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FARMING

JUNE
1897

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PUBLISHED ON THE FIFTEENTH OF EVERY MONTH.

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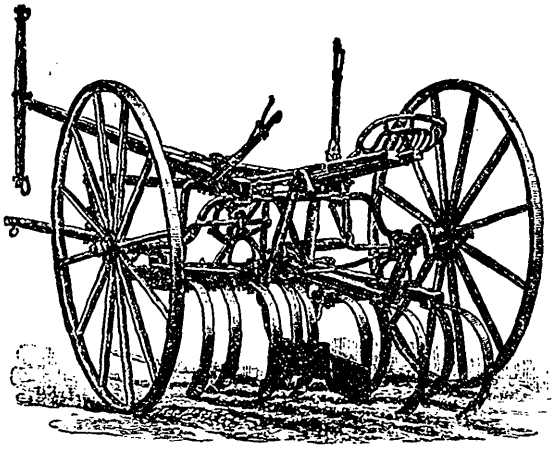

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Double or Single Lock Levers

Is unequalled by any other machine in the market as a

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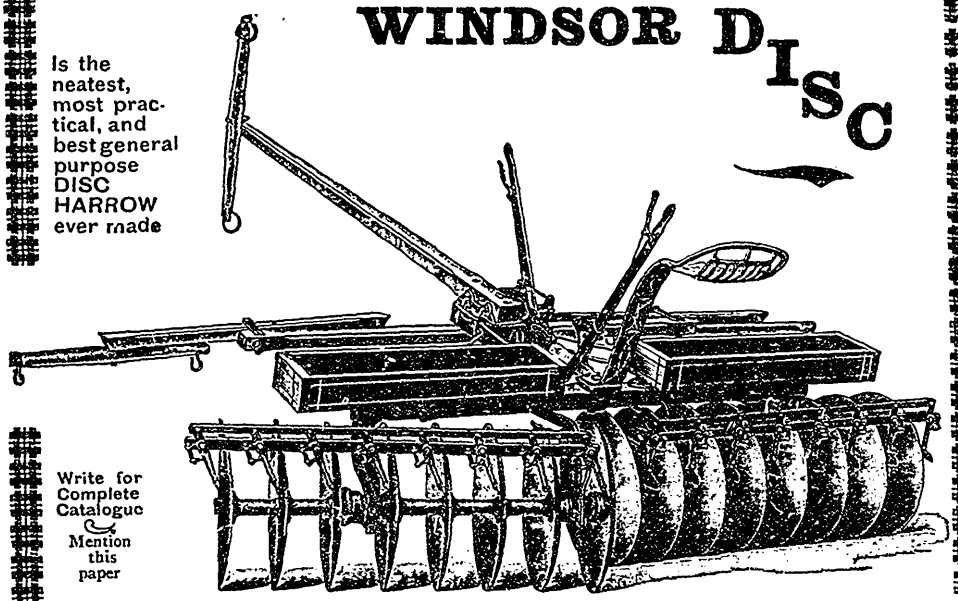
Is the neatest, most practical, and best general purpose DISC HARROW ever made



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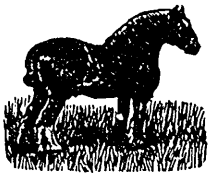

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Choice young Heifers and Bulls by the celebrated Cruickshank bulls, Northern Light and Vice-Consul.

My stock in the above lines were very successful at all the large shows last year. Call and examine stock before purchasing elsewhere. Terms reasonable.

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For Sale—One yearling Shorthorn Bull, two Berkshire Boars 11 months old and a few choice fall sows. Prices moderate.

Jno. Racey, Jr,
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FOR SALE

Two Choice **CLYDESDALE STALLIONS**

Large size, good color, and breeding of the best. Also one **Shorthorn Heifer**, two years old, which will make a **prize-winner.** Terms reasonable.

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Breeder of Scotch Shorthorns of Duchess of Gloster, Lovely, and Nonpareil strains. Young bulls and heifers for sale at the lowest prices.

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We have a number of Fillies, Mares in Foal, and Stallions, for sale. Imported and homebred; all choice, registered animals: also good teams suitable for export.

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A Premier 5x7 inches with 4 plate holders, sliding front, good lense and tripod complete. Camera has only been used a few times. Also a 4x5 Premier with 8 plate holders, tripod and leather carrying case. These will be sold at less than half price.

Apply to THE BRYANT PRESS,
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Two Jersey Cows, 4 years old, and **one Jersey Bull**. All thoroughbreds, and solid fawn in color. Will sell cheap as I have no further use for them.
Further particulars on application.

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SHORTHORN BULLS AND HEIFERS
of Select Scotch Breeding at Low Prices

Fashionable Hackneys AND Prize-Winning Clydesdales

Of the best known strains

For Sale

A number of superior Hackney stallions and mares, sired by such well-known prize-winners as Ottawa, Banquo, Seagull, and the world-renowned JUBILEE CHIEF, winner of the Hackney championship at the World's Fair.
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MATCHED HIGH-STEPPING CARRIAGE HORSES
SUPERIOR SADDLE HORSES
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HANDSOME PONIES

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PINE GROVE STOCK FARM,
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On the C.P.R. and G.T.R. Railways.

Special bargains on young bulls of superior merit and select Scotch breeding. Also thick young heifers at the right prices. **Two imported Cruickshank Bulls for sale; also Ayrshires, Jerseys, Shropshire Sheep, and Clydesdale Horses.**

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

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LAURENTIAN STOCK and DAIRY FARM,
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Ayrshires, imported and homebred; herd headed by Imported **Tam Glen 2nd, No. 1310 D. A. H. B. Jerseys** all of the celebrated St. Lambert family; herd headed by **Lisgar Pogis 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.

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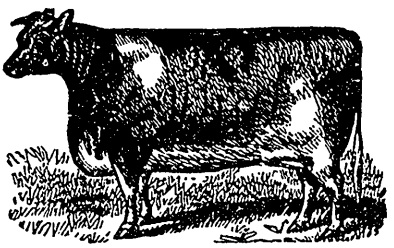

Has for sale, at temptingly low prices, a number of extra good Shorthorn Bulls, fit for service, and an equally good lot of Cows. Heifers—the very best we ever bred. Send for Catalogue and prices. Enquiries answered promptly. Our motto—"No business, no harm."

Claremont Station, C.P.R. Pickering Station, G.T.R.

696

SIMMONS & QUIRIE

Shorthorns and Berkshires.

The herd is headed by the imported bull, Blue Ribbon 17095 (63706). He by Royal James (54992), dam, Roslentz, Vol. 38, p. 298, E.H.B., by Gravesend (92460). Among the females are representatives of the Stratballans, Minas, Golden Drops, Mysies, Elviras—all pure Scotch breeding, except the Elviras, which are Scotch crosses.

The herd of Berkshires includes many prize-winners, and are an exceedingly choice lot.

Farm 7 miles from Ilderton Station, G.T.R. Stock of all kinds for sale. Apply to

C. M. SIMMONS, Ivan, Ont., or
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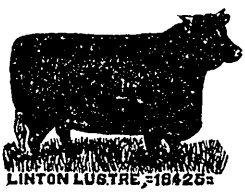
Hickory Hill Stock Farm

Two young Ayrshire Bulls for sale. One out of Dandy = 2223 = the first prize in milk test at Guelph, 1896; the other out of Briery Bank Susie=2847=. Write or come and see.

NAAMAN DYMENT,
Clappison's Corners, 3 miles from Dundas

SHORTHORNS



SIX BULLS FOR SALE

fit for service, at reasonable prices.

Write for particulars.

D. ALEXANDER,
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FOR SALE Shorthorns, Berkshires, Southdowns and Leicesters.

Four very choice young bulls and a number of young cows and heifers. A fine lot of boars and sows of different ages. Also a few ram and ewe lambs.

WRITE ME, OR COME AND SEE.

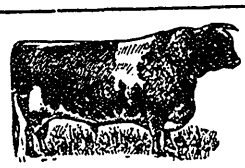
532 **E. JEFFS & SONS, Bond Head, Ont.**

FOR SALE.

A choice young Shorthorn Bull, calved November 15th, 1894. Dark red. Sire, Victor=17167=by Baron Evenlode =16705=. His dam is Alice of Tinton=15314=by Emperor= 4809=. Write, or come and see.

Daniel Housburger, Tintern, Lincoln Co., Ont.

Cargill Herd



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For Sale Good young cows, two years old; yearlings and heifer calves, out of Imported and Home-bred cows, and the Imported bulls, Royal Member and Rantin Robin. Come and see them or write if you want something special. Station on the farm.

H. CARGILL & SON,

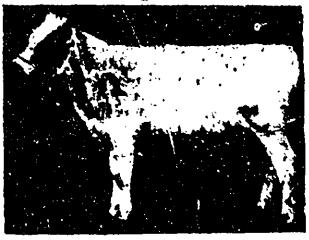
CARGILL STATION AND P.O., ONT.

AYRSHIRES.

ISALEIGH GRANGE STOCK FARM:..

June Announcement

Ayrshire and Guernsey Cattle.
Improved Yorkshire Swine.
Shropshire Sheep.



Our Shropshire sheep and Yorkshire Swine are unexcelled. We offer the choicest stock of both **For Sale** at reasonable prices. Our herds Ayrshires and Guernseys are also in first class condition. We can fill orders from prize-winning and imported animals of the very best strains. Particulars furnished on application to

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OF
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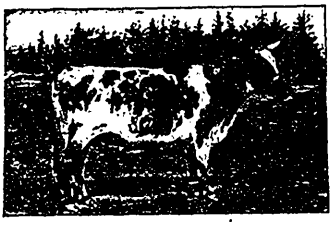

Young Stock of both sexes for sale from the best milking strains.

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POULTRY

Light and Dark Brahmas; P. Cochins; S. G. and Colored Dorkings; B. P. Rocks; S. C. Brown, S. C. Black, R. C. Brown, and White Leghorns; Indian Games; S. S. Hamburgs; Golden Polish; Houdans; Bronze Turkeys; Toulouse and China Geese; Aylesbury and Rouen Ducks.

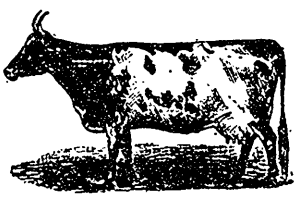
Eggs and Stock For Sale at Reasonable Prices.

Wm. Stewart & Son,
Hoard's Station, G.T.R. **MENIE, ONT.**

GLENHURST HERD OF AYRSHIRES

Noted prize-winners. Choice quality and heavy milking families. Extra fine young animals of both sexes for sale.

Also Leicester Sheep and Berkshire Swine.



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596 WILLIAMSTOWN, ONT.

Persons replying to advertisements will please mention FARMING.

AYRSHIRES ... For Sale

I now offer for sale the celebrated stock bull

"DOMINION CHIEF,"

which is considered one of the best stock bulls in Canada; also two choice young bulls, fit for service, sired by **"Dominion Chief,"** as well as several choice young imported cows and heifers, and two Shorthorn heifers, sired by **"Gibson Duke."**

These bulls will be sold cheap if taken at once. Write me for particulars.

JOHN H. DOUGLAS,
WARKWORTH, - - ONTARIO.

Maple Cliffe Herd of Ayrshires

NOTED PRIZE WINNERS,
And heavy milking families.
Choice Young Stock.
For sale at prices to suit the times.

Apply to

ROBERT ROBERTSON, Compton, Que.

MAPLE CLIFF STOCK AND DAIRY FARM

FOR SALE this month: Ayrshire Bull calf, Jock of Maple Cliff seven months old, by Gold King and from Mysie Carrick, a very deep milker, $35.00. Tamworth pigs two months old, $7.00 each. Large English Berkshire pigs one month old, $5.00.

R. REID & CO.,
729 (One mile from Ottawa.) **Hintonburg, Ont.**

CHOICE AYRSHIRES OF DEEP MILKING STRAIN
Largest and Oldest Herd in Canada

We have for sale this year a choice lot of young bulls and heifers sired by Leonard Meadowside, sweepstake bull at Ottawa.

Berkshire pigs and Shropshire Sheep always on hand.

Terms to suit the times.

J. YUILL & SONS, **Carleton Place.**

AYRSHIRES.

AYRSHIRES.

JERSEYS.

POLLED ANGUS AND HOLSTEINS.

"RAPIDS FARM" LACHINE RAPIDS, QUEBEC

Royal Blackbird of Craigston.

POLLED ANGUS AND AYRSHIRE CATTLE

THIS successful and present head of the herd is now for sale; also two young Bulls fit for service. Prices to suit the times.

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W. W. OGILVIE, Proprietor. *ROBERT HUNTER, Manager.*

WILLOW GROVE STOCK FARM.

Breeders and importers of highly bred Aberdeen Angus Cattle. Two prize-winning yearling Bulls and a splendid lot of females for sale at reasonable prices.

WILLIAM STEWART & SON,
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HOLSTEINS.

GEM HOLSTEIN HERD.

STOCK FOR SALE

We only keep and breed Registered Holstein-Friesians. We have now some Choice Young Bulls and Heifers, also some older animals, all of the very best dairy quality, that we will sell one or more at a time on reasonable terms. Correspondence solicited.

690 **ELLIS BROS.,**
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Helbon Stock Farm

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

FOR SALE---

Twenty females and a few young bulls, rising one year old. A rare chance to get the best stock at bargain prices.

J. W. LEE, 809 **Simcoe, Ont.**

..HOLSTEIN-FRIESIANS..

Purebred stock of all ages, male and female, of Netherland, Johanna, Moore, and Peel strains, for sale at lowest prices.

519 JOHN McGREGOR, Constance, Ont.
Londesboro Stn.

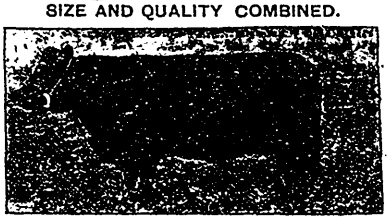
Holstein - Friesians

Choice young bulls and heifers, richly bred from BARNTON, BARRINGTON MERCEDES, and ARTIS strains. Prices reasonable.

T. W. CHARLTON, St. George, Ont.

Champion Blacks . .

SIZE AND QUALITY COMBINED.



Mysia 2nd of Verulam won 1st as fat cow against all breeds in Toronto, 1896, one of five that won Gold Medal at Montreal and 1st in her class at Fat Stock Show. *Out of total of 10* medals offered in Ontario and Quebec in the last two years our herd has won 7, including the Montreal Gold Medal for 5 beef animals, any breed, and first gold medal offered at Ottawa for Polled Angus herd. Out of six herd prizes our herd has won five firsts, and our bull calves have never been beaten in four years. Stock for sale.

JAMES BOWMAN,
Elm Park Farm - - Guelph, Ont.

GOLD MEDAL HERD OF HOLSTEINS.

Quality, TOPS All our breeding females are in advanced **Blood, BEST** Registry or eligible for same. We have a **Prices, RIGHT** few heifers from 6 months to 3 years old for sale. We also offer for sale the **Silver Medal** Bull Calf of 1896. Dam's record, 15,000 lbs. milk in one year.

C. J. GILROY & SON,
Maple Glen Stock Farm. **Glen Buell, Ont.**

We have a number of

Choice Young Holstein Bulls and Heifers

FOR SALE

Price and quality must sell them !

Mostly sired by **Siepkje 3rd Mink Mercedes Baron,** a World's Fair prize winner.

Heifers and young cows bred to **Sir Paul De Kol Clothilde,** a milk and butter prince. His nineteen nearest relatives average twenty-two pounds of butter a week, and fourteen average 16,28₃ pounds of milk in one year. Write us for records of the dams of these young bulls. Four of our cows have won money in public tests (more to follow).

A. & G. RICE, Brookbank Stock Farm, **Currie's P.O.,** Oxford County, **Ont.**

SPRING BROOK STOCK FARM

Holstein-Friesian Cattle and Tamworth Swine.

A few choice bulls ready for service. Also a grand choice in females of all ages. A bargain in bull calves. Breeding for quality and quantity. Write at once or come and see. Prices right. Tamworths of all ages for sale.

413 **A. C. HALLMAN,**
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St. Petersburg, G.T.R. Main Line. Waterloo Co., Ont.

HOLSTEINS.

MAPLE HILL
Holstein-Friesians

A grand lot of cows and heifers of all ages now for sale; all bred to the milk and butter king, Sir Pietertje, Josephine Mechthilde, and the great show bull, Count Mink Mercedes. Heavy production, fashionable breeding, and show-ring quality are characteristic of this herd.

No more bulls for sale at present.

G. W. CLEMONS - St. George, Ont.

ALVA FARM — GUERNSEYS

Awarded first prize at Montreal for BREEDERS' YOUNG HERD. Young animals of MERIT for sale. Pedigrees and particulars to parties wishing to purchase. Address,

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Ingleside Herefords..

Largest herd of choice-bred Herefords in Canada. Winners of both the first and second herd prizes at Toronto, Montreal, and Ottawa, 1895 and 1896, also silver medals same years for best bull and best female.

This herd is of the "up-to-date-beef-kind," combining early maturity and quality.

Young Bulls for Sale.

Young Tamworth Pigs for Sale.

Farm 2½ miles from G.T.R. station. **H. D. SMITH**, *Ingleside Farm*, 536 **Compton, Que.**

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Temperance St., Toronto, Can.

Patrons: Governor-General of Canada and Lieutenant-Governor of Ontario. The most successful Veterinary Institution in America. Experienced teachers. Classes begin on Wednesday, Oct. 14th, 1897. Fees, $65 per session.

PRINCIPAL, PROF. SMITH, F.R.C., V.S.,
254 TORONTO, CANADA

SPRING BANK STOCK FARM

SHORTHORN CATTLE
OXFORD SHEEP
BRONZE TURKEYS

Have on hand for sale 14 shears, 3 shearling rams; also a number of ram and ewe lambs. Prices right.

462 JAS. TOLTON, Walkerton, Ont.

FOR SALE.

This Canada of Ours....

should export a large amount of Butter.

The Butter should be First-Class.

Use the **Davis Cream Separator**

MANUFACTURED BY

The John Abell Engine and Machine Works Co.
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TORONTO, - CANADA.

WANTED. A Good Agent to sell and lease territory for the best Farm Gate *in the world. It is a money maker.* Write at once. JOHN J. MAGINNIS, Aurora, Ill., U.S.A.

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SHEEP DIP
—AND—
CATTLE WASH

Non-poisonous and reliable.
Mail orders promptly supplied.
Imported and for sale by

S. E. STONE, Guelph, Ont.

FOR SALE

- One First-Class, Second-Hand Alexandra Cream Separator, capacity 600 lbs. per hour; runs by hand or power.
- A First-Prize Imported Guernsey Bull out of Irma 3421, silver medal cow at Toronto, 1896. Write

WM. BUTLER & SONS,
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FRUIT EVAPORATORS.

The CHAMPION Fruit Evaporator or Dryer.

Evaporates all kinds of Fruits and Vegetables. Made substantially of galvanized iron and is FIRE PROOF.

The Best and Most Economical Evaporator on the Market.

A Profitable Investment for every farmer growing fruit. It also bakes Bread, Pies, etc., and roasts Meat, Turkey, Chicken and game. Prices reasonable. Illustrated circular and full particulars on application.

The G. H. GRIMM, Mfg. Co.,
84 Wellington Street, - - MONTREAL, QUE.

SHEEP AND SWINE.

OXFORD DOWNS For Sale

Ram and Ewe Lambs and Ewes of all ages, all registered. **Yorkshire Pigs**, bred from J. E. Brethour's prize-winning stock.

Plymouth Rocks, best strain.

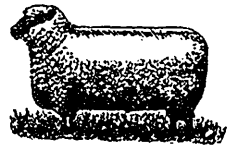
John Cousins & Sons,
693 HARRISTON, ONT.

MY COTSWOLDS won, in 1896, at three provincial and three county fairs 38 firsts, 31 seconds, 8 thirds, and 1 fourth, being first and second 26 times, and all pens shown for except one, and it was simply a give-away. We offer twenty good ram lambs, shearing and two-shear, at farmers' prices. Some excellent shearing ewes, bred to our best studs; fit for any company.

BERKSHIRE SOWS, ready to breed. Boars fit for service. 20 PLYMOUTH ROCK COCKERELS, choice. Visitors welcome.

632 **C. T. GARBUTT**, Box 18, **Claremont, Ont.**

OXFORD DOWNS



FOR SALE. — A fine lot of ram and ewe lambs, bred from imported sire and dams.

Prices to suit the times.

SMITH EVANS,
491 GOUROCK, ONT.
BREEDER and IMPORTER

FAIRVIEW SHROPSHIRES.

BETTER THAN EVER

The greatest winners and best sellers bred in America. Many good ones on hand. More coming from England in July. Kindly send your order, or come to select.

JOHN CAMPBELL,
Fairview Farm. WOODVILLE, Ont.

THE OLDEST ESTABLISHED FLOCK OF OXFORD-DOWN SHEEP IN CANADA.

I have a number of choice Yearling Rams and Ram Lambs, Yearling Ewes and Ewe Lambs for 1897. Prices reasonable. Won many honors at "World's Fair."

Henry Arkell, Arkell, Ont.

SOUTHDOWN SHEEP.

Champion flock at the World's Fair. Awarded twenty prizes of which ten were first. Write for prices to

JOHN JACKSON & SONS,
Abingdon, Ont.

Duirholm Poultry Yards, B. P. Rock eggs from middle of June at half price, 50 cents per setting.

Somerville McKessock, MASSIE, Ont.

Carter & Coyn

Portage la Prairie, Man.

PRIZE TAMWORTH AND CHESTER WHITE SWINE
Mammoth Bronze Turkeys

For sale. Write us.
858

LARGE ENGLISH BERKSHIRES

Some prize-winners and some pigs from prize-winning boars and sows, September and October litters. Some fine young sows, farrowed in May. Also Clydesdale mares, from yearling to seven-year-old, eligible to registry. Prices right.

GEO. THOMSON, Bright, Ont.
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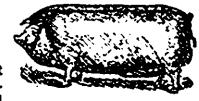

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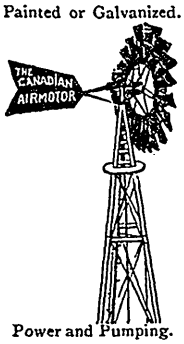

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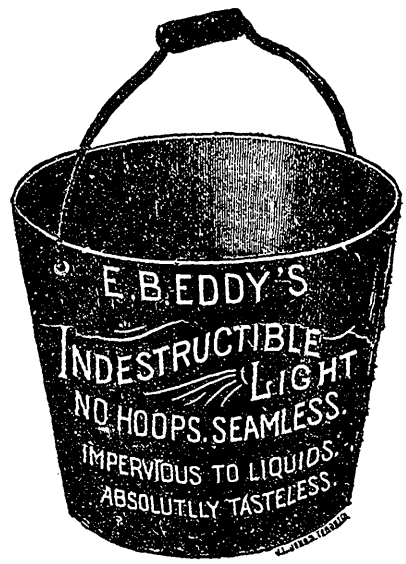

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FARMING

Vol. XIV. JUNE, 1897. No. 10.

HER MAJESTY, QUEEN VICTORIA.

In unison with all the rest of the vast British world, FARMING takes part in the Jubilee festival of the completion of the sixty years of the reign of our Most Gracious Queen. We print upon our cover page, and also herewith, an excellent copy of Her Majesty's latest portrait. In her younger days Queen Victoria was a beautiful woman; and all the portraits of her up to the time of her great sorrow in 1861 show her to have been possessed of that grace of form and feature that we instinctively love to associate with one who occupies such an illustrious place. Upon the death of her noble husband, the late Prince Consort, an expression of sadness crept into her otherwise beautiful countenance—an expression that has no doubt grown graver and graver with each succeeding year. But no one can look upon the portrait of Her Majesty herewith presented without feeling a glow of admiring reverence for its sad, sweet dignity, grave though no doubt it be, and without intuitively bearing inward testimony to the purity of character and the gentleness and kindness of spirit which it betokens. A royal and dignified face it is, such as becomes a queen; but a sweet and kindly face it also is, such as befits the character of one whom the English people by common consent acknowledge to be the type of all that is beautiful and sacred in motherhood and wifehood.

Her Majesty, Queen Victoria.

Queen Victoria rules over the largest and mightiest empire the world has ever known. Twenty-seven per cent. of the population of the globe acknowledges her sway; twenty-one per cent. of the land surface of the globe is covered by her flag. Thus one person out of every four of the whole world's inhabitants is a British subject; and one foot out of every five of the whole earth's

solid domain is British soil. And the language of the British people is fast becoming the language of the civilized world. The English language is now spoken by about one-fourth of the commercial population of the globe; and while the use of every other language is either stationary or decreasing the use of English is constantly increasing.

The sixty years comprised within Victoria's reign have been the years of the greatest progress in the arts that make for the material and intellectual betterment of mankind that history has recorded. Mankind hitherto has always needed many centuries to show a progress equal to that which has been made by civilization during the six decades whose completion we are now celebrating.

It is not within the province of FARMING to do more than in this general way refer to the glorious position which Queen Victoria holds, or to the magnificent successes achieved by civilization within the period of her reign. But it may not be out of place for us to note, as one element of her popularity, the warm interest that, following in the steps of her royal grandfather, she has ever taken in agriculture. Though she has never descended from that inherent dignity of manner which so well becomes her character and station to win from the general public an appellation expressive of popular good-will, such as that bestowed upon "Farmer George," yet none the less she has won the esteem of her people by showing her practical concern in the great industry upon which the happiness and comfort of so many millions of her subjects depend. The words of the Earl of Cathcart, uttered on the occasion of the Queen's assuming the presidency of the Royal Agricultural Society of England in its jubilee year of 1889, and presiding at the society's show that year held in the great park at Windsor, close to her royal residence, may very fitly be quoted here: "Her Majesty the Queen is not only a farmer by descent, and herself a practical farmer and stock-owner and prize-winner, but Her Majesty is also a farmer-wife; for Her Majesty's illustrious and ever-to-be-remembered consort was an interested and far-seeing agriculturist, one who amidst the absorbing avocations of a life devoted to the promotion of the useful, the beautiful, and the good, practically earned and freshly dignified a name for many years associated with the throne and royalty of England, the grand old name of "British Farmer." In her farms at Windsor, Frogmore, Hampton Court, and Abergeldie, the Queen, with loving memory of her husband's aims, continues to take that interest in the raising of purebred stock and in dairy pursuits, which so long as her princely consort was alive was associated with his interest in the same objects rather than bestowed upon them directly. In the Windsor farms (the "Shaw," the "Home," and the "Flemish") Shorthorns, Herefords, and Devons are bred and kept, all of surpassing excellence. In fact, Her Majesty's stock of these breeds have again and again won prizes in public competition when matched against the best in England (250 prizes in ten years at first-class shows is no bad record); and the Shorthorn bulls, "Field Marshal" (bred by Amos Cruickshank), and "New Year's Gift" have won reputations as stock-getters of which any stockman in the kingdom might be proud. "Frogmore" is a dairy farm, which while he was alive enjoyed the peculiar interest of Prince Albert. It is in the well-equipped dairy of that farm that Her Majesty is said to have instructed her royal daughters in the practical mysteries of butter-making. Her royal daughter-in-law, the Princess of Wales, is also an adept in the dairy art. At Hampton Court is maintained the royal stud of Thoroughbreds; and Southdown sheep are kept there also. And at the Royal Farm of Abergeldie, near Balmoral Castle, in Scotland, there has been maintained for twenty years a very choice herd of Aberdeen-Angus cattle, the original stock of which was obtained from Mr. William McCombie, of Tillyfour. The Prince of Wales, equally with his royal mother, is a sympathetic and practical patron of agriculture. At Sandringham he maintains farms aggregating, in all, about 2,000 acres. Here he breeds Thoroughbreds, Shires, Hackneys, Cleveland Bays, Shorthorns (both Bates and Booths), Jerseys, Dexter Kerries, and Southdowns. When His Royal Highness won the Derby in 1896 with "Persimmon," there was a general feeling of gladness that a member of the Royal family, so universally popular as the Prince of Wales now undoubtedly is, should succeed in capturing that prize which of all those pertaining to agricultural pursuits is the one most coveted and most honored by Englishmen.

AMBER, Ont.—J. E. Bryant, Esq., Toronto: "My Dear Sir,—Allow me to congratulate you on the success of your enterprise in publishing FARMING. It is becoming a great paper." Yours truly, JOHN BELL.

MR. J. A. RUDDICK, Superintendent of the Dairy School at Kingston, Ont., writes: Your Dairy number is first-class, and ought to be in the hands of every butter and cheesemaker in Canada.

TOPICS OF INTEREST FOR THE MONTH.

Canadian Trade With Japan.

MARQUIS ITO, the foremost statesman of Japan, who is on his way to England to attend the Queen's Jubilee, spoke some plain truths in Montreal. He commented particularly upon the ignorance in this country regarding Japan, which is really our next door neighbor, although it must be admitted that the neighbors live at some distance from each other. Marquis Ito holds that Canada could establish an extensive and profitable trade with Japan if she would only turn her attention that way. The cost of making butter and cheese and of raising cattle is such in Japan that the Canadian article could be sent over, with proper refrigerator accommodation, and bring a handsome profit to the Canadian exporter. "It is only due to the carelessness of Canadians," said the Marquis, "that this market has not been worked up long ago. You do not seem to appreciate the number of cor rs we have in Japan and the fact that we are to pay for a few luxuries outside of our rice, which, I suppose, you think is all we live on."

Bulletins in Plain English.

PROFESSOR JORDAN, of the Geneva, N.Y., Experiment Station, announces that hereafter the bulletins issued from that station will be in double form. One will be in plain language, so that any man having a common school education can understand it. In commenting upon this announcement *Hoard's Dairyman* says:

"It is well for our agricultural professors and experiment station directors to consider that 90 per cent. of the farmers in the land have never received schooling in any other than the country district school. The language of the sciences, with all their technical terms, was not used to any great extent in these schools. But few farmers have had the opportunity to familiarize themselves with scientific terms.

"We realize the difficulty that exists, for it comes to us in the shape of letters of inquiry almost every day. But the farmer with a good brain, and a true farmer's interest in his business —and most farmers are that way—wants to know the best truth he can get. They realize the fact that the Experiment Station is working out valuable knowledge that the farmer cannot afford to dig out and demonstrate.

"Professor Jordan will be doing a good work, and one highly appreciated, if he can encompass the truth of his bulletins in simple, everyday English."

