a very hard piece of labor thus obtaining and arranging money to make prizes nearly equal for the several exhibits so as to give general satisfaction. Now, we all know that these shows do not get the attention nor the attendance they might or would get were they advertised more thoroughly. Our American cousins are certainly more alive in this matter than we Canadians. An energetic committee will do much to make a good prize list, and only men who have the interest of the show business at heart should be put into office. These men will hardly ever get "nay" from any whom they approach for specials or other contributions. Then, men like the above will do their utmost to obtain as judges good reliable men who know thoroughly the several kinds of stock or articles they have to judge. By this means a great deal of "kicking" and unpleasantness is avoided, because all have confidence in the men appointed, and they know and feel that if they fail to secure the prizes there must have been something better or it would not have been so. Thus this confidence pushes them on and they feel determined to be up to the mark next time, for as we once overheard an exhibitor remark, "Well, old So-and-so is going to be judge, and he knows what's what, and I guess by the look of things I'm not going to get any reds this time, but I won't be beaten next time. I have been exhibiting for years, but the judge generally was the doctor, the M. P., or some such person of consequence in the locality, who probably knew very little of what was required, but gave the 'reds' and 'blues' to the best of his ability." This kind of thing, however, is rapidly passing out of date, and in almost all places we have the directors selecting competent men for judges; therefore, intending exhibitors, look well to what you are thinking of showing, and let it be as good as you can possibly make it. Have no, "Oh, I guess that will do" business, but just polish, trim, clean and do to the best of your ability all you can, so as to get the coveted ticket, and make your exhibit reflect credit upon you and attract the attention of visitors.

Some Poultry Notes.

Editor Canadian Live Stock and Farm Journal:

SIR,—I am pleased at the interest taken in the poultry essay competition. It shows that the farmers are alive to their own interests in the matter, and are not like a farmer that I was talking chicken matters over with not long since. After complaining about their destructiveness, he said that if he only owned a gun he would have made short work of a flock the evening before that were on his grain. In answer to my question in regard to the owner of them, he said, "Why, they belong to my wife." Now, there is something wrong when such things occur on the farm. Is there any living thing on the place that contributes more to the general welfare of the family than old Biddy? Where is the farmer's wife who will give up her poultry; and who knows better than herself that it is from this source that many little necessities for herself and family are procured? In past years, before cheese factories were as plentiful as at present, the farmer's wife had butter, as well as eggs and poultry, but now, alas! the cheque that arrives monthly from the factory usually finds its way into the pants pocket of the boss, and he has other ways for it to go. Farmers, give your poultry every chance, without stinting them in any way, and mark the result. I notice an excellent article in your June issue on crossbreeds. I

have bred purebreds and crossbreds of many breeds in my thirty years of poultry-raising. For eggs I have had excellent success with crosses. I cannot say that they laid any more, but the eggs were larger as a rule. For a number of years I used the light Brahma blood as a basis for crosses, and in every case it produced good results. The Langshan is another noble fowl to use for that purpose. By mating a Langshan cock with Barred Plymouth Rock hens, you will get pullets that will begin to lay early and continue at it all winter. They will not produce their kind, however, when bred again. Their markings are almost always entirely black, with a glossy green tinge, and they are shorter in the leg than the parent sire. The Wyandotte fowl of to-day seems to be the happy result of careful crossing to produce an all-round farm hen, but is difficult to breed for plumage for show purposes. Wherever farmers have convenient water, ducks should be raised. They will pay big profits, gathering, as they do, nearly all of their own food after the first few weeks. The Pekin is considered by many to be the one that will mature the earliest. My own experience has caused me to choose them.

W. J. STEVENSON

Oshawa.

The Apiary.

The Season.

By R. F. HOLTSMANN, Brantford.

The past season in Canada has been remarkable, not only as concerns the beekeeper, but also those interested in agricultural pursuits of all kinds.

During the summer of 1894 the bees in many localities gathered more or less of honey dew. Being amongst the first surplus it was stored in the brood chamber, and, doubtless, some colonies went into winter stores with inferior honey for winter stores. Again, in the majority of localities the honey flow was early, and, as the bees consumed, before winter, a portion of the stores in the brood chamber unless they were fed or provided for, they starved before spring. Unfortunately, past experience has shown that a very large percentage do not make adequate preparation under the above circumstances. Spring blossoms forth, and with it many unlucky beekeepers also blossom forth. Again, after Christmas the winter was very severe, and, unless conditions were favorable, heavy losses resulted. All these combined made the average loss through the country very heavy. At the same time I made it a point to get the reports from some fifty of our most careful beekeepers, and the loss was about the same as usual, and the average would not exceed eight per cent. Cellar-wintering, where the cellar is good, certainly appears to be the least risky, and outdoor wintering the more uncertain method.

This season blossoms started early. I have reports from British Columbia that bees were gathering pollen in February; and, just here, let me dismiss British Columbia by saying that they have had a good honey season out there, and that province gives great promise to beekeepers. One beekeeper out there bought forty gross of jars for marketing his honey crop. In Ontario the bees built up rapidly; the weather was unusually warm, and so unnatural that I freely predicted a frost to follow. The frost came, far more severe than I dreamed of, and cold weather continued day after day. Colonies not well protected with cushions or paper on top, in all probability, were checked with chilled brood. In many districts the bees killed their drones, and have never reached the swarming impulse since. In a few districts, such as my own, the bees never killed their drones, but swarming was light. Owing to the frost, the bees received little or nothing from fruit blossom

Basswood blossom was largely destroyed, clover cut down, even the tops of the thistles were cut down, and the bees received a bad set-back. If plenty of rain had followed, the damage would have been lighter. Such was the case between Ottawa and Montreal, and in portions of Quebec. Very dry weather set in, however, throughout the greater portion of Ontario, and, within the past few days, some hundred reports lead me to think that there have been but few swarms, and that the average honey crop through Ontario will not exceed twenty-five pounds to the colony. In the extreme eastern part of Ontario the crop is good. It is also very fair in Quebec. Bees should be well looked after and cared for. They must be fed for winter, if necessary, and every beekeeper should keep his dish the right side up for the time when it rains. It has not rained honey in Ontario for some years. Surely the next must be the lucky year.

The North American Beekeepers' Association in Toronto.

A gathering to which all will be welcomed is the forthcoming meeting of the North American Beekeepers' Association, to be held in the Normal School auditorium, Toronto, beginning at 8 p.m., September 4th. The reduced railroad rates which will prevail during the time of the convention will make this an unusually large convention. From a distance such men are expected as Thomas G. Newman, Chicago; Doctor C. C. Miller, Marengo, Ill.; G. W. York, Chicago, Ill.; Emerson T. Abbott, St. Joseph, Mo.; S. D. Stilson, York, Neb.; Captain J. E. Hetherington, Cherry Valley, N.Y.; A. I. Root, E. R. Root, J. T. Calvert, Medina, Ohio; James Heddon, Dowagiac, Mich.; H. R. Boardman, East Townsend, Ohio; Hon. R. L. Taylor, Lapeer, Mich.; and J. T. H. Brown, Augusta, Georgia. As regards Canadians, all that is necessary to say is that there will be a special meeting of the Ontario Beekeepers' Association in conjunction with the North American, and hundreds have already signified their intention to be present. Some, of course, are going to see and hear these men of whom they have heard so much, some intend to take in the Toronto Exhibition, some are going to help discuss such questions as "Introducing Queens," "Bee Paralysis, What we Know and should Do about It," "The Proper Size of a Brood Nest, How shall it be Decided?" "Mistakes of Beekeepers and Bee Journals," "How to Feed Bees Properly," "How Beekeepers might receive more Benefits from the Experiment Stations," "Who shall Winter Bees Out of Doors, Who in the Cellar?" "Legislation for Beekeepers," "What is Indicated by Color in Italian Bees." All are going to receive some benefit, directly or indirectly, by means of which they will receive better returns from keeping bees. Now, none of the readers of THE LIVE STOCK JOURNAL need hesitate to come because they may feel they are not wanted. You are welcome, if you keep bees or not. More than that, if you have any particular question you would like to have brought up, if you will send me the question as soon as possible, it will receive every consideration. I know the general press will do its part to make this convention one of which Toronto and Canada will have reason to be proud, and I have no doubt the convention will be beneficial to the country.

R. F. HOLTSMANN.

Brantford, Ont., July 20th, 1895.

Jottings.

Guernsey Herd Register.—We have received another part of this Guernsey Breeder's Journal, the one to hand being Vol. 6, part 21. The increased attention given to Guernseys on this continent is reflected in its pages.

American Aberdeen-Angus Herdbook.—Vol. 6 of this record has just been issued, and we are indebted to Mr. Thos. McFarlane, the secretary of the association, for a copy received. The number of entries now reaches 27,500.

Massachusetts Experiment Station.—The twelfth annual report of the Massachusetts State Agricultural Experiment Station is to hand, from which we notice that the several lines of investigation carried on in former years have been continued during the year past with good results.

English Southdown Flock Book.—The increased attention that is being given to registering of their sheep by Southdown breeders in England is evident from a perusal of Volume 4 of the flock book lately to hand. Several new members have joined during the past year, and the outlook is decidedly satisfactory.

American Shropshire Sheep Record. If any proof were needed of the extent to which the breeding of Shropshires on this continent has progressed, it is to be found in looking over the volumes of the record for the breed, which are issued with commendable promptitude by the secretary, Mr. Mortimer Levering. Volume 10, just to hand, is as big a book as any of its predecessors, and contains the pedigrees of 12,555 sheep, bringing the total to date up to 69,620 entries.

American Shropshire Sheep Association.—The American Shropshire Sheep Association has provided ribbons for the special prize, offered by that association this year. These ribbons are very handsome, costing the association nearly \$1.00 each. They will be forwarded to the secretaries of each of the fairs where the above association offers special prizes. This association also pays the expenses of expert judges, named by it, for judging at the fairs where it offers special prizes.