To what is above stated FARMING would like to add that another very desirable thing in connection with the bulletins, is that for those which are long and intricate, and that involve more or less of descriptions of complicated experiments, with the results in statistical tables, etc., there should always be a supplement, in which a clear, condensed account of the matter of the bulletins should be given, that should bring out in plain language the conclusions arrived at, with a summary of the reasons for arriving at them. We receive at this office almost all the agricultural bulletins and reports published on this continent, and we are quite sure that nine-tenths of them are practically useless to those whom they are most intended to benefit, simply because of this deficiency of a concise, clear re-statement of the whole case, with reasons and conclusions all succintly drawn up. A great mass of tabulated statistics is all very well for a fellow-worker in the same line, but is useless to the ordinary busy reader.

The Sugar Beet Industry.

The possibility of the growth of sugar beets for the purpose of supplying the raw material for the manufacture of sugar is a matter which is now occupying the attention of our neighbors to the south of us, especially in the States of the great northwest. The consumption of sugar in the United States is about five thousand million pounds per annum, and not over one-fifth of this vast amount is produced in the country. It takes over three-fourths of the whole amount received by the people of the United States for the wheat and flour that they export to pay for the sugar they import. They send out of the country over one hundred millions of dollars per annum for sugar. It is claimed that the production of sugar from beets can be effected so economically as to make all this outlay upon foreign products unnecessary. It is authoritatively stated that the process of production has passed the experimental stage; and that the establishment of beet-root sugar factories will now be limited only by the capacities of any particular district for furnishing the raw material. There are three factories already in operation in California, two in Nebraska, one in Utah, one in New Mexico, and one in Wisconsin, and there is an agitation for one to be established in Oregon. The capital required for each factory is, however, considerable; a factory using 350 tons of beets per day would require about $500,000 capital. Such a factory would need about 7,000 acres of beet land available to supply it with roots, that is 3,500 acres each year, for the sugar beet-root crop is not grown two years continuously on the same land.

We should like to see the probabilities and

possibilities of beet-root sugar manufacture thoroughly investigated for Canada. Unlike our neighbours in the United States we have no competing sugar-cane districts. The whole of the sugar we consume must be imported. It is claimed that in some parts of Canada the sugar-beet thrives remarkably well, and matures with a rich proportion of sugar, so that the profitable manufacture of beet-root sugar here is only a question of capital. It is not likely, however, that an enterprise requiring so much capital will ever be established in any part of Canada until it has been authoritatively proven that the beet roots do well here, and this proof will not be undertaken, we presume, except by Government. We think this is a matter that our Dominion Government could very reasonably take in hand. If our total consumption of sugar could be obtained from beet roots grown upon our own farms, it would mean an immense accession to our annual agricultural production. It is estimated that if the United States manufactured from beet roots all the sugar they consume, it would mean an expenditure on home produced industries of more than twice the money they now receive for all the wheat they export.

Tennessee Centennial Exposition.

The most important exhibition this year in the United States will be the Tennessee Centennial Exposition, to be held at Nashville, Tennessee, in the coming autumn. The authorities of the state are supporting this exhibition with unequalled enterprise and liberality. It has been determined that it shall be excellent in every possible way, and no pains or expense has been spared to accomplish this end. There is a particular desire that the live stock department shall be a great success. The live stock exhibit does not begin until Monday, September 20th, so that date will give opportunity for Canadian breeders to be on hand if they so desire. The prize list is too long for more than mere mention by us; but some idea of its liberality may be gathered from a few special classes. For example, for high jumpers the first prizes are from $150 to $300; for Thoroughbreds the first prizes are all $200 each; for Hackneys they run from $75 to $100. In cattle the first prizes for Jerseys run from $25 to $225. Similar prizes are given for Holsteins. The other dairy classes are not so well provided for. The Shorthorn list is a very full one; so is the Hereford. The swine list is very full for Berkshires, Poland Chinas, Duroc Jerseys, etc. The sheep classes are also pretty well provided for. Extra prizes are given in all classes. Full information may be obtained by addressing J. W. Russwurm, Secretary Live Stock Department, Nashville, Tenn. The entries close on Thursday, July 15th.

The Currant Fly.

During the past two years Professor Harvey, of the Maine Experiment Station, has, with patient labor, completely worked out the life history of the currant fly, *Epochra canadensis*. This pest in its habits quite closely resembles the apple maggot, and in some parts of the States and Canada is causing much damage to the currant and gooseberry crops. The more technical description of the currant fly and the results of the investigation were printed in the annual report of the Maine Station for 1895. The present Bulletin No. 35, gives a somewhat more popular description of the life history, habits, and way of fighting this pest.

A full page plate gives pictures of the insect in all stages of development.

The insect spends nearly eleven months in the ground. It cannot be destroyed so far as known in the winged stage. The eggs are deposited under the skin of the fruit, and spraying would do no good. A part of the infested fruit drops prematurely, and the worms remain in it for some time before they emerge and go into the ground. From this habit it is recommended to gather the fallen currants frequently and burn them. While this cannot be relied upon to destroy *all* of the flies, it can be employed to keep them in check.

As the pupæ are found only about an inch below the surface, they could be destroyed with little trouble by removing the soil to that depth from under the bushes and burying it deep, or depositing it on a road or other exposed place.

Methods of extermination are being studied at the station, and it is hoped that an effective method of destroying the insect may be worked out during the season of 1897.

This bulletin will be sent to all who apply to the Agricultural Experiment Station, Orono, Me.

Tillage and Cover Crops.

PROFESSOR ROBERTS, whose article in another place on "Five Loads Per Acre Enough," we commend to all our readers, in writing to a friend in Canada recently said:

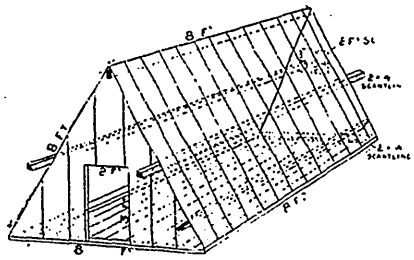
"Yes; we are laying greater stress than ever on tillage and cover crops, and less stress than heretofore on farm manures and commercial fertilizers. Five loads to us means seven and a half tons at least of manure which contains no extraneous water. Last year we raised on our best oat plot 96½ bushels of oats on what we considered poor land, land from which three 'white' crops had been taken in the three preceding years. No manures or fertilizers were used for

any of these crops. We are raising from 300 to 400 bushels of potatoes per acre for three years continuously by superior tillage.—I have no doubt but that you are getting nearly twice as much from your land as the average product of your neighbor's. This all comes from intelligence rather than from human muscle."

Summer House for Pigs.

Mr. E. D. TILSON, of Tilsonburg, expects good results from a new plan he has adopted for summering his pigs. He has divided his orchard into a number of small pens. In each pen he has placed a small summer house, and a sow that is due to farrow. The house affords shelter for the sow and her pigs.

The house is cheaply made. It is 8x8 feet on the ground. Scantling, 2x4, 8 feet square, form the sills, which are bevelled a little on the outside. The roof is a shanty roof of boards 8 feet long, with a ridge-board between them at the top. Both ends are closed, but what may be called the front end has an opening for a door, while the other end has a window in it. Halfway up on each side a piece of 2x4 scantling is fastened in and projects out at both ends, thus making handles by which the house can be lifted from place to place. At right angles to the roof boards a plank 8 inches wide is fastened with the inside edge six inches from the floor. This



Summer House for Pigs.

serves as a protection for the little pigs. Some of the pens stand on a board floor 8 feet square. Mr. Tilson has found that the pigs root up the earth, and the young pigs are thus safer on a board floor until able to get around smartly.

Sour Whey versus Sweet Whey.

MR. G. E. DAY, B.S.A. Agriculturist of the Ontario Agricultural College, has sent us the following note respecting the whey experiments which he has been conducting, and which were noticed in a recent issue of FARMING:

"*Re* experiment on the relative feeding value of sweet and sour whey noted in your last issue, I beg to offer an explanation which should have accompanied the report of the experiment, but was unintentionally omitted. The whey in question was obtained from a large whey tank in connection with the college dairy. This tank had not been cleaned for some time previous to the commencement of the experiment, and was not allowed to become empty throughout the experiment, but a little fresh whey was run in about three times a week. It was consequently in a very sour condition, and our cheesemaker, Mr. Stratton, tells me that he never saw whey from any factory that excelled ours in point of sourness.

"I may say that we are just commencing another experiment along the same line, and I am almost hoping that the results will not prove so favorable to the sour whey. We shall also have analyses made of both the sweet and sour whey, and try to make the work as thorough as possible.

"Our pigs for the breed experiment have nearly all arrived, and we have also commenced an interesting series of experiments with soiling crops for cows. At present we are feeding green rye and alfalfa; later will come oats and peas and oats and tares; then sweet corn and dent corn; and, for winter feeding, mangels and sugar beets."

Holstein Men Please Explain.

A CORRESPONDENT, evidently a Jersey man, writes us as follows:

"In Mr. G. A. Gilroy's interesting article on the merits of Holstein cows for dairy purposes in FARMING for May, he says:

"'We hear some farmers say that it costs more to produce cheese or butter from our favorite breed than from the other breeds. This is, in a measure, false.'

"What is meant by the reservation 'in a measure'?

"After reading Mr. Gilroy's article I looked up the records of seven-day dairy tests given in FARMING in January, 1896, of 25 Holsteins, and in March, 1896, of 25 Jerseys, to see what they would show as to the amount of butter produced by these two breeds from a given amount of food. I found as follows:

"The Holsteins produced 496.824 lbs. butter from food worth $51.36. Therefore they produced 100 lbs. butter from food worth $\frac{\$51.36}{4.96824}$ or $10.74.

"The Jerseys, from food worth $39.38, produced 541.4375 lbs. butter.

"Therefore the Jerseys from food worth $10.74, produced butter to the amount of $\frac{541.4375 \times 10.74}{39.38}$ lbs., or 147.6645 lbs.

"Moreover, as pointed out by Mr. Reid, the Jersey butter was *actually made*, the Holstein butter only *estimated*, and that at a very high rate, *i.e.*, probably *over-estimated*.

"So that from the food from which the Holsteins made 100 lbs. of *estimated* butter, the Jerseys would have made 147⅔ lbs. of *actual* butter."

The Good Roads Report.

The report of the Provincial Road Commissioner has just been issued by the Department of

Agriculture. The report contains articles and comments on statute labor, statute labor abolished, statute labor commuted, the treatment of existing roads, the preparation of road metal (gravel, broken stone, field stone), the best method of placing metal on the roadway, rolling country roads, drainage of macadam roads, location of roads, repair and maintenance, crowning the road, the treatment of hills, embankments and cuttings, road machinery, bridges and culverts, wagon tires, the employment of convict labor in roadmaking, and also a short sketch of the development of roads in Ontario. Matters of interest to town corporations are also discussed, including the choice of pavements, brick and macadam pavements, cement-concrete sidewalks, etc. The report is written in a popular style, technicalities are avoided, the information contained is practical and direct, and is compiled solely with a view to the condition of roads and streets as they exist in this province to-day. The intention of the report is that it shall furnish information on the subject of road and street improvement to municipal officers in towns and townships where engineers have not been employed to oversee this class of work. Everyone interested in "Good Roads" should read the report, a copy of which may be obtained by any person who will send his name and address to "A. W. Campbell, Provincial Road Commissioner, Toronto."

SOME THINGS FOR DAIRYMEN TO PONDER OVER.

John Gould has been discussing, in the New York *Tribune*, the decrease in the value of land in some dairy districts, and its increase in others. He points out, with facts that have come under his own experience, that the dairy industry in the Eastern States is declining:

"That there is a depression in the dairy industry of the Eastern and Central States is without question. Ten weeks' travel over the territory designated, and the receiving of more than a hundred letters from dairymen in the semi-Western States, fully confirm this. That in this territory there is a decrease in the number of cows, and a closing of creameries and cheese factories by the score, cannot be denied, and can only be explained by the common, everywhere-made assertion that 'cows do not pay.' Still, with the same voice is added that 'dairy products are as high, or higher, and sell more promptly than any other farm crop.' All over this territory cows are constantly rising in value, and are sought for in a way not equalled by any other stock, which in itself is a sort of dairy paradox."

But he says that in the Western States and in Canada things are different:

"While east of Toledo, Ohio, there is a decline in the number of cows, and the output of dairy produce, it is not true of the West, nor of our Dominion cousins, and all over the globe the dairy interests are on the increase, and a steady one at that. Why this should be so it is hard to explain. Why is it that this Eastern—for now all east of Chicago is East—farmer should allow the man in some other section to monopolize an industry that once had the choice of the finest markets of the world? Once New York and Ohio butter and cheese found their way to the finest markets; but now Canada, Denmark, and other remote places have sprung into notice and are in the first place, and, what is more, are steadily increasing their output of dairy products, and at no higher figures than butter and cheese of the same quality made here would bring; so it is not a case of under-selling, but a case of competition, that we have to do with."

He sees no *real* reason why the intelligent Eastern "Yankee" farmer should not be able to compete with the West, with Canada, with Australia, or even with Denmark and Holland:

"How is it this man in the West, in Canada, and in Denmark, even in far-off Australia, is taking the market away from the East? It is not because of cheaper land, or cheaper feed, and his intelligence should not be greater than that of our Yankees, with all their advantages for many generations. Rents are high in Denmark and Holland, and freights are high from the South Seas. It is not because of demand, for the British and other dairy produce-consuming people seem to take unlimited amounts of it, if it reaches a certain standard of excellence. Why should not New York and Ohio have kept their hold and lead in the dairy industry? Whereas, Ohio has possibly kept the number of her cows good, New York has actually decreased her dairy interests by 40,000 cows. Nor can it be said that the quality of produce offered is very much, if any, superior to the material of ten years ago."

But the *actual* reason, in his opinion, is the Eastern man's neglect of dairy economics, and the production of a poor product:

"We believe this decline is wholly traceable to a neglect of the close study of dairy economics. Instead of getting a far better producing class of cows, and making a close study of rations and foods, with the view of vastly decreasing the cost, and at the same time striving to excel in the produce made, old ways have been followed, and the economy was along the line of getting cheaper help in the factories. Vast amounts of butter and cheese have been made without much definite knowledge, and no great exhibition of skill; so that from first to last there has been too much cost and too great waste, and the receipts have not equalled the actual cost. Of course, the dairy

could not pay. Here and there earnest attempts have been made, by individual dairymen, and sometimes by communities, to remedy these matters, and the country is dotted here and there with fine examples of what can be done. There is too much of the summer sunshine dairying, and far too much six months' rest, when the cost of keep is the greatest, and little attention at any time to the real physical needs of the cow. There has been an almost total ignoring of the fact that the cow is a mother, and that the true principle of dairying is based on this fact, and that the promotion of the office of motherhood is the real secret of dairy success. As a consequence of this indifference—far too general—the dairy industry in these designated sections came to a standstill, then to an actual retrograde movement."

But there is hope for the Eastern man if he will only be guided rightly:

"Will this Eastern man try to regain his old-time industry? If he does not, what industry is there for him to choose? What one that will be better? Of course, the Eastern man does not have the broad, rich plains of the west, but, instead, hilly lands and tortuous valleys; but the hillsides have the sweetest of grasses, the meadows grow nutritious hay, and along the valleys concentrated crops can be grown. With half of the cows dead, and the rest half fed and cared for as they ought to be, and with the natural resources of the farm husbanded with a business sort of management, there is yet a way out. All over this territory of declining dairying, there needs to be a general shake-up. Make only the finest, and in making this there must be co-operation, from the boy who drives home the cows to the man who puts the finishing touches upon the packages for market. There has got to be effort in combining skill and honesty. It was oleo, skim, and filled cheese, and not caring a "rap" about uniformity, or the looks of the package, or its contents, that have had not a little to do in this decline; quite as much as the competition of our neighbors. There has been no end of putting good and poor material together at the creameries, and supposing that a critical market would never smell or discover anything."

Mr. Gould pays a compliment to Canada in the discussion:

"Canada has absorbed our market from the fact that her government said, first, no adulteration of dairy products shall come into her domain or be made in it. Neither shall skim or filled cheese be made or harbored in her boundaries. A factory must make either all butter or all cheese, and only the best shall be made of either. This is the result: A few years ago the United States sent $13,000,000 worth of cheese to England, and Canada $3,000,000 worth, and now their cheese is so much better than ours that the figures are exactly reversed. If they could do this, in ten years, by being commercially honest, cannot we imitate them and get half of the trade back? The Eastern dairyman is confronted with a problem that must be solved, or wreck will follow. Is it not the wisest plan to attempt reconstruction?"

Hoard's Dairyman, in discussing the question raised by Mr. Gould, adds some illustrative facts regarding the decline of values in the East that seem momentous:

"John Gould asks significant questions, with meat in them. He is looking over the dairy situation. He sees the industry declining in the old dairy districts in the East, and increasing in the West What he says is true. Go into Herkimer, Oneida, Madison, Otsego, Jefferson, Chenango, and others of the famous old dairy counties of New York, and what do you find? Farm lands have declined from 25 to 50 per cent. in value from what they were thirty years ago. One farm that we know of in Madison county, of two hundred acres, sold a year or so ago, for $15 an acre. Not long since a friend told us of a splendid stock farm, in that county, of two hundred acres, with fine buildings that did not cost less than $10,000. On the farm is a mortgage, held by a Syracuse bank, for $10,000. Our friend informed us that the farm could be bought for the face value of the mortgage to-day."

But adds in contrast, the values of land in Wisconsin, where dairying has for some time been carried on "with brains":

"Now look at the contrast. Take, for instance, Jefferson county, Wisconsin. The county is twenty-four miles square, and contains a population of 36,300. In the county there are eighty-seven creameries and four cheese factories, and 36,000 cows. Much of the butter made goes to Boston, New York, and Philadelphia—1,100 miles to the eastward. Under the influence of intelligent dairy farming farm lands have steadily risen in value for twenty-five years. The average value the past year, as shown by the sales reported by the register of deeds, was $60 per acre. The farmers grow good crops, yet there are more silos in this county than in all the counties named in New York."

And thus points the moral, which is one which every dairyman in Canada ought to ponder over, lest it may apply to his own case:

"John Gould has hit it plainly and truthfully. There has been a decline of true dairy brain work in the East. Old ways were followed when they were worn threadbare of any profit whatever. The old farms have declined in fertility for the same reason. Farms that we well know in New York will not keep more than half the cows per acre that they did forty years ago. The real brainy farmers of New York are doing as well with cows as can be done anywhere. They are making a brave fight, also, to arouse their neighbors out of the dull, dry rot of indifference, through the farm institutes and dairy conventions. There is no reason on earth why a herd of cows on a good farm in New York should not be even more profitable than in Jefferson county, Wisconsin. We have travelled over these New York farms with a sad heart many times. It makes us somewhat sad, and a good deal mad, to see men ruin themselves and a noble country, and fold their hands helplessly, saying: 'There is no help for it.'

"Modern dairy farming calls for intelligent, brain work. We need intelligent farm judgment as shown in breeding, feeding, and handling. and to keep up the power and fertility of the farm. If we allow our brains to fall into decay, our herds and farms will quickly follow.

"In our opinion, here lies the secret of the decline of dairying in the East."

HORSE BREEDING FOR PROFIT.

The Bowmanville *Statesman* edited by Mr. M. A. James, who being a farm-bred man is taking a warm interest in everything relating to farm improvement, publishes the following letter from a writer who is described as "one who for years has been paying attention to the subject, and who by association with the noted dealers of the province, and careful observation, is competent to assist readers":

"Horse breeding generally follows the fad of the individual. Some prefer to raise the work-horse, of the stamp of the Clyde, on the ground that they are not so liable to have mistakes and have not to reach that degree of perfection in conformation which a harness-horse or hunter must have to be salable at a remunerative price, and therefore the proportion of the stock which are good ones will be greater than with the lighter class. With these I agree, as the demand for this class of horses is great and is getting greater, and those of your readers who incline to this view are fortunate.

"There is another class, however, and I am afraid they constitute a large majority, who will persist in kicking against the pricks, and by that I mean attempting to force their will against the great growing factor of "demand," and breeding what they term trotting stock. I am afraid the young man of the family with his light covered buggy and his pretty girl with the summer hat and the evening and Sunday drives, and his rival with a similar outfit, has too much to do with this course. If this be so, I would counsel that family to be satisfied with one horse of this kind, on the same principle that as it is healthy to have only one wearer of a pretty hat at a time, it is profitable to limit your ideas in this business to one horse.

"With these fads, however, I have nothing to do. I am asked to tell of the horse which leads the market to-day as a money producer. In this there is business. It is regulated in the same way as at one time it was more profitable to raise wheat; it passed by, and barley became the ruling feature in grain, which in time, having lost its prestige, gave way to clover seed, and was followed by peas. So in the horse. We all remember when a fairly matched team of Clyde horses, ranging from four to six years, if heavy and fat and sound, were chased after and commanded any sum from $350 to $500 without the slightest effort of the owner. So, now, the harness horse of good size and weight, say fifteen three to sixteen hands, and from 1,100 to 1,250 pounds, with good front action, fair hock action, aged four to five years, sells himself, knowing that he is for the time the fancy of the purchasing public and can ask for himself what he likes."

The writer urges that the horse to breed is the horse that will sell; and of selling horses there are now only three types:

"There are only three classes of horse with which the public are concerned, and they come in the following order: 1st, the harness horse (high stepper and carriage); 2nd, the dray horse of Clydesdale pattern; and 3rd, the saddler, for which the demand is somewhat limited, and which is almost out of the question for this neighborhood (Durham county, Ontario), as the female stock is not here to breed to."

The writer believes that at the present time horses of the Hackney type are the horses that sell best in this country:

"The horse which leads and fills the eye of this fastidious public is the Hackney. I believe that he is a horse that has come to stay; that the condition of things caused mainly by the use of electricity has wiped out what was once termed the general-purpose horse."

Horses have been bred so scantily during the past five or six years that now good horses are very scarce:

"The producers of horses have not in past years been breeding, which has rendered the supply very small—so much so that I will venture to say that in your constituency there is not one sound horse of driving quality of four, five, or six years, and leaving out the dealers and perhaps one other, not ten desirable horses of two or three years. And what is true of your constituency from the writer's experience, gathered from personal visitation and from talks with leading dealers in Ontario, is also true of the whole province."

That the Hackney horse has come to this continent to stay, and that capitalists recognize this fact and are preparing to meet the demand for horses of the Hackney type, the writer illustrates by the action of Mr. Stevens, the well-known breeder of Attica, N.Y.:

"Some of the Americans are alive to the condition of affairs, and let me instance one case, that of Mr. Stevens, the president of the First National Bank at Washington. He is a wealthy man with a beautiful farm, the homestead of his father, at Attica, near Buffalo, N.Y. He farms for pleasure, of course, but so practical is he that he would not continue one day unless he made a profit. For a number of years he made his leading line Holstein cattle. His herd of nearly 400 cattle, never below 300, was the leader of United States and America. Sales of about 100 bull calves yearly at prices ranging from $300 to $4,000

each, testify to his perfection, and prizes in diplomas, medals, and tickets on banners, closely packed, cover wall space more than twenty feet square. About four years ago he saw the future of cattle was over; and he disposed of his entire herd, with a very few exceptions, and embarked in the Hackney horse business. He visited England, the Hackney's home, paid $22,000 for one stallion, $15,000 for another, $5,000 for a single mare, $4,000 for other mares, and so on. What did he do this for? Do not let your readers run away with the idea that it was for amusement—he is too clear-headed. These thoroughbred Hackneys were obtained for the purpose of raising thoroughbred Hackneys, and selling them to breeders, and so produce thoroughbred stallions for service throughout the country, in anticipation of the demand which has since come. The Grahams of Claremont, the Cochranes of Compton, Quebec, the Becks of London, the B[illegible]ths of Bowmanville, and many other Canadian [illegible]ealers, are to the front also in this line in Can[illegible]...

It is not the thoroughbred Hackney, however, that is in demand by the public. It is the half-bred Hackney that the public require. And this is where the matter becomes important to the ordinary farmer. For producing desirable half-bred Hackneys the mare to breed to is one of trotting stock:

"The ideal mare to breed to this class of horse is the trotting stock. To begin with, she should be free from all constitutional infirmities or broken-down legs, unless caused by accident, and from splints, spavins, etc. Mares that have done much hard work are not the best, as they are apt to throw under-sized foals. The size should not be under fifteen-three. Mr. Stevens has in his stable about thirty mares of trotting stock purchased from Kentucky which he is breeding to his Hackney sires to produce drivers or carriage horses, and from which he expects pairs to realize from $1,000 to $2,000 for gentleman's uses. These are not unusual prices, but cannot be expected to be obtained by your readers, as they are for thoroughly broken finished horses, while your readers must expect only the price for the raw material, as they have not the means or the experience to put on the final polish or fitting or to reach the best market. If the ordinary farmer would breed his reasonably good general-purpose mare to horses of this class, and properly care for them in their babyhood, he will produce eighty per cent. of his stock saleable horses, commanding at three years of age from $125 to $200.

"Carriage teams of this class are very saleable here from $600 to $900 at four years, which leaves ample margin to the dealer to pay the prices mentioned and put on the final tiffics in mouthing, reining, stepping, straightening gait, and remedying defects."

Here follow some good hints as to the feeding and care of foals and colts:

"The foals should be well nourished by feeding. Straw and turnips in a dark hole, or under the cold comfort of a straw stack, will not do. Their feet must have special care. Colts from yearlings must be run, not tied up, on ground floors, in well ventilated and well lighted stalls; their feet pared at least twice during a winter season, and two or three times during the summer season. It is well to have a blacksmith cut them down to the tender point. Long toes, overgrown or unnatural, make horses knuckle, change the shape of their legs, and put on false gait in moving. Wash a colt's feet once a week with salt and water. Dirty feet in stall, and principally in pasture, cause incipient thrush and contracted, bad heels, fatal to the harness horse.

"Feed yearlings a gallon of chopped oats and a gallon of bran every day, after they are stalled, and carrots once a day, and hay. It may be said this is more expensive than keeping a colt on grass and straw and turnips for the first three years of its life, but it will pay itself in the long run. What does this grain cost? One gallon chop per day, 182 gallons, 23 bushels, $4.60 in six months, and the bran, which is a trifle. Clean your colt with a stiff brush some every day during winter months. Watch his health; a little sulphur if needed, perhaps some nitre. There is lots of time to do this, and you are making money by so doing. Halter break your colt at six months, make him handy, and handle his feet; do not pet him, and make a fool of him. Lastly, give him to a good man to break. Do not try to do this yourself. Good horses have been ruined in this way. Do not work him on the farm at anything but the lightest kind of labor. Sell before you attempt to break if you have no good man near by, unless you are experienced in the art, or if you can command a good man it is better to sell when coming from his hands or while with him."

FIVE LOADS OF MANURE PER ACRE ENOUGH.

By I. P. Roberts, Director, College of Agriculture, Cornell University, Ithaca, N.Y.

[Published in Farming through the courtesy of Mr. F. W. Hodson, Superintendent of Farmers' Institutes, Ontario.*]

Note.—We have pleasure in reprinting from *The Rural New York Farm and Fireside* the following very excellent sketch of Professor Roberts' life and work.—Ed. Farming.

Professor Isaac P. Roberts, whose portrait we present upon this page, is one of the pioneers of agricultural teaching. There were no courses or schools of agriculture when he was a boy. He obtained his education by attending the academy at Seneca Falls, N.Y., and by private instruction given by a cousin in the farm house in winter time. He was born upon Cayuga Lake, but when of age

*Some time ago Mr. Hodson paid a visit to the farm of the College of Agriculture, Ithaca, New York, and was much struck with the excellence of the pastures and hay crops of the farm, which seemed to him, when the natural qualities of the soil were taken into consideration, to be especially good. He lately requested Professor Roberts to give him an account of "how it was done," and the article herewith published is the result.

went to Northern Indiana, where he remained as a farmer, teacher, and carpenter, until, in 1862, at the age of thirty, he moved to Mt. Pleasant, Iowa. Here he again engaged in farming, teaching, and carpentry, and was so successful that in 1864 he was made superintendent of the farm of the Iowa Agricultural College. In 1870 he was made professor of agriculture in that institution, and was also elected to the secretaryship of the board of control. In charge of three responsible offices, he applied himself with great diligence to the study of the sciences akin to agriculture. He had no models and few precedents to follow. The

Director I. P. Roberts, Ithaca, N.Y.

West was new; public opinion upon educational matters had not crystallized; agricultural methods were for the most part crude and wasteful.

Professor Roberts is a natural student. He can see and learn more while sitting on the fence than most men can learn in a week's schooling. He sees accurately and reasons correctly, and this is the essence of the spirit and purpose of investigation. A man who twenty-five years ago looked abroad upon the fields and saw new facts, and as a result advised new methods, was an innovator. His opinions must attract attention. So Roberts did not stay long at the Iowa Agricultural College, fortunately for New York State. In 1873, almost broken down from overwork, he left Iowa and became identified with Cornell University, at Ithaca, N. Y., as professor of agriculture. The University conferred upon him the degree of M. S. in Agriculture in 1876.

To write a history of the agricultural department of Cornell University would be equivalent to writing a biography of the last twenty years of Roberts' life. That department is Roberts. He now has competent associates, but his influence runs through it all and dominates it. He is director of the college of agriculture and of the experiment station. In these positions he is universally loved by professors and students, because he makes no pretensions to superior knowledge, and he allows every good man full liberty to do his best and most personal work. It is a strong man who can manage great enterprises and responsibilities without dictation, and without giving offense to any one. The Cornell experiment station is probably the ideal station in its management. Director Roberts assumes only to direct the financial and general policy of the station, and the various workers, being left to their own inspirations and incentives, do their best work.

As a teacher, Professor Roberts is wise in all the accumulated wisdom of the management of farms, and stock, and crops, and business. He has almost transcendent judgment in matters of farming. He arrives at his conclusions slowly, but his final opinions are sound. He is a man of affairs, managing the university farm, and two farms of his own, with consummate skill. He is probably unique among the professors of agriculture in this country in being able to interest students directly in pure and simple farming without the aid of more or less technical and bookish teaching of science. A walk over the fields with Roberts is one of the events which a student remembers all his life, and yet the student cannot tell why, so quietly and simply and directly are the lessons impressed upon the mind. He makes no pretence of learning, but his students trust him because they know that his whole temper is that of a learned and clear-headed man. He is very close to his students; he is friend, companion and adviser.

Professor Roberts is a prolific writer of articles for the press, and has just written a book upon "Fertility of Land." One son, a graduate of Cornell, is manager of a large ranch in Mississippi, in which the father is interested. Another son is now a student in the agricultural course at Cornell. A daughter is professor of economics in Leland Stanford University, and wife of the professor of mechanic arts in that institution.

"When I visited your station some years ago I was impressed with the excellence of your pastures and hay crops. Considering the natural quality and condition of the ground, I think they are the best I have ever seen."—*Extract from a letter from Mr. F. W. Hodson, Superintendent of Farmers' Institutes, Ontario, to Director Roberts.*

Early History of the Farm.

In answer to your request to outline our methods in grass and clover culture, I may say, in brief, that the University farm was far from being fertile when cleared of its forest—hemlock and pine (hard and soft), interspersed with white and red oak where the land changed from a gravelly to a clay soil. When I took charge, more than twenty years since, I learned that the land had been tilled about twenty-five years; that timothy, corn, wheat, and like crops had been raised and removed, but that little resultant manure had been returned to the fields. The hill pastures were extremely poor, and the level land gave, the first year I tilled it, scarcely more than twenty-five bushels per acre of oats and corn, and less than one ton of "daisy" hay per acre.

Formerly Manure was Purchased.

The dairy consisted of eight grade Shorthorn cows. We began to draw manure from the city,

more than a mile away, and 450 feet below the level of the fields. This manure cost, when delivered, $1.25 per load. When fairly rotted it had become so far reduced in bulk as to make the cost per load, when drawn to the fields in the fall, fully $2.50 per load of about 3,000 pounds.

For Fifteen Years No Manure Has Been Purchased.

In a few years most of the noxious weeds of America and Great Britain appeared. The worst one, corn chamomile (Anthemis arvensis), is still with us in full force. This method of improving the fertility of the land went on for about five years, when the dairy was increased to twenty cows and about ten young animals, and besides we had the work horses and the colts. From this time on *no manure was purchased;* but the manure of the farm was cared for in covered barnyards and in rotting pits.

Hill Fields Turned to Permanent Pastures.

It was found that the hill fields could not be kept in the rotation profitably. They were therefore prepared in a superior manner, and sowed to fall wheat without manures or fertilizers. Ten days after the wheat was sowed about seven quarts of timothy seed were sowed, and in the spring seven quarts of mixed red and alsike clover seed per acre were sowed. (Blue grass asserts itself too freely naturally in this locality; other grasses to some extent.)

Since this seeding the plan has been to coax the grass to cover the entire ground. Once commercial fertilizers containing a relatively high per cent. of nitrogen were used. Most of these pastures have received a light dressing of coarse farm manures in the winter; the poorer knolls two dressings in the last eighteen years. Small quantities of clover, with a little timothy, have been sown about every five years early in the spring, followed by a harrowing with a sharp spiked tooth harrow, and then rolled. On the hill which tips to the north, lime has been used once to correct the acidity of the soil, and to prevent the growth of moss. We turn the cows on the pastures rather late in the spring, and keep on feeding a small grain ration until the grasses have some substance. One seven-acre day pasture and one four-acre night pasture serve to carry from twenty to twenty-four milch cows from spring until the last of July; then their food is supplemented from the other fields. It will be seen that the pastures receive, in the way of manure, some additions from the food obtained from other fields, and from the slight summer grain food fed in the barns, through the droppings of the animals. In the fall, field corn is used to supplement the permanent pastures and the clover pastures. The clover fields are mowed once and then pastured. The permanent pastures are now seeded so well that they look like good lawns, and, while the ground in many places is so light and gravelly that the grasses cannot grow for want of moisture late in the season, yet they keep fairly green, and when the fall rains come these old neglected hill sides are again clothed with a short, dark second growth.

To Supplement the Soil Fertility Judiciously is Our Aim.

Briefly, then, the pasture fields have been cared for and watched as carefully as a fond parent watches a loved child. The aim has been not to do too much for them, or the debtor side of the account would be too great. By supplementing the soil fertility judiciously, and allowing the land to do its best, satisfactory results have been reached.

Treatment of Our Meadows.

We expect, in a normal year, two and one-half tons of mixed timothy and clover hay from the meadows. Last year it fell a little short; the year before we secured 2.6 tons of nicely-cured hay per acre. The seeding is done in the winter wheat crop. About four quarts of timothy seed are sowed some ten days after the wheat is drilled in. The object in withholding the timothy seed is to prevent it from becoming so large in the spring as to crowd the wheat in case the winter has been severe, and the wheat starts slowly. Seven to eight quarts of clover seed mixed in the proportion of two of alsike to six of medium red clover, are sowed before freezing has ceased. The wheat is cut rather high that the stubbles may protect the tender plants. When the rag weeds and other weeds and the clovers have grown to the height of the stubbles the machine is set high, and the field is mowed, and the stubbles, weeds, and tops of the clover are left upon the ground. Sometimes the clover asserts itself so strongly that the second sowing is resorted to, for it is believed that if the clover blooms profusely the first fall it will not give nearly so good results the following year. Then, too, if a large amount of material is left on the clover during the winter, and the snows chance to be abundant, the clover is sometimes seriously injured. After harvest mowing causes both the clover and timothy to tiller, and prevents most of the rank weeds from seeding.

Our Crop Yields per Acre.

If it would not appear egotistical, I may add that our best oat crop, raised some five years ago

on a twenty-acre field, gave eighty bushels and fourteen pounds of weighed oats per acre. We have never been able to secure so large a yield on large areas since, though last year some of our carefully-measured plots of a tenth of an acre, third continuous cropping without manures or fertilizers, gave ninety-seven bushels and sixteen pounds per acre. We confidently expect, and usually secure on an average, sixty-five bushels of oats, as many bushels of corn, fifty bushels of barley, thirty-five bushels of wheat, two and one-half tons of hay, and thirty-five tons of mangolds, and three hundred bushels of potatoes, per acre.

A Four Years' Rotation Followed.

During this fifth of a century we have used very little commercial fertilizers, having found in early days that they did not give, in this locality, marked results. The farm has been brought up to its present degree of fertility by following in early days a carefully-matured five years' rotation which, however, has latterly been changed to a four years' rotation since the clover root borer has been abundant.

The Points We Lay Stress on.

In recent years we have laid great stress on the conservation of moisture by tillage, and on cover crops, and on the care and management of the farm manures. The manures are usually spread thinly on the surface in the fall or early winter. By this practice we are able to give at least a "sandwich," if not a full meal, to every field that is under rotation, about every second year. Our rotation is (1) corn, manured; (2) oats or barley, unmanured; (3) wheat, manured; (4) clover and timothy, unmanured. Of course, it should be said that our small farm of about one hundred and twenty-five acres does not suffice for feeding forty to fifty animals that we keep, exclusive of fifty sheep and as many swine; but it is deemed wise economy to purchase some concentrated foods and take the resultant manures to the fields rather than to reduce the number of animals and purchase commercial fertilizers.

How We Treat our Manures.

The manures are kept in covered yards during the winter until a suitable time for distributing them. About once a month all hands and teams distribute from the wagon or sleigh about five loads, 1,300 pounds per load, per acre, on the prospective corn ground. Some time in February our fifteen acres of corn ground will have been covered. In the spring when the cattle go to pasture the accumulated manure is drawn to near the centre of the farm, placed in a water-tight rotting receptacle, and left until the wheat ground is plowed. Then it is removed and applied before harrowing at about the same rate per acre. We aim to keep the plants from being gorged with a feast or starved by a famine. Our pastures at this writing, May 17th, are from four to eight inches high, and look unusually well, as rains have been abundant. Above all, the ground is covered, and the plants look as though they were neither hungry nor dry.

THE FUNDAMENTAL POINTS OF PRACTICAL EXCELLENCE IN BEEF CATTLE.

By C. F. CURTISS, Director and Professor of Agriculture, State Agricultural College and Experimental Station, Ames, Ia

[The following article, by Director Curtiss, was recently read before the Iowa Improved Stock Breeders' Association. It is one of the most valuable contributions to the literature of beef-cattle production that has appeared for many years. We are indebted for its present use to the courtesy of the Minister of Agriculture for Ontario. For a brief biographical sketch of Mr. Curtiss, see FARMING for May, page 621.

Every Breeder Must be a Student.

A brief consideration of the qualities of practical excellence in beef cattle may well engage the attention of the breeder and feeder. A topic of this character is too often regarded as of interest only to the professional exhibitor, or the lecture room instructor and student; but in this field every successful breeder must always be a student, for the first essential in successful breeding is a clear conception in the mind of the breeder of what constitutes a good animal, and of all the characteristics that go to make up real excellence in a herd or flock. It is said that the late renowned Amos Cruickshank, the founder of the great Scotch tribe of Shorthorns, was often seen by the side of the leading sale rings of Great Britain, intently studying every animal that came into the ring, and his minute knowledge of all the animals brought out was the marvel of those who chanced to converse with him about them afterwards.

Bakewell as well as Cruicksha nk was a Student.

And while the methods of the first great improver of live stock were largely secret, it is

known that the justly celebrated Robert Bakewell was not only an exceedingly close student of living forms, but that his rooms were also full of models and parts of domestic animals that he had

Director C. F. Curtiss, State Agricultural College, Iowa.

carefully dissected and studied piece by piece, and preserved in alcohol for future reference. In his work of selection and improvement he imparted to the Leicester sheep such a remarkable aptitude to take on flesh that this quality remains a characteristic of the breed to a greater degree than of any other long-wooled breeds of England, even to the present day.

Fitness for the Block is the Ultimate Test.

I invite your attention to this subject on account of its general importance to the beef producer as well as the breeder of show ring and sale stock; for I contend that the show ring type must necessarily keep close to, and be largely governed by, the practical demands imposed by the feed yard and the block; or else the lessons of the show yard and sale ring are without value, if not positively misleading. No one is more concerned in what constitutes the essential qualities of a good beef animal than the man who breeds and feeds for the block; for it must be kept in mind that this is the ultimate end of all beef stock, and the best beef animal is the one that carries to the block the highest excellence and the most profit. This in a word, is the keynote of the whole problem, and if we do nothing more than look squarely at this subject in the right light we will have made a good beginning. It means everything in the live stock business, to begin right, to be travelling upward—to just be headed in the right way. To be headed the opposite way is fatal.

The Beef Type is Definite and Varies but Little.

To begin with, there is a well-defined beef type that admits of less flexibility than is generally regarded. We hear much about the dairy type, and there is a dairy type, fairly clean cut and well defined; but I want to say to you that there is also a beef type, more rigid and less variable than the dairy type. Your own observations and experience will bear me out in this assertion. You all know that there are not a few cows of quite positive beef tendencies capable of making very creditable dairy records, and a great many that combine milk and beef to a profitable degree; but can you recall an instance of a good carcass of beef ever coming from a steer of a pronounced dairy type or breed? So clearly and definitely is this beef type established that to depart from it means to sacrifice beef excellence.

Typical Illustrations of the Ideal Beef Type.

Here are some illustrations that pretty accurately represent the ideal beef type. The first illustration is a good reproduction from a photograph of a prize-winning Angus heifer exhibited by Queen Victoria at one of the late Smithfield fat stock shows. The next illustration is a portrait of a high grade Shorthorn steer, raised as a skim-milk calf at the Iowa Experiment Station. He was the best steer in the Chicago yards on a day when there were 26,000 cattle on the market. The third illustration is of a high-grade Hereford steer, fed at the Iowa Experiment Station, that was good enough to easily top the market, and was one of five to dress an average of 67.05 per

Polled Angus Heifer.
Champion at Smithfield Fat Stock Show. Owned by Her Majesty Queen Victoria.

cent. of net beef. He weighed, when two years old, 1,620 pounds. I have also here a standard of excellence that I have formulated for the use of students in judging beef cattle:

Scale of Points of Excellence in Beef Cattle, as used by the Students in the Department of Agriculture in the Iowa Agricultural College.

	Possible score.
(*a*) GENERAL APPEARANCE: 25.	
Weight—estimated.....lbs.; actual.....	
Form, smooth, even, parallel lines, deep, broad, low set	10
Quality, thick covering of firm flesh; mellow touch; soft, heavy coat; fine bone; velvet-like skin.....	10
Style, vigorous, strong character, active, but not restless.....	5
Objections, rough or angular in form, harsh coat, hard skin, dull appearance.....	
(*b*) HEAD AND NECK: 10.	
Muzzle, broad; mouth large; jaws strong; nostrils large.....	2
Eyes, large, clear, placid.....	2
Face, short; quiet expression.....	1
Forehead, broad, full.....	1
Ears, medium size, fine texture.....	2
Neck, thick, short, and full; throat clean.....	2
Horns, fine texture, medium size or small.....	
Objections, long or lean head and neck, dull eyes, coarse, heavy horns.....	
(*c*) FOREQUARTERS: 10.	
Shoulders, covered with flesh, compact on top, smooth.....	4
Brisket, prominent and wide.....	3
Dewlap, full skin, not too loose and drooping....	1
Legs, straight, short; arm full, shank fine, smooth.....	2
Objections, bare shoulders, narrow on top, contracted brisket, coarse legs.....	
(*d*) BODY: 35.	
Chest, full, deep, wide; girth large; crops full..	8
Ribs, long, arched, well covered with firm flesh.	7
Back, broad, straight, smooth, and even.....	10
Loin, thick, broad, full	6
Flank, full, even with underline, or nearly so...	4
Objections, narrow or sunken chest, hollow crops, sloping ribs, bare or rough back and loin, high flank.....	
(*e*) HINDQUARTERS: 20.	
Hips, wide, smooth, well covered.....	5
Rump, long, even, wide, smooth, not patchy....	4
Pin Bones, wide apart, smooth, not patchy.....	2
Thighs, full, deep, and wide.....	2
Twist, full, deep, large, level with flank, or nearly so.....	3
Purse, full, indicating fleshiness.....	2
Legs, straight, short, shank fine, smooth.....	2
Objections, prominent rough hips, narrow, bare rump, spare thighs, light twist, small purse, coarse legs.....	
Total.....	100

NOTE.—In practice the student sets down opposite each section the value of the points deficient, also of the objections, and subtracts the total from 100, which will give the estimated score.

The True Use of the Score Card.

I regard the score card as an educator and of great advantage to the student, but I do not favor its use in the show ring. The judge who goes into the show ring should carry a clean cut mental conception of a good animal, and the qualities that are objectionable. This applied to the animals of a ring virtually amounts to the use of a score card without the objectionable features of that system. In recommending the score card to the student, I use the term student in its broadest sense, embracing not only the prospective breeder within the class room, but also every member of the great practical school of every day working breeders, who wishes to keep in the foremost rank of his profession. One of the prime causes why so many men fail in this field is the lack of a thorough study of the essential characteristics. In other words, and to put it more plainly, breeders fail to breed good animals because they do not know what good animals are.

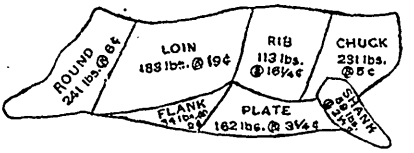
The General Beef Form the Main Requisite.

I will only endeavor to call your attention at this time to some of the more important characteristics enumerated in the score card, as my time will not permit me to take up this subject in detail.

The first thing that should be looked to is the general beef form—low, broad, deep, smooth and even, with parallel lines. No wedge shape is wanted for the block.

A Thick Firm Even Covering the Next Requisite.

Next in importance is a thick even covering of the right kind of meat in the parts that give the high priced cuts. This is a very important factor in beef cattle that is often overlooked. Here is a drawing representing the wholesale method of



cutting beef, showing that about 28 per cent. of a good carcass of beef sells for nearly 64 per cent. of the total value. The high priced cuts are the ribs and loins. These parts on an average sell for about three times as much per pound as the others. Good broad, well covered backs and ribs are absolutely necessary to a good carcass of beef and no other excellencies, however great, will compensate for the lack of this essential.

It is necessary to both breed and feed for thickness in these parts. And mere thickness and substance here is not all. Animals that are soft and patchy, or hard and rolled on the back, are sure to give defective and objectionable carcasses, even though they are thick, and they also cut up with correspondingly greater waste. The men who buy our cattle and fix their market value, are shrewd enough to know almost at a glance how much and just what kind of meat a steer or a carload of steers, will cut out, and if the producer overlooks any of the essential points, he is compelled to bear the loss.

Character, Style, and Finish, Important.

Then, in addition to securing the general beef form and make up, together with good backs, ribs, and loins, there is a certain quality, character, style, and finish, that constitute an important factor in determining the value of beef cattle. One of the first indications of this is to be found in the skin and coat. A good feeding animal should have a soft mellow touch, and a fine but

thick and heavy coat. A harsh unyielding skin is an indication of a sluggish circulation and low digestive powers. The character and finish exemplified by a clear, prominent, yet placid eye,

High-Grade Shorthorn Steer.
Raised as a skim-milk calf by the Iowa Experiment Station. Best steer in the Chicago yards, on a day when there were 26,000 cattle on the market.

clean cut features, fine horn, and clean firm bone, all go to indicate good feeding quality and a capacity to take on a finish of the highest excellence, and consequently to command top prices. I would not tolerate too large or too coarse bone. Coarse boned, rough animals are almost invariably slow feeders and hard to finish properly. A certain amount of size is necessary, but it should be obtained without coarseness. The present demand exacts quality and finish rather than size.

Vigor and Constitution Essential.

Besides these qualities, and above all, it is necessary to have vigor and constitution. We find evidence of these in a wide forehead, a prominent brisket, broad chest, full heart girth and general robust appearance ; and without them other excellence will not have its highest significance.

Every Live Stock Exhibition Should have its Fat Stock Classes.

And now, while I have urged the importance of those things which go to make up a finished carcass of beef of the highest value, and while, as I have stated, the block is the ultimate end of all beef cattle, I want also to state that undeveloped breeding stock cannot at all times be expected to measure up to this standard. And right here I want to say a word about our present system of show-yard competition. I believe that every fair and live stock exhibition should have its fat stock classes, and that these should be taken as the standard of the finished product. They will afford the most practical and useful lessons to be gained by the show, and the stock brought out for them will represent the culmination of the highest excellence that can be attained. The competition will be a measure of everything at its best, and in it every animal will rightly be rated according to what it is capable of producing on the block. The show ring should afford a contest of that kind, and in addition to the practical lessons, and its educational value, it would partially remedy the tendency to rate breeding stock according to the flesh carried. While heavy flesh is necessarily a factor of great importance, yet to go into a breeding herd and absolutely rate every animal as if it were to go at once to the shambles may lead to entirely erroneous results. I do not undervalue fitting ; other things being equal, the best fitted should always win, but the point that I want to urge is that an animal in a breeding herd ought to be rated according to its value as a representative of that herd, and for the purpose of the herd, instead of taking rank simply as a carcass of beef in the form presented. In a fat stock ring it is proper that only the carcass be considered. In a breeding ring, an animal should be rated by its value to go on in the herd, and not simply to go on to the block. There is a well marked distinction here that should never be overlooked. The fat stock classes should be added for the lessons that they will bring, and to avoid diverting the purpose of the breeding stock classes. A sum of money equal to that given to any one breed would be sufficient to make a satisfactory classification in which fat stock of all beef breeds could compete and furnish one of the most interesting and instructive features of the fair.

For Producing Beef use Animals of Beef Type Only.

In conclusion I wish to call attention to one other point, by way of emphasis, of the necessity of having the right kind of cattle to insure a profit, or rather to avoid a loss, under present conditions. There is not a very great difference in the

High-Grade Hereford Steer.
Fed and marketed by the Iowa Experiment Station. Weight at two year's old, 1,620 lbs. Sold at ten cents above the topmost price for other cattle on the market.

rate of gain, or the number of pounds of increase in weight from a given amount of feed, that will be made by a representative of the best beef breeds and a genuine scrub, a Jersey or a Hol-

stein steer. This is a fact that practical breeders and improvers of live stock were slow to accept at first. In fact they did not accept it until it was repeatedly demonstrated, and some will not concede it yet, but the evidence is constantly accumulating and it is useless to ignore facts. After all there is no well founded reason why a Shorthorn or a Hereford or an Angus should make more gain in weight from a bushel of corn than a Holstein, a native, or a scrub. This is governed altogether by the digestive and assimilative machinery of the steer. The Holsteins, for instance, are known to be vigorous eaters, and the despised scrub usually has a disgestive system like a goat—and is always hungry. Scientists have discovered that civilized man has no greater powers of digestion than the barbarian or the Indian. Neither has the improved steer better digestion than the native. The feeder is often deceived in

High-Grade Jersey Steer.
Fed and marketed by the Iowa Experiment Station. Realized only $2.12½ below top quotation.

the belief that he has a good bunch of cattle simply because they feed well and gain rapidly. Economy of production is an important factor, but it is by no means all. It is even more important to have a finished product that the market wants and will pay for, than that it simply be produced cheaply.

Comparison between Beef Types and Dairy Types when used for Beef Production.

I have here, for example, illustrations of two steers fed at the Iowa Experiment Station; one is a Jersey and the other a Hereford. (See third and fourth illustrations in this article.) While they were in the feed lot, the Jersey made a gain of two pounds a day for nine months; and the Hereford 2.03 pound for fourteen months. There was practically no difference in the rate and cost of gain. Judged by the record they made up to the time they went to market, the Jersey would take rank close to the Hereford in both rate and economy of gain. But the interesting part of the comparison came later. The Jersey took on flesh rapidly, and was exceedingly fat and well finished. He was as good as it is possible to make a Jersey steer. Yet when he went to market he had to sell $2.12½ below the top quotations, while the Hereford went 10 cents above the top for any other cattle on the market. *But you may say that this was partly prejudice.* I used to think so, but since I have followed cattle through the feed lot and to market and onto the block, and carefully ascertaining all the facts for several years, I have changed my mind. I will show you where the difference was in those two steers. This steer (the Jersey) belongs to a breed that has been developed for centuries for the specific purpose of making butter—that is, putting the product of its feed into the milk pail. They are rough, angular, and bony, and when you fatten them, as you can do, they do not put the fat into the tissues of the high-priced cuts of steaks and roasts on their back, but this steer had 190 pounds of what is termed *loose or interna* tallow, 55 pounds of suet on a 763-pound carcass; that is 32.1 per cent. of that steer's carcass was tallow. Tallow was at that time worth 4 cents a pound, while the best loin cuts were worth 19 cents, at wholesale. And besides that this steer only dressed 57.5 per cent. of beef, while the Hereford dressed 67.5 per cent. Then the Hereford only had 95 pounds of tallow and 38 pounds of suet on 888-pound carcass—equivalent to 15 per cent. And besides this striking difference in percentage of meat in high-priced cuts, the meat of the Jersey was very much inferior to that of the Hereford. The Jersey steer went on accumulating fat around his paunch and internal organs to the extent of nearly one-third of his body weight, while he hadn't meat enough on his back to decently cover his bones. This explains why you can never get a Jersey or a Holstein or any other roughly-made steer smooth, no matter how long you fatten them. Thus you see there is a reason why rough cattle do not sell. These same distinctions are largely true of the native and all other improved cattle, when an attempt is made to fatten them for beef. The men who buy them don't need to kill them to find it out; they know it is soon as they see them.

Use the Type that Produces the High-priced Product.

So when we put a steer into the feed lot to fatten, it is all right to know that he is gaining rapidly and cheaply, but we also want to know whether he is *making a 4-cent product or a 19-cent product.* If he hasn't the beef type, and hasn't the characteristics of a beef animal bred into him, he will fall short of the mark. Feed alone does not make the high-selling product.

DAIRY FARMING METHODS AS FOLLOWED IN THE PROVINCE OF QUEBEC.

By J. C. CHAPAIS, LL.B., St. Denis, Kamouraska, Quebec, Assistant Dairy Commissioner for the Dominion of Canada.

PART I. THE ESTABLISHED SYSTEM OF ROTATION OF CROPS.

We have great pleasure in presenting to our readers the following very practical article by Mr. J. C. Chapais, Assistant Dairy Commissioner for Canada, on "Dairy Farming Methods as pursued in the Province of Quebec." Mr. Chapais is one of the very best practical dairy farmers in his province. Professor Robertson in his testimony before the House of Commons' Committee on Agriculture, once said of Mr. Chapais, that he knew not "where his equal could be found for both sound practical and sound scientific knowledge of agriculture." Mr. Chapais' work as Assistant Dairy Commissioner is concerned principally with the instruction of the French speaking farmers of Quebec in modern methods of dairy farming. That his efforts have been abundantly successful is shown by the fact that in no part of the world has there been such progress made in dairy farming as has been made in Quebec in the last dozen years, and no part of the world stands higher to-day for successful dairy farming on a large scale than do some districts of that province. The value of Mr. Chapais' article is, that it is not theoretical. It is the plain statement of practices that have been proved to be good in years of experience by many people, and we feel sure that the readers of FARMING in Ontario and other parts of the Dominion will be glad to study the methods of our successful Quebec dairymen as Mr. Chapais describes them.

Mr. J. C. Chapais, LL.B.
Assistant Dairy Commissioner, Dominion of Canada.

At the request of the editor of FARMING, I will try to give its readers an idea of the system of culture followed by the dairymen of the Province of Quebec, for the production of abundant, rich, and cheap milk. This system has enabled our dairy farmers to increase in such a way the products of their dairy industry that our province counts now 1,400 cheese factories and 400 creameries, whereas in 1880 it had only 200 cheese factories and 50 creameries. This system has been the subject of hundreds of lectures which I have delivered through the whole Province of Quebec, and, with some modifications, to the French farmers of the other provinces of the Dominion. It is a summary of these lectures which I now give in the present article, to comply with the wishes of the editor of FARMING.

Dairying is the Best of Agricultural Industries for the Quebec Farmer.

Many facts have contributed to convince the Quebec farmer that dairying is, for him, the most profitable industry. First, our province is, by its geographical position, totally different in climatic conditions from Ontario and the United States. Its farming operations commence, in the spring, at least three weeks later than they commence in the west. The late spring frosts are felt sometimes to the beginning of June, and this to a degree sufficient to compromise the prospects of the future crop. Moreover, towards the beginning of September, early fall frosts often happen which ruin the crop at the moment it is just ripening. Lastly, severe frosts sometimes take place in October, at the time the crops are just housed, and leave the farmer but little time to do his fall plowing. All this renders grain growing very precarious, especially so when we remember that the west of Canada, which twenty years ago produced no wheat, now exports the finest wheat of the world by millions of bushels.

Another consideration is that, in our province, grain culture no longer pays, because most of the farm lands have been exhausted by too much grain growing. Land becomes poor from culture because it yields its own substance to the crop. Culture of grain and hay to be sold on the markets impoverishes the land more than the culture of grain and forage grown to be fed to the animals of the farm. A proportion of only fifteen per cent. of the substance of forage and grain fed to cattle is assimilated by the eater, and almost all the remainder, *i.e.*, nearly eighty-five per cent., is given back, in the shape of manure, to the land. On the contrary, grain and hay sold in the markets leave only straw to the land, and, consequently, make it much poorer.

Considering, moreover, that our climate is the very best in summer for the production of grasses of the first quality and of all kinds of fodder, and that by its coolness it enables the dairyman to keep his milk in the best of condition, it is evident that dairying is the best of agricultural industries for the farmer in the Province of Quebec.

Those who, being convinced of that fact, have changed their mode of culture, have found it advantageous to follow on their lands the system of rotation I am going to indicate here.

Necessity of a Regular System of Rotation.

Before going any further, I will first say a few words on the necessity of rotation. Rotation has especially for its aim the destruction of weeds, the breaking up of the soil, and the enriching of it so that it will be in the best possible condition for the growth of crops, and the securing of a succession of plants which draw off from the soil elements which a single kind of these plants would not have taken from it. This allows of the utilizing of all the strength of the soil, and prevents the complete removal from it of certain elements of which, without rotation, it would be totally deprived in the end, while it would also contain others which could not be utilized, and would be lost.

A System of Twelve Years' Rotation.

The system of rotation advocated here is planned in such a way as to give the greatest possible quantity of products which can be utilized by dairy cattle. It is a rotation of twelve years, and is supposed to begin, in its application, with a piece of land in pasture. The description here given shows the cultivation received each year by that piece of land during twelve years, in turn with eleven other pieces which receive in succession the same treatment.

First year.—Crop of peas and oats on pasture land plowed the preceding autumn.

Second year.—Plowing in of manure the preceding autumn. Division of the piece of land in three parts, one to grow a crop of roots, one to provide green fodder for the cows when needed in midsummer, and one to raise a crop of fodder corn for silage.

Third year.—Crop of grain and the seeding of mixed clover seeds, common red clover, alsike clover, and white clover.

Fourth year.—One crop of clover for pasture or green fodder. A second crop to be plowed in in the fall, to supply nitrogen to the soil in a cheap way.

Fifth year.—Crop of grain and seeding of mixed grasses and clovers for meadow.

Sixth year.—Crop of almost pure clover hay.

Seventh year.—Crop of hay.

Eighth year.—Crop of hay, and top-dressing of manure on meadow immediately after hay is carried away.

Ninth year.—Crop of hay.

Tenth, eleventh, and twelfth years.—Pasture on old meadows.

I will now enter into some considerations about the details of this rotation.

First Year—Peas and Oats.

When the land is in good working condition in the spring, work the soil with the disc-harrow, in order to break and pulverize it thoroughly, so as to get a good seed bed. Peas and oats offer to the farmer the advantage, should the crop of hay be short on account of drouth, of giving a good substitute for hay, if cured half ripe.

Second Year—Hoed and Cleaning Crop.

This is the year to give the soil a thorough cultivation. The growing of potatoes, mangels, carrots, turnips, corn, green fodder, necessitates: First, subsoiling of the land with a subsoil plow, and a complete pulverization of the surface; second, a heavy application of farmyard manure, and also, if the best of results is expected, of commercial fertilizers; third, frequent stirring and hoeing of the soil, which prevents weeds from growing. For the eastern part of the province, from Quebec down to the Gulf and Baie des Chaleurs, I advise, above all, potato culture as a hoed and cleaning crop. In that section of the province there are two precious sources of manure which are within the reach of the farmer every spring. I mean the small fish called caplin, which come up to spawn on the shore as soon as the ice is gone, and two kinds of seaweeds. These manures, in their green state, give imme-

diate results only if applied to potato culture. If we compare them with barnyard manure, we see that these substances contain per cent. as follows :

	Fish.	*Seaweed.*	*Barnyard Manure.*
Nitrogen.....	2.34	0.37	0.49
Phosphoric acid.....	1.70	0.26	0.32
Potash.....	0.40	0.62	0.43

As these substances come in large quantities at once, and must be disposed of immediately, farmers find a great advantage in manuring their potato fields with them. These manures would not give good results in their green state for other roots, as has been found by experience. Fish is used at the rate of 18 bushels and seaweed at the rate of about 25 tons, or 70 single loads per arpent (four-fifths of an acre). The cultivation of the potato with these manures gives excellent results, and is much more practicable for the farmers of Eastern Quebec than the culture of mangels, carrots, or turnips, which have to be sown later in the spring, and must therefore be manured with barnyard manure and commercial fertilizers, and therefore require much more work than the potato for weeding, singling, and hoeing, a thing worth consideration on account of the belated spring season in the section of Canada I have been speaking about.

For green fodder we sow three bushels of a mixture of peas, tares, vetches, oats, rye, per arpent, or not quite four bushels per acre. The sowing is done in four instalments, leaving a week's interval between each of them.