Wisconsin Agricultural Experiment Station.—The annual reports issued by the above station are always interesting reading. The eleventh annual report to hand is well up to the average, and contains a great deal of useful information. Prof. Henry reports on experiments in swine feeding, and Prof. Craig on rape for sheep, and other experiments with the woolly tribe, while Prof. Woll and Babcock treat of matters in connection with dairying, and other subjects receive attention from other members of the staff.

The Amateur Sportsman.—The *Amateur Sportsman*, published by the M. T. Richardson Co., 27 Park Place, New York, comes to our table this month richly laden with interesting reading for hunters, anglers, and dog-fanciers. It contains many appropriate half-tone engravings, instructive and practical articles on hunting, fishing, camping, natural history, the rifle, and the dog. It is the purpose of its publishers and owners to make the *Amateur Sportsman* in all respects a first-class paper for sportsmen. A sample copy will be sent free of charge.

The Happy Thought Range.—The Happy Thought stove and range, manufactured by Mr. Wm. Buck, Brantford, Ont., is very suitably named. The production of this stove was, indeed, a happy thought of the inventor. Large numbers of these stoves and ranges are in use in our cities and country, and we have yet to find the buyer of one who is dissatisfied with his bargain. In Toronto these ranges are greatly used, and a sure proof of their ease of management is the fact that all cooks like to fire out in houses where there are Happy Thought ranges. The Happy Thought is easily handled, has a deep fire-box, which saves much labor in filling, and is, what is a great advantage, very economical of fuel. The writer has one in his house, and is thoroughly well satisfied with it.

The Genuine Tolton Pea Harvester.—We are informed by Messrs. Tolton Bros., Guelph, that they have had a very good season with pea harvesters, which are doing their work well and giving the best of satisfaction. Where there is a fair crop, by this way of har-

SHORTHORNS.

Shorthorns.

Some fine young heifers and bulls.
Also a choice lot of Leicester shearing rams.
Drop us a card for full particulars.

H. & W. D. SMITH,

Half mile from Exeter Stn. Hay, Ont.

SIMMONS & QUIRIE,

Shorthorns and Berkshires.

The herd is headed by the Matchless bull, Royal Saxon 10537, by Excelior (imp.) 22693 (51231) with Harpington M. 18240, sired by Harpington Hero 324, as reserve. Among the females are representatives of the Strathalls, Minas, Golden Drops, Myrics, Elvires. They are Bates, with Scotch crosses. The herd of Berkshires includes many prize-winners, and are an exceedingly choice lot. Farm 7 miles from Ilderton Station, C.T.R. Stock of all kinds for sale. Apply to

O. M. SIMMONS, Ivan P.O., Ont., or JAMES QUIRIE, Delaware, Ont.

SHORTHORNS.

H. I. ELLIOTT

BREEDER OF

Scotch Shorthorns and Southdown Sheep
Imported King James at the head of herd.
Hilview Farm, Danville, Que.
335

SCOTCH SHORTHORNS AND BERKSHIRE PIGS FOR SALE



Choice young cattle of both sexes of the most select breeding. Also young Berkshire pigs from sows selected from the herd of Mr. J. C. Snell, Edmonton, Ont. Write for prices.
W. WAITE,
Hilview, Quebec.
Farm one-half mile from station C.P.R. 246

SHORTHORNS FOR SALE



YOUNG BULLS AND HEIFERS

Write for particulars, or come and see stock. Prices reasonable.

JOHN MILLER,
Markham, Ont.

Farm three miles from Locust Hill, C.P.R., and four miles from Markham, G.T.R.

277

- SHORTHORNS -



LINTON LUSTRE #18228

I have for sale two nice yearling heifers, red, and red and little white, good ones. Also two bull calves, well bred, and well grown. All are from first-class stock, and at reasonable prices.

D. ALEXANDER, Brantford,
Lambton County, Ont.

416

GLENBURN STOCK FARM.



A fine lot of young Berkshire pigs ready to ship. Can supply pairs not akin.
Prices reasonable.

JOHN RACEY, Jr.,
Lennoxville, Que.

24

"THE BRIARS"

SUTTON WEST, ONT.

84 Head of Registered
Shorthorns.

Including bulls of various ages, incorporating the best blood of the Scotch and English Herds. Also HORSES AND PIGS.
Inspection invited.
249 F. C. SIBBALD.

J. CARSON, Agent, Yorkton, Assa.

SHORTHORNS, SOUTHDOWNS, LEICESTERS, BERKSHIRES.

All stock is first-class, and registered. You will find our prices right, and all stock as represented. Always pleased to show stock, or to answer correspondence.

E. JEFFS & SONS,

300

Bond Head, Ont.

AMPLE SHADE STOCK FARM.

In Shorthorns and Leicesters we have some excellent showyard timber, suture winners, coming forward for the fall fairs. Inspection invited.

E. GAUNT & SONS,
ST. HELENS, ONT.

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W. C. EDWARDS & CO., Breeders and Importers.

ELMHURST STOCK AND DAIRY FARM,
Clarence, Ont.

Shorthorns of milking families with Imported Grandeur at the head of our herd. Our Shropshires are all imported from the best flocks in England. Berkshire Pigs. Young stock for sale. Post office and telegraph office, Clarence, Ont. Railway station and steamboat landing Thurao, P.Q., on the C.P.R.

334 HENRY SMITH, Manager.



PINE GROVE STOCK FARM,
Rockland, Ont.

Special bargains on young bulls of superior merit and select Scotch breeding. Also thick young heifers at right prices.

Post Office, Telegraph Office, and Steamboat Landing, Rockland, Ont., on the C.P.R.

JOS. W. HARNETT, Manager.

LAURENTIAN STOCK AND DAIRY FARM,
North Nation Mills, P.Q.

Ayrshires, imported and homebred; herd headed by Imported Emperor of Dromore 5431 C.A.H.R. and 1868 S.A.H.B. Jerseys, all of the celebrated St. Lambert family; herd headed by Legar Pogia of St. Anne's 25704, A.J.C.C. Berkshire Pigs.

Young stock of all the above breeds for sale. Post Office, Telegraph Office, and Railway Station, North Nation Mills, P.Q., on the C.P.R. GEORGE CARSON, Manager.

BRITISH ADVERTISEMENTS.

MUTTON SHEEP.

PURCHASE SUPPORT SHEEP, from registered flocks, for exhibition or exportation. Full particulars may be obtained upon application to the Secretary of the Suffolk Sheep Society. Address:

ERNEST PRENTICE,
Auctioneer and Commission Agent,
Stowmarket, England.

SIR THOS. BARRETT LENNARD, Woodingdean, Rottingdean, Brighton, England.

Registered Southdown Flocks 7 and 8 at Bellus in Essex and Woodingdean in Sussex. Winner of many prizes, including the gold medal given by the Emperor of the French at Poissy; first prize, Fat Stock Show Lewes, 1892; and commended at Chichester, 1892. Full pedigrees kept, and all ewes numbered.

PAGHAM HARBOUR CO., Selsey, Chichester, England.

Flock of 1,000 ewes, winners Southdown Challenge Cup in 1892, 1st prize Wool; Jubilee, Royal, and Royal Prize Ram Lambs in 1892-93-94.

SUSSEX CATTLE.

Pedigree Sussex cattle descended from the oldest and best strains of blood (first prize for bull and also for cow at County Show, 1892), also registered Southdown Sheep (Flock No. 25 S.D.F.B.), for sale at reasonable prices. Apply to the owner

T. BANNISTER, Limehurst, Hayward Heath, Sussex, England.

H. T. LOCKE-KING, Brooklands, Weybridge, England.

Registered Southdown Flocks, 10 and 11.

Ewes individually numbered and full individual pedigrees of every sheep recorded in private flockbook. Rams and ewes always for sale, descended from all the best and purest blood. Shire horses also kept, bred from noted prize-winners.

KIDNER EDWIN,

LICENSED VALUER AND SALESMAN, BREEDER OF Registered Dorset Horn Sheep, Shropshire Sheep, and Devon Cattle. All commissions personally executed. Address: **MANOR FARM, Cothelstone, Taunton, Somerset, England.**

Messrs. J. R. & R. R. KIRKHAM . . .

Own a flock of about 2000 Lincoln sheep, having always rams and ewes for sale. Individual pedigrees recorded, and given with every animal. Enquiries and inspection solicited. Address: **Biscathorpe House, Lincoln, England**

LORDS A. & L. CECIL, Orchardmains, Tonbridge, Kent, England,

Breeders of Clydesdales, and successful exhibitors of the same at all the chief shows of Great Britain. Numerous prizes have been won in the closest competition. Only the best and most fashionable strains are kept. The stud, which can be seen at any time, is always kept in a natural condition and is under the direct personal management of the owners. The whole of the colts and fillies, being reared in a hardy way, can be thoroughly recommended. Mares, colts, and fillies always for sale. Foreign orders executed, and stock shipped by experienced men.

REGISTERED SOUTHDOWNS,

Flock No. 6, Southdown Flock Book. Property of F. N. Hobgen, Appledram, Chichester, Sussex, England.

Sheep always for sale. Inspection invited. The best only are kept. Specialty, good wool and mutton combined.

Registered Red Poll Cattle

Property of **LORD HASTINGS, Melton Constable, NORFOLK, ENGLAND.**

Bulls, cows and heifers always for sale. Messrs. Miller's, of Nebraska, celebrated cow **RUBERTA** came from this herd. Pedigree Tamworth pigs also for sale. Inspection invited. Quotations given. Apply Estate Office, Melton Constable, Norfolk, England.

BIG SALE

At Isaleigh Grange Farm, Danville, Que., will be held in September one of the greatest stock sales that have ever taken place in this country. Mr. J. N. Greenshields, proprietor of Isaleigh Grange Farm, and Mr. A. McCallum, of Spruce Hill Dairy Farm, have decided to hold a joint sale on Mr. Greenshields' farm (which comprises over 800 acres) in September (date to be announced later), when they will offer an immense herd of purebred Ayrshire and Guernsey cattle, Shropshire sheep, and Yorkshire swine, of all ages and both sexes. It will be a grand opportunity for breeders to secure first-class animals of the above breeds at their own prices. The stock contains no culls.