As to Indian corn for silage, we use the small Canadian yellow flint corn, which is less bulky than the western or southern dent corn, but gives as much food in 10 tons as the dent gives in 16 tons.

Third Year—Grain Sowing with Clover Seed.

I have mentioned for the third year of the rotation grain sowing with clover seed. In fact, the fourth year will be a year of clover for pasture, green fodder, or hay. To get a good crop of clover, fifteen pounds of seed must be sowed on each arpent. It is better to mix the three kinds mentioned, in the following proportions : Common red clover, 10 lbs. ; alsike clover, 4 lbs. ; white clover, 1 lb. Complaints are often made that the clover seed does not come up. This is owing, in almost every case, to its being sowed too deep. On a soil well prepared, and not too wet, one good rolling is sufficient. In any case, a light harrowing is all that is needed to make it deep enough.

I may as well mention here the fact that if a farmer wants to get a good, cheap, and profitable pasture, lasting longer than a clover pasture, which in the rotation stands only one year, he should prepare, out of his rotation, a piece of ground to have a more lasting pasture. He will find orchard grass a valuable addition to clover for a more permanent pasture than clover alone.

Orchard Grass.—Orchard grass will grow anywhere in our province up to 47 degrees 30 minutes of latitude, and probably farther north than that. It will agree with all kinds of soils, dry or moist, provided they are not wet, and will succeed in soils too poor for other grasses. This quality makes it very useful on dry slopes of poor land, to prevent landslides. In fact, it will grow in almost all situations, but it thrives at its best in good sandy loam. It grows very well in the shade, and owes to that last quality its English name of "Orchard grass." It stands drouth in a marvellous way, and gives an abundance of grass, especially if cut or grazed often. It must not be sown with timothy as it becomes too hard to make good hay when timothy is ready for cutting. It is a first-class plant for permanent pastures, on account of its perennial character. Sown with common red clover, it is ready for cutting or grazing at the same time as clover, and grows back very rapidly after being cut. It lives much longer than common red clover, which never lasts more than two years. It is relished by all grazing animals. When using orchard grass seed for pasture, we sow 10 pounds of common red clover, 4 pounds of alsike clover, 1 pound of white clover, and 8 pounds of orchard grass. It is well to know that the first year orchard grass will grow and show but very little in the field. It never grows to seed the first year. Many persons are induced to believe that their orchard grass did not grow on account of that.

Difference between Common Red Clover and Large Red Clover.—Before leaving this subject of pastures and clovers I think it is as well to mention some mistakes that are often made by many farmers who don't know that there is much difference between the two varieties of red clover that are offered for sale by seedsmen. In fact, it is very difficult to find out under the various names given to both red clovers, in catalogues, which is the one wanted. A few remarks made here will prevent such mistakes. I will first indicate the various names under which they are found advertised in different catalogues in Canada and United States :

Common Red Clover.

Biennial red clover,	Trifolium medium,
Broad clover,	Trifolium pratense,
Common red clover,	Upper Canada clover,
Meadow trefoil,	Western clover,
Small red clover.	

Large Red Clover.

Cow grass,	Rawdon clover,
Large late clover,	Red perennial clover,
Large red clover,	Sapling clover,
Mammoth clover,	Trifolium pratense perenne,
Pea vine clover,	Vermont clover.

If we make a close observation of the appearance, habits, and growing of these varieties of clover, we find that it is very easy to establish the difference there is between the two. That difference is shown here.

Common Red Clover.	*Large Red Clover.*
Leaves broad,	Leaves long and narrow,
Leaves not velvety,	Leaves velvety,
Flowers rather pale red and globular,	Flowers deep red and of oval shape,
Flowers with short stem,	Flowers with long stem,
Stem hollow or pithy,	Stem fleshy and full,
Giving 2 crops a year,	Giving only 1 crop a year,
Early,	Late,
Best for pastures.	Best for hay.

Large red clover is about three weeks later than common red clover. When I say that common red clover is better for pasture, I must explain my idea. I don't mean to say that the large clover is not good for pasture, because I know the contrary to be true, large clover being just the kind of plant that gives good pasture after animals are done with common red clover, which is ready to be pastured much earlier. But I mean to make it understood that, as we generally grow clover with timothy for hay, the large red is much better for that purpose, because it flowers generally with timothy.

Fourth Year—Clover for Pasture, Green Fodder, or Hay.

We are now, for this fourth year, with one piece of land in clover. This clover, for the first pasture, in the spring, will in the west of the province, be ready about the second week of June, and in the east of the province about the first week of July, while for hay it will be ready to be taken up about the last week of June in the west, and about the second week of July in the east. As to the second crop, it should be plowed in in the fall of the year. We all know that clover, in getting its nitrogen from the atmosphere by a special adaptation of its roots for that function, is a fertilizing crop when ploughed in; and as I write here for a class of farmers who have sometimes some prejudice against chemical manures or who have not always the ready money to buy them, I think it is well to show them that they have a source of cheaply bought nitrogen in their second crop of clover. This must not prevent those who wish to feed their second crop as green fodder or pasture to their cattle from doing it.

Fifth Year—Wheat and Seeding for Hay.

We find our soil prepared, by the fall plowing of the previous year, for a crop of wheat with which we sow hay seed for meadows, as the land is to be left in meadow, the next year. In many places, still, in our province, no other hay seeds are used than timothy and the three kinds of clover I have already spoken of above. As in explaining my system of rotation, I endeavor to speak as little as possible of innovation, I will mention the quantity of these seeds which are required for a good arpent of meadow, (four-fifths of an acre) while I will state for the information of farmers who wish to try another mode of seeding for meadows, that a good mixture of other seeds with the first four spoken of, gives fuller and better returns of good hay for milch cows. There is first, the mixture of timothy and clovers:

Timothy (3 gallons)	15 lbs.	Alsike clover	3 lbs.
Large red clover	7 "	White clover	1 "

These quantities, as well as those of clover given above for pasture, may appear excessive to many, and yet they are necessary to ensure success. Besides, any intelligent farmer can raise upon his own land, the seed he requires, and, in this way, avoid an outlay which he may not always be in a position to make.

A Preferable Mixture.—Now I will indicate another mixture of hay seeds which offers more variety. Some of these seeds are early, some are late; some like damp or low soils, some dry and high soils; some stand well abundant rains, some are drouth proof; so that the mixture of all these grasses and clovers ensures a better average of hay in all soils and seasons than does simply the "timothy and clovers" mixture mentioned above. The mixture is made as follows, for light, medium, and heavy soils, per arpent (four-fifths of an acre):

English name.	*Light soil.* lbs.	*Medium soil.* lbs.	*Heavy soil.* lbs.
June grass	5	2	2
Clover, alsike	2	2	2
Clover, large red	4	4	3
Clover, white	1	1	1
Meadow fescue	3	4	4
Meadow foxtail	1	1	1
Orchard grass	6	8	8
Red top	3	5	5
Rough meadow grass	4	1	2
Timothy	5	6	6
	34	34	34

Sixth Year—Crop of Almost Pure Clover Hay.

In this (sixth) year we will hav· a ·· of almost pure clover hay if we don't use ı clover for green fodder, which, in many cases, is done. As the sowing of grasses last year was made for the formation of meadows, no pasturing ought to be allowed on this piece of land this sixth year, nor would I advise to take up the second crop of clover, which is much more useful when left as a mulch for winter protection on the young meadow.

Seventh Year—A Crop of Hay.

We have this year the second crop of hay from our meadow, but much more various in composition than that of the previous year, especially if the second mode of sowing grass seeds has been followed.

Eighth Year—A Crop of Hay and Top-Dressing of Manure.

The third crop of hay yielded by the meadow is taken up and immediately after the meadow should be covered with last winter's barnyard manure in the proportion of ten tons per arpent, equivalent to about sixteen tons of green manure. This will insure another excellent hay crop for the fourth year of meadow land.

Ninth Year—Last Crop of Hay.—Care of Meadows.

The last crop of hay will be taken from that piece of land from which, as we see, we have had four crops of hay during the last four years. As long as the land is in meadow care must be taken not to allow the meadow to become bare, for any spot on which good grass ceases to grow gives shelter to weeds. The frost sometimes raises up the roots of plants which afterwards wither and die. To avoid this heavy rolling must be done as soon as the land is firm enough in the spring. If the ice has left some bare spots they must be broken up with a heavy harrow, grass seeds must be mixed with about ten parts of their weight of good pulverized dry earth and one part of superphosphate and sowed on the spots, on which immediately after a heavy roller should be passed. If weeds appear, they must be weeded out by hand, and if that is done as they show themselves they will not spread. Above all, cattle should never be allowed to graze on the meadow neither in the spring nor in the fall of the year.

Tenth, Eleventh, and Twelfth Years—Pasture.

During the last three years of the rotation the piece which has been four years in meadow is given up to pasture. To have this pasture in good condition, the dung dropped by the cattle must be carefully spread, to prevent the grass from being burnt at the place the excretions fall. This will also prevent the hatching of the eggs of the horn fly, which deposits them in the newly dropped dung. The tufts of grass, which from one reason or another, the cattle leave untouched here and there must also be removed. These tufts, if allowed to grow, ripen and exhaust the soil. In spring the care mentioned above for meadows must be given to pasture land. Another important point is that the pasture should be divided in small plots by temporary fences in order to have a plot of new grass untouched and unsoiled by the cattle to give them every ten or fifteen days. In this way there is no spoiling nor waste of grass.

Possible Alterations of this System of Rotation.

Of course, this rotation is not proposed as the only good one to follow, nor do I pretend that it is susceptible of no alterations. On a light soil we will find sometimes that hay won't stand four years in good condition on the land. In such a case the rotation will be shorter by one or two years. On the other hand, on some very rich land, we get good first class crops of hay during as long as six or even ten years. Under such conditions don't touch the meadow as long as it gives a good crop of hay. But then give it every three years a good top-dressing of manure immediately after the hay is taken up. If you follow this system, of course your rotation will be longer according to the number of additional years the land is kept as a meadow.

General Rules to Follow for Obtaining Satisfactory Results.

In this, as in other systems of culture, there are certain strict rules which must be followed in order to obtain good results. These rules bear upon the cleaning of the land, drainage, fences, weeds, selection of seeds, care of manure, selection, care and feeding of stock. I will make a few remarks on these various topics in my Part II.

Part II. of Mr. Chapais' article will appear in our next issue. For a short biographical sketch of Mr. Chapais, see FARMING *for March, page 476.*

MR. JOHN. J. LENTON, Biltmore, N.C., writes: "The recent changes in FARMING have done you great credit. Canada was certainly in need of a high-class agricultural magazine, but FARMING is to the purpose, and I feel sure the farming community will appreciate it and heartily co-operate with you to make and keep it really first-class."

"The last few numbers of FARMING have many excellencies." J. P. FOX, Winchester, Ont. (Secretary of Dundas County Farmers' Institute).

HOW WE CAN EXTEND THE MILKING PERIOD OF OUR COWS—WITH SPECIAL REFERENCE TO THE CULTIVATION OF AUSTRIAN BROME GRASS.

By S. A. BEDFORD, Superintendent, Dominion Experimental Farm, Brandon, Man.

MR. S. A. BEDFORD, the Superintendent of the Experimental Farm at Brandon, Manitoba, was appointed by the Dominion Government to take charge of the farm as soon as it was purchased in 1888. Previous to his appointment he accompanied the Director, Dr. Saunders, on a trip made for the purpose of examining all parts of the province with the view of selecting the best location for the farm. Since his appointment he has improved the farm and carried on its work with the utmost degree of success. He is looked upon by everyone as being "the right man in the right place." To an interviewer, Dr. Saunders of Ottawa, Director of the Government Farms, has thus testified to Mr. Bedford's work at Brandon: "Kind and courteous to a degree, an indefatigable worker, and an enthusiastic experimentalist, Mr. Bedford's efforts have indeed been crowned with success; for where chaos and weeds once held possession now order and neatness prevail; avenues are nicely gravelled and lined with trees; experimental plots have been carefully laid out; the testing of grains, grasses, fodders, trees, shrubs, and flowers in all their varieties, has been carried on systematically; and the animals of the farm—specimens of different breeds—have been kept in the pink of condition. But Mr. Bedford's fitness for his position is evidenced, not only in the success of the farm itself, but, what is of more importance, in the interest in the farm taken by the farmers throughout the province, as attested by the increasing amount of correspondence which he has to attend to and the increasing number of visitors who come to the farm every year, to see it and inspect its operations."—Mr. Bedford was born in Sussexshire, England, in 1852. He came to this country (Ontario), in 1863. After following farming for some time on his own account in Oxford County, he removed to the Northwest in 1877, and took up land near Thornhill, in Southern Manitoba. From the time of his first settlement in the province until his appointment to the Experimental Farm he devoted a great deal of his attention in the interests of colonization companies towards encouraging emigration to the province and to the Northwest Territories. For some years he had over four hundred families under his care.

S. A. Bedford,
Superintendent Dominion Experimental Farm, Brandon, Man.

When speaking to a dairy expert some years ago, he gave it as his opinion that the only serious drawback to successful dairying in this province was the very short season of pasturage on the average prairie farm. Since then, however, many steps have been taken towards lessening this drawback, until now, with proper management, the milking period can be made fully as long as in Ontario.

Requirements.

The following are some of the requirements necessary to obtain the maximum yield of milk:

(1) The selection of suitable cows.

(2) The cows must be in good condition when calving.

(3) Milking should commence early.

(4) A good flow should be kept up all summer.

(5) The flow should continue late in the fall.

The Selection of the Cows.

I will leave the subject of the selection of suitable cows to be discussed by better qualified persons, but I would point out that even the best cows require to be fed with easily digested and nutritious food, before as well as after calving, if the best results are to be attained. It is unreasonable to expect a large return from the thin, mangy cows one often sees in the spring, for by the time such animals have recovered their vitality much of the milking season is over.

The Usefulness of Roots or Fodder Corn.

We have found that a limited quantity of roots or fodder corn in the ration greatly assists to fit cows for calving. These feeds appear to produce the laxative condition so desirable for this trying period.

Cows Come In Too Late.

We find, as a rule, that in this province cows come in too late in spring. This does not give sufficient time for their calves to be weaned from milk before the factory season commences. As there is a general scarcity of nutritious food at this time of the year, farmers prefer to have their calves come on full pasture rather than earlier in the season, when often there is nothing but dry hay provided, and possibly not an abundance of that. But the difficulty here can surely be avoided, in a country where such large crops of roots, fodder corn, and coarse grain can be grown, and where bran is as cheap as it is at present.

Liberal Feeding Required at Calving Time.

The nutritious food should be given not only when the cow is confined to the barn, but even during the first few weeks of pasturage. A liberal allowance should be fed both morning and night, as the soft pasturage of early spring is deficient in feeding qualities. With a little care in these matters both the condition of flesh and the flow of milk can be kept up, and the herd be prepared to do its best when on full pasture later in the season.

How to Obtain Good Native Pastures.

Much complaint is heard regarding the small amount of food afforded by our native pastures. This we find can be remedied on the higher lands by breaking up the old run-out sod, taking off a crop or two of grain, and then re-seeding it to native or other grasses. On a plot treated this way four tons of clean native hay was cut, while a plot adjoining it left in virgin sod gave only half a ton of very weedy hay. We find that it is best before seeding to grass to take off two or three crops of grain, so as to kill out any perennial roots that may be there, and to germinate as many weed seeds as possible.

Keeping Up the Supply of Milk in the Fall Months.

We have now come to our last requisite, the keeping up of the supply of milk in the fall months.

Native Grasses Alone Not Sufficient.

While our native grasses can scarcely be excelled for the quality of butter and cheese that can be made from them, they have the great disadvantage of starting late in the spring, and ripening or drying up early in the fall; and this greatly lessens their utility as pasture. At the farm in Brandon we have found no grass to equal the natives in yield of hay, but many of the imported grasses start earlier in the spring, and keep green later in the fall; for this reason we do not recommend the natives for pasture when sown alone. Among the best imported grasses for pasture and hay is the Austrian Brome grass, and a few notes on its cultivation, and on the results obtained in pasturing from it, may be of benefit.

AUSTRIAN BROME GRASS.

Austrian Brome grass is a perennial grass. It is a native of Russia, but it has been cultivated for a long time in Austria; hence its common name. It has a tall stalk with a spreading head, and the plant is well provided with leaves. We find it relished by both cattle and horses, calves being particularly fond of the tender leaves; and, judging by several analyses, it is very nutritious.

Its Suitability for Pasture.

As a pasture grass for this province, the Austrian Brome grass is, perhaps, unequalled. Starting early in spring, it is fit to pasture two weeks earlier than our native grasses, thus enabling cattle to be turned out much sooner. The aftermath in summer and fall is also heavy.

This year at the Experimental Farm at Brandon, cattle were pasturing on it up to the first of November, and when snow came it was still several inches high, and quite green. There is no question that this grass will materially assist in keeping up the flow of milk in the autumn months, when native pastures are dried up, thus overcoming one of the greatest drawbacks to dairying in this province, viz., the shortness of the season.

Its Persistency.

A field of this grass was sown on the Experimental Farm in the spring of 1890, and it has borne crops of hay every year since. The first four crops averaged from 1½ to 2½ tons per acre.

How to Sow It.

Three different plans for seeding with this grass have been adopted on the Experimental Farm.

(1) The grass seed is sown broadcast by hand with a grain crop, preferably with wheat. This is done just before or just after the grain is sown, when the one harrowing will cover both lots of seed. To avoid burying the grass seed too deep, it should not be sown on rough, plowed land until it has been harrowed at least once. The objection to sowing this grass with a crop of grain is that should a drought follow the sowing, as the grain will have the strongest plants, they will absorb all the moisture and leave the tiny grass plants to perish; and should the season be a wet one, or the soil strong, the grain will lodge and smother out the grass.

(2) A better plan, and the one generally adopted, is to sow the grass seed on spring-plowed stubble, in the month of May or early June.

Weeds and a volunteer crop of grain come up with the grass, but these are cut down before the seeds are formed. This leaves only enough for protection to the young grass, and their growth is in no way checked. The only objection to this plan is that some of the shorter weed plants, in spite of every precaution, will escape the mower and go to seed, and the crop of grass the next year will be more or less mixed with weeds.

(3) On farms not subject to drifting by winds the better plan is to prepare the land as for summerfallow, by plowing in May or early June, and to follow by harrowing or cultivating until about July 15th, when the seed can be sown and harrowed in. The seed will germinate in the moist, fallowed land at once, and the young plants will have made a good stand by winter. If the cultivation has been thorough, the surface soil will be quite free of weeds, and the crop of grass the following year perfectly clean. This is an excellent plan to follow when the grass is intended to be saved for seed, as the sample is pretty sure to be clean.

On soils liable to injury from wind this plan is not to be recommended, as the well-worked soil is very apt to drift, and expose the grass seed to injury. Eastern authorities recommend sowing from 25 to 35 pounds of seed per acre. This is much too thick for our country. With such thick sowing the grass soon becomes matted and fails to send up stalks, and in a year or two it is useless except for pasture, and in a dry season even the pasture is poor. With from 15 to 20 pounds of seed per acre, the stand is sufficiently thick to insure a good crop; the plants are not crowded, and large crops of hay are secured the first two or three years; and if by that time the grass becomes too thick it can be pastured.

Growing the Seed.

The plants produce abundance of seed which weighs 14 pounds per bushel. The yield of seed this year on a four and a half acre field at the Farm was 511 pounds per acre. Several Americans visiting the Farm last summer expressed surprise at the fine crop of brome seed growing here, and stated that an almost unlimited market could be found for it in the neighboring republic, where it was found impossible to grow such good crops of seed. It is found here that the ripening of a crop of seed materially lessens the yield of hay in the following year, but does not appear to injure it for the pasture.

Its Extermination when Necessary.

Owing to the many branching roots of this plant some anxiety has been expressed regarding the danger of its spreading and becoming a weed. In the six years it has been growing on the Brandon Farm none of the plants have spread; and on a plot broken thinly immediately after haying, and backset this fall, it was found that the sod was well rotted and the plants apparently all killed. Another field, however, that was allowed to ripen its seed, and then plowed late in August, was not well rotted when backset this fall, many of the plants being quite green. Evidently for the complete extermination of the plants the grass must be broken early, and then backset in good time.

Yield of Brome Grass per Acre.

The following table shows the yield of Brome grass, as grown on the Brandon Experimental Farm, since it was first sown (with the exception of 1892) with character of soil, area of fields, etc.

Date.	Yield per Acre.		Crop.	Age of Grass.	How Situated.	Character of Soil.	How Sown.	Area Occupied.
	Tons.	Lbs.						
1891	2	1105	1st	2 years.	Valley	Black loam	With grain	1/10 acre
1893	1	333	3rd	4 "	"	"	"	1/10 "
1894		1668	4th	5 "	Undulating	Sandy loam	On summer fallow	1/10 "
1895	1	950	2nd	3 "	Side hill	"	With grain	1/4 "
1896	2	80	2nd	3 "	Valley	"	"	1/10 "
1896	2	350	5th	6 "	Undulating	Very gravelly loam.	"	3/4 "
1896	1	1252	2nd	3 "	"	"	"	"

Its Usefulness for Fall Pasture.

As an illustration of the usefulness of Brome grass for fall pasture, I will give you our experience on the Brandon Farm last fall. On September 3rd last, we experienced eight degrees of frost. This soon dried up all the native grasses and the flow of milk from the farm herd of four cows fell from 116 pounds on the 7th, to 88 pounds on the

20th, making a gradual decrease of two pounds per day per cow. On the 20th, the cattle were turned into summer fallowed fields, partly sown with grain late in summer, and the balance more or less grown up with volunteer crop. By the end of the first fortnight the decrease of two pounds per day had been turned into a slight increase, but the pasture on the fallow was thin, and the plants soft and apparently not very satisfying. After being on the fallow for three weeks the feed became short, and the cows were herded on a field of Austrian Brome grass of the previous spring's sowing. The grass was from six inches to a foot high, quite green and fairly thick on the ground. During the fortnight the cows were in this field the flow of milk again increased, averaging thirteen pounds more per day than during the time they were on the summer fallow. The Brome grass was much thicker on the ground, and therefore contained more feed per acre, and was apparently more nourishing. The Brome grass was not nearly all fed off when winter set in, and it remained green until covered with the snow. Apparently this grass is excellent for pasture, and every farmer keeping cows should have a field ready so that the cows may be turned into it before the native pasture is ready in spring and after it is dried up in the fall.

SHEEP FEEDING.*

By J. A. CRAIG, B.S.A., Professor of Animal Husbandry, University of Wisconsin; formerly Editor of *The Canadian Live Stock and Farm Journal*, the predecessor of FARMING.

PART II.—THE FEEDING OF SHEEP FOR MARKET.

In feeding sheep for market the important consideration is the profit, and that depends on many circumstances. The feeding value of different foods, their cost, and the time occupied in fattening and marketing the sheep, are perhaps the most influential. It will be advisable to consider (1) the feeding of lambs that are to be sold to an early market some time during the interval from birth to weaning, (2) lambs intended for the fall market, and (3) those fed until they reach the period of their fullest development, which is usually when they are about 1 year old.

Professor J. A. Craig.

NOTE.—For a biographical sketch of Professor Craig, see FARMING for October, page 65.

Fattening Lambs for the Early Markets.

In preparing lambs for the early markets the best gain, to my knowledge, is that made by three lambs at the New York Cornell Station, which made a weekly gain per head of 5.36 pounds, extending over a period of nine weeks. Another lot of three made an average weekly gain of 4.47 pounds per head, extending over a period of twelve weeks. In neither case, however, is the composition of the ration or the amount of grain reported. The best gain in the writer's experience at the Wisconsin Station has been made by four lambs that were fed a mixture by weight of four parts of bran, four parts of corn meal, and one part of linseed meal. When the experiment started, the lambs were about three weeks old, and they were fed for ten weeks on this grain ration, receiving in addition the milk of their mothers. The average weight of each lamb at the beginning of the experiment was 18.6 pounds, and at the end 62.5 pounds, an average weekly gain per head of 4.48 pounds. They each ate 26.6 pounds of the grain mixture during the ten weeks, costing 18 cents per head.

The results that come next to these in profit were obtained from feeding a grain mixture consisting of two parts of ground wheat and one part of ground corn by weight. The lambs were about four and one-half weeks old when the experiment started, and averaged 26.1 pounds in weight. When the experiment ended fourteen weeks later, they averaged 77 pounds in weight,

*Being part of a Special Farmers' Bulletin recently issued by the Department of Agriculture for the United States.

having made an average weekly gain per head of 3.63 pounds. They each ate 40.5 pounds of the grain mixture in the fourteen weeks, costing 33.3 cents.

Another lot of five lambs, about six weeks old at the beginning, fed a mixture of equal parts of bran and linseed meal before weaning, made an average gain of 40.9 pounds in twelve weeks, or a weekly gain of 3.4 pounds per head. They ate 50 pounds of the grain mixture per head, which cost 37 cents.

In another trial with fourteen lambs a mixture of bran, corn meal, and linseed meal gave an average weekly gain of 3.1 pounds, extending over a period of twelve weeks. During the first three weeks the mixture was three parts of bran and one part of linseed meal, and during the remaining nine weeks it was two parts of bran, one part of corn meal, and one part of linseed meal. The lambs each ate 42.7 pounds of the mixture during the twelve weeks, which cost 34 cents.

Considering these results, it is clear that corn meal is the leading food to feed young lambs for quick and profitable fattening. Bran probably ranks next, and with these linseed meal may usually be fed in small quantities to advantage.

Fattening Lambs for the Fall Markets

Under some conditions it may not be profitable to put the lambs on the market early or to carry them over winter, but it may be better to sell them in November, before housing is required. The best weights that we have obtained at the Wisconsin Station with lambs fed until November have been made by the lambs previously mentioned as receiving bran, corn meal, and linseed meal before weaning. After weaning they were fed 2 parts of ground corn and 1 part of linseed meal by weight. On November 19th, each lamb averaged 102.7 pounds in live weight, and in the nineteen weeks that elapsed since weaning they had made an average weekly gain of 2.66 pounds per head. They each ate 183 pounds of the grain mixture, in addition to pasturage, at a cost of $1.47 per head for the grain.

Linseed meal and cotton-seed meal.—In a comparison of these, in addition to corn meal for fattening lambs after weaning, a weekly gain of 3.3 pounds per head was obtained from the mixture of 2 parts of corn meal and 1 part of linseed meal, and 2.95 pounds per head from the mixture of 2 parts of corn meal and 1 part of cotton-seed meal, with pasturage. In the ten weeks' feeding the 5 lambs on the linseed meal mixture had eaten 432.5 pounds of grain, while those receiving the cotton-seed meal ration ate 346.5 pounds of grain. In the last five weeks there were only 4 lambs in the latter lot. The cost of gain, exclusive of pasture, would be at the rate of $2.09 per 100 pounds for the linseed meal ration and $2.25 for the cotton-seed meal ration.

Oats with pasturage.—The feeding of oats to lambs being fattened on pasture after weaning has given us returns that are close to the foregoing ones. In one trial 5 lambs attained an average weight of 99.8 pounds in sixteen weeks after weaning, making an average weekly gain of 2.1 pounds per head. Before weaning they had been fed a grain mixture of bran, ground corn, and linseed meal, of which they ate 42.7 pounds, costing 34 cents per head, and after weaning they ate 6.9 pounds of the same mixture and 120.9 pounds of whole oats, costing $1.13 per head.

In another trial, 5 lambs being fattened on pasture after weaning were made to weigh an average of 97.6 pounds by November 8th. In the twelve weeks before weaning they had gained an average of 3.4 pounds weekly by eating 50 pounds of equal parts of linseed meal and bran, costing 47 cents, and after weaning they received whole oats and pasture. During the fourteen weeks so fed they made an average weekly gain of 1.4 pounds, and they ate 52.1 pounds of oats per head, costing 56 cents.

More economical results were obtained by restricting the amount of oats to 0.5 pound per head daily while the lambs were on good pasturage. In the trial in which this amount was fed the 5 lambs gained during the twelve weeks 1.35 pounds per head weekly. They each ate 42 pounds of oats, costing 36 cents. These lambs were made to average 93.3 pounds by November 9th. They were the same lambs previously described as being fed ground wheat and ground corn before weaning.

Cotton-seed cake and corn meal with pasturage.—In experiments at Woburn, England, conducted in behalf of the Royal Agricultural Society of England, trials extending over seven years have been made in fattening lambs with these foods in addition to pasturage on clover that had been seeded the previous year. Each year three or four lots of sheep in groups of ten were annually fed off the acre of pasturage, with the following average results:

	Pounds.
680 pounds of undecorticated cotton-seed cake fed with 1 acre of pasturage gave an average increase of	376.5
728 pounds of corn meal fed with 1 acre pasturage gave an average increase of	377.1
No additional food with 1 acre of pasturage gave an average increase of	264.1

These results indicate that the feeding of these feeds in addition to pasture would be profitable,

and that the rate of gain, being 55.3 pounds per 100 pounds of cotton-seed cake and 51.7 per 100 pounds of corn meal, is slightly in favor of the former, while the cost of gain is favorable to the corn meal.

Fattening lambs on rape.—There are exceptional possibilities in well-grown rape for fattening lambs, if it is fed with proper jndgment and care. It may be fed to best advantage in the early fall, and hence is of valuable assistance in *fattening lambs for the fall or early winter market.* It supplies a vast amount of food that the lambs are very fond of, and as it withstands drought and early frost better than most succulent fodders it is a crop that may be relied upon with at least common certainty. The first trials reported with rape for fattening lambs were made in England, about 1845. Ten wethers fed on rape alone from August 10th to September 21st, made an average increase in the six weeks of 20 pounds, or 2 pounds per head weekly.

The most extensive trials in feeding lambs on rape have been carried on at the Ontario Experimental Farm. In 1890, 54 acres of rape pastured 17 head of steers and 537 sheep, and 1 acre of the rape sustained 12 lambs for two months. It is estimated that the food provided by an acre of rape was worth $16.80. In another trial, rape alone was fed to 60 lambs, and they were kept on 2.18 acres for twenty-five days, during which time they increased in weight 390 pounds, or an average weekly increase per head of 1.82 pounds. Again, in an experiment on one-sixth of an acre, 6 lambs were kept for forty-two days, and from this it is concluded that 1 acre would have pastured 36 lambs two months and have made 762 pounds of mutton.

At the Michigan Station, 15 acres of rape pastured 128 lambs for seven and a half weeks, with a total gain of 2,890 pounds. At this rate it is estimated that 1 acre would pasture 9 lambs seven weeks, and they would produce 202.5 pounds of increase. It is stated that the field would unquestionably have pastured 10 lambs for the period of ten weeks.

Prize-Winning Hampshire Down Ram Lamb,
Owned and bred by the Right Honorable the Earl of Carnarvon, Highclere Castle, Newbery, Berks, England.

Rape and pasture.—At the Ontario Station an experiment was tried in feeding rape alone against rape and pasturage. Thirty lambs comprised the two lots, the one being put on an acre of rape and the other given a similar amount with pasture. In fifty-eight days both lots had eaten their respective acres, but the 15 on rape alone gained an

average of 22.93 pounds per head, and those receiving rape and pasture 28 pounds per head, thus showing the advantage of having pasturage for the sheep to graze when being fed on rape.

Rape and oats.—At the same place 15 wethers were fed on an acre of rape, with 0.5 pound of oats in addition. Besides eating almost the whole of the crop from an acre in fifty-eight days, they also consumed 345 pounds of oats, and gained 23.67 pounds per head, or a weekly increase of 2.8 pounds per head.

Rape with corn and oats.—At the Wisconsin Station 16 wethers were fed on 0.7 of an acre of rape for twenty-five days, and also ate 153.5 pounds of oats and 97.5 pounds of whole corn. They gained a total of 149 pounds, or a weekly average of 2.6 pounds. Valuing the foods and the wethers at cost, and the selling price of the latter at 4 cents per pound, the rape would be worth $14.48 per acre.

Rape, wheat, oats, and linseed meal.—At the Wisconsin Station 21 wether lambs were fed on 0.5 acre of rape for ten weeks. They ate in addition a total of 1,439 pounds of the grain mixture, and made a total gain of 413.5 pounds, or a weekly gain slightly less than 2 pounds per head. Valuing the food at current prices, and estimating the lambs to be worth 3 cents per pound when they were put on the rape and 3.5 cents when taken away, the 0.5 acre would be worth $10.12, or an acre $20.24.

When these wethers had eaten the crop on 0.5 acre they were put on another piece that had been sown broadcast. One-tenth of an acre was eaten in two weeks, with 160 pounds of ground wheat, 160 pounds of linseed meal, and 160 pounds of ground oats, and the 21 wethers gained 142 pounds, or a weekly gain of 3.3 pounds per head.

Precautions necessary in feeding rape.—When sheep are being herded on rape there is danger of bloating or diarrhœa from excessive eating. Pasturing the sheep for a few hours previous to turning them on the rape, or allowing them to have the range of a small piece of pasture at all times, will assist in preventing these troubles. The use of the trocar and cannula is the most efficient method of relieving bloat in urgent cases, while in mild attacks the giving of ammonia, a teaspoonful in three times as much water, will usually bring relief.

Group of Purebred Southdown Sheep.
The property of A. Telfer & Sons, Paris, Ont. Taken on the farm of the Messrs. Telfer, in the autumn of 1896.

Shearing Wether Lambs Before Fattening Them.

When lambs are being fattened early in the fall or in preparing them for winter fattening, it is a profitable practice to shear them before the fattening begins. At the Ontario Experiment Station 10 lambs sheared in January made practically the same gain in weight as 10 others not shorn and similarly fed. At the Wisconsin Station no advantage has been found from shearing in December. Those shorn yielded a total of 2 pounds less washed wool than the others, and

made a total gain of 2.7 pounds less than the wethers that were not shorn; and the cost of 100 pounds of gain was $4.70 for the shorn and $4.40 for the unshorn lots.

Shearing in November.—Shearing the wether lambs before fattening them in this month proves to be of slight advantage. The wethers that were shorn made 7 pounds more gain than those left unshorn, but the cost of gain was $4.44 per 100 pounds in comparison with $4.17 in the case of those that were not shorn. One advantage noted was the rapid fattening of the shorn wethers after shearing and during the first half, or first eight weeks, of the feeding period.

Shearing in October.—It was found decidedly beneficial to shear lambs in this month before fattening them. Five wethers were shorn October 14th, and fed for fifteen weeks against another lot of 5 left unshorn. The shorn lot gained 225.5 pounds and the unshorn 210.5 pounds, or an average weekly gain per head of 3 pounds for the shorn and 2.8 pounds for the unshorn. The cost of 100 pounds of gain was $6.11 with the shorn lot and $6.67 with the unshorn. In another trial with 10 wethers, 8 were shorn October 9th, and the same number left unshorn. In ten weeks' feeding the shorn lot gained 194.4 pounds, or 3.4 pounds per head weekly, while the unshorn lot gained 169 pounds, or 3 pounds per head weekly. In both of these trials in October and in the November trial it was observed that the removal of the fleece hastened the early maturity or fattening of the wethers up to the time the fleece had again grown over 1 inch in length, or until about eight weeks had passed.

Fattening Wether Lambs to Maturity.

Preparation for fattening.—It is the common practice on most farms to withhold grain from the lambs for a time before and after weaning, in the belief that they will make quicker and more profitable gains while being fattened later. For four years we have fed lambs at the Wisconsin Station from birth until slaughtered, and have kept accurate account of their food and gain, so as to understand the influence of grain feeding at all times. The evidence is clear that the greatest and most profitable gain is made in the younger days of the lamb, and that the feeding of such food as bran, linseed meal, and oats before weaning, and a small quantity of oats after weaning not only pays in direct profit if the lambs are sold at any of these times, but the fattening later is none less profitable because of this management.

Prize-Winning Group of Purebred Leicester Sheep.
Bred and owned by James S. Smith & Son, Maple Lodge, Ont.

Feeding grain before weaning has produced an average of 61 cents per head more profit at weaning time than where no grain was fed. With lambs sold in the fall, feeding grain both before and after weaning produced an average of 34 cents per head more profit than where no grain was fed.

Feeding such foods as oats, bran, and linseed meal before and after weaning did not influence the gain during the fattening period, which usually extended over three months. The cost of gain, however, was 29 cents per 100 pounds cheaper in the instance of the lambs that had no been fed grain.

One of the most profitable features of grain feeding lambs previous to fattening was observed to be the earlier maturity of those that had had

grain from birth. For instance, in one trial the lambs fed grain from birth attained an average weight of 113 pounds seven weeks earlier than those that had had no grain previous to fattening, and this weight was reached at a smaller cost in the instance of the lambs fed grain from the start.

System of feeding.—There is unlimited variation in general practice in regard to this point. It has been our custom to feed the grain first, then the succulent food, and last the dry fodder. In feeding fattening sheep of the age indicated the aim should be to induce the wethers to eat as much as possible. At this time they should receive all the grain they will eat up eagerly. To secure the best results it is a good plan, where it is possible to do so, to feed the grain in two, or even three, feeds. This may be done easily when less than 100 are fed together, but with more than that it is not a commendable plan. By feeding only one-third of the full feed intended it is easy to gauge the appetites of the wethers, which is a very important matter. The smallest degree of overfeeding is certain to react on the gain of the sheep, for in some instances it will probably cause scouring, in others constipation, and it may even result in the loss of some of the lambs.

Essentials in management.—There are two essentials that contribute to cheap and rapid gains, and these are quietness and confinement. The least excitement brought on by the appearance of dogs, haste, or abuse on the part of the attendant is certain to be shown by the scales. For some time the Wisconsin Station used yards in connection with the fattening pens, but for the last two years they have been removed, and better results seem to have followed.

Quantity to feed.—Careful attention must be given to the amount of grain that is fed. This part of the ration costs most, gives the quickest returns, and is the most likely to produce some disorder in the digestion of the sheep. For the first two weeks it is much better to give them only one-half what they need than to feed them too much; especially is this true if over 50 sheep are being fed together. Starting the sheep safely and well on a ration brings the feeder's skill into play, particularly if the sheep have been unaccustomed to grain. There are some foods that are safer than others to feed at the beginning, and among these oats or bran have a general preference. Wheat is comparatively safe, while corn is probably the most dangerous to feed alone. One pound per head daily of either bran or oats is liberal feeding for sheep that are accustomed to grain, and a slightly smaller quantity will be sufficient for those that have not been accustomed to it. The quantity of grain may be gradually increased as the capacity of the sheep to consume it becomes greater. The careful and successful feeder trains his sheep to eat with as much carefulness as the trainer teaches a colt to trot. It is safe to assume that wethers at this age may be fed all the grain that they will eat, as it is usual for them to profitably utilize it in making gain, unless they are unhealthy or the management is defective. It is a hard matter to estimate the amount of grain to feed, owing to the variation in the consuming capacity of sheep. In starting it has been our custom to feed from 0.5 pound to 1 pound. A month later the wethers will probably be taking 1.5 to 2 pounds, and during the last month from 2 to 3 pounds per head has been the capacity of most of the sheep we have had in experiments.

Cost and value of the increase.—In comparing foods for fattening sheep it has been the custom to compare them on the basis of the cost of 100 pounds of gain, overlooking the increased value per pound which the sheep realizes in the market because of the increase that has been made during the feeding period. It is but a moderate advance to accept 3 cents per pound as the cost price of feeders and 4 cents per pound as the selling price when ready for market. Thus each pound that cost 3 cents when the feeding began becomes worth 4 cents at the close of the feeding, owing to the better condition of the sheep, which increases the percentage they will dress. This better condition is produced by the foods that are fed, so that in estimating the profits from any ration the ration should be credited with this increased value per pound of the sheep. Calculations of profit in succeeding experiments here mentioned have been made on this basis.

Fodders for fattening wether lambs.—There is no doubt as to the preference of the sheep in the choice of fodders, but there is no experimental data upon which to base conclusions as to their relative values. Clover hay seems to be the fodder they relish most, then pea straw, corn fodder, and timothy hay. The condition of the fodder will materially influence the gain, for if it is musty, burned, or dusty, or has been allowed to grow too coarse, they will neglect it. Two or three pounds of any of the fodders mentioned will be about the quantity that wether lambs 9 or 10 months old will eat daily through the fattening period.

Succulent foods for fattening lambs.—When being fattened wether lambs should have some succulent food in their ration, for the reason that they will remain healthier and not be troubled with the common disorder called stretches, and

they will usually make a better gain. It is very seldom that a group of sheep may be fattened on dry food without some of them dying or suffering with constipation.

At the New York Cornell Station two lots of 5 lambs each, about 8 months old, were fed alike, except that one lot had corn silage and the other hay. In nineteen weeks the lot on silage gained a total of 132.5 pounds; the other lot gained 124 pounds in the same time. The silage ration was estimated to be the cheapest. Four pounds of silage were considered to be equivalent to 1 pound of hay.

The value of roots in a ration was shown by trials at the Michigan Station, in which corn and hay were compared with corn, roots, and hay. Ten sheep on the former gained 328 pounds in fifteen weeks, as compared with 397 pounds on the corn, roots, and hay. The profit was about 3 cents per head more for the latter lot.

In other trials at the same station corn and linseed meal were fed with hay, against the same kind of grain and hay with roots. Ten lambs on the hay ration gained 357 pounds in fifteen weeks, while 10 on the hay and roots gained 392 pounds. In this case the profit was greater without than with the roots.

At the Wisconsin Station a ration of oats, corn, and linseed meal with hay was fed against a similar ration containing roots. The 4 lambs fed the former ration made a weekly average gain of 2.64 pounds per head, and those fed the ration with roots made a weekly gain of 2.48 pounds per head. The profit was about 2 cents per head more from the ration without roots.

These results do not show a decided difference in favor of either ration, but in feeding large numbers the advantage more decidedly appears in favor of the succulent ration because of the decreased risk of deaths due to digestive derangements.

Roots and silage have been compared for fattening wether lambs without any marked difference in their value becoming apparent. If there is any, the rate of gain is in favor of the roots, and the cost of gain is favorable to the silage.

Corn.—This is assuredly the most fattening farm grain that may be fed to sheep. In relying on it alone, however, there is much difficulty in maintaining the appetites of the sheep and in preventing disorders and deaths. Corn, roots, and hay were fed in a ration at the Michigan Station against different rations, and the corn ration gave a weekly gain per head of 2.6 pounds, which was only equalled by a mixture of corn and oats.

Corn and hay were fed for fifteen weeks in trials conducted at the Michigan Station. The 10 wether lambs ate 1,579 pounds of corn and 1,095 pounds of hay and gained a total of 328 pounds, giving a profit of 59 cents per head. At the Wisconsin Station 5 wether lambs ate in eight weeks 427.75 pounds of corn and 288.5 pounds of hay and gained 104.5 pounds, giving a profit of 87 cents per head.

Cracked corn and hay were fed at the Minnesota Station to 10 wether lambs weighing 710 pounds, and in twelve weeks they ate 1,103 pounds of corn and 849 pounds of hay and gained 211 pounds, or an average weekly gain per head of 1.75 pounds. This ration returned a profit of 44 cents per head.

Oats.—In beginning to fatten wether lambs it is safe to feed oats. The lambs like them, and they will begin to eat them at once. Fed alone, however, they do not produce as great a gain as corn. Hence, as the fattening proceeds, the quantity of oats should be gradually decreased.

At the Ontario Station 4 wether lambs were fed for fifteen weeks on oats, hay, and roots, and gained 156 pounds, or a weekly increase of 2.6 pounds per head. At the Michigan Station 10 lambs fed for seventeen weeks on oats, hay, and roots gained 379 pounds, or a weekly average per head of 2.2 pounds. At average prices there was no profit in either case.

Oats and Swedish turnips were fed to 5 wether lambs weighing 548 pounds at Rothamsted, England, for ninety-seven days. The lambs gained 130.9 pounds, or an average weekly increase of 1.9 pounds per head, giving a profit of only 3 cents per head.

Crushed oats were fed in feeding trials at Woburn, England, in connection with Swedish turnips and hay chaff, with the result that 8 wethers increased 380 pounds in one hundred and twelve days, or an average weekly gain of 2.9 pounds per head. This high rate of gain appears to have been due to the crushing of the oats. Crushed or "grittled" barley fed to similar sheep gave a weekly gain per head of 2.8 pounds, while whole oats and barley mixed in equal parts and fed in similar quantities to the foregoing gave an increase of 3 pounds per head per sheep, and wheat in the same experiment fed whole in similar quantities produced an increase of 3 pounds per head weekly. The large gains appear to be due to the fact that the sheep were good feeders.

Peas.—The best satisfaction will be obtained from feeding peas when they are split or crushed and fed with other foods. At the Ontario Station 4 wether lambs were fed in fifteen weeks 628 pounds of peas, 1,050 pounds of hay, and 460 pounds of roots, and gained 105 pounds, or an

average weekly gain of 1.75 pounds per head. Charging the peas at 60 cents per bushel and the other foods at current prices, 45 cents per head was lost by feeding this ration.

Barley.—This grain has been experimented with for fattening sheep most extensively at the Rothamsted Station, in England. In one trial 5 wether lambs, weighing 602 pounds, ate in eighteen weeks 630 pounds of barley and 1,879 pounds of clover chaff, and gained 139 pounds, or an average weekly increase of 1.54 pounds per head.

Prize-Winning Aged Purebred Oxford Down Ram.
The property of Smith Evans, Gourock, Ont. Mr. Evans himself is at the head of the ram.

At the Minnesota Station 10 wethers weighing 733 pounds ate 1,268 pounds of barley and 630 pounds of hay in twelve weeks, and gained 199 pounds, or 1.65 pounds per head weekly. With barley at 45 cents per bushel, and the other foods and the lambs at market prices, there was a profit of 13 cents per head.

Ground barley has given slightly better returns. Four wether lambs weighing 519 pounds fed at the Rothamsted Station ate 280 pounds of ground barley and 3,867 pounds of mangel wurzels in ten weeks and gained 81 pounds, or a weekly increase of 2 pounds per head. The average profit was 51 cents per head. In another trial at the same station ground barley was fed with meadow-hay chaff to 5 wethers weighing 589 pounds. In thirty-two weeks they ate 1,120 pounds of barley and 2,899 pounds of the chaff, and gained 164 pounds, or a weekly increase of 1 pound per head.

Crushed or grittled barley was fed to 8 wethers weighing 959.25 pounds. In one hundred and twelve days they ate 658 pounds of grittled barley, 17,472 pounds of Swedish turnips, and 224 pounds of hay chaff, and gained 365.75 pounds, or an average of 2.8 pounds per head weekly. Charging the barley at 45 cents per bushel and the other foods at market prices, the increased value of the sheep shows that only market prices were obtained for the foods fed in this ration.

Wheat.—In an experiment at Woburn, England, with different rations, including linseed cake, linseed cake and undecorticated cotton-seed cake, crushed oats and barley meal, crushed oats and split beans, and lastly wheat, the wheat gave the largest gains. During the first period of the experiment it was fed in the form of meal, but was afterwards fed whole, with a very noticeable increase in the gains resulting. The 6 wethers fed wheat for one hundred and six days ate 558 pounds of wheat, and, as nearly as can be estimated, 12,720 pounds of roots and 277 pounds of hay chaff, and on this they gained 313 pounds, or an average of 3.4 pounds per head weekly. In another series of experiments at the same place with crushed oats, crushed barley, oats and barley mixed, wheat and oats mixed, and wheat alone, the best results were obtained from the whole wheat. The eight wethers receiving the whole wheat in one hundred and twelve days ate 658 pounds of whole wheat, 17,920 pounds of Swedish turnips, and 224 pounds of hay chaff, and gained 389.25 pounds, or an average of 3 pounds per head weekly. In the first series the wether lambs fed the wheat ration yielded a profit of 18 cents per head, and in the second 12 cents, rating wheat at 53 cents per bushel.

Small wheat was fed at the Minnesota Station in an experiment to determine the value of the various grains for fattening wether lambs. Ten wether lambs, weighing 737 pounds, ate in twelve weeks 1,505 pounds of small wheat and 742 pounds of hay, and gained 2,020 pounds, or an average weekly gain per head of 1.6 pounds.

Valuing the small wheat at $10.56 per ton, and the hay at $8, the profit returned by each lamb was 45 cents. In the same trial wheat screenings was fed to 10 wether lambs weighing 736 pounds, and in twelve weeks they ate 1,776 pounds of the screenings and 609 pounds of hay, and gained 244 pounds, or an average weekly gain per head of 2 pounds. On the same valuation the profit from each wether lamb was 53 cents.

Sheep of all kinds and ages appear to be very fond of wheat bran, probably on account of its flavor, and the fact that they digest it easily. Many of the large feeders in the West consider bran one of the safest and best foods to begin the feeding of large numbers, though they only rely on it alone for a few weeks.

Beans.—In the feeding experiments that have been made with beans as the only grain the results have been unsatisfactory. In a trial at Rothamsted, England, ground beans were fed with mangels in comparison with other grains, and a very unsatisfactory opinion was formed of their value, the sheep refusing to eat the beans and losing weight, so that the food had to be changed.

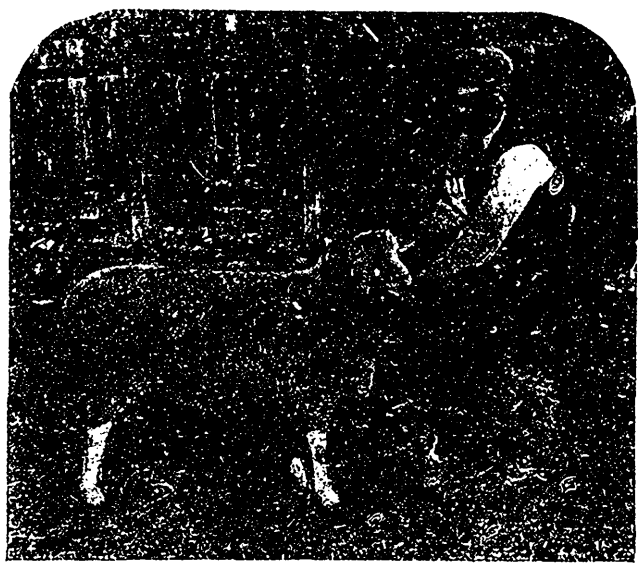
At the Ontario Station 4 wether lambs fed for fifteen weeks on beans, hay, and roots, gained 47.12 pounds, or an average of 0.95 pound per head weekly. This a very small gain, and as a consequence the ration proved a very unprofitable one.

Linseed cake.—This is a very healthy food for sheep, and they eat it eagerly, especially if it is not ground too fine. When crushed into pieces about the size of peas sheep eat it with relish. There is much difference in the different grades of linseed cake, and for this reason its feeding value varies greatly. In an experiment in England with linseed cake containing 6 or 7 per cent. of fat and other containing 15 to 16 per cent., the wethers ate very nearly the same amount of food on both kinds, while the gain with the linseed cake rich in fat was the much greater. It is estimated that this was worth $5 per ton more than the linseed cake low in fat.

In the trial conducted at Woburn with wheat, crushed oats and barley meal, crushed oats and split beans, linseed cake and undecorticated cotton cake, and linseed cake alone, the linseed cake was only second to the wheat in the rate of gain. The 8 wether lambs fed the linseed cake ration weighed 916.5 pounds at the beginning of the experiment, and in one hundred and six days they ate 588 pounds of linseed cake, and, as nearly as may be estimated, 16,960 pounds Swedish turnips, and the average weekly gain per head was 3.3 pounds, as compared with 3.4 pounds on wheat, 2.6 pounds on crushed oats and barley meal, 2 7 pounds on the mixture of crushed oats and split beans, and 2.7 pounds on the mixture of linseed cake and undecorticated cotton cake. While the linseed-cake ration gave a very high rate of increase, yet it was not a profitable ration, for only market prices were obtained for the foods fed.

In another series of experiments at the same place, in which linseed cake alone and mixtures of it with barley and malt were fed to sheep, the highest rate of increase was obtained from the linseed cake alone.

Results from feeding unmixed grains. –From the results presented in the outline of what had been accomplished in the feeding of single grain foods, it is evident that there are but few of them that give profitable returns when fed alone. Some give a high rate of gain, but the cost absorbs the profit, and others yield satisfactory gains so long



First Prize Aged Purebred Dorset Ewe.
Bred and owned by J. A. McGillivray, Q. C., Uxbridge, Ont.

as the sheep will eat them and continue in good health. At the average current prices the indications of the experiments are that corn is much the more profitable single grain to feed, next to which rank such as wheat, cotton-seed meal, or linseed, while most of the others enumerated barely pay returns equal to their market prices, and some, such as beans and bran, fail to do this.

Grain mixtures. — There is abundant evidence indicating that the merit of a grain mixture as a part of the ration lies in the fact that the sheep like it better than the unmixed grains, eat *more of it, and as a result gain more. The fact* that they eat more seems to be the chief element in making the profit less than in the feeding of some of the foods unmixed.

Prize-Winning Shearling Shropshire Ewe.

Bred and owned by R. Gibson, Delaware, Ont. The young man holding the sheep is Mr. R. Gibson, Jr., who captured the prize for sheep shearing against all comers at the recent New York Fat Stock Show.

Peas and corn.—In an experiment in feeding whole corn, corn and peas, corn and oats, and corn, peas, and oats to wether lambs, in addition to hay, the corn gave the poorest results of all, so far as the rate of gain is concerned, the average weekly gain per lamb being 2.6 pounds on corn, 2.7 pounds on oats and corn, 3.15 pounds on corn and peas, and 3.01 pounds on corn, peas, and oats. *The cost of 100 pounds of gain was,* corn, $3.99; corn and oats, $4.46; corn and peas, $4.20, and corn peas and oats, $4.46.

Oats and corn.—This mixture is probably more frequently used than any other in the West. In trials at the Michigan Station the 10 lambs receiving corn and oats with roots and hay were only equalled in weekly gains by those fed corn alone. This mixture surpassed bran alone, corn and bran mixed, oats and bran, and another of corn, oats, and bran, in weekly gain and in cost of gain.

At the Wisconsin Station it has been our custom, in fattening lambs that have been fed grain continuously from birth, to feed oats at first during the fattening, then add corn, and finally, if the lambs appeared to need it, to add some linseed meal. In one of the trials corn and oats were fed alone to 15 lambs throughout the fattening (twelve weeks) with hay in addition. They ate 1,523.5 pounds of corn, 1,073 pounds of oats, and 1,320 pounds of hay, and gained 529.5 pounds, or an average of 2.9 pounds per head weekly. *The profit on the lambs fed this ration at the* Michigan Station would amount to 54 cents per head, while that from those fed in our trials would be 67 cents. These figures indicate that both in direct profit and rate of gain the oats and corn mixture gives results superior to most other mixtures, while observation of the conduct of the wethers when being fed this ration justifies the assertion that it is an exceptionally wholesome food for sheep.

Peas, oats, and corn.—Five wethers fed a grain mixture of peas, oats, and corn with hay made an average weekly gain of 3 pounds per head. The profit was 76 cents per head, which was slighily below that of a lot receiving corn and peas, and also less than that of a lot on whole corn.

Bran, oats, and corn.—This mixture was tried at the Michigan Station in comparison with bran and oats and bran and corn. In the seventeen weeks the average weekly gain was 2.10 pounds per head on bran and corn, 2.11 pounds on bran and oats, and 2.3 pounds on the mixture of bran, oats, and corn. The profit on the bran and corn ration was 21 cents per head, on the oats and bran ration 10 cents, and on the bran, oats, and corn ration 22 cents per head. It will be seen from these trials that the best returns in profit resulted from feeding the corn and bran mixture and the corn, oats, and bran ration, for both of these surpassed the oats and bran.

Wheat and corn.—This grain mixture was fed to one lot of wether lambs at the Michigan Station in comparison with other grain mixtures, and very satisfactory results were obtained from it. Ten wether lambs weighing 800 pounds ate in fifteen weeks 743 pounds of corn, 743 pounds of wheat, and 1,183 pounds of hay, and gained 293 pounds, or an average of 1.97 pounds per head weekly. They gave a profit of 38 cents per head if we charge the wheat at 53 cents per bushel, corn at 40 cents, and hay at $8 per ton. This is a better return than the oats and bran, bran and corn, and oats, bran, and corn mixture fed in the same trial.

Corn and linseed meal.—In the above trials at the Michigan Station corn and linseed meal gave high results. Ten wether lambs weighing 829 pounds ate in fifteen weeks 347 pounds of linseed meal, 1,388 pounds of corn, and 1,152 pounds of hay, and gained 357 pounds, or an average of 2.38 pounds per head weekly. A profit of 41 cents per head resulted from feeding this ration. Cracked corn and linseed meal were fed in a ration at the Minnesota Station to 10 wether lambs weighing 722 pounds. In twelve weeks they ate 142 pounds of linseed meal, 1,284.3 pounds of cracked corn, and 634 pounds of hay, and gained 289 pounds, or an average of 2.4 pounds per head weekly. The profit from feeding this grain mixture with hay was 55 cents per head.

Barley and linseed meal. This mixture was fed in the same experiment as the preceding at the Minnesota Station. Ten wether lambs weighing 757 pounds ate in twelve weeks 159 pounds of linseed meal, 1,431.9 pounds of barley, and 603 pounds of hay, and gained 274 pounds, or an average of 2.2 pounds per head weekly. There was a profit of 13 cents per head, which is not so great as that resulting from the ration containing wheat and linseed meal.

Oats, barley, and wheat.—In the sheep-feeding trials at Woburn, England, oats and barley mixed equally by weight returned a weekly increase of 3 pounds per head, the oats alone 2.9 pounds, barley alone 2.8 pounds, and the oats and wheat 1.6 pounds per head weekly. Wheat alone did the best of all the grains fed, it giving a weekly increase of 3.06 pounds per head.

Corn, oats, and linseed meal.—The results that have been submitted from the feeding of different rations will go far toward justifying the practice we have followed in fattening wether lambs. They would be started on oats, and fed lightly for two or three weeks, then corn would be introduced, and for seven or eight weeks the grain portion of the ration would be corn and oats. During the last two or three weeks linseed meal would be added to the ration, and on this mixture the wethers would be finished. Though this mixture has not been fed in a trial against other grains, in three trials with this ration the average weekly gain per head has been 2.88 pounds, 2.9 pounds, and 2.98 pounds, respectively, and the profit per head has been 93 cents, 27 cents, and 26 cents.

The results of these trials declare corn to be the most profitable grain for fattening sheep. But practice teaches that other grains must be fed with it to maintain the appetites of the sheep and keep them otherwise healthy. It will likely be safest and best under most conditions to start the fattening with oats or bran, then introduce as much corn as possible, and finish the fattening with a mixture containing one part oats, one part oil meal, and three parts corn by weight. The data given in the trials described will indicate what the advantage may be, in using other foods under special circumstances.

POULTRY ON THE FARM.

By Mrs. Joseph Yuill, Carleton Place, Ont.

Mrs. Joseph Yuill, of Carleton Place, is one of the best dairywomen in Eastern Ontario, and perhaps in Canada. As is well known she was one of the very first to conceive the idea of the "travelling dairy," now so well established as a means of education in dairy matters. Her practical ideas in all poultry matters, however, are quite as much in demand at conventions, institutes, etc., as her ideas in dairying; and she is in fact one of the best practical poultrywomen in the province. For an interesting sketch of Mrs. Yuill, see Farming for December last, page 292.

I should like to give the readers of Farming an account of how I feed and care for my hens and the profit I make from them.

On the first day of January, 1896, I took sole charge of my hens (50 in all, not counting roosters), and I determined to keep an accurate account of the feed I gave them for the year. I also kept an account of their earnings.

I fed 2½ lbs. clover @ $8 a ton..... ..1 cents.
5 " shorts @ $12 a ton.....3 "
20 lbs. mangels @ 10 cts. a bush..... ....3⅓ cents.
5 " ensilage @ $2 a ton... ....½ "
Meat scraps..... ....½ "
5 " Oats @ 20c. a bushel..... .....3 "

11⅓

My fowls, therefore, cost me 11⅓ cents per day for six months.

How I Feed My Hens.

The way I feed my hens is as follows:

For their breakfast I take 2½ lbs. clover and put it in a pot with a half gallon of water and set it on the stove and let it come to a boil. Then I lift it off and allow it to stand for an hour. I put 5 lbs. shorts into a large pail; empty the clover on to the shorts and mix them, so that they will be moist but not wet.

At half past nine o'clock I feed them 20 lbs. of mangels. The mangels should have a narrow

strip of the peeling taken off the four sides to give the hens a start. Bore a hole through the end of the mangel with a sharp knife. Hang the mangel to the ceiling with a wire, high enough from the floor so that the hens can just reach it.

At noon I feed them 5 lbs. of ensilage, and all the clean, pure water they will take. In cold weather I warm the water. Hens should never be allowed to get on to their feed with their feet.

In autumn, when we kill our pigs and beef, we boil the livers, lungs, and other refuse parts in a large kettle, using a large quantity of water. When the mess is well boiled it is thickened with peas, oats, and barley, ground fine. It is then put into small barrels and allowed to freeze solid.

Mrs. Joseph Yuill, Carleton Place.

Then the barrels are rolled into the hen house and a few staves are broken out of one barrel at a time. The hens will work away at this all winter.

I allow half a cent a day for this.

The Importance of Lime, Sulphur, and Water.

I also lay in a good supply of lime and sand and wood ashes. I find that lime which has been exposed for a year is better than old plaster.