It is proposed to make the sale an annual event, and to conduct it in such a manner as to merit the fullest confidence and support. The date has not yet been decided on, but will be fixed either before or immediately following the Montreal Exposition.

Catalogues containing full particulars of stock will be ready about end of July, and a copy will be sent free to any one applying to

T. D. McCALLUM, Manager, Danville, Que.

FOR SALE.

3 YOUNG SHORTHORN BULLS 3

From 8 to 24 months old, at prices and terms to suit the times. Come and see stock, or write.

DAVID MILNE, Ethel, Ont. 189

BRITISH ADVERTISEMENTS.

Secretary to the National Sheep Breeders' Association of England and the Southdown Sheep Breeders' Association; Hon.-Sec. Kent Sheep Breeders' Association.

W. W. CHAPMAN,

PEDIGREE LIVE STOCK AGENT AND EXPORTER.

All kinds of Registered Stock, Horses, Cattle, Sheep, and Pigs supplied on Commission.

References—JOHN JACKSON & SON, Ablugdon, Ont.; N. CLAYTON, Selsey, Chichester, Eng.

Offices: Fitzalan House, Arundel St., Strand, London, England.

Registered address for cables—"Sheepcote, London."

H. PENFOLD, SELSEY, CHICHESTER, ENG.

REGISTERED SOUTHDOWNS, No. 4

Established over a century. One of the best and purest of Southdown Flocks in England. Many prizes have been won for the last 30 years. Rams and Ewes always for sale; full pedigrees kept.

THE IMPROVED LEICESTER SHEEP BREEDERS' ASSOCIATION.

The second annual sale of Improved Leicester Sheep will be held at Great Driffield, Yorks, on **THURSDAY, SEPT. 12th, 1895.** The third volume of the Flock Book is ready.

JOSEPH CRUST, Great Driffield, England. Secretary.

Edwin Bass, Elphicks, Horsmonden, Kent, Eng.

Breeder of Pedigree Large White Yorkshire and Berkshire Pigs. Highest awards at Royal Shows. Boars, Yelts, and in-pig Sows of either breed always for sale. Yorkshire boar in use, Holywell Bath (1799), winner of 10 firsts, 4 seconds, 2 reserves. A few pedigree late-bred Shorthorns kept.

KENT OR ROMNEY MARSH SHEEP.

The Walmer Court Flock, established in 1852, duly registered and recorded in "The Flock Book of the Kent or Romney Marsh Sheep-Breeders' Association," has long been considered a leading flock, and has won over \$2,500 at the R.A.S.E., and other leading shows. Inspection and enquiries invited. Apply to the owner.

H. PAGE, Walmer Court, WALMER, KENT, ENGLAND.

JAMES LAWRENCE, Stall Pitts' Farm, Shrivenham, Bucks, England

BREEDER OF . . . Registered Berkshire Pigs, from stock unsurpassed for true characteristics, size, and quality. One of the oldest established herds in England. Enquiries Solicited - - Prices Moderate

F. N. HOBGEN, F.S.I. T. C. HOBGEN, F.S.I.

HOBGEN BROS. Auctioneers and Cattle Commission Agents, **CHICHESTER, SUSSEX, ENGLAND.**

Appointed Auctioneers to the Southdown Sheep-Breeders' Association.

MAPLE GROVE AYRSHIRE STOCK FARM

R. G. Steacy, Importer and Breeder, LYN, Ont.

Largest importers in United States and Canada of the most noted Milk, Butter, and Prize Record Ayrshires procurable in Scotland. Head of herd is Carlyle Lessnessock, whose grand dam was never defeated in a milking contest in England and Scotland, competing against all other dairy herds for years in succession and awarded more prizes in gold medals, cups, and money, than any Ayrshire ever exhibited with the imported females of noted individual records. I am in a position to offer none but performers at reasonable prices. Do not fail seeing my stock at all leading exhibitions this fall.

Registered rough-coated Scotch collies from imported stock.

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Jottings—Continued.

vesting, the farmer can cut his peas as soon as they are ready, and thus get the full benefit of the nutriment in the straw for fodder, which is very important in a year like this, when hay is so scarce. At the same time from eight to ten acres can be harvested per day in the most complete and cleanly manner. This machine is now becoming quite popular, and their trade is constantly increasing year by year, which speaks well for the implement. We would also draw our readers' attention to the new root cutter advertised in another column.

Central Canada Fair, Ottawa.—The annual fair of the Central Canada Exhibition Association in September is now the great event of the autumn season in the Ottawa Valley. In the past it has attracted thousands of people to the capital, some of whom journeyed hundreds of miles to see it. This year the directors have enlarged and improved the grounds and buildings, created a permanent dairy building, which has 2,600 cubic feet of refrigerator room, and increased the prize list to \$14,000, in addition to offering thirty-five specials, which include twenty-five gold medals, silver medals and cups, and cash prizes. They also have secured a choice list of attractions, and arranged for a fine programme of races. The improvements to the grounds include, besides the establishment of a permanent dairy building, the construction of a new roadway to the stables, so that the race track will not be crossed in going to them, the improving of the grand stand, the levelling and beautifying of the island grounds, and the rearrangement of the machinery hall. The work on the machinery hall grounds will be especially pleasing to machinery men. By the improvements the avenues to the grounds have been made exceptionally attractive to spectators, and the machinery building has been arranged so as to permit all exhibitors to show their wares to the very best possible advantage. In addition to all of the above attractions will be a grand spectacular production and military spectacle, representing the siege of Sebastopol and taking of forts Malakoff and Redan, which will be presented in the evening. Interspersed with the spectacle will be music, fireworks, and special attractions, and the presentation alone promises to be worth going miles to see.

Macdonald, Fraser & Co., Live Stock Salesmen, Scotland.—This noteworthy firm of live stock salesmen hold a pre-eminent position in Scotland for the sale by auction of all classes of live stock. The business has been established since 1864, and is carried on at Glasgow, Perth, and Inverness, at which places they have erected first-class auction rings and stabling for the conduct of their ever-growing business. The numbers of live stock sold by them last year are as follows: 165,000 sheep, 121,000 cattle, 8,000 horses. It will thus be seen that this firm has built up a business of great dimensions, and has become the most important and the most widely recognized factor in the activity of the live stock trade in the United Kingdom. It has not only by far the largest hold on the home live stock trade, but also on the Canadian horse, cattle, and sheep trade. The most of the horses exported from Canada to Glasgow during th

TO STOCKMEN AND BREEDERS

LITTLE'S PATENT FLUID
(NON-POISONOUS)
SHEEP DIP AND CATTLE WASH

For the destruction of Ticks, Lice, Mange, and all Insects upon Sheep, Horses, Cattle, Pigs, Dogs, etc. Superior to Carbolic Acid for Ulcers, Wounds, Sores, etc. Removes Scurf, Roughness and Irritation of the Skin, making the coat soft, glossy, and healthy. The following letters from the Hon. John Dryden, Minister of Agriculture, and other prominent stockmen, should be read and carefully noted by all persons interested in Live Stock:

"MAPLE SHADE" HERDS AND FLOCKS.

BROOKLIN, ONT., Sept. 4th, 1890.
DEAR SIR,—I cannot afford to be without your "Little" Sheep Dip and Cattle Wash. It is not merely useful for Sheep, but it is invaluable as a wash for Cattle, etc. It has proved the surest destroyer of lice, with which so many of our stables are infested. I have ever tried; it is also an effectual remedy for foul in the feet of Cattle. I can heartily recommend it to all farmers and breeders.

JOHN DRYDEN.

17 Gold, Silver, and other Prize Medals have been awarded to "Little's Patent Fluid Dip" in all parts of the world.

Sold in Large Tins at \$1.00. Special terms to Breeders, Ranchmen, and others, requiring large quantities.

Ask your nearest druggist to obtain it for you; or write for it, with pamphlets, etc., to

ROBERT WIGHTMAN, Druggist, Owen Sound.

333 Sole Agent for the Dominion.

BRITISH ADVERTISEMENTS.

SIR THOS. BARRITT LENNARD, Woodingdean, Rottingdean, Brighton, England.

Large White pigs of prize-taking blood, bred entirely from the stock of Sanders Spencer, Walker Jones, and Duckering, and Berkshire pigs from the stock of Benjfield. Boars, silt, and sows always for sale at very moderate prices.

AYRSHIRES.

AYRSHIRES

Always for sale Some choice young bulls and heifers bred from the Glenhurst herd.

John Sandilands, Williamstown, Ont.

FOR SALE

Choice Ayrshire Bull Calf, sire Glencairn 3rd (imp.), dam Nellie Osborne (imp.). All young stock sired by imported bulls.

DANIEL DRUMMOND, Petite Cote, P.Q.

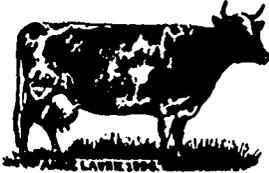
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GLENGARRY STOCK YARDS.

My AYRSHIRE HERD comprises the best business strains. Bull and heifer calves descended from the importations of the late Thomas Brown. One very fine bull calf by Saladin and Glenrose suitable for all exhibitions. Drop a card for particulars.

JOHN A. McDONALD, Jr., Williamstown, Ont.

MENIE STOCK YARD.



Breeder of Ayrshire Cattle and Berkshire Pigs. First-class pedigreed stock always on hand and for sale. First-class milking stock a specialty. Hoard's Station, G.T.R. 184 **WM. STEWART, Jr., Meule, Ont.**

AYRSHIRE CATTLE

DAVID BENNING, Glenhurst, Williamstown, Summerstown Station G.T.R., BREEDER OF

Ayrshire Cattle, Leicester Sheep, and Berkshire Pigs. The bull, Tom Brown, and heifer White Floss, winners of sweepstakes at World's Fair, were bred from this herd. Young stock always for sale. 140

NEIDPATH STOCK FARM

Thos. Ballantyne & Son, Stratford, Ontario,

... BREEDERS OF ...

Purebred Ayrshire Cattle

Herd consists of the imported bull, Beauty Style of Auchenrain, and ten imported cows of the highest milking strains and their progeny, by imported bulls. 355

GREENHOUSE STOCK FARM.

W. B. Cockburn, Nassagaweya, Ontario. Breeder of Ayrshire Cattle, Oxford Sheep and Berkshire Pigs.

I have several choice bull calves from imported cows for sale, at prices to suit the times; also a nice lot of shearing Oxford ewes, and some very promising Berkshire pigs. Write for prices and particulars. 161

AYRSHIRE BULLS FOR SALE.

One yearling Bull, one two-year-old Bull, Heifer and Bull Calves. All from choice milking stock. Prices reasonable. Address, 267 **WM. KIDD, Petite Cote, Que.**

ALEX. HUME,

Burnbrae P.O., Ont.,

Importer and Breeder of Ayrshire Cattle and Yorkshire Pigs has for sale a few large aged cows, two yearling heifers (not yet served), a few fine calves, one two-year-old bull of heavy milking strain, one one-year-old (imp. in dam) of the best strain of Scotland's Ayrshires, and some choice dairy cows and heifers of several crosses from the best of dairy stock. Also spring pigs from four months old down and two sows under two-year-old class, one boar and two sows under one-year-old class. Show animals. Telephone, Hoard's Station, G.T.R.

AYRSHIRES.

FOR SALE

Four extra good bull calves (Ayrshire) and a few fine heifer calves, out of such bulls as Prince of Byron and Norman of Robertland. Also some very fine Berkshire pigs, of different ages, sired by Knowlton. All direct from imported prize-winning stock, and all registered.

226 **A. TERRILL, Wooler, Ont.**

CHOICE AYRSHIRES.

Stock bull is imported SILVER KING who took 1st prize—2-year-old class—in 1893 at Montreal, Hochelaga, London, Ottawa, Toronto, as also silver medal there as best bull of any age. Dam of Silver King is Nelly Osborne (imported), who took 1st as milk cow and champion medal at World's Fair, and his sire is Traveller, the champion Ayrshire bull of Scotland. I Offer For Sale young stock of both sexes sired by this famous young bull, and whose dams are not only good individuals and prize winners, but heavy milkers as well, with exceptionally high tests for quality.

Please address **D. McLAHLAN, Petite Cote, P.Q.** 186

JAMES COTTINGHAM,

Riverside Farm, Breeder of Ayrshire Cattle.



Herd traces direct to stock imported by Andrew Allan, Montreal, and headed by the prize-winning bull, Sir James (1891); sire, Rob Roy (1897). Stock of both sexes for sale at all times, including some choice young bulls and heifers. Correspondence solicited. Visitors welcome. Railroad station and post office, Ormstown, Que. Farm one mile from station. 337

Ayrshires...

None but the best kept. Some fine bulls, also calves of both sexes for sale. Send a card for full particulars.

F. W. TAYLOR, Wellman's Corners, 228 Ontario.



Sale of Ayrshires.

At the sale to be held on Mr. J. N. Green-shields' farm, in September (date to be announced later), we will offer twenty head of purebred Ayrshires, of different ages and both sexes. There are no inferior animals among them. It will be a great chance to get a start with this breed. Date of sale is to be either preceding or immediately following the Montreal Fair. Catalogue ready about end of July, a copy of which will be sent free to any one sending a post card. 198

A. McCALLUM & SON,

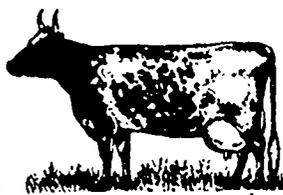
Spruce Hill Dairy Farm. DANVILLE, QUE.

Ayrshires and Shorthorns



Of the finest breeding. A number of bull calves sired by Dominion Chief; dams, Amy, Ella, etc. A beautiful light colored yearling bull from Amy, and several Shorthorn heifer calves sired by Gibson Duke. Send for all particulars and prices.

232 **JOHN H. DOUGLAS, Breeder and Importer, Warkworth, Ont.**



Jottings—Continued.

Last year passed through their hands at their Glasgow centre, where they have fitted up very convenient stabling accommodation, and where they hold great sales of horses by auction. They also disposed of large numbers of Canadian cattle and sheep last year at the same centre. The firm is also widely known throughout Great Britain for the many fashionable sales of purebred stock which are conducted by them. Their Perth cattle market, styled "The Perth Auction Market," is the largest in the kingdom, covering three and a half acres of ground, and comprises three spacious sale halls, where business is conducted simultaneously by three auctioneers. On some days as many as 40,000 sheep and 2,000 cattle are marketed by them at Perth. The firm is widely known for the upright manner in which it conducts all business entrusted to its charge. The business is soundly established, widely and valuably connected, enterprisingly administered, and marked by continuous increase, and it affords us a distinct pleasure to record the facts and salient annals of a concern operating on such wholesome and unequivocal principles.

Stock Notes.

Notice.—New advertisements, notice of which is desired in the Jottings or Stock Notes columns, must reach us by the 10th of the preceding month. Items for Jottings, to secure insertion, must also reach us on the same date.

Cattle.

Mr. T. A. Bixby, South Haven, Mich., reports: Corn and potatoes are looking well. Oats are short, but wheat is fair. Hay crop is a failure, and pastures are all dried up.

As advertised in another column, Messrs. David Motion & Sons, Hamilton, Ont., intend selling by public auction on Wednesday, August 28th, the whole of their valuable herd of Ayrshire cattle. This herd has had a very successful showyard career, and the individuals comprising it are of very high merit.

Messrs. A. & G. Rice, Currie's, Ont., report: Despite the drought and flies, we are pleased to be able to state that our Holsteins are in fine condition. We intend to exhibit at the great fairs, and think we can make it worth while for all dairymen who love a good cow to inspect our herd. We can show cows with records as high as 85 lbs. milk in one day (made in a public test), three-year-olds that have given 52 lbs. in one day, two-year-olds that can give 45 to 50 lbs. milk in one day, yearlings from cows that have made 70 lbs. of milk and 3 lbs. of butter in 24 hours, at five years old, in a public test. If such records as these conform to the idea of what a good cow should be, we hope to meet many old friends and make many new ones. We have at the head of our herd a bull that was a prize-winner at the World's Fair and many other places, also young Sir Paul De Kol Clothide, that unites the blood of three of the greatest butter families of the breed.

Swine.

Mr. W. D. PALMER, Mendota, Ill., writes: My Berkshire are doing finely, and I have a choice lot of pigs sired by Winceler Lad 34874, dam Regal Queen 224 33276. Their grand sire was Lord Windsor 20267, whose sire was Cash Boy 4th 32465, by Highclere 20263, dam Longfellow Lady 5th 33274. It is very dry here, and we have had very little rain for some time. Corn is looking very well, but other crops are not so good.

Sheep.

Mr. W. H. WANNER, Lakelet, Ont., reports his Shropshires as in good shape, considering the dry weather.

Mr. SMITH EVANS, Guise, Ont., writes: I have recently made the following sales of Oxford Down sheep: To Mr. C. W. Hilton, Anson, Maine, one shearing ewe; to Mr. J. V. Cooper, Pictou, Ont., three shearing ewes; to Mr. H. Arkell, Arkell, Ont., three shearing rams, five ram lambs, and two ewe lambs, to fill his orders for the American buyers. Mr. Arkell says my lambs are equal to any in the country for bone and size combined. My lambs are doing well, although the weather has been very dry. I still have a number of lambs of both sexes on hand, at prices to suit the times.

Mr. C. T. GARBUFF, Claremont, Ont., writes as follows: Since last writing I have made a large number of sales of boars and sows and sows in farrow, imported and homebred, which have given general satisfaction. I have also sold a number of Cotswold sheep, including all my shearing ewes, and I am in want of a first-class pair. I am reserving Lord Lorne (imp.), a first-prize ram at Toronto in 1894, and offering for sale my two three-year-old stock rams with records of fifteen firsts and one second, and which weigh 355 lbs and 330 lbs. respectively, also ewes weighing 235 lbs. and 230 lbs. My sheep are doing well, considering the dry weather. Hay is very light, but peas and corn are good.

Sheep.

Mr. JOHN CAMPBELL, Fairview Farm, Woodville, Ont., writes: The Shropshire ram, Chancellor 53028, a first premium sheep as a shearer at the World's Fair, whose sire is the far-famed Newton Lord, has, since last season, developed so as to surprise all who see him. Last month he weighed no less than 380 pounds, and is as active as a Hackney stallion, and wonderfully smooth for a big one. Probably he will be seen at the coming fairs, among a number of other good ones from Fairview Farm. Though the drought has been so long-continued, the Fairview flock has lived through it with little loss of condition, which shows that Shropshires of high quality are good rustlers. The youngsters are, as in the past, a good lot, and, without doubt, will give good satisfaction to the customers who will secure them.

AYRSHIRES.

AYRSHIRES

A few fine young stock bulls for sale. One by the same dam as the Columbian winner (Tom Brown). Also some good young females. Come and inspect our stock. Prices to suit the times.

ROBERTSON & NESS - Howick, Que.

POLLED ANGUS.

It is an



UNDISPUTED FACT

That the beef of the

POLLED-ANGUS

commands the highest price in the British market. Drop us a card and get full particulars of our herd.

WM. STEWART & SON,

182 WILLOW GROVE FARM, Lambton Co., Lucasville P.O., Ont.

HOLSTEINS.

MEET US AT THE GREAT FAIRS.

We will again exhibit at the large fairs a carload of **HOLSTEIN CATTLE**, and promise to show you something that will please any lover of good milkers. Parties desiring young stock from the great Holstein families will kindly write or ask for records, etc., which we shall be pleased to supply. We keep no culls.

A. & G. RICE,

Brookbank Stock Farm, Currie's Crossing, Ont.

HELBOH STOCK FARM

Holstein-Friesians of the highest producing strains, founded on the best imported families of NORTH HOLLAND.



A few grand young bulls on hand at reasonable prices and easy terms. Also Improved Large Yorkshires of Sanders, Spencer and Walker Jones' breeding. Also choice Oxford Down rams.