I have a small door in my hen house through which my hens pass, going out and in. I have a small muslin bag filled with sulphur hanging over the door on the inside of the house, so that the hens will touch it with their heads every time they go out and in. This sprinkles sulphur on the hens and keeps them clean of vermin.

Hens should have a good supply of fresh, pure water every day. I believe there is more loss to the farmers with their hens for the want of fresh water than from any other cause. When a soft day comes the water drops from the roof into the manure. The hens, being thirsty, drink this liquid manure, which is sure to cause scours.

The breed of hens we have had for some years past are the Barred Plymouth Rocks, but we are now giving the White Plymouth Rocks a trial; not that I consider the latter any better fowl, but on account of them being white they are easier prepared for market.

One Hundred and Fifty Chickens a Year.

We generally raise one hundred and fifty chickens every year. The chances are that one-half of them will be cockerels. As soon as they are large enough to kill, we commence killing them, and supplying private customers at fifty cents per pair. This is when they are about four months old.

When all the cockerels are killed, we kill off the old hens. We never keep a hen over the second winter, except a few for mothers. We get a setting of eggs from some reliable breeder every year, and keep our supply of roosters out of them for the next season.

I find the best way to stop hens clucking is to have a box about three feet wide by six feet long, with a sparred bottom (round spars), so that the hens will have no place to sit down on except on a bar. Set the box, say, six inches from the ground, to allow a current of fresh air to pass through under the box. Give her plenty of feed and water, and in three days she will be off the clucking, and will have commenced to lay.

The Cost of Raising One Hundred and Fifty Chickens.

I raised one hundred and fifty chickens until they were four months old at a cost of four dollars and ninety-seven and three-tenths cents.

The first ten days I fed them a scone made from one-half pound of oatmeal, one-half pound corn meal, and one pound shorts, one teaspoonful salt, and one teaspoonful soda. Damp with buttermilk, and bake with steam until well done. When cool, crumble fine and add one hard-boiled egg, chopped fine, to each day's ration. This scone will be sufficient to last one hundred and fifty chickens for the first ten days.

The next month I feed them one pound small wheat, and one and a half pounds cracked peas each day. The next month I feed two pounds boiled peas and three pounds shorts mixed thoroughly. The next month I feed the same ingre-

dients, but double the amount. For the last three weeks I feed the same, but again double the amount.

I have small troughs constructed so that the chickens cannot get into them with their feet, and I keep them well supplied with water and milk.

The first ten days they cost eighteen cents. For the next month they cost 48⅜ cents; for the next month, 97$\frac{7}{10}$ cents; and the third month, $1.85; and the last three weeks, $1.48.

This makes a total of 4.97\frac{31}{10}$.

The Profit from Keeping Fifty Hens.

We keep over fifty of the best pullets for laying next season; but for convenience we will suppose we kill them all. What we did kill we sold at fifty cents a pair.

This makes	$ 37 50
The feathers are worth	3 00
Making	40 50
To which add 639 dozen eggs at an average of 13¼ cents a dozen	87 86
Making total receipts from the fifty hens	$128 36
Cost of feeding the 50 hens for the six months at 11⅓ cents a day as above	$ 20 74
Cost for remaining part of the year	13 16
Total cost of 50 hens for the year	33 90
Cost of feeding the 150 chickens, as above	4 97 3-10
Total cost for 50 hens and their progeny	$38 87 3-10
Total profit on the 50 hens	89 48 7-10
Total profit on each hen	1 78

Our hens are all allowed the run of the farm.

SELECTING A MALE.

By D. H. RUSNELL, Stouffville.

It is not my intention to discuss the question how or by what rule to select a male, but it is my object to put the importance of the question before the readers of FARMING, and have something for them to be studying about.

This question has been brought vividly before my mind during the past few months when I have seen two-thirds of the farmers of the country using a male of any kind or an inferior animal, and mating stock perhaps not at all in form for the breed they belong to, or perhaps using closely related parents such as brother and sister, or mother and son, and so on—anything to save a dollar, and yet at the same time losing five; because we know that stock inbred does not mature as rapidly, nor does it ever reach the same stage of perfection as stock bred from unrelated parents.

A few years ago one of my neighbors used to breed pigs; but he never took his sows away, always inbreeding them year after year, and by and by his pigs became so runty and small that he could hardly raise any, and when he did raise them he could not get $1 each for them, when I could get $2.50 for mine.

Does it pay, I ask, to use inferior males?

Again, I was at an auction sale not long ago where there was a pair of calves put up about a year old, and they were knocked down at the magnificent price of $2.25 each. Instead of using a good bull, say one for about $2, the breeder of these calves thought it was cheaper to use one that cost him only 50 cents; and you see the results.

My experience makes me say: Breed good females to good sires, and you will always receive good profits.

I wish I could induce our legislators to take hold of this question and put a license on all males kept for hire for breeding purposes, so that this evil, which is ruining our live stock business, might be stamped out. It is an evil, indeed, which is causing many a farmer to give up his farm in disgust, saying it does not pay to raise stock; and yet if he used good sires he could not only raise stock profitabiy, but also keep up the fertility of his farm and raise grain profitably as well.

NOTE.—The remedy suggested by Mr. Rusnell is the only remedy that will amount to anything, No man should be allowed to sell the services of a sire unless he has a license for doing so; a license granted by the Agricultural Department, which should testify not only to the breeding of the animal, but also to its immunity from disease.—Editor FARMING.

THE ADVANTAGES OF BUYING ORCHARD SUPPLIES FROM PRACTICAL AND RELIABLE CANADIAN FRUIT-GROWERS.

By E. D. SMITH, Helderleigh Fruit Farms and Nurseries, Winona, Ont.

The history of MR. E. D. SMITH, of Winona, the proprietor of the Helderleigh Nurseries, is worth contemplating as an example of what can be accomplished in the way of building up a business by energy, enterprise, and good, straight, honest dealing. He began his fruit-growing business in 1877, and the selling of fruit plants in 1882, and the selling of nursery stock on an extended scale only in 1890, and now he has one of the largest businesses in his line in Canada—indeed, we believe there is only one other business that seriously rivals it. His fruit farms now extend to over 450 acres, of which 372 are owned by himself, while the rest is held on lease. His fruit orchards and vineyards comprise 124 acres, and the land actually occupied in the growing of nursery stock amounts to 128 acres. The rest of the land is all in a high state of cultivation, with the object of being soon devoted either to fruit or to nursery stock.

Mr. E. D. Smith, Winona.

One of the representatives of FARMING recently paid a visit to the Helderleigh Nurseries, and gathered from Mr. Smith some information as to his methods of caring for his land, and as to the magnitude of his business, which we are sure will be of interest to our readers. In the preparation of his land for planting stock, he summer-fallows, subsoils both ways, and applies compost, obtained from Toronto, at the rate of from twenty to thirty tons per acre. This compost is composed of horse manure with all the privy manure mixed with it that it will absorb. This method of mixing makes very strong stuff that can be very easily handled, for it is just long enough to fork well. Mr. Smith is a thorough believer in underdraining. He underdrains 20 acres each year, preparatory to preparing it for nursery stock. He already has 125 acres underdrained with drains 30 feet apart and 3 feet deep. His drains run over hill and dale. In his rented land he drains the wet places thoroughly. In all he has about 200,000 of tile laid; enough to reach in a straight line over 40 miles.

In fruit, Mr. Smith has a general assortment. He has 51 acres in bearing vineyards, and if no mishap occurs, should have, at least, 150 tons of grapes this season. He has 15 acres in currants, raspberries and gooseberries, all very heavily loaded. He has less peach trees than he has of anything else, but has even 500 of these. He finds that he can grow his best grapes, plums, pears, currants, and gooseberries on land too heavy to grow peach trees or apple trees or small fruit stock profitably, so that he has planted his heaviest land very largely to the former sorts of fruit. He has about 6,000 plum trees of various ages, of which 400 were planted this spring; but his heaviest planting this year was in pears, of which he planted 2,600 standards, chiefly Bartletts, and 1,200 dwarfs, chiefly Duchess, Beurre d'Anjou, and Louis Bonne. He has about 700 cherry trees planted for fruit. He has great faith in cherries, if they are planted on suitable soil. But the soil should be very dry. Not only will cherries not stand wet feet, but even damp feet makes them sick.

Of nursery stock Mr. Smith's annual planting, all on his own place, runs into figures somewhat as follows: 35,000 peaches; 60,000 apples; 75,000 plums; 40,000 pears; 30,000 cherries; 75,000 spruce, and over a half a million of berry plants, grape vines, and rooted cuttings of one sort or another.

To supply the labor for so much business there is required a pretty large constant staff, which averages about 60 or 65 all the year round, varying from 20 in the winter, the slackest season, to 110 in the spring, the busiest season. This is exclusive of berry pickers. The wages paid average about $1.00 a day, but at least 25 men get more than this. Mr. Smith believes in encouraging good men to remain with him. He has several men who have been with him for 10 years or more. The best men are encouraged to buy an acre lot and build a $300 house for themselves. Already quite a little village has been built up on the nurseries, of workmen's houses, costing from $500 to $700. A good man, Mr. Smith says, with a smart family of berry-pickers, will save $200 per annum.

An electric trolley line runs through the plantation, with service daily, every hour each way, thus bringing the nurseries into close connection with the G.T.R. and C.P.R. at Hamilton, etc. There is a switch on the packing grounds, and thus cars can be loaded with nursery stock for transport either by freight or express to any part of the Dominion.

It is gratifying to know that such enterprise as Mr. Smith has shown in building up his business has met with success. Since he began to do business by agents in 1890, his sales every year have nearly doubled, except last year (which was one of the worst years ever known in the nursery business), when, however, they were quite as large as the year before. This year Mr. Smith expects they will again double. This success is only what should be expected from Mr. Smith's method of doing business. Believing as he does, that honest dealing is not only good policy, but good morality also, he endeavors to carry it out in every transaction he enters into. Having thus won for himself an excellent reputation for good stock, good business methods, and good square dealing, there is a great future before him, and FARMING believes that he will win it.

I wish to state in a few words some plain considerations for the readers of FARMING why they should get their orchard supplies from nurserymen, who are themselves practical and reliable fruit-growers, rather than those who merely grow the nursery stock they sell, or who only handle the stock which they themselves purchase from others.

(1) The purchaser is always supplied with instructions for planting the various sorts of fruit he purchases. These instructions have been drawn up by men who have had years of experience in planting and growing Canadian fruit, and therefore they can be thoroughly depended upon.

(4) The purchaser can depend upon the fact that his varieties are *true to name.* But this can only be so when the nurseryman grows the varieties on his own land, *and raises fruit from them himself*, and then makes the necessary cuttings, buds, and scions of them for himself. This is a matter of serious importance to one who is setting out an orchard, and ought to count for a good deal. The man who does not himself grow the fruit of which he sells the stock, even though he may grow the stock, has no way of testing whether his buds, cuttings, and scions are true to their name or not. A stake turned or lost, or a careless piece of work on the part of an employee, may cause a mistake that will produce infinite annoyance and loss. I have known a case where, in a nursery, peaches were budded as "Alexanders," which were in reality some late and tender sort of peach, and where, in each succeeding year (as of course the buds were taken from the nursery stock), all the trees grown and sold as "Alexanders" were spurious; and neither the nurseryman nor his customers found it out until the trees thus sold began to bear, which was some five years or so. Now, if the buds, instead of being taken from nursery stock, had been taken from bearing trees, doubtless the mistake

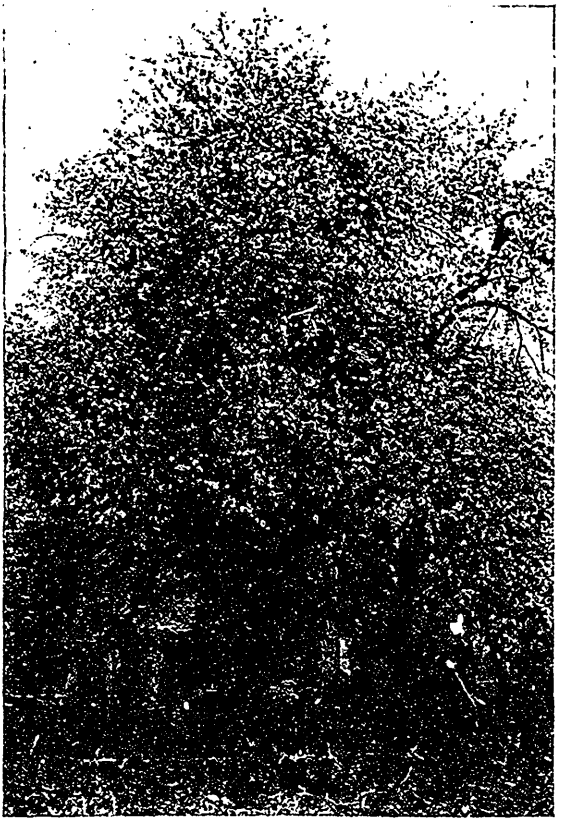
General View of the Holderleigh Fruit Farms and Nurseries.
Comprising over 450 acres. The property of Mr. E. D. Smith, Winona. View taken from a ridge of the Hamilton Mountain.

(2) He is also always supplied with information as to the best and most reliable means for combatting the insects and other pests that trouble fruit-growers. This will be very useful to him; for this information is prepared by those who know by experience the value of the remedies they recommend.

(3) When any questions arise as to the suitability of any kind of fruit for market or home use, the purchaser can by writing to the man he has purchased his supplies from, get the advice and experience of one who has been growing and shipping fruit for years, and who in this way must be practically acquainted, perhaps much better than most people, with what can or cannot be done with certain kinds of fruits in certain localities.

would have been found out in about a year.

But the nurseryman who buys his stock and sells it again is in a still worse position to do justice to his customers, no matter how well-intentioned he may be, for as to the purity of his stock he is at the mercy of the dealers who supply him; and also to a great extent as to its quality; and in the spring when he is filling his orders, if he finds what he gets is unsatisfactory, it is too late to remedy the mistake, and so he must either cancel the orders he has received or else fill them with unsatisfactory stock, which last, of course, he will be strongly tempted to do.



Seventy-Year Old Apple Tree.

The property of Mr. E. D. Smith, Winona. Growing upon the old homestead, once the property of Mr. Smith's father. It bears about ten barrels of Fameuse apples every alternate year, so that it has in its time borne at least 300 barrels. It has borne as much as 23 barrels in a single season.

(5) Again, a practical fruit-grower will most certainly propagate, and push to sell, the fruit that in his own experience he has *actually found to be profitable;* whereas a mere nurseryman, who does not grow fruit practically, but must form his judgments by what he sees at fairs, etc., or by what he reads in books, will be apt to make mistakes, and propagate varieties that later on will be found to be unprofitable as compared with other sorts; but having gone to expense in the propagation of them, he is loth to throw them away, especially if he has paid a high price for the original stock, and the temptation is thrust upon him of pushing them off on the public.

Then as to the importance of purchasing stock from Canadian growers, instead of foreign stock, surely a word or two cannot be out of place.

(1) Foreign stock is grown by and gives employment to foreigners, who buy nothing from us that they can get as cheaply at home. Canadian grown stock gives employment to a large number of our own people, who consume and buy what Canadians have to sell at better prices than export prices.

(2) Canadian stock is delivered promptly from the ground in a fresh, thrifty condition, while foreign stock is always a long time in transit and is frequently delayed, especially at the frontier, and therefore frequently arrives dead or in half dead condition, entailing heavy loss.

(3) If stock bought of foreign nurserymen turns out untrue to name or diseased, the purchaser has no redress, but must just "grin and bear it"; whereas, if purchased from a reliable permanent Canadian firm, he has a remedy and can get the wrong righted promptly. At the present time United States nurseries are in many cases infested with the dreaded plum scale and San Jose scale.

(4) Much foreign stock is not adapted to our climate, especially if grown south; and one cannot tell where it is grown, as American nurserymen buy and sell backwards and forwards between north and south, many northern firms having nurseries in the south, where stock can be grown cheaply, on account of the longer season and cheaper labor.

Lastly, I would impress upon the readers of FARMING that Canadian stock is not all good.

As there are certain sections where fruit, especially peaches and grapes, succeed better than in others, so there are sections where nursery stock does better than elsewhere. To grow a sound healthy tree, it must never be frozen in the nursery, or the new growth will overgrow the frozen wood, which turns black and finally rotten, and becomes what is called "black heart." Trees grown outside the peach belt are frequently frozen in this way. They were never frozen here in Winona. Beware of trees from nurseries where peaches and grapes do not thrive.

Again, to produce sound, healthy trees, the foliage should not be cut off by premature frost, either in spring or fall. In a long season the period of wood ripening is extended and the wood becomes mature and firm; whereas if leaves are forced off prematurely, the wood, not having hardened, is liable to be frozen in the winter. Here at Winona, under the base of the mountain, the season is the longest in Canada. For thirty years no frost has injured grape shoots in the spring, and no crop has been injured before matured in the fall. The season is from two to four weeks longer than in most other sections of Canada. The shelter of the mountain and the tempering effects of Lake Ontario keep Jack Frost back. Hence I claim that nursery stock grown here and in districts such as this is harder in the wood and better fitted for general planting in Canada than that grown where the seasons are shorter.

Also I cannot too strongly impress upon all intending purchasers of nursery stock the importance of dealing with known responsible men, men whose business is of no mean proportions, and who therefore afford a certain guarantee of permanency. Do you not stand a much better chance of fair treatment from men such as these than from unknown or irresponsible men? Or those with little or nothing at stake? Deal therefore with men who furnish only good stock and treat their customers in an honorable manner; who furnish only the best that grows, and strive to deal justly by all men, not only as good policy but as good morality also. This is too important a matter to shelve. There is nothing that opens a wider door to fraud and rascality than the selling of nursery stock, for it takes years to test its purity.

THE REASON WHY THE PRICE OF APPLES HAS BEEN SO LOW.

By E. D. SMITH, Winona, Ont., Proprietor of the Helderleigh Fruit Farms and Nurseries.

Despite the low prices for fruit that have prevailed during the last year or two (especially last year), I have no doubt whatever that fruit-growing will continue to be—as it has been in the past—the most profitable industry that can be carried on upon the farm. Even with prices such as prevailed last year, I believe, there was a greater margin on the whole than was obtained in any other branch of farming, while in ordinary years the profits are many times greater.

And despite the low prices of last year, I have the greatest confidence in the future success of apple-growing especially. I speak from experience. I have exported considerable quantities of apples. I have handled about 10,000 barrels annually, and I think I know something of the reasons why the growers got so little last year; and why, too, they got so much less than what they should have got for a good many years past. The reason, in my opinion, is simply and almost solely on account of the lack of proper facilities for ocean transportation.

The apple buyers know very well from experience that they must allow about 25 cents to 50 cents per barrel on the whole purchase off the price they would otherwise be able to pay for sound apples simply to cover the waste caused by heating on the boats; and also because of the absolute uncertainty they are under as to whether one-half, or one-quarter, or what proportion of the apples are going to arrive sound.

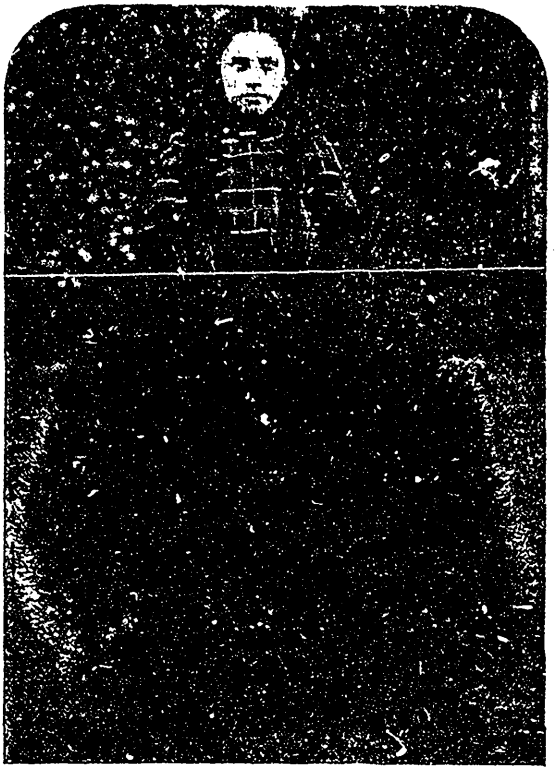
Now surely, in a progressive country like ours, this state of things must soon come to an end; and when it does end our apple-growers will have the benefit of the improvement. If they had had it in the past—if, for example, during the last ten years, our apples could have been shipped across the ocean without heating, it would have meant millions of dollars in their pockets. Especially would this have been so during this last season when the price of apples was so low.

I say this state of things *must* cease; and I say so because it is entirely unnecessary that a barrel of apples should be heated in crossing the ocean. Any person knows that Canadian apples will keep *perfectly* in the temperature of the North Atlantic (which is from 40° to 60° Fahrenheit all during October and November), for the ten day

necessary for the passage, or, for that matter, for ten times ten days. The remedy then is simply to make the temperature of the hold the same as that of the outside air of the ocean, which would be the simplest matter in the world.

I do not believe in Government interference in everything, but it does seem to me that here is a clear case for it. Here is one of the leading and most profitable industries of the country being throttled, simply because of the indifference of the steamship companies. One would naturally suppose that competition for the trade would induce some steamship line to provide the small necessary machinery to pump into the vessel the outside air. But, as a matter of fact, at the season of the year when apples are mostly going forward the steamships are so crowded with freight that they are quite careless and indifferent as to the accommodation they can give for apples. But if the matter were thoroughly understood by shippers, I feel sure that sufficient pressure would be brought to bear in some way upon the steamship lines to secure the carriage of our apples to Europe in a perfectly sound condition.

When this is secured we may expect a permanently profitable future for our Canadian apple-growers; for we have the best location in the world to grow first-class apples, and we have access to the best market in the world; and we must remember that though apples may be grown in many parts of the world, the parts are very few and small where apples can be grown with such fineness of texture and delicacy of flavor as our apples show; and the English purchaser will have nothing but the best. If we capture the English market our future is assured.



Arbor Vitæ Tree (Golden Arbor Vitæ Hoveyii).

Growing on the Helderleigh Nurseries. The property of Mr. E. D. Smith, Winona. (Mr. Smith's daughter in the background). This arbor vitæ is an exceedingly handsome tree, but it does not grow to be very large, reaching only to 8 to 10 feet, and that very slowly. Growing very compact, never needing trimming, with a round symmetrical head, and golden tips on the ends of its leaves, it is one of the most attractive ornamental trees or shrubs known to nurserymen.

THE RAPE CROP.

By GEORGE HARCOURT, B.S.A.

Some six or seven years ago an effort was made at the Ontario Agricultural College to show the farmers of Canada some of the uses of rape. It had been grown very successfully in certain districts, but its great value as a fodder plant was not so generally known. Rape is now grown in many parts of Canada quite extensively. In the United States it has gained a strong foothold, particularly in the States of Michigan, Wisconsin, and Minnesota.

Variety to Grow.

The best variety to grow is called the Dwarf Essex Fodder Rape. There are other varieties of rape that produce seed the first year, but they do not make sufficient growth to make them valuable for fodder purposes.

Kind of Soil.

The rape plant does fairly well on almost any kind of soil, but it does best on a soil containing a large amount of decayed vegetable matter. Hence a piece of old sod well worked makes an excellent place for rape.

Seeding.

When sown in drills, about two pounds of seed to the acre will be required, and three pounds per acre if sown broadcast. Sowing the rape in drills is the most satisfactory way. The drills should be about the same distance apart as those for turnips. Some prefer them even closer. It is generally sown with the turnip drill, in ridges, but a good many farmers are sowing it now like they do their mangels, on the level, with the grain drill. There appears to be no gain from sowing rape in drills.

There are other methods of seeding rape. It is sown in the corn field after the last cultivation. It is also sown with oats in the spring. Objection has been raised to this plan on account of the rape, if it does well, checking the oats and causing trouble in harvesting. If the precaution is taken to allow the oats to come through the ground before the rape is sown, and then cover it with a light harrow, there will not likely be any trouble, as the oats will hold the rape in check. The rape is usually sown after the turnips are put in.

Uses of Rape.

The longer the plant is grown, the more varied are the uses made of it. For feeding lambs and cattle in the fall it is hard to beat. One prominent cattle man said, the other day, that he considered a patch of rape one of the best crops he grows. It put his cattle in such good shape in the fall that they were half wintered.

Rape for Hogs.

Other uses have been found for the rape. Mr. John Bell, of Amber, was one of the first to find the value of rape for pigs. His Tamworth pigs found their way to the rape patch, thrived well on it, and showed him that it was a safe, good food for pigs.

Professor J. A. Craig, of the Wisconsin Experiment Station, states, in a recent bulletin on rape, that he has found excellent results from fattening hogs on rape. He found that twenty hogs would eat, along with the grain fed them, an acre of rape in three months.

Rape for Soiling.

Professor Craig has been trying rape as a soiling crop with very marked success. For this purpose he advises sowing early in the spring. When it is about two feet high it is ready to cut for feeding, about July. He found that it was best to cut it about four inches from the ground. It would shoot out and make a new growth, which could be cut, and, if the season was at all favorable, a third cutting could be obtained, or, in all, about thirty tons to the acre.

Professor Craig says about fattening lambs on rape: "The results of our experiments in fattening lambs on rape show that the average gain per head weekly has been two and one-half pounds. About one pound of grain per head daily has been the average amount fed with the rape. Using our results in a conservative way, it may be said that if forty lambs are used to feed off an acre of rape, and given some pasture and an average of one pound of grain per head daily, they will produce at least 400 lbs. of mutton from the acre in one month."

Sow a Patch of Rape.

The season is at hand for sowing rape. Get a piece of land ready, convenient to a pasture field if possible, and put in a patch of rape. It will put the sheep in fine shape for winter, also the young stock, and it will help the flow of milk, but it is not to be recommended for milch cows. Give the pigs a trial on it. They may have to be taught to eat it, but it is likely to prove an important green food for pigs.

A CHEAP SUMMER SILO.

By GEORGE HARCOURT, B.S.A.

A large number of farmers have found from experience that corn silage makes a good food for summer feeding instead of green fodder. They find that it is much easier to feed, being always ready, than green stuff in the field which has to be cut and carried to stock, and that the results are superior to those obtained from green feed.

This has led some farmers to build a small silo just for summer feeding; and others have left a few feet in the bottom of their silos and have found good results from this plan. The objection to the latter plan, however, is that there is a greater proportionate waste in a large silo on the surface than in a small one. This is because during the hot weather the germs which spoil the silage exposed to the air are more active at sum-

mer temperatures than at winter temperatures. Hence some have adopted the plan of building a silo of small diameter so that there will be only a small amount of silage exposed to the action of the atmosphere in proportion to the amount fed.

Everybody, however, has not the means to build a small silo, but Mr. A. J. Stover, of Norwich, has devised a plan whereby everybody that has a silo can have a small one for summer feeding with but a very small outlay.

Mr. Stover has a large round silo about 25 feet in diameter. He found that there was too large a surface exposed to the air when he saved a few feet in the bottom for summer feeding. He then conceived the idea of building a wall across the silo, dividing it into two equal parts. This wall was put in; it is of brick, 4 inches thick, 6 feet high, and topped with a pointed piece of wood, so as to divide the silage as it settles. When he fed down to the level of the wall this spring, only one side was fed out; the other was left, tramped down, and a covering allowed to form on it. This will give him the equivalent of a summer silo with a lessened surface exposure. It will all be fed out by the time the corn is ready to go in the silo in the fall, and thus no trouble will be experienced in filling it. This plan has worked well with Mr. Stover and should commend itself to many who have silos and would like a smaller one for summer feeding.

THE ENTOMOLOGICAL SOCIETY'S REPORT.

The annual report of the Entomological Society of Ontario is before us. It is filled with information of the most practical sort bearing on farming and fruit-growing. Both these industries owe a large debt to the unselfish and unrewarded labors of the members of this admirable society. We make a few notes and comments on matters of special interest to our readers, and would refer them for more information to the report itself.

Grasshoppers.

The President, Mr. John Dearness, of London, in his address at the annual meeting, spoke of the destructive ravages of the grasshopper. These, however, were not so bad in 1896 as in 1895. He thinks the partial disappearance of the plague is due to the increase of the grasshopper's parasite, the red mite. The spring of 1896 was favorable to the development of the grasshopper, and in some localities they were exceedingly numerous, but in others they were very scarce. Where the "hoppers" were numerous no red mites were to be seen; but where they were scarce the red mites could almost always be found on them under their wings.

The Army Worm.

Both the President and Professor Panton refer in the report to the Army Worm, whose ravages in some parts of Ontario last year were so terrible. The natural defence most to be depended upon seems to be the attacks of its parasite, the red-tailed tachina fly. Artificial remedies are the burning of rank grass in bordering swamps in spring or fall, clean cultivation, and the keeping of fence corners, etc., scrupulously clean. When the worm has made its appearance its progress should be stopped by ploughing a furrow with its perpendicular side next the field to be protected, for the "army" always marches straight ahead. Or a ditch may be dug in the same way. Holes should be dug at intervals of ten to fifteen feet in the furrow or ditch to catch the worms that, unable to climb the side, wander aimlessly along the furrow. When the worms are collected in this way they may be destroyed either by (1) ploughing a furrow so as to bury them; (2) sprinkling coal oil upon them; (3) scattering straw over them and firing it; (4) dragging a heavy pole along the furrow or ditch.

Where Paris green may be safely used a strong mixture (one pound to seventy-five gallons of water) sprayed upon the plants likely to be attacked will be effective. Windrows of green oats sprinkled in this way in the line of march will destroy myriads as they feed upon their favorite food. Where Professor Panton tried this plan he found 2,560 dead worms on a single square foot beneath the windrows. Professor Panton has no faith in the use of salt or lime as a barrier to the progress of the army worm.

Professor Panton thus accounts for the sudden appearance and disappearance of the army worm, matters which surprise very many people:

"Hidden in the grass by day, and feeding at night, they escape observation. Dry weather seems favorable for their development. Consequently a dry season, followed by a mild winter and by a second dry season again, as in '95 and '96, supplies conditions very suitable for such increase as becomes noticeable. In the first dry season the moths produce numerous "worms," but not so many so as to be specially noticeable. The following mild winter does not destroy them in their larval condition. In the succeeding dry summer season the moths, now quite numerous, lay many eggs, which hatch out and give rise to innumerable

caterpillars. These, when their food is scarce, are forced to "march," and thus they become suddenly conspicuous. As they develop they pass into the ground to enter the pupa stage, and thus as suddenly disappear again."

The Gregarious Habits of the Army Worm.