J. W. LEE, 430 Simcoe, Ont.



Fairview Farm

E. FANNAECKER Breeder of Grand Milking Registered Holstein Cattle. A specialty in females of all ages at present.

244 Heapeler, Ont.

BROCKHOLM HOLSTEINS



Netherland Romulus, a grandson of Netherland Prince and Albino 2nd, at the head of herd. Original stock cows all imported from Holland. Also Improved Large Yorkshires of the best strain. Young Stock for Sale.

R. S. STEVENSON, ANCASTER P.O., ONT.

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HOLSTEINS.

FOR PRICES ON

HOLSTEINS

WRITE TO

F. A. FOLGER

RIDEAU STOCK FARM

BOX 577

KINGSTON, ONT. 373

HOLSTEIN-FRIESIANS

Richly bred. None but the best kept. Young bulls and heifers of the Netherland, Peel, Johanna, and Moore strains.

171 JNO. MCGREGOR, Constance, Ont.

HOLSTEIN-FRIESIANS

H. BOLLERT, Cassel, Ont.

I now offer for sale several very choice bulls fit for service; they are of rare breeding, with great milk and butter records to back them. Also females of all ages and at breeding at prices that are right. Remember the best are the cheapest. Come and see them, or write for prices and full particulars. 339

REGISTERED HOLSTEINS

FOR SALE BY

ELLIS BROTHERS,

BEDFORD PARK P.O., ONT.

3 miles north of Toronto, on Yonge Street. Electric cars bring you to our gate.

Inspection invited and

306

Correspondence Solicited.

JERSEYS.

FOR SALE.

A. J. C. C. JERSEY BULL CALF.

Dropped Nov. 12th, 1894. Solid color, black points. Combines close up to blood of Ida's River of St. L., 19 tested daughters. Stoke Pugs, 27 " " " " Tormentor, 33 " " " " Ida's Stoke Pugs, 23 " " " " Pedro, 21 " " " "

1 lb. of St. L. tests 30 lbs. 7 oz. Allie " " 26 " 12 oz. Onan " " 22 " 3 oz. Eutrotis " " 22 " 7 oz.

For particulars and prices, write

H. FRALEIGH, - St. Marys, Ont.

JERSEY COWS AND HEIFERS.

The highest testing strains.

Rich breeding and good colors.

ALSO TAMWORTH PIGS.

JOHN PULFER, - Brampton, Ont.

JERSEY BULL FOR SALE

Calved July 26th, 1894, sired by Exciter 33620, dam Matina of St. Lambert 87304, granmam Ligara; average test, 5-19. Great grandam, Ligara's Rose, average test, 47. This record is taken from Ontario Agricultural College Report for 1894, p. 151. Also some

FINE REGISTERED BERKSHIRE PIGS

WILLIAM CLARK,

Meyersburg, Ont.

ROYAL BUSINESS JERSEYS

I HAVE for sale a handsome and richly bred two-year-old bull, Signet Seal, bred by the sweepstakes bull at Toronto, '94. Dam gave 50 lbs. milk daily, and tested 6.2 butter fat.

Handsome bull calf, 3 months old, by champion bull of Canada.

Grand young cow, to calve in July.

Two charming two-year-old heifers, due to calve in July and August.

Three yearling heifers in calf.

Two heifer calves, 2 and 4 months old.

Come and see, or address

J. C. SNELL,

Edmonton, Ont.

Brampton Stn.

SHEEP.

A Choice Lot to Pick From.

Consisting of Ram and Ewe Lambs, and Ewes in Lamb. The finest lot of Shropshire Lambs we ever bred, and you cannot object to the prices we ask. Let us hear from you.

Allen McPherson, 219 Forest, Ont.



WM. CLARK, North Wiltshire, P.E.I., offers for sale, at moderate prices, a very choice lot of Leicester ram lambs from prize-winning ewes and sired by his noted stock ram, McNeil 190. He also breeds Improved Large Yorkshire Pigs, and Plymouth Rock Poultry.

Oxford Downs.

We can suit you. Drop us a card for prices and particulars.

Turner & Jull, 448 Burford, Ont.



GOOD LEICESTERS

We have some of the best Leicesters to be found in the country, and if we cannot please you your case is hopeless. We have shearing ewes; ewe and ram lambs; shearing, two-year-old, and aged rams. Let us furnish you with all particulars.

E. Archer & Sons, Warwick, Ont.

OXFORDS.

Fine rams, shearing and shears, and ramlambs, Yorkshire sows due to farrow in a few weeks. Also Plymouth Rocks. We can suit you. Send card for particulars and prices.

JOHN COUSINS & SONS, 290 Harriston, Ont.



Linden Oxfords.

Our flocks are composed of imported sheep, or directly from imported stock; all sired by winners at English Royal.

Do you want a ram lamb sired by the Royal winning rams, Royal Warwick 3rd, or Bath and West? If so, write, or come and see us.

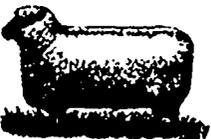
Also some fine young Yorkshires. Stations—Dutton, M.C.R. Guelph, G.T.R. R. J. HINE, Dutton P.O. K. FINLAYSON, 414 Campbellton P.O.



OXFORD DOWNS

FOR SALE.—Six shearing ewes and a few imported ewes, 3 and 4 years old, also 25 ram and ewe lambs. Prices reasonable.

SMITH EVANS, GOUROCK, ONT., BREEDER AND IMPORTER



Whiteside Bros.,

The Glen, Innerkip, Oxford Co., Ont.,

Shropshires—Yearlings and lambs. Berkshires—Breeding stock, both sexes. Also Ayrshires.

In writing mention this journal.



SHEEP.

THEY ARE FINE!

Fairview's Shropshires

Were never in better shape to supply fine animals. Best breeding, all ages, both sexes. Come or write, to secure the pick.

JOHN CAMPBELL, Woodville, Ont.

Shropshire Rams

and

Young Shorthorn Bulls

FOR SALE.

ALSO A FEW FEMALES.

All of the finest breeding. Write for particulars and prices, or come and see our stock. Visitors always welcome.

C. H. IRVING, Newmarket, Ont.

MONTROSE STOCK FARM

Breeder of Shorthorns (Waterloo blood strains,) Shropshires, Berkshires, Bronze Turkeys, and Fancy Plymouth Rocks. I make a specialty of raising Swede Turnip Seed, warranted fresh and 1/2 lb. sufficient per acre. The best quality of turnips grown. Write for prices.

HORACE CHISHOLM, Paris, Ont.



T. W. HECTOR

The Cottage,

Springfield-on-the-Credit, Ont.

Breeder and Importer of

DORSET HORN SHEEP

And dealer in

Saddle and Carriage HORSES.

Stations: Springfield, C.P.R., and Port Credit, G.T.R.

SPRINGBANK STOCK FARM

SHORTHORN CATTLE, OXFORD SHEEP, BERKSHIRE PIGS, AND BRONZE TURKEYS.

Three Bull Calves for sale, sired by a grandson of Indian Chief. Good animals. Prices to suit the times.



JAS. TOLTON, Walkerton, Ont.

LINCOLNS!

The Largest Flock in Canada!

Our breeding ewes, 150 in all, are from the best English flocks. Our last importation was made from the flock of Mr. Henry Dudding, and were all personally selected. If you want a ram or a few ewes, send along your order. If you want shearlings or lambs of either sex, we can supply you with the very best.

J. F. GIBSON, Denfield, Ont. W. WALKER, Ilderton, Ont.

1881 SHROPSHIRE 1895

Our flock, the oldest Shropshire flock in Canada, was founded in 1881. Importations made from time to time, selected in person from best English flocks. This season's lambs are a strong lot, dropped in January and February. Orders can now be taken for pick.

J. COOPER & SON, Kippin, Ont.



SWINE.

SPRINGBROOK STOCK FARM.

PUREBRED TAMWORTH SWINE Young pigs ready to ship, and satisfaction guaranteed. Also some choice HOLSTEIN CALVES of both sexes.

A. C. HALLMAN,

New Dundee, Ont.

BEKSHIRES.

A CHOICE lot of sows for sale, bred to farrow in February and March, and some to breed yet. A few boars fit for service. Young pigs of various ages. Call and see stock, or write for prices and description.

J. H. SIEFFERT,

NORTH BRUCE, ONT.

BERKSHIRES

A choice lot of young registered Berkshires for sale from six weeks to six months old. Pairs supplied not akin, also some good slow sows under a year, at prices to suit the times. Write for prices, or come and see us. Satisfaction guaranteed.

E. E. MARTIN, Canning, Ont.

Paris Station, G.T.R.

If you want Improved Chester White Swine or Dorset Horn Sheep of first-class quality at rock-bottom prices, write to

R. H. HARDING, Breeder and Importer, MAPLEVIEW FARM, 222 Thorndale, Ont.

LARGE ENGLISH BERKSHIRES

Good show stock for sale. Various ages from 7 weeks up. Choice sows in farrow by extra large boars. Satisfaction guaranteed or return at my expense. Address,

C. R. DACKUN, Chesterfield, Ont. Bright Station, G.T.R.

KEEP YOUR EYE ON THIS SPACE



CHOICE BERKSHIRES.

A litter just farrowed. Dam has a record of six 1st and two 2nd prizes for 1894. Some fine young boars fit to ship, and other pigs of different ages. Sires and dams of all imported. Also Cotswold shearing rams, ram and ewe lambs fit for any flock. All stock guaranteed as described. Visitors welcome.

C. T. GARBUTT,

Claremont, Ont.

IT PLEASES US

To have folks come to see our stock, or to write about them. There is always pleasure and satisfaction in handling Poland Chinas and Chester Whites when they are really well bred. The prices, too, will surprise you.

DANIEL D'COURCEY,

Bornholm, Ont.

Chester Whites

A large number of sows bred for fall orders. Send in your orders. Now is the time to secure special prices.

JOS. CAIRNS,

Cumloch, Ont.

Large English Berkshires for Sale

Three sows in pig, also young stock, both sexes. Address

R. J. DIXON,

Gleneden, - Ontario.

SWINE.

Pleasant View Herd

REGISTERED TAMWORTHS



Sows in pig to (imp.) Birmingham Hero, also fine young stock of both sexes. Pairs not akin. At prices to suit times. Call and inspect or write.

E. B. KOLB, Berlin, Ont.

MAPLE LEAF FARM

IMPROVED LARGE YORKSHIRES

Markham Baron, the sweepstakes saviour over all breeds at Fat Stock Show at Guelph in 1925, was bred by us. A choice lot of young sows old enough for mating. Also young boars. Pairs furnished not akin. Only first-class stock shipped.



JOHN PIKE & SON, Locust Hill P.O., C.P.R., Markham G.T.R.

Some of the Best

Yorkshires in the country are to be found at the Woodroffe Stock Farm. I have them for sale, cheap, from three months to two years of age. Both sexes. Young sows to farrow in October.

J. G. CLARK, OTTAWA, ONT.



H. J. DAVIS, WOODSTOCK, ONT.

Improved Large Yorkshire Boars, very fine, fit for service. Also young pigs supplied not akin. Berkshire Boars of good breeding, fit for service, and young pigs ready to ship; also Shorthorn Bulls and Shropshire Rams from imported stock for sale at moderate prices.

IT IS NO TROUBLE

To make money in breeding Tamworths if you can get the blood to start with. I have them at all ages, both sexes, and lowest prices. Also a few Yorkshires.



J. F. MASTER, New Dundee, Ont.

CHESTER WHITES and BERKSHIRES.

The Best Herd in Canada.

Can supply pigs of any age. Send card for particulars and prices. No trouble to answer correspondence or to show stock.

JAS. H. SHAW, SIMCOE, ONT.

DUROC JERSEYS

Do you want the best?

You will run no risk in buying from us. We have now for sale: 6 boars fit for service, 12 sows ready to breed, 60 pigs most is old. An excellent lot of hogs of sows. Greatest prize-winning herd in Canada. Our stock boars are the best procurable in the United States.

TAPE BROS., Ridgeway, Ont.

63 CHESTER WHITE SWINE. REGISTERED STOCK.

Tombase Geese, Pekin Ducks, Bronze Turkeys, eggs \$1.00 per 11. Partridge and Buff Cochins, Plymouth Rocks, Silver Gray Bantams, Golden, Silver and White Wyandottes, Brown and White Lechons, Black Hamblers, American Dominiques, Black Red and Black Sumatras, and Indian and Pit Games, \$2.25 per 11. Will mix sittings if desired; also a few pairs of Wild Turkeys for sale. G. BENNETT & PARDO, Charing Cross, Ont.



SWINE.

IMPROVED LARGE YORKSHIRES.

The winners of twenty first prizes at the World's Fair.

A number of young Boars and Sows for sale.



ALL CHOICE STOCK.

JOSEPH FEATHERSTON, Pine Grove Farm, STREETSVILLE P.O. and Telegraph, Ont.

St. Williams Herd of Improved

Yorkshire Swine

Choice young boars suitable for fall exhibitions for sale cheap. These are bred for early maturity as well as easy keeping qualities. Stock guaranteed as described. Correspondence solicited.

H. BENNET & SON

St. Williams, Ont.

Large English Berkshires

Of the best recently imported families from which I now have a choice selection of fall and spring pigs. Pairs furnished not akin. Also a few superior Yorkshires of the best strains.

Dennis Hawkins, Woodville, Ont.

YORKSHIRES

For Sale. One of the best herds in the province. Also CARRIAGE HORSES from Standard-bred and Hackney stallions. J. M. HURLEY & SON, Belleville, Ont. Box 442. Kingston Road Stock Farm.



DUROC JERSEYS.

THE PINE GROVE HERD.

Choice pigs of all ages ready to ship. Can supply pairs not akin. Prices reasonable. Satisfaction guaranteed. Call and inspect or write for particulars.



CHARLES ANSTICE, Springford, Ont.

HAVE YOU ANY FINE SHOW PIGS?

If not, I would like to hear from you.

I have for sale an excellent lot of Tamworths under six months.

WM. ROW, Avon P.O., Ont.



BERKSHIRES

Choice pigs, by Baron Lee 4th, weight 202 lbs. at 13 months, and the following prize-winners at Toronto exhibition: Star One (imp.), 53 lbs.; Regalia, 54 lbs. at 12 mos., and Lord Ross. We have the best boars and sows in the history of the herd. Also choice Jerseys for milk, and in call.

J. G. SNELL & BRO.,

Brampton Stn. Edmonton, Ont.

POLAND CHINAS AT REDUCED PRICES.

1 boar 2 years old; 1 boar 10 months old; 1 sow 1 year old, with pig; 1 sow 10 months old.

The above are all first-class, and registered. Write for particulars.

WESLEY W. FISHER,

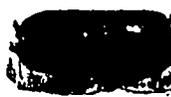
Ben Miller, Ont.; Goderich Station.

SWINE.

LARGE ENGLISH BERKSHIRES.

Bright Prince, a never-beaten winner, assisted by Banner Boy. Grand young boars and sows now for sale, also choice Shropshires.

Stock Farm,



T. A. COX, Brantford, Ont.

You Are Invited

To come and see our stock or to write to us for prices and particulars. We have for sale 23 head of Chester White and Tamworth pigs from six to ten weeks old from imported and prize-winning stock. Best quality. Lowest prices.

H. GEORGE & SONS,

Crampton, Ont.

YORKSHIRES

Six weeks old for \$5.00.

For full particulars write

F. RUSSELL,

Mount Forest, Ont.

PUREBRED TAMWORTHS.

A choice lot of spring pigs, farrowed last of February, now in grand shape to ship. Have also a limited number of young sows bred to farrow in July and August. I am making a specialty of this class of swine. I keep no other.

LEVI MASTER, Haysville, Ont.

TAMWORTHS FOR SALE.

1 boar 10 months old, 2 boars 7 months old, 4 boars 3 months old, 4 sows 7 months old, bred to "Woodland's Duke"; 9 sows 3 months old. Drop me a card for all information. Stock guaranteed.

J. L. REVELL, Putnam, Ont.

RED TAMWORTHS.

My breeding herd is almost all imported. The noted English herds are represented. Boars and sows old enough for mating; also some good spring pigs ready for shipment. Correspondence solicited.

ANDREW DUNN, Ingersoll, Ont.

BERKSHIRES FOR SALE.

My Berkshires secured a large number of the most important prizes at Toronto, Montreal and London exhibitions; also several prizes at Stock Show in Guelph, including sweepstakes' purebred sow of any age or breed.

A choice lot of all ages for sale. Please mention THE LIVE STOCK JOURNAL. GEO. GREEN, Fairview, Ont. Stratford Station and Telegraph Office.

POLAND CHINAS.

My herd is composed of the most popular strains of prize-winning blood from imported stock. A choice lot of spring pigs from imp. Black Joe ready to ship. Also a 12 months old sow due to farrow in August (a show sow).

OLIVER DRURY, Fargo, Ont.

SWINE.

E. D. GEORGE PUTNAM, ONT.

Importer and Breeder of OHIO IMPROVED CHESTER WHITE SWINE

The largest and oldest established registered herd in Canada. I make this breed a specialty and furnish a good pig at a fair price. Write for prices.



TAMWORTHS. CHESTERS. POLANDS.

Some choice Tamworth boars fit for service, and sows bred to farrow in September. Chesters from 10 to 14 weeks old. Poland 1 to 1 1/2 mos. Tamworth 4 months. A post card will bring you all information.

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POLAND CHINAS ARE THE RIGHT KIND.

Brood sows for sale. Boars ready for service. Young sows ready to breed. Lots of pigs two to three months old; good long pigs with heavy bone. Prices right. Mention STOCK JOURNAL.

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A first-class specimen of the most fashionable strain of Poland Chinas in the world at head of herd.

Stock of all ages for sale at hard-times prices

Send for illustrated catalogue of POLAND CHINAS, POULTRY, and RASPBERRY PLANTS (In season) Correspondence solicited, and personal inspection invited. Address, CAPT. A. W. YOUNG, Tupperville, Ont.

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Some extra fine EXHIBITION PIGS

Pairs not akin. Also September, 04, bear, fit to head any herd. Satisfaction guaranteed.

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By investing in some good TAMWORTHS. Let us know what you are in need of. Some fine stock now for sale, including boars fit for service, sows due to farrow in August and later. Grand lot of young pigs. Pairs not akin. Also Yorkshire Bull ready for service, and some fine cows and heifers.

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ENGLISH BERKSHIRE PIGS Apply to Bow Park Co. (Ltd.) BRANTFORD Canada.



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Two Fillies

2 and 3 years old, for sale, registered in American C Stud Book, fine colors and good animals in every way. The 3 year-old is bred. Let me hear from you early, if you want a bargain.

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DIRECTOR AND BREEDER OF
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FROM THE BEST STOCK IN SCOTLAND.
English and French Carriage Horses, Shetland Ponies,
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**CLYDESDALE
STALLIONS**

I have three imported Clydesdale Stallions bred from the most popular lines, guaranteed to be sound, sure, and excellent getters, that I wish to sell at reasonable prices. Drop a card for particulars.

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A grand pair of mares by Lord Ralls (imp), dam Nellie (imp), by the Monarch of the Glen. One a sweepstake mare at Montreal in 1891, and has a fine yearling filly. Also choice Ayrshires of all ages.

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Wanted . .

To Exchange for or Purchase,
1 Black Hamburg Cock.
1 Black Minorca Cock.

1 Pair Buff Cochins.
1 Pair Partridge Cochins.

When writing state price and quality.
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WEBSTER & HANNUM BONE-CUTTER write me.