Mr. J. Alston Moffat, of London, in his "Notes on the Season of 1896," has this interesting paragraph concerning the curious gregarious habits of the Army worm:

"A great deal of romance has been written upon the army worm. Its sudden appearance in vast and destructive hordes is well calculated to arouse the imagination of those who are totally indifferent to, and wholly ignorant of, the habits of insects; consequently the movements of the army are to them perfectly mysterious. We read of their coming, no one knows how, or from where, and of their always travelling to one particular point of the compass. Of their following a leader who directs their movements; and who gives the signal for their advance by a wag of his head; and much more of the same sort. The army worms come from eggs, like all other insects, which in this case are laid near the roots of grasses by its moth, and may be feeding there in great numbers when young without attracting the slightest attention. It is not until they are well grown that they acquire their great powers of destruction, and then the field in which they were born may not be able to sustain all of them; when the necessity to travel to other localities in search of food is forced upon them. The only really mysterious thing about their movements is, that they should keep together in a body and go in the same direction in search of food, instead of, as is usual with caterpillars, each going in the direction that its fancy leads, independently of the others of its kind. This gregarious habit is indeed very wonderful. But food is their objective point of travel, not any particular one of the compass."

The Importance of Entomology to the Farmer.

The distinguished Canadian entomologist, the Rev. T. W. Fyles, of South Quebec, contributes an exceedingly interesting paper on "The Influence of Entomological Studies to an Agricultural and Fruit-growing Community." It is very important to know what insects are injurious to our crops and forests and what ones are useful to them. Many species are known to be the cultivator's friends. Of the 25,000 named species of North American insects only about 8,000 can be regarded as pests. Some insects are injurious in one stage of their existence and useful at another. The Hawk-moths by dispersing pollen act beneficially for the fertilization of blossoms; but if they were allowed to increase unchecked their caterpillars would soon become terrible pests, and would destroy not only our fruit trees, but many of our shade and ornamental trees also. The Humble-bee is an example of an insect wholly beneficial. The cross fertilization of blossoms in our orchards is largely effected by his aid. So useful is he that he has been transported to New Zealand to labor there for the public good. On the other hand the potato beetle is an unmixed evil. The destruction of every wintered-over potato beetle in the early spring is the destruction of an incipient host. The potato plants should be sprinkled with Paris green, as soon as they appear above the ground. In connection with this advice Mr. Fyles tells this story:

"A friend of mine, when the beetles first invaded the province, and before it was quite known how they should be dealt with, broke up a piece of land in the very centre of his extensive farm, and planted it with potatoes, hoping that its isolation would secure him a good crop. One early day he went to the enclosure to see if the potato plants were showing themselves. They were not; but to his disgust there was, to use his own words, 'a durned potato bug sitting on the fence, and awaiting for them to appear.' His action in regard to that individual was both prompt and effective!"

Gooseberry and currant bushes should be gone over with white hellebore as soon as the leaf buds begin to open. But though insecticides are useful, greater good is often accomplished by calling in the aid of insect friends than by direct attacks on insect foes. Mr. Fyles says that the introduction of the Australian lady-bird has probably saved the orange groves of California from extinction; and he also says that "if the vine-growers of Europe had imported into their vineyards the parasite (*Diplosis grassator*) which keeps down the Phylloxera in the vineyards of this country, it would no doubt have saved many a valuable European vineyard from destruction. The introduction of a European predaceous beetle (*Clerus formicarius*) is saving from destruction the spruce forests of the United States, which formerly were dying out at a fearful rate, owing to the attacks of bark-boring and wood-boring larvæ. The clerid larva searches the boring larvæ out, and devours them with avidity.

Entomology in the Public Schools.

Inspector Dearness, Mr. Fyles, Professor Panton, Dr. Bethune (the editor of the *Entomologist*), and others, all speak of the great need of teaching practical entomology and other natural sciences in the Public Schools. Inspector Dearness, one of the most practical and successful educationists in the country, says that he knows from experience that entomology is not only a useful, but also an exceedingly interesting subject of education, even with the youngest children—the "little kindergarters." Professor Panton gives

an outline of a series of entomological studies. In introducing this he says:

"A few years ago the discussion of any topic of a scientific nature excited but little interest among farmers. They thought that science was far removed from the truly practical work of the farm. This condition of things has passed away. The farmer now feels that a knowledge of the teachings of science lies at the very foundation of success in the pursuit of agriculture. He has learned that science is simply systematized knowledge; that its principles are founded on the facts which are discovered daily on the farm, or in the orchard. In reality the farmer is one the most scientific of men, and is surrounded by conditions especially fitted to develop observation, comparison, and method in work. The Farmers' Institutes have done a good deal in awakening farmers to the necessity of a study of science as it relates to their work. But we believe that a *greater future* is in store for the people of rural districts when their children shall have become acquainted with the teachings of science, by having given some attention to its study while at the common school in their neighborhood, and the subject of entomology especially, is one well fitted for study in rural schools; specimens are readily obtained for illustration, and it is peculiarly suited to interest young minds."

Bats and Bed-Bugs.

A very interesting paper is by Mr. Robert Elliott, Plover Mills, on "Insectivorous Mammals." In it he refers to a very curious belief connected with these nocturnal insectivores:

"Upwards of 400 species of bats are known in the world. In the tropics large fruit-eating forms are abundant. Those of temperate regions, as ours, are almost exclusively insectivorous, and as such must, generally speaking, be considered beneficial.

"Occasionally bats find shelter in badly constructed dwellings. There they congregate each morning in increasing numbers, and finally, with much chattering and quarrelling, they sink into their long hybernatory sleep.

"In some cases the owner of the house, after different attempts to smoke them out with sulphur, is often driven to tearing off boards, and after considerable trouble and expense, gets rid of a colony of one hundred or more.

"A most curious zoological fiction connected with bats is the absurd belief that they are the offspring of bed-bugs. Once a wiseacre of our country side gravely advanced to me this untenable theory of the origin of bats. While admitting that owing to the similarity of their retreats, bats might transfer the 'bugs' to new quarters, I combatted as best I could the ridiculous statement by showing that it was a wholly unnecessary assumption. But lo! he, as if to demonstrate that 'there are more things in heaven and earth than are dreamt of in our philosophy,' challenged me to deny that *gorillas* had crossed over from Africa and had taken an effective part with Wellington in the Peninsular campaign against the French. In vain I defined the term 'guerilla warfare'—he, forsooth, was a captain of our Canadian volunteers, and not wishing to have exemplified on myself his conception of a 'gorilla attack,' I escaped the dilemma with the diplomatic rejoinder that one story seemed as true as the other."

THE COMING EXHIBITIONS.

CANADA'S VICTORIAN ERA EXPOSITION.

This year the exhibition which is to be held in Toronto between August 30th and September 11th is to be termed the Victorian Era Exposition and Industrial Fair. It is an appropriate title, and the directors are determined that the exhibition of 1897 shall be worthy of it. While the scheme to hold an inter-provincial show this year fell through, owing to the inability of the Dominion Government to respond to the request for financial help, the board, nothing daunted, have lost no time in setting such wheels to work as will ensure an exhibition that will transcend in effect and in merit all previous efforts. The prize list has been improved in several directions, and a number of special prizes are being offered by private individuals and outside bodies in commemoration of the year. Among others, Mr. John Holderness, of the Albion, Toronto, ever a good friend of the horse, has donated $50 for the best Hackney of any age, and the English Hackney Horse Society has informed Manager Hill of their intention to give two silver medals, to be used as the board thinks best. The Ontario Association of Trotting and Pacing Horse Breeders have branched out this year, and will give eight races for purses of $500 each. Other prizes for trials of speed will be announced later. The full prize list will be published in a day or two, when it will be found that the various committees have done their work well, lopping off here and adding to there, in order to encourage the most practical in every direction.

Entries for the live stock classes close on Saturday, August 7th.

A feature this year will be a live stock auction sale on Friday in the second week. Entries for this sale close on the same day as entries for the exhibition, the sale being only intended for the benefit of exhibitors. One dollar will be charged for entry, which will be refunded on the sale being made, and five per cent. commission only charged.

Among the improvements to the grounds, which will be found quite numerous, will be entirely new pig pens, a new horse ring an eighth of a mile in circumference, and two large new stables. Other improvements will be made as found advisable. Altogether live stock breeders and exhibitors will find that the directors of the Toronto Exhibition Association have this year done their very best to meet their requirements.

CENTRAL CANADA EXHIBITION.

Within the past few years this exhibition has come to be recognized as one of the leading fairs in Canada. Situated as it is at Ottawa, the capital of our fair Dominion, it has particular advantages over many other shows. The Exhibition this year promises to excel in many respects the successful efforts of former years.

A copy of the prize list for 1897 has just come to hand. It is the first received this year, and the association and its officers are to be highly commended for their promptness in having their prize list distributed at such an early date. It shows that they are hustlers, and that every effort will be put forth to make the coming show a brilliant success. The prize list itself is excellent in design and attractive in appearance, and reflects much credit upon the management of the Exhibition in its style and workmanship.

Liberal prizes are given in the various departments, and especially those connected with stock and agriculture. The sum of $14,900 is offered in premiums in all classes, and it is worthy of particular mention to note that 31 gold medals are offered, besides a number of silver and bronze medals. All the gold medals will be given for stock and agricultural products. Other special features of the show will be given in a later issue. Prize lists can be obtained by writing to the secretary, and for further particulars see advertisement in this issue.

MONTREAL PROVINCIAL EXHIBITION NOTES.

Already the offices of the Montreal Exposition Company are beginning to present a busy appearance preparing for their great Diamond Jubilee Exposition, which, this year, is to be held before any of the other Canadian exhibitions, viz, 19th to 28th August, inclusive. The farmers and live stock dealers now recognize what an important centre Montreal is, as no dealer need take any of his live stock home with him unless he wishes, as buyers in that city are always looking for good stock to ship to the old country. The farmers throughout Quebec also are always anxious to pick up good stock, and each year purchase many good animals from Ontario breeders. Exhibitors at Montreal thus have an advantage over those showing at other places.

As Montreal is to be favored with the meeting of the British Medical Association this year, there will be a number of distinguished visitors from all parts of the world. The Exposition authorities seem to recognize this, and are sparing no pains to make this year's event eclipse all its predecessors.

A pleasing feature of the Montreal Exhibition is the increased interest shown by parties who donate prizes. Among some of the special prizes offered this year are the following:

HORSES.

Canadian Produce Co., gold medal for the best three-year-old Percheron stallion.

Canadian Produce Co., silver cup for best jumper.

Hackney Horse Society, London, Eng., two silver medals in Hackney class.

Robert Wiseman, Mile End Hotel, Montreal, $15 for best walking horse.

CATTLE.

W. W. Ogilvie (Canada's great miller), cash prize of $100 for best herd of Ayrshires.

Dominion Shorthorn Breeders' Association, $25 for best herd of young Shorthorns.

Ayrshire Importers' and Breeders' Association, gold medal for the best four Ayrshire animals, the progeny of one sire.

H. Laporte, Montreal, gold medal for best Canadian cow.

SHEEP.

American Oxford Down Association, $60 for Oxford Sheep.

PIGS.

Joseph Featherstone, M.P. for Peel, $20 for best Yorkshire boar imported since exhibition of 1896.

POULTRY.

J. J. Gareau, St. Roch L'Achigan, $10 for best collection of hens' eggs.

DAIRY PRODUCTS.

Wells, Richardson & Co., Montreal, two gold and two silver medals for best display of butter and cheese.

One of the chief exhibitors in the horse department this year will be Dr. W. Seward Webb, President Wagner Palace Car Co., who has signified his intention of entering some of the best animals from his stock farm at Burlington, Vt. They will certainly add to the attractiveness of the horse display, as they have a wide reputation of being among the best in this part of the continent.

The Jubilee idea is not lost sight of by the Exhibition authorities, as stationery displayed by the company show some beautiful designs.

WINNIPEG INDUSTRIAL EXHIBITION.

This year the Winnipeg Industrial takes place from July 19th to 23rd, and everything points towards the coming exhibition outclassing anything of its kind held in the west during previous years. The management is making a special effort to provide attractions suitable for commemorating the Queen's Diamond Jubilee. A copy of this year's prize list has not yet come to hand, but, judging from what has been done in previous years, the prizes offered will be large and numerous. About $9,000 were given in prizes for live stock and the products of the farm last year, and this amount will likely be increased this year. This exhibition offers an excellent opportunity to Ontario breeders who wish to do business in the west, and we are assured that visitors from the east will receive every attention from the management of the show. Mr. F. W. Heubach, Winnipeg, is the manager, and will be pleased to give particulars regarding the exhibition to those making application therefor.

From *The Aberystwith Observer and Merionethshire News:* "The agricultural community of Canada have in FARMING, published by the Bryant Press, Toronto, an admirably got-up monthly magazine, one which will compare favorably with any of our best London monthlies."

PURDIN AGRICULTURAL EXPERIMENT STATION, LAFAYETTE, INDIANA. April 10th, 1897.—I have been reading FARMING for some time, and have great admiration for the work you are doing. A. W. BITTING (Veterinarian).

MR. R. C. FEARMAN, of F. W. FEARMAN & SON, pork packers, Hamilton, writes: "I read the different numbers of FARMING from cover to cover, and I always find in them something to profit by. I only wish you could get every farmer in the land to take it."

WM. STEWART & SON, Menie, Ont., writes: "Never before have we found the demand for Ayrshires so brisk. Enquiries are coming in by every mail from all parts of Canada and the United States, and every one of them in answer to our advertisement in FARMING.

Publishers desk

FARMING

AN ILLUSTRATED MONTHLY MAGAZINE DEVOTED TO FARMING IN ALL ITS BRANCHES.

Succeeding *The Canadian Live Stock and Farm Journal.*

Published on the fifteenth of each month by

THE BRYANT PRESS,

20 Bay Street - - - Toronto, Canada.

Subscription Price—

Canada and the United States, $1.00 per annum in advance. Great Britain and other countries in the Postal Union, $1.50 per annum in advance. Single copies 10 cents.

All subscriptions are received on the understanding that we be notified when the subscriber wishes to discontinue. FARMING will be sent to all subscribers until a notice to discontinue is received and all arrears are paid up.

Renewals—

Money for renewals should not be paid to strangers, and when subscribers do this it must be at their own risk. It should be sent by each subscriber direct to this office. We do not authorize agents to collect money for renewals.

The date opposite the name on the Address Label indicates the time to which a subscription is paid, and the changing of this date is sufficient acknowledgment of payment of subscription. We should be notified when this change is not made promptly.

Remittances—

Remittances should be made by post office money order, express money order, or registered letter. Sending money in an unregistered letter is unsafe, and will be at the sender's risk.

Discontinuances—

Returning a paper is not a notice to discontinue. A subscriber wishing to discontinue must notify us by letter or postal card. All arrearages must be paid up before a name can be taken from our list.

Changes of Address—

In ordering change of address, be sure to give the old address as well as the new. We cannot find a name on our books unless the post-office address is given.

Advertising Rates—

Cards in Breeders' Directory, $1.50 per line, yearly contracts. No card of less than two lines nor for more than five lines taken; and no card taken for less than one year.

Ordinary Advertisements per line—Single Insertions, 18 cents; Three months' contracts, 15 cents; Six months' contracts, 12½ cents; Yearly contracts, 10 cents.

One inch space contains 12 lines.

Rates for Larger Advertisements on Yearly Contracts on application.

Communications—

All business communications should be addressed to "FARMING, 20 Bay Street, Toronto, Canada."

Communications for the Editorial Department should be addressed to "The Editor, FARMING, 20 Bay Street, Toronto, Canada."

Matter of any kind for publication must reach us before the 15th of the month preceding date of publication.

W. W. CHAPMAN, Representative for Great Britain and Ireland,

Fitzalan House, Arundel St., Strand, LONDON, ENG.

CONTENTS FOR JUNE.

A Fitting Way to Celebrate the Jubilee.

It is very gratifying to know that our efforts in the way of publishing an up-to-date agricultural journal have been successful, and that FARMING is every day increasing its patronage among our farmers. We receive letters from all quarters speaking in the highest terms of our journal, and we hope to continue to merit the favor and good-will of the agricultural classes. Though we are very thankful indeed for the large patronage already received, yet we realize that there are hundreds of farmers in our fair Dominion who are not yet subscribers to FARMING, and who ought to be its constant readers. Can we not count on our present subscribers putting forth a special effort this jubilee year, and assisting us in at least doubling our list of subscribers? If each one would undertake to see his neighbor and have a confidential chat in regard to the merits of FARMING, it would help us very much. For two new yearly subscribers sent in by a subscriber at $1 each, we will advance his subscription one year, and for one new yearly subscriber at $1 we will advance his subscription six months.

Publisher's Desk.—*Continued.*

Handy Almanac for 1897.—The *Live Stock Journal*, of London, Eng., has issued an almanac containing matter of general value to breeders. Besides tables and information valuable to any stockman or farmer, there are about fifty special articles written by recognized authorities, and also a large number of illustrations. The almanac is sold at one shilling.

Pea Harvester.—This convenient and easy running machine is made by Tolton Bros., Guelph, and is one of the best of its kind in the market. It comprises ease and rapidity, and is so arranged as to be easily attached to any mower. No drilling of holes on the inside shoes of mower bar is required. The harvesters are made to suit all kinds of mowers.

Agricultural Year Book.—We have received notice that the year book of the United States Department of Agriculture will be ready for distribution about August 1st. It consists of such reports from the different bureaus and divisions, and such papers as are specially fitted to interest and instruct the farming community. It is a most valuable publication, and we shall endeavor to give our readers the benefit of it through the reading columns of FARMING.

Convenient Hay Loader.—Among our new advertisers in this issue is the Waterloo Manufacturing Co., Waterloo, Ont., who advertise their convenient hay-loader. This is a great time and labor-saving implement, and should meet a ready sale among the farmers. This firm also manufacture a special line of portable and traction engines, threshers (horse-powers), plows, ensilage cutters, cream separators, etc., and everything turned out is guaranteed to be of the very best quality.

Light-Running Vehicles.—The McLaughlin Carriage Co., Oshawa, Ont., advertise in this issue a special line of light-running buggies. This well-known firm, one of the largest in the Dominion, manufacture sixty styles of wheeled vehicles and sixteen styles of spring wagons and democrats. Their goods have a high reputation for lightness of draft, durability, and excellent workmanship. Their special combination spring wagon is very suitable for the farm, and is one of the best of its kind made. An illustrated catalogue giving full particulars will be mailed on application.

What Salt Will Do.—Salt renovates grass lands, sweetens herbage, and prevents mustiness in hay. Salt moistens dry soil. Salt purifies the stables, benefits horses, improves their coats, and keeps them in good health. Salt improves the crops, makes the grain plumper, the straw stiffer and whiter, ripens the crop earlier. Salt prevents potato disease. Salt prevents rot in sheep. Salt increases the yield and improves the quality of milk. Salt will kill all insects. It is the best insecticide known. Invaluable for killing the army worm, wire worm, etc. Farmers cannot do without salt. Salt is a necessity for the farm as much as it is for human beings. The money spent on salt as a fertilizer is the best investment a farmer can make.

Noxon Front Cut Mower. — This strong, light-draft, and perfect-working mower is manufactured by the Noxon Bros. Manufacturing Co. (Ltd.), of Ingersoll, Ont., whose advertisement appears in this issue. This machine is of the latest make, and is so arranged that the weight of the cutter bar is equalized by driver's foot lever, for instantly raising the cutter bar. This firm also manufacture a special light steel binder, which can be handled by an ordinary farm team with ease. It is simple, durable, and convenient, and, what is better, reasonable in price. All kinds of the latest improved harvesting machinery are manufactured by this well-known and old-established firm, whose goods are known for their excellence and perfection in workmanship.

Indurated Fibreware.—The largely-increased demand and use of this material of recent years has led the E. B. Eddy Co., of Hull, Que., to devote special attention to the requirements in this line for the stable and dairy. They are producing hollow-ware suited to the needs of the farmer, and have surmounted the difficulty so common in wood, paper, tin, and iron wares Some of the points in which it excels other hollow-wares are: Will not shrink or swell; will not taint water, milk, or other liquids; cannot leak, water soak, or rust; has no hoops to drop or rust off; has no paint or varnish to wear off;

Publisher's Desk—*Continued.*

is proof against hot and cold water, kerosene, benzine, and ordinary acids ; and is lighter than a wooden pail. Indurated fibreware is made of long and strong fibred wood of which the fibres are disintegrated, then pressed together in one homogeneous mass by enormous hydraulic pressure. Its strength and firmness are remarkable, and its lasting qualities unrivalled. Information regarding this new and improved ware may be had by applying to the E. B. Eddy Co., who will be pleased to send a small "booklet" advocating its uses.

The Farmer's Binder Twine Co.—This company was formed in 1891 by a few of the leading farmers in the west, among whom were the late John Hope, Hon. Thos. Ballantyne, Mr. Joseph Stratford, Robt. Beith, M.P., Messrs. Jacob Mott and T. O. Currie, and the late Wm. Campbell. These parties were convinced that the high prices at which twine sold were unnecessary, and decided to organize and produce a cheaper twine. It was found difficult at the start to secure the necessary machinery for manufacturing the twine, as all the manufacturers of binder twine machinery were under bond to the national combines not to sell a spindle to any person without the consent of themselves. This difficulty was later on overcome by one of the manufacturers falling out with the combine. Meetings were held throughout Ontario and Quebec by Mr. Joseph Stratford, the energetic manager, and other speakers. In this way a capital stock of $72,000 was soon subscribed, and the enterprise started, and as a result the price of binder twine has been reduced by one-half. The present officers of the company are : President, Hon. Thos. Ballantyne ; vice-president, Mr. Robt. Beith, M.P. ; manager, Mr. Joseph Stratford ; assistant managers, Mr. Alex. Ballantyne and Mr. Wm. Irwin. The works of the company are situated at Brantford, and comprise a factory 50x325 feet and a warehouse of the same size. The raw material is purchased in the Phillipine Islands, and the establishment has a capacity for turning out five tons of the best quality Red Star brand of twine daily. The company is purely a farmers' organization, the stock being held by farmers in small shares and can only be transferred to farmers. The enterprise has been a pronounced success from the start, and is a striking object lesson of what can be done by active co-operation on the part of our farmers.

Stock Notes.

Items concerning conditions of stock, also information as to recent sales, purchases, milk performances, or any other matters that will be of interest to our readers as news freely admitted in these columns. Items describing stock for sale, or anything else of an advertising nature, will be inserted only if paid for.

Messrs. Grrenslade & Kidner will sell by auction without reserve, on July 2nd, at Manor House, Cothelstone, near Taunton, England, their herds of Devon cattle and Dorset and Shropshire Down sheep. Intending purchasers will do well to make a note of this important sale. The cattle and flocks are of the highest order and merit.

James Bowman Guelph, reports shipment of two bulls to J. D. McGregor, of Brandon. Several young heifer calves promise to make extra good ones, particularly one out of Kyma 2nd, and by Lord Aberdeen 3rd. The yearling heifers are also doing well, and show the feeding qualities for which the Aberdeen-Angus are famous. At the head of the herd is Kyma's Heir 24835 by Jus. imp., and his dam is Kyma 2nd. He is in good form and doing well.

At Ruby Grove, Stallingborough, Lincolnshire, Eng., Mr. Henry Dudding, one of England's best known stockmen, will sell by unreserved auction on July 27th, 1897, 100 head of purebred Shorthorns and 150 Lincoln sheep. The name of Mr. Henry Dudding, who has been one of our advertisers for years, is sufficient to warrant a large attendance of stockmen at this important sale. See our English correspondent's special article below in reference to this well-known herd.

Morris, Stone & Wellington, Welland : The Shire mare, Daisy, which won first with foal by her side at Toronto, '96, has another grand filly foal at her side. Her last year's

Premises of Alex. St. Louis, Walkerville, Ont.

Stock Notes.—*Continued.*

oal, Laura, is developing nicely. Elsie, the dam of Daisy, has a foal that promises well. These and other foals are all by Pride of Hatfield, who is doing a good season's work, and showing himself an excellent sire. The yearling fillies are doing well, and some of them promise to make good ones.

WM. ROLPH, Markham, has recently made a sale of six cows to Miller and Sibley, of Franklin, Penn. These animals were all of his own breeding, and this sale speaks well for the high quality of the Glen Rouge stock. One of these cows since arriving at her new home has been tested and made 22 lbs. 12 ozs. of butter in seven days. Four other animals have also been sold at handsome figures. The Glen Rouge farm has more of these good ones to come on among the yearlings and two-year-olds

A. M. & R. SHAW, Brantford, report their herd of Galloways as doing nicely. Gem 3rd of Doumlaurig has a nice deep bodied heifer calf. Blackie of High Park has a good heifer calf from Haldimand 8806. Ailie Anderson has also a good bull calf. The older stock by McCartney 9739 are coming on well. Their Yorkshire sow, Snowflake, has had twelve litters—in all 167 pigs—and of these she has raised 120, and some of them have been very successful prize winners at Toronto and other shows.

F. A. COX, Brantford, has three exceeding fine October sows in farrow, and sixty young pigs sired by Fitz Lee, a son of Baron Lee, and five other choice sows to farrow during June and July. He reports sales of two sows to Mr. Turnbull, Brantford; one sow to Jesse Ash, White School House; one boar to Kitchen Bros., Copetown; one boar to J. C. Meyer, Kossuth; and two sows to Mr. Gilderoy, Brantford. He has in all about 250 chicks doing well; they were hatched in a safety incubator and raised in a brooder.

WM. ARMSTRONG, Locust Hill, finds that his Holstein cows are the ones to give him a large yield of milk. His grand old cow, Lavata, an imported cow, is yielding him over sixty lbs. of milk a day, and has left him a number of extra good milkers in the herd. Belle of Locust Hill is still yielding over forty lbs. a day though she calved last October. She has a fine heifer calf. Lavata 3rd has a good bull calf and is milking extra well. At the head of the herd is Princess Lida the 4th's Prince, who is proving a good stock getter. The young stock are all doing well.

T. W. CHARLTON, St. George, has a herd of Holsteins that are making a good record as milk producers. The foundation stock are noted milkers, possessing the blood of the best milking strains of the breed. Some of the cows are persistent milkers, and very difficult to dry up. The younger stock show that they inherit the good milking qualities of the dams. At the head of the herd is Lord Everet 2nd, a bull of rich breeding, and one that has proved the sire of a lot of excellent cows He is soon to be displaced by a young bull of even richer breeding, and one that possesses many good points of a typical dairy bull. In the stables are a number of really good heifer calves that promise great things.

MESSRS. A. & G. RICE, Curries, Ont., write that since our representative visited them a few weeks ago their famous cow, Calamity Jane, has increased her flow of milk from 50 to 52 and 53 lbs, per day. *This is the eighth month since calving.* In four days she gave 208 lbs. when being milked twice a day, and running on the grass with the rest of the herd. They report the sale of the bull Tirania Baron to Sleeth Bros., Quebec. This animal was shipped through without a man in charge. A block of ice was put in a tub in the car. As this melted, drink was provided for the animal. The purchasers report that the bull arrived in good condition, and that they are well pleased with him. This is rather a novel method of providing drink for stock en route, and might suit for comparatively short distances.

A. & G. RICE, Currie's Crossing, report that their Holstein cow, Calamity Jane, who won the sweepstakes prize in the milk test at Guelph last December, is still giving over fifty lbs. of milk a day, although it is seven months the 25th of May since she calved. Lena of Fairmount, second at Guelph, is still doing over thirty pounds a day, though she, too, came in last October. A 3-year-old granddaughter of Daisy Texall came in on May 19th. She had a heifer calf, and is doing well. Good Luck Jane, a young daughter of Calamity Jane, comes in for the first time in the fall. So also do a number of other young and promising heifers. The young bull, Sir Paul DeKol Clothilde, is developing into a grand bull. He is of good milking stock and should get a lot of valuable animals. Three young heifer calves do him great credit.

H. & J. MCKEE, Norwich: The foundation of the herd of this firm was laid many years ago in Judy—321—a noted milker. A daughter of hers, Lassie—506—, was also a grand milker and left a lot of excellent stock. Of the present herd, Martha

Stock Notes—(*Continued*).

—384—out of Annie Laurie by Jock, is a particularly nice cow doing well at the pail and throwing good stock. Several other cows are good typical animals and dropping valuable calves. At the head of the herd is a capital good bull, Royal Chief of Brookside. His dam is Alma by Rob Roy of Oxford, and his sire Hamilton Chief. The young stock from him speak well for him as a sire of desirable animals. This herd is kept for the production of milk in paying quantities. Many of the cows give from 50 to 55 lbs. of milk per day. The percentage of butter-fat ranges between 3.5 and 6 per cent.

MR. JOHN BELL, Amber, has a lot of typical Tamworth pigs At the head of his herd is Dorchester Hero—567—who has proved himself a good stock getter. He is a boar of good bone and substance, and is out of an imported sow and by an imported boar. Middleton Mimulus—12—one of the aged sows, is an imported animal, and a good one. She has proved a superior animal in many ways. A daughter of hers, Miss Kennedy, is exceptionally deep with extra length. Agincourt Queen, a daughter of Miss Kennedy's, has a fine litter of pigs with her that are doing very nicely, as are also four other fine litters. Mr. Bell's Clydesdale stallions are meeting with a good season's work, and some of his young fillies are exceptionally good ones, particularly Lady Amber and Dominion Belle, two full sisters by Crickmore Darnly and out of Lady Erdley.

H. B. JEFFS, Bond Head, Ont., writes: Pedigreed stock are looking up, there being a great demand for good Shorthorn bulls and Berkshires. Since last reporting in February I have sold the following stock, viz., 1 bull and 1 sow in farrow to H. Dunning, Thornton P.O. ; 1 boar and 2 sows in farrow to A. Torrance, Thornton P.O.; 1 bull to J. S. Kerfoot, Minesing ; 1 boar and 3 sows (six weeks old), not akin, to Peter Corbett, Puce ; 1 sow in farrow to W. Draper, Cookstown ; 1 sow in farrow to T. Fisher, Ivy ; 1 boar and sow in farrow, not akin, to W. Lennox, Ivy ; 1 boar to W. Brown, Cookstown ; 2 sows in farrow to T. H. M. Hulse, Kettleby; 1 boar to J. Cooksie, Schomberg ; 1 yearling bull to W. J. Lennox & Co., Ivy, Ont.; 1 yearling bull, 1 yearling heifer, and my stock bull Warfare to H. Raikes, Pine Lake, Alta. Also some good grade milch cows ; and have two young bulls and a number of Berkshires yet for immediate sale. Also cows and heifers.

MANITOBA'S PREMIER PURCHASING STOCK IN ONTARIO.—Mr. James Yule, of Woodbridge, Ont., a former successful breeder of Shorthorns, has sold out his entire stock and engaged with the Hon. Thomas Greenway to take charge of his herd at Crystal City, Manitoba. He made us a visit recently, and stated that he had made the following purchases for Mr. Greenway's farm : Mina Lass, by Golden Crown Imported, from Mr. John Isaac, Markham ; also the 1st prize calf at the Industrial in 1896 from Israel Goff, Alma, Ont. This calf is reported to be the best female in Ontario. Three Shropshire sheep from John Campbell, Woodville, Ont., one an imported shearling ram, winner of 3rd prize at the Royal Show, England, and two shearling ewes, also winners in England. A Yorkshire boar and sow from Joseph Featherston, M.P. A fine team of carriage horses were also purchased for Mr. Greenway's private use. The Greenway farm in Manitoba contains 2,000 acres. There is at present on it a herd of 40 Shorthorns, 24 Shropshire sheep, 12 of which were selected from John Campbell's well known herd, and 60 Berkshire and Yorkshire pigs. Besides the purebred stock a large number of fine grades of cattle are kept, making a herd of about 150 in all.

JAMES I. DAVIDSON & SON, of Balsam, Ont., write us that they have made the following sales : Sold to Mr. James Hunter, Green Ridge, Man., Pride of Balsam [2189], who weighed 1,725 lbs. when 24 months and 15 days old. He is a bright bay. Sire was (Imp.) Tofty [2123] (9452), who was a prize-winner in every competition, winning the gold medal at Ottawa in 1895, and sold for $1,000 cash. Pride of Balsam's dam, Kate Hill 2nd, won the first prize for the best imported or Canadian-bred mare at the spring show, Toronto, first at the Industrial, also the medal for best mare and two of her progeny (being the Pride of Balsam and his full brother). Pride of Balsam has been shown on several occasions, and never left the ring without a prize. We have yet some good Clyde mares and fillies, and will breed eight of them this season. We also sold to Mr. Brewester, McIntyre, the bull Scottish Prince 6th, sire Scottish Prince =14828=, dam Necklace 20th, by (imp.) Hospodar. To A. Graham, Pomeroy, Man., the heifer Necklace 21st, by Sittyton Chief =17660=, dam Necklace 17th, by Councillor of State (imp.). Also to Joseph Watson, Greenbank, Ont., Village Boy 10th, by Scottish Prince, dam Village Beauty 3rd, by Vanguard. Sold to W. H. Lochart, Whitby, Scottish Prince 5th, by Scottish Prince, dam Duchess of Gloster 43rd, by Lord Abbot (imp.) To John S. Robson, Manitou, Manitoba, Village Boy 12th, by Scottish Prince, dam Village Beauty 4th, by Hospodar (imp.) Hospodar was exported back to England, also a son of his.

FROM Fairview Farm on May 20th we had the following report : "To-day I shipped a car of pedigreed Shropshire rams

Stock Notes.—*Continued.*

to W. A. McIntosh & Co., of British Columbia, which ought to make a marked improvement in their flocks, as, in my opinion, a better lot of ranch rams never left Ontario. Messrs. W. C. Edwards, M.P., L. Bennett, M.P., and other leading breeders furnished me with selections. Last week I shipped one shearling ram and two ewes, leading winners in England and Canada, to C. J. Poulter, Iowa, who is greatly pleased with them. I sent him seven ewes last February. At the same time I sent two excellent shearling ewes to W. C. Frazier, who also has Iowa for his State. He has just written saying: 'Satisfactory? Well, yes, I should say so. If those ewes don't do me some good then there is no use in trying to get anything that would.' In April, to Mr. W. Grogan, of Manitoba, a ram and two ewes with great prize-winning records were sold. The ram Fairview Stamp won first all over Ontario and at New York. With his sire and dam, both the leading winners in their classes at the World's Fair, their total cash winnings ran up to fully *one thousand dollars*. The pair of ewes have an unbeaten record in Canada, and won second and third at New York. These, with other sales, have so reduced my flock that, with orders already placed, and fine prospects for trade, I have determined to again import in July, to meet the ever-growing demand and advancing values. Since August $100 has been got for home-bred Newton Lord rams three times, yet I have now the most numerous and best crop of lambs ever raised on the farm, so that intending purchasers of first-class Shropshires will find my flock well stocked to select from. See new ad., page x. To Hon. T. Greenway I have recently sold a choice imported shearling ram, a winner at the Shropshire Show, England, in 1896, and also at Madison Square Garden Show, New York. With the ram a finely mated pair of shearling ewes went west. One of them, my choice of the winning pen of five lambs at the Shropshire Show in 1896, and in Ontario also won several firsts. The mate is a daughter of a triple first winner at the World's Fair, and herself a first winner at New York City Show last November. Will hear of them later, no doubt. JOHN CAMPBELL."

MR. HENRY DUDDING'S FLOCK AND HERD.

(By our Special Correspondent.)

The gentleman whose name is at the head of this notice, Mr. *Henry Dudding, is one of England's* grand stockmen. Noted all the world over is that grand flock of Lincoln sheep which has its habitat at Riby Grove, Stallingboro, near Lincoln.

Stock Notes—*Continued.*

No matter wherever the Lincoln sheep finds a home, there the name and fame of Dudding's sheep is sure to be found.

Early in the present year our representative had the privilege and pleasure to visit and inspect this noted flock. A flock indeed he found it to be; not by any means a collection of sheep, but a flock with one continuous type and character throughout. This, indeed, is one of the most striking features of the flock, a sure and certain proof of the value of any flock. Certain it is that wherever one finds a uniform type, likeness, and character running throughout the flock, we may rely that that flock is one from which sires and dams may be taken with every confidence, for flock likeness such as is found here is not the result of a few years of haphazard or chance breeding, but the result of, in this case, generations of careful breeding and attention.

The foundation of the flock is not given in any public record, but it is known that for considerably over a century the flock has been in the Dudding family, the present owner, Mr. H. Dudding, being the third in direct succession that has been the proud owner of the most noted Lincoln flock of his day. Such was the case certainly with his father, and possibly with his grandfather as well. As before stated, the result of this continuous management under the same fundamental idea has been to produce such a wonderful and remarkable flock likeness, type, and character, that few if any other flocks can show. Not only has this been the result, but a further and equally important one has been obtained, which is that so great is the impressiveness of the sires from this flock, no matter where they go to, that an enormous demand always exists for them; the reason of this great impressiveness being that the sheep having been for so many generations so carefully bred, the good qualities and type having been so definitely fixed, that the representatives of the flock cannot fail but to impress their known type and character upon any classes to which they may be mated, in a greater or less degree, as the case may be.

The flock at the date of our visit numbered 1,350 ewes, 600 ewe tegs, and 400 ram tegs, and a grand lot they were. Their fleeces were of grand quality, without breach wool, thick as possible, yet soft as could be, and of the finest possible texture. What a grand lot they were one cannot with full justice describe them; they need to be seen to be fully appreciated. Detailed criticism need not be given, for we could not at the space at our command do proper justice thereunto, therefore we must content ourselves with saying that a better flock could scarcely be found. The ram tegs were a typical and grand lot, not in any way being pampered or spoilt, but being well and thoroughly kept, folded out in turnips in the bleak, exposed fields. How healthy and strong they were, and what grand fleeces they all had! A sight such as this one rarely is privileged to see. Amongst them we saw 20 that had been selected by a buyer who, notwithstanding having made a bid of $5,000 for them at the age of ten months, had to leave them, for the owner distinctly refused to consider such an offer. Just fancy an offer of $250 per head being refused for 20 rams at ten months of age. However, it is very evident that the owner was fully justified in refusing the said offer, for just after one was sold for $550, two for $300 each, and others at similar high prices.

The difficulty of keeping up a proper and judicious change of blood is not, of course, so great with a flock of this large size; however, when a change is deemed necessary, recourse is always made to stocks that have been using Riby rams, and thus whilst the needful change is secured, no great alteration of type or character is brought in, from the fact that all sheep who own Riby rams for their sires are, generally speaking, almost identical as regards type and worth with the old flock from which their sire comes. The stud rams of such a flock as this are, of course, grand ones; those we saw were so indeed. Mere enumeration of them would be of little information to your readers, hence we give no separate details, but will content ourselves by saying that they were such as one may rightly describe as being the very best that the breed could produce.

The show yard career of the flock is a grand one. The success has been consistent and continuous. Not only has the

Stock Notes.—*Continued.*

flock taken in years gone by a leading place, but it has done what is far more difficult to do, fully maintained the position year after year. Its doings at Windsor Royal Show in 1889 were remarkable, where second and third awards for old rams, first, second, and third awards for shearling rams, and first for shearling ewes, all went to Mr. H. Dudding's sheep, as well as the most coveted honor of all, the first prize for wool. The doings of this stock's representatives at Chicago World's Fair are fully known to your own stockmen, for, shown in the hands of one of your own leading breeders, they won six firsts, four seconds, and one third award, as well as both the male and female championship.

The sale record of the flock is such a one that will make all breeders wish that the flock was theirs, and it has also this remarkable and notable feature in connection therewith, namely, that it has for years been making high prices of sheep which have been sent all over the world. Many other flocks have, during the last year or so, since the present large demand for Lincolns has come to the front, made high prices as well, but this to them is an occurrence of recent date; but with the Riby flock it is not so. As far back as 1860 $350 was made of a ram; then, again, another ram was let for four seasons for fees which amounted to $3,000. On another occasion $4,750 was paid for 50 ewe tegs and 2 rams, these latter being priced at $100 and $50 respectively. In 1873 70 rams averaged $190. Then at Windsor Royal $2,250 was made of 3 rams. Other examples might and could be given, but enough has been said to prove what a grand reward has been received by those who for years have labored so hard and constant to secure such a grand result as has been here recorded. The records given above are private sale ones; below we give some facts and figures which speak in no uncertain terms of the great value that beyond doubt is given by the public for rams bred at this most noted farm.

The averages quoted are those made at Lincoln Fair, where last year one of this flocks produce made for the first time in the history of the breed that record price of $1,750.00.

1892.....	22	rams	sold averaged	$190 00
1893.....	20	"	" "	186 50
1894.....	20	"	" "	142 00
1895.....	17	"	" "	
1896.....	15	"	" "	511 00

The following table, however, brings out in a still stronger light the great value of Riby sires when compared with other flocks. The figures given below are those that have been obtained from the records of the society, and they are those made for every lot sold at ram sale for the last four years:

Date of sale.	Total number of rams sold.	Amount made.	Average.	Number of rams sired by Riby rams or their sons.	Amount made.	Average.
1893	335	$22,013 00	$ 68 00	60	$ 4,449 00	$ 74 00
1894	375	24,969 00	69 00	100	9,600 00	96 00
1895	326	31,461 50	96 50	114	13,138 00	115 00
1896	355	51,056 50	114 00	117	22,220 50	189 00

Facts such as these are a record few, if any, other flock can show. We may mention that this year there will, in addition to the usual lot of rams being sold at Lincoln ram sale, be a very grand selection offered for sale at home on the 27th of July, 1897, at which date there will also be offered a grand lot of ewe tegs and selection of Shorthorns from Mr. H. Dudding's noted herd, numbering about 150 head. The Riby Shorthorn herd is not of so great notoriety as the Lincoln flock. It is, however, just such a herd that had its owner the inclination to have pushed it in the show yard that would have very soon taken a very leading place. The herd is a grand one, and one that is fully worthy of the notice of any breeder who may be desirous of adding to his herd either male or female. The sole reason for the sale being that it has now outgrown the

Stock Notes.—*Continued.*

room that the large holding of Mr. Dudding provides for it. Red is a largely predominating color. Big, wide, strong and deep are the cows; capital loins and well-sprung ribs they have; and as far as their milking properties are concerned, they are fully up to the required standard.

The herd consists of Booth, Bates, Cruickshanks, etc., and amongst them are capital examples of all the best families of the different lines of blood. Should any Canadians be at the sale day, July 27th, 1897, it will well repay them to pay a visit to Riby Grove. They will see, and if they are cattle or sheep men, such cattle and sheep that they will fully appreciate. There is no room at Riby for second-rate stuff; hence it will be sure to fully repay any one who has the time to go. They will see and realize what a grand result can be obtained by constant and continuous care and management such as this well-known stock breeder, Mr. H. Dudding has given and does give to his farm and herd.

The general result of the lamb crop through England this year is only a moderate one. Reports sent to the princ., live stock papers emanate from only the leading flocks of the country, *i.e.*, from those where the greatest care and attention is given. These, though they form some sort of a guide as to the results amongst this group of sheep breeders, do not quite give as much information as might be done, for although correct as to details of their own individual cases, they are only, as a rule, sent when results are satisfactory. The ordinary flocks have in many districts had a distinctly bad season. Abortion has been one of the principal causes of the loss, whilst lambs dying at about a week or so old has materially reduced the number reared. We have had a most trying winter for sheep; constant wet and cold winds have had a very bad effect on all kinds of sheep. This too has been felt largely in the lambing flocks, for ewes, although healthy, have been much reduced in strength, and consequently the lambs came weak and easily fell victims to the inclement weather.

The demand for mutton is first class, and for tip-top quality and small weights high prices are easily made, $1.44 per 8 lbs. dead weight has been made over and over again. The prospects of the mutton trade are certainly most bright. Our supplies at home are very short, and those both from the United States, Argentine, and Australia show during the first quarter

Stock Notes.—*Continued.*

of the present year a notable reductio.. compared with last year. Thus it is pretty certain that for small sheep, well fed, and fatted, a most remunerative market will be found here.

Beef trade is also better than it has been for some time past, and it is pretty evident from the continued increase in value of this commodity in the States that we are likely to see the present value well maintained here for the present at any rate.

CANADIAN PRODUCE.

A matter of the utmost importance to your colony is that your produce should be sold here as "Canadian." It may be some amongst you do not fully realize what this means, but those of us here who see and know what takes place, can and do fully realize its value and worth to you. Generally speaking, we hear of "American" this or that, but hardly ever of "Canadian." This is not as it should be. All you send us should be labelled and sold as "Canadian," and from the grand quality of your produce you have everything to gain and nothing to lose thereby; hence, as a well-wisher and friend of that grand country of yours, I say it is your government's first duty to see that all your produce sent here is sold as Canadian, and I am certain that the result would be increased demand for your produce.

Mr. H. D. Smith, of Compton, who has paid us a visit, has, after a long and most careful examination of our best Hereford herds, made a grand selection for addition to his well known herd. A selection that does great credit to his judgment, and one that when it arrives at its future home will be such as will be quite a pleasant surprise to Hereford breeders, for those selected are tip-top ones, and no mistake. The selection numbers seven animals, and Mr. Smith has placed all arrangements for shipping them, etc., after the Royal Show in June next in the hands of Mr. W. W. Chapman, live stock commission agent and shipper, Fitzalan House, Conduit street, Strand, London, W.C., a name that is familiar to our readers.

Amidst great regrets of all pig breeders Mr. E. Brown, of Elphicks Horsmanden, Kent, Eng., has, in consequence of his leaving his farm next September, dispersed his entire herd of Berkshire and Large White Yorkshire pigs. A noted herd all over the world was this herd, and its dispersion sale fully proved the value breeders attached thereto. Prices ranged from $130, and the entire herd, half of which averaged under five months of age, averaged $33 each.

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See Lists in January, February, and March Numbers

WE beg to draw the attention of our numerous subscribers and readers to this splendid List of Premiums. Every article is useful, and should be found on every farm. They have been especially selected from the stock of JNO. S. PEARCE & Co., London, Ont.

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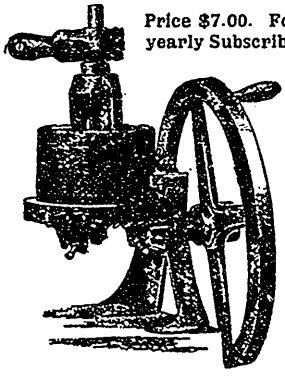

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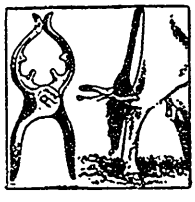

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For two new yearly Subscribers at $1.00 each.

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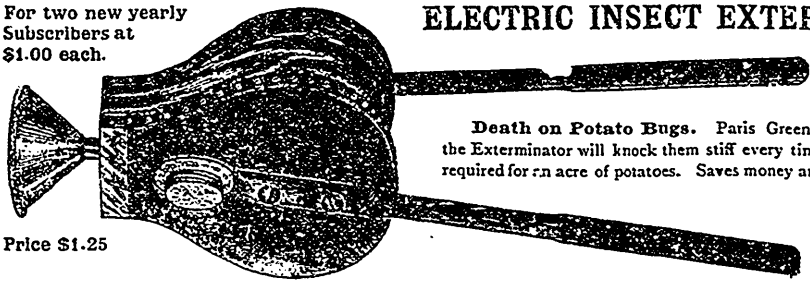


Death on Potato Bugs. Paris Green when applied with the Exterminator will knock them stiff every time. Only one pound required for an acre of potatoes. Saves money and kills every time.

Price $1.25

FARMERS' FAVORITE BABCOCK MILK TESTER

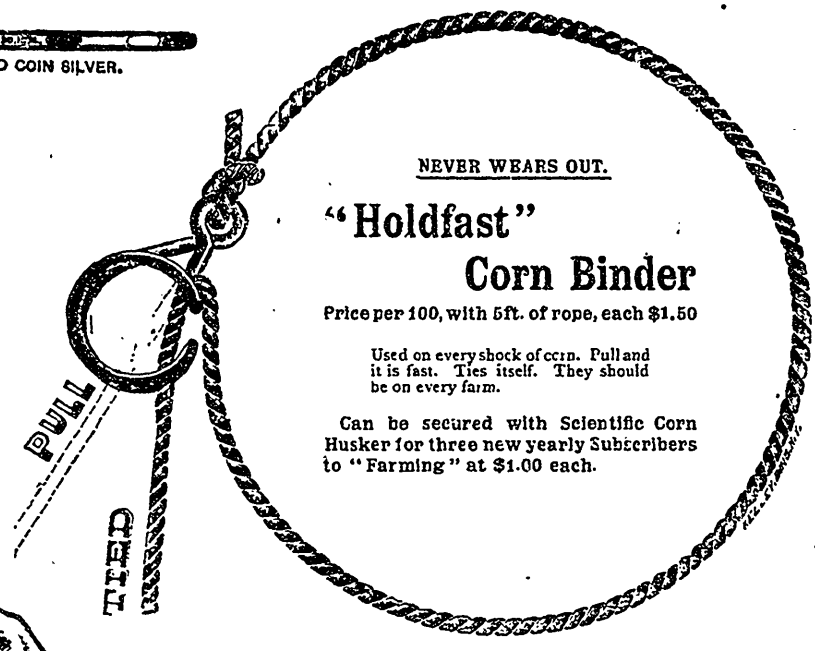
Four Bottle Machine, Price $5, for seven new yearly Subscribers at $1 each.

Six Bottle Machine, Price $6, for eight new yearly Subscribers at $1 each.

Every one who keeps cows should have a Babcock Milk Tester and find out what each cow is doing. Then discard the poor ones and keep only those which will return a profit for their keep. What easier way of securing one than by getting new subscribers to FARMING!

MILKING TUBES

Price 25c. by mail. Useful for sore or torn teats, or hard milking cows. Every farmer should have one. Given free, along with a complete Butter Mould and Printer, for one new yearly subscriber to "Farming" at $1.00.



NEVER WEARS OUT.

"Holdfast" Corn Binder

Price per 100, with 5ft. of rope, each $1.50

Used on every shock of corn. Pull and it is fast. Ties itself. They should be on every farm.

Can be secured with Scientific Corn Husker for three new yearly Subscribers to "Farming" at $1.00 each.

SCIENTIFIC CORN HUSKER

PRICE 15 CENTS.

Greatest Little Tool on Earth.

Given with the Holdfast Corn Binder for three new yearly Subscribers to "Farming" at $1.00 each.

SHEEP LABELS

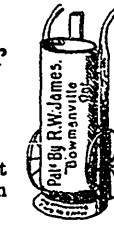
Very useful for owners of sheep.

Sixteen of these Labels, with number and name on each, as in cut, sent free for one new yearly subscription at $1.00.

Combined Truck and Bag Holder

One of the most useful implements on a farm, and one of the most complete labor-saving devices ever invented.

Price $5.50. Will be sent f.o.b., at Bowmanville, to anyone sending us ten new yearly Subscribers at $1 each.



Your Own Subscription Free

For one year for two new yearly subscriptions at $1.00 each.

For six months for one new yearly subscription at $1.00.

All communications should be addressed to

FARMING,

Agents Wanted. *20 Bay Street, Toronto, Can.*

BRITISH ADVERTISEMENTS.

BRITISH ADVERTISEMENTS.

KENT or ROMNEY MARSH SHEEP

ASHFORD RAM SALES.

The First Annual Sale of Registered Kent or Romney Marsh Rams consisting of selected specimens from leading flocks of the breed will be held at

ASHFORD, KENT, ENGLAND,

—ON—

Friday, October 1st, 1897.

Registered Rams will also be offered for sale at **Ashford** on **Tuesday, October 5th** and **12th,** and at **Rye, Sussex** on **Wednesday, October 13th** and **27th, 1897.** Catalogues and full information from W. W. CHAPMAN, Secretary Kent or Romney Marsh Sheep Breeders' Association, Fitzalan House, Arundel Street, Strand, London, England.

Manor House, Cothelstone, near Taunton, England.

MESSRS. GREENSLADE & KIDNER

WILL SELL

BY AUCTION

(without reserve)

On FRIDAY, JULY 2nd, 1897

he whole of the important, attractive, superb, registered herd of purebred, pedigree, prize-winning Devon Cattle, most of which are of the well known Harold strain of blood, numbering over 100 head of prime cattle. The Dorset Horn and Shropshire Down flocks are registered and known for their large size, being full fleshed and well wooled; Mr. Kidner having taken both first and second prizes for wool seven years in succession, and at the annual Dorset Horn Ram sale sheep bred by Mr. Kidner made the highest price ever known two years in succession. The flocks number together over 1,000 sheep.

Secretary to the National Sheep Breeders' Association of England and the Southdown Sheep Breeders' Association; Hon. Secretary 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, Abingdon, Ont.; N. CLAYTON, Selsey, Chichester, Eng.

Offices:

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

Registered address for cables—"Sheepcote London."

An advertisement in FARMING is a good investment for the advertiser.

BRITISH ADVERTISEMENTS.

HAMPSHIRE DOWN SHEEP.

Great English Pedigree Sales. July, August, and September, 1897.

WATERS & RAWLENCE, Salisbury, England, will sell by auction during the season upwards of

50,000 Pure Bred Ewes, Lambs, and Rams,

including both Rams and Ewes from the best registered prize winning flocks in the country.

Commissions carefully executed. Address

62 WATERS & RAWLENCE, Salisbury, England.

J. D. Millington

SEMPRINGHAM HOUSE,
near . . .
FOLKINGHAM, LINCOLNSHIRE,
ENGLAND,

HAS for sale pure bred registered Lincoln Rams, Ewes and Ram Lambs and She Lambs, descended from the best blood in the country. Flock established over 100 years. The Lambs are this year principally sired by the 200 guinea ram Sempringham Ashley Rover (1291). (This sheep gained first prize at the Yorkshire Show in 1895, and last year clipped 31 lbs. of wool). Also by Sempringham Pointon A 2241; Laughton Chief 1427 (bired from Mr. J. E. Casswell at a high figure, and one of his best wooled Rams; and Sempringham Duddings, 2240, half brother to the Royal Prize Shearling at Darlington.

Registered Stock Book No. 56.

Telegrams and Mail Station

BILLINGBORO, G.N.R., 1 MILE

MISCELLANEOUS.

THE FIRST OF THE SEASON

◆◆◆◆

MONTREAL EXHIBITION

Aug. 19 to 28th

Increased Prizes.

New and Varied Attractions.

The Peoples Outing to Canada's Metropolis.

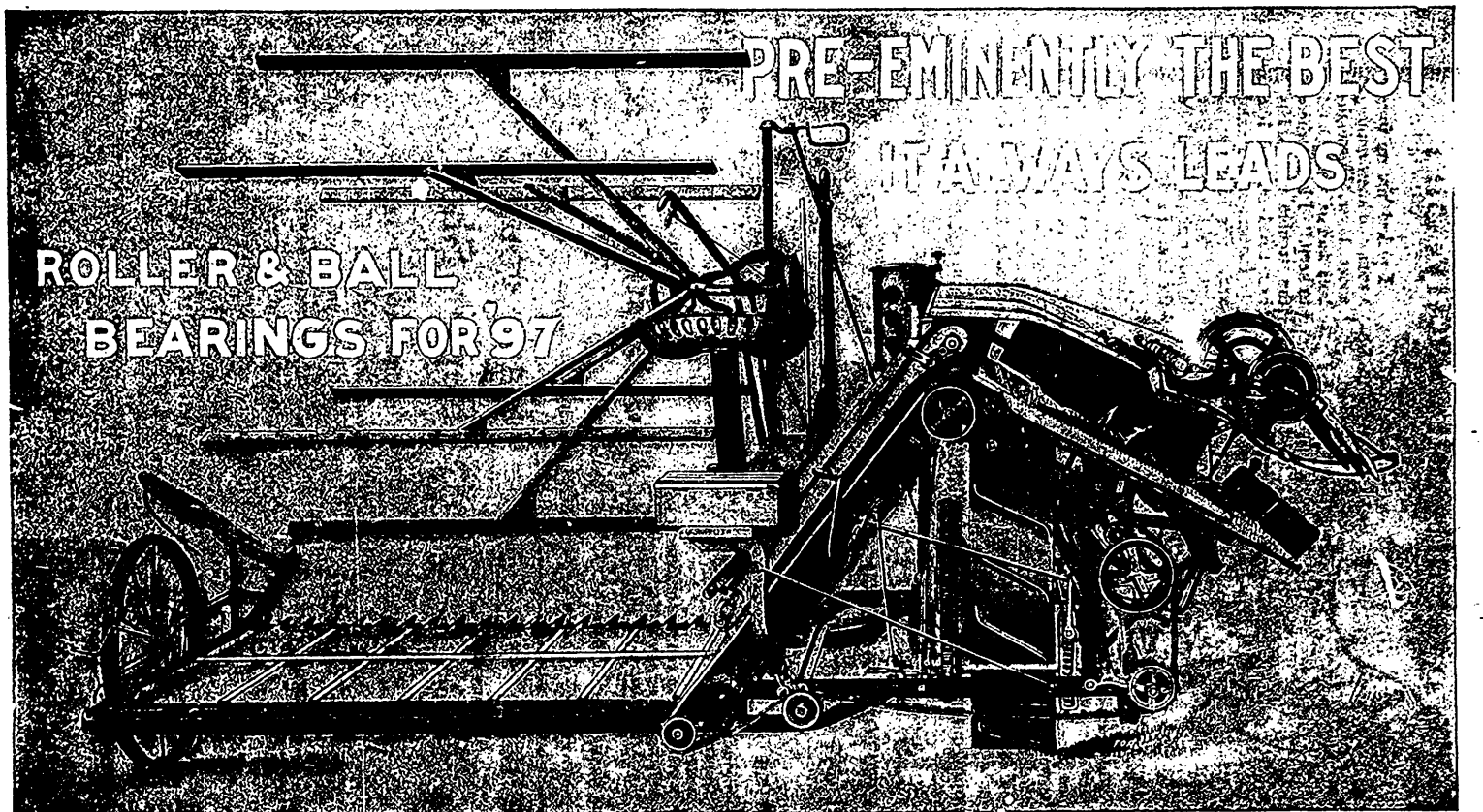
Cheap Excursions on all Railways.

• • • •

For Prize Lists, Programmes and all information, Address

S. C. STEVENSON, Manager and Secretary,

MONTREAL, QUE.



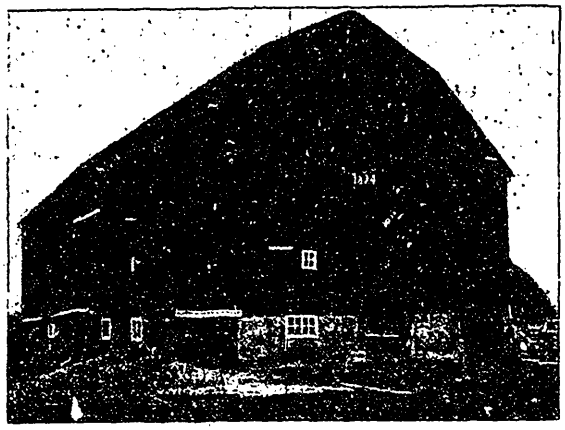
Massey-Harris Wide-Open Binder

A TRIUMPH OF MAN'S GENIUS. IT WILL DO ITS WORK WELL IN ANY KIND OF CROP, NO MATTER HOW TALL OR HOW SHORT, HOW HEAVY OR HOW LIGHT, HOW TANGLED OR FALLEN AND LODGED. IT SAVES LOTS OF THE CROP THAT OTHER MACHINES LOSE.

Queenston = Cement

FOR BUILDING

Stable, Silo and other Walls; Cisterns; Stable Floors; Hog Troughs; Road Culverts; and other structures.



Basement barn of Mr. E. B. Brown, Brownsville. The basement and all inside floors are built of

Queenston Cement Concrete

Read Mr. Brown's Testimonial . . .

Brownsville, Jan. 3rd, 1896.

ISAAC USHER & SONS:

GENTLEMEN,—In answer to your enquiry in reference to your Cement, I am glad to say it has proved in every way satisfactory. As you know my barns were struck by lightning on May 10th, 1894, and entirely consumed. I then built a new barn, 50 x 80 ft., using your Queenston Cement in my concrete walls. The foundations were 2ft. deep and 1 ft. 8in. in width; then I built on that the walls 7ft. high (the walls were 16 inches thick), set on the centre of foundation, finishing 12in. thick on top to receive sills 10in. square (the joists were laid on the top of sills), making walls for my stables 7ft. 10in. in the clear. The outside face of walls were plumb; the inside face of walls were battering 4in. We used, in the foundation and walls, 90 barrels of your Cement. I superintended the construction of the walls personally. I had in my employ four men. We were ten days in building the 9 feet of wall. We commenced to build on the 18th of June, and finished walls on the 28th. We raised the barn on the 6th of July; a very heavy frame of hardwood timber; posts 19 ft. long (hipped roof). On the 15th of July we commenced hauling in hay, and then grain as fast as we could harvest it until I had at least 200 tons in the barn. The walls stood this great pressure; there is not the least crack anywhere. I believe I have as good and perfect a wall as it is possible to build, and I am sure it will stand for generations. In October I put in my floor all over the barn, all for cattle manure drops, stalls, etc. In this I used 76 barrels of your Cement, and as a comparative test I used one barrel of Portland Cement. The floors have been in daily use over a year, and I have never been able to see any difference between the Queenston Cement and the Portland Cement. I consider I have a perfect floor, that will last more than a lifetime, and at a much less cost than plank. No liquid manure is lost