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Park Farm, - - - OSHAWA, Ont.
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Horse Owners! Try

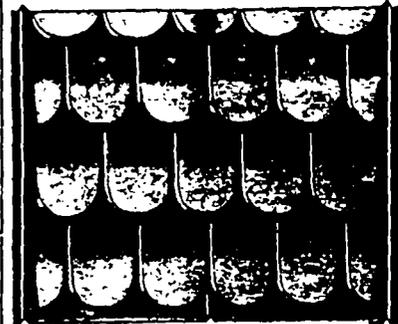
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The Safest, Best BLISTER ever used. Taken the place of all liniments for mild or severe action. Removes all Bunches or Blisshes from Horses and Cattle. SUPERSEDES ALL CAUSTIC OR FIRING. Impossible to produce scab or blissh. Every bottle sold is warranted to give satisfaction. Price \$1.50 per bottle. Sold by druggists, or sent by express, charges paid, with full directions for its use. Send for descriptive circulars.
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Made of steel, painted red or slate color, also galvanized iron. Fire and water proof.

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And are invaluable in all complaints incidental to Females of all ages.

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Is the only reliable remedy for **Bad Legs, SORES, ULCERS, and OLD WOUNDS.**

FOR BRONCHITIS, SORE THROATS, COUGHS, COLDS, GOUT, RHEUMATISM,

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Manufactured only at 78 NEW OXFORD STREET, late 111 OXFORD STREET, LONDON.

And sold by all Medicine Vendors throughout the World.

**Don't
Neglect**

To keep your stock salted in the pasture these days. The warmer the weather, the more necessary to keep them healthy, and to do that they **MUST** have salt, all they want, and whenever they want it. The best way to do that is by using

Rock Salt

Large lumps of it can be laid in the pasture fields, and they take it to suit themselves. Rain does not waste it away. It salts stock for half the cost of using loose salt.

quills, or over at 50 cents per 100.

(Cash with the order.)

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A large number of one-year-old Pullets. Name breed, number for sale, and lowest cash price.
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For Sale

(without reserve) in

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STALLIONS,

3 French Coach

3 Glydesdale

15 Percherons

All purebred and registered. Every one guaranteed as a sure foal-getter.

The balance unsold, if any, will be sent to the United States in September.

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**CENTRAL CANADA EXHIBITION
ASSOCIATION**

**EIGHTH ANNUAL EXHIBITION AT
OTTAWA**

SEPTEMBER 20th to 28th, 1895.

Entries close September 17th.

New and improved entrance to Exhibition Grounds. Buildings, Grounds, and Grand Stand improved and enlarged. Machinery Hall ground-levelled and made attractive.

Special attention paid to the Poultry Building and its surroundings. New roadway thereto from the main entrance.

Permanent Dairy Building in which six new and suitable refrigerators (Latham patent) have been placed, thus giving about 200 cubic feet refrigerator room.

New and permanent roadway to stables, thereby avoiding having to cross race track.

List of Special Attractions heretofore unequalled at this Exhibition, also balloon races with parachute drops.

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\$14,000 offered in prizes, besides a list of thirty-five "Specials" (including twenty five gold medals), silver and bronze medals, silver cups, and special cash prizes. The gold medals given by this association are acknowledged to be the best given by any similar association, in existence.

Large purses offered in the Speeding Departments for running and trotting races.

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Grand Spectacular Production and Military Spectacle representing the Siege of Sebastopol and taking of Forts Malakoff and Redan, interspersed with Music, Fireworks Display, and Special Stage Attractions.

Don't fail to visit Ottawa's Permanent Exhibition.

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The Ontario Agricultural College will reopen on October 1st.

Full courses of Lectures, with practical instruction in Agriculture, Live Stock, Dairying, Poultry, Bee-keeping, Veterinary Science, Chemistry, Geology, Botany, Entomology, Bacteriology, English, Mathematics, Bookkeeping, and Political Economy.

Send for circular, giving terms of admission, course of study, etc.

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Great Dispersion Sale

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IMPORTED AND HOMEBRED AYRSHIRE CATTLE

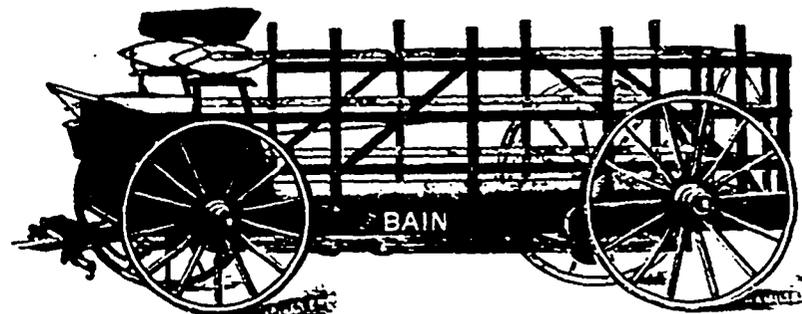
DAVID MORTON & SONS will sell by Public Auction on Wednesday, August 28th, their entire herd of Thoroughbred Ayrshire Cattle, consisting of over fifty head of the choicest Ayrshires ever offered for sale in Canada. This will give breeders an excellent opportunity to secure first-class stock in suitable condition for exhibiting, as a number of these animals have carried off first prizes wherever shown. Catalogues ready by August 1st, and will be mailed on application.

Terms - All amounts under \$100, cash.

Over \$100, twelve months' credit on approved notes. Sale to commence at one o'clock p.m., to be held at the farm, Lot 1 and 2, 5th concession, township of Barton. Special train will leave Grand Trunk King Street Station, at 12 o'clock noon, for the farm. Tickets will be furnished free to intending purchasers on application to

**GEO. ANDREW, Auctioneer, or
DAVID MORTON & SONS, Proprietors,
HAMILTON**

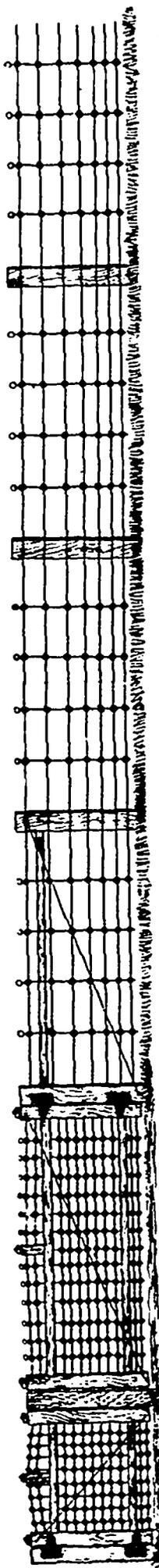
The Bain Holley Patent Low-Down Wagon



The Latest Invention and Greatest Success in Wagon Building

Especially suitable for handling LIVE STOCK, FRUIT, DAIRY PRODUCTS, HEAVY MATERIAL. No slatting of pole BODY HANGS LOW - therefore no high lifting in loading. Will be on exhibition at principal fairs. Call and see it. Further particulars and prices cheerfully furnished on application.

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INGERSOLL,
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The accompanying cut represents five panels of fence and gate of the **LOCKED WIRE FENCE**, which is now built with improved corrugated hardened steel stays and Hexsemer steel clamp—a combination which is proof against the most unruly stock or designing men. The crimp in the wire, in combination with steel clamp, when locked acts as a spring adjusting the fence to heat or cold.

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Stronger,
Better,
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than any other fence, and without doubt the best fence on the American continent.

All persons having wire fences erected in the past should use the stays and steel clamps of the Locked Wire Fence Co. on them. The crimp consumes all the slack, makes the fence tight and adds over 100 per cent to its value, at a very small cost.

We desire to inform the farmer and public generally that we are prepared to supply the material or erect this fence throughout the Dominion of Canada.

Recollect, we are the only firm that is furnishing the genuine material in the form of the corrugated hardened steel stay and Hexsemer steel clamp.

**THE BEST
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MADE FOR
FARMS AND
RAILROADS.**

AGENTS WANTED in every township

Send for circulars and particulars.

**THE
Locked - Wire
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INGERSOLL, - ONT.
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**WESTERN
FAIR**

CANADA'S FAVORITE
Live Stock Exhibition

Sept. 12th to 21st, 1895.

LONDON, - ONT.

The Prize Lists are ready and distributed to all known exhibitors. Several important additions and alterations in the Live Stock, Dairy, and Agricultural classes.

Send post-card if you have been overlooked. Stalls and space allotted on receipt of entry. Be early and get your choice.

ENTRIES CLOSE SEPT. 12th.

Cheap railway and express rates on all lines. The greatest stringest and best collection of special attractions ever offered a Canadian public are being secured. Everything indicates a most successful Fair.

Electric and steam cars, best hotel accommodation in Canada. Everything at reasonable rates.

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Montreal Exposition.

**Fourth
Provincial
Exhibition**

SEPTEMBER 12th to 21st, '95

Agricultural and Industrial

Grand Show of

**LIVE STOCK
DAIRY and
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PRODUCTS**

SPLENDID SHOW ASSURED

Apply early for space to

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It is not Paradise,

But

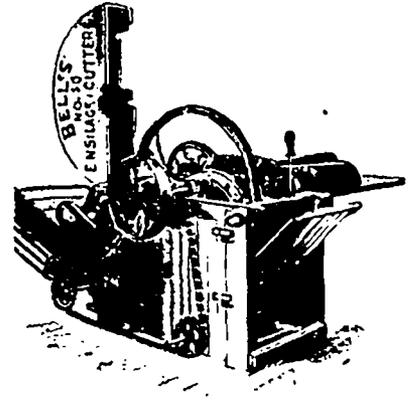
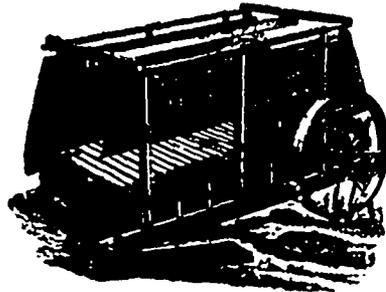
If you have some cash to spare and are willing to work financial independence cannot be more easily secured than by buying a few acres of irrigated land in Salt River Valley.

This valley is in Southern Arizona, and is noted for its fine semi-tropical fruit and superior climate. Horticulturists say that greater profits can be realized here from oranges and grapes than in Florida or California. Physicians assert that the warm, dry, bracing climate exerts a healing quality. It is the healthiest air. The great blizzard of 1894 did not blight the tenderest leaf in this protected spot.

To get there, take Santa Fe Route to Phoenix, A. T., via Prescott and the new line, S. F. & P. Ry., Address F. T. Hendry, 67 Gibraltar Street, Detroit, Mich., for illustrated folder. They readily tell the story of a remarkable country. Actual results are given on certificate of harvest.

**It is the
Salt River Valley.**

We will be there again!



"In our opinion, the complete outfit is just about perfection."

That is what Messrs. Rice, Rathborne, Farburn, Milne, Yule, Cameron, Routledge, Miller, McColl, Bowman, Cockburn, Ellis, and Clemons said about it. They are all stock exhibitors, and ought to know, for they saw it at actual work last fall at the stock barns, Toronto Exhibition.

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They produce large crops of wheat of superior quality

Try our Fertilizer for Fall Wheat, which is especially manufactured for that class of crop. TERMS EASY PRICES LOW

"Having used your Sure-Growth Fertilizer for the past three seasons, it is with pleasure I recommend its use to others. I commenced with one ton in the first season, and two years ago purchased from you two tons, and last season two and one half tons. Always used it on fall wheat at the rate of about two hundred pounds per acre, and am fully convinced I had at least one third larger yield and finer sample than where no fertilizer was used."

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Prison
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Twine.**

Pure
Manilla

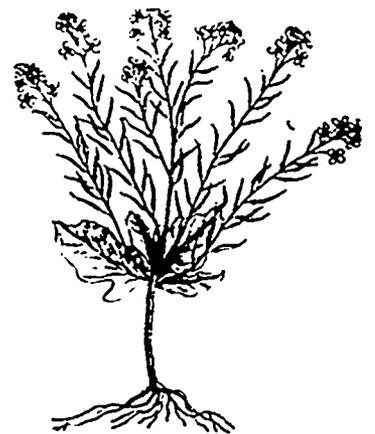
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EVERY farmer should at once begin to deal with the pest above delineated if it is found on his farm. It is very common on some farms, and is rapidly spreading into parts where lately it was unknown. How to deal with it effectually without losing a crop, and at the same time with benefit to the soil in which it is found, is something worth knowing. Professor Shaw's valuable book on "Weeds" will tell you—not only how to deal with this pest, but with every other pest. It is a good book that is prone to injure your crops. Send for it. Only 15 cents. Neatly bound and illustrated and sent postpaid. Address

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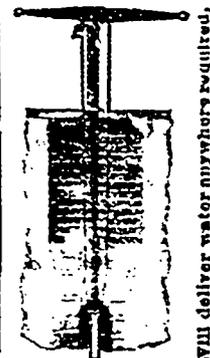
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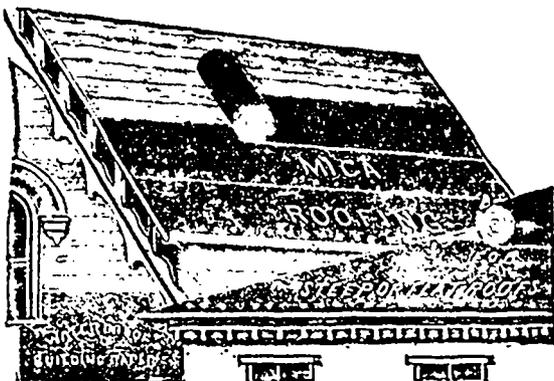
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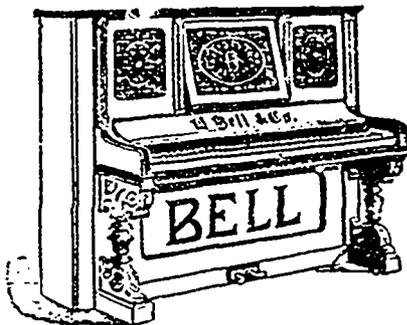
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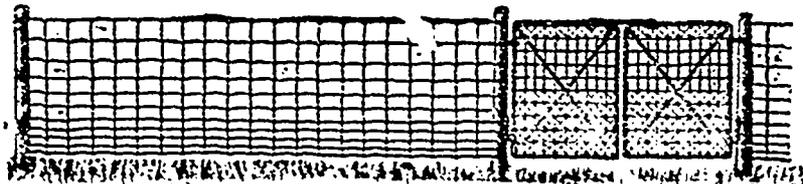
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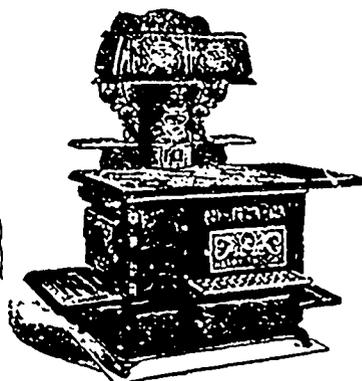
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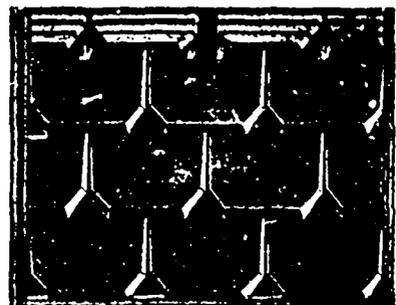
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Fertilizers containing a high percentage of potash produce the largest yields and best quality of

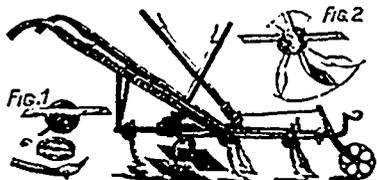
Wheat, Rye, Barley, Oats,

and all winter crops.

Send for our pamphlets on the use of potash on the farm. They are sent free. It will cost you nothing to read them, and they will save you dollars. Address, GERMAN KALI WORKS, 23 Nassau Street, New York.

Model Scuffler

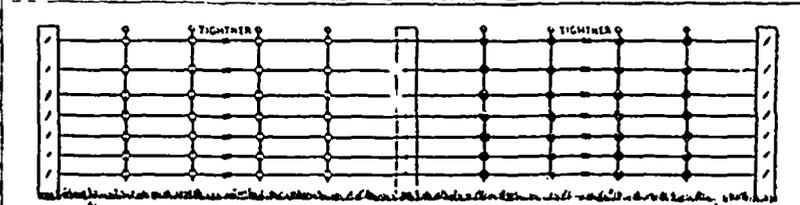
LIGHT AND STRONG QUICKLY ADJUSTED.



WE aim to make an implement which will adjust itself to all the varying conditions of the soil in the quickest possible manner, and with the least manipulation. We accomplish this by our new patented shank fastener or clamp. The change is made by loosening one nut half a turn, by which operation the point can be shifted to any conceivable position. This Scuffler is what many of our customers have already termed it—"a world beater." It is strong, durable, and of the best material and workmanship.

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No better wire fence built than the Casey Diamond Grip, Pat. Just the thing for farmers—neat, strong, and durable. Will last a lifetime, barring accidents. Uses only straight wires, with so little depression as not to cause the galvanize to crack or peel. If there is a dealer who wants something better to handle than he's had, try it. We also supply the Double Lock Wire Fence, which is claimed by some to be second to none, the lateral wire of which, as well as the upright stay, being crimped at joints. Our agents build either on premises. Agents wanted everywhere in Canada, to whom sole territory will be allotted. County and township rights for sale. Our Gas Pipe Frame Gate takes the lead. No better or cheaper place in the city to get plain or fancy turning done. Call on, or address,

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CENTRAL NURSERY.

Fruit and Ornamental Trees.
Shrubs, Roses, Clematis, Grape Vines, Small Fruits, etc.

Send for prices that will suit the times.

Early orders collected.
A. G. HULL & SON,
ST. CATHARINES, Ont.

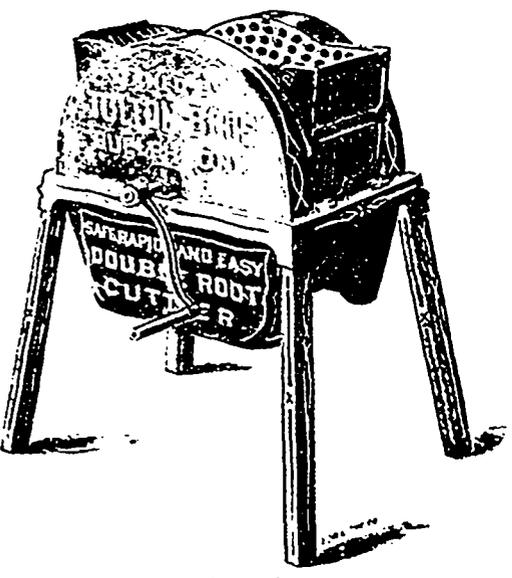
No Agents. We give OUR CUSTOMERS the BENEFIT of Commission.

The Match that always lights

Costs no more than the match that doesn't always light.

E. B. EDDY'S

Matches always light.



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Being the only Double Root Cutter manufactured, and noted for being a Safe, Rapid, and Easy Machine and one which sells at sight after a careful inspection, as it will either pulp, coarse or fine, or slice by simply turning over the centre grate and turning crank the reverse way; it is considered in either capacity superior to any single machines and has taken first prize at every fair where exhibited, where prizes were given.

POINTS OF MERIT.

- 1st.—To change from pulping to slicing is but the work of a moment, which can be done at the same feeding, with no loss of time and no trouble.
- 2nd.—There are two separate wheels, one for pulping and the other for slicing. Each one is specially adapted for the work it has to do, with the best of knives placed in their respective wheels in a manner to obtain the very best results possible (three for slicing and six for pulping).
- 3rd.—The united force of both wheels is always used in doing the work in either capacity. This accounts for its being a steady, easy running and rapid root cutter.
- 4th.—The Hopper being between the wheels, and having large lower pockets, prevents churning, and with the knife-wheel, both internally shielded, makes it perfectly safe and prevents the roots from acting as a break on the wheels, and also from jostling them about, so common in all other combined machines.
- 5th.—Hence the Latest and Best, and what has been long looked for, a safe, rapid, and easy Double Root Cutter.

Submitting your orders for same, we are, yours truly,
TOLTON BROS.,
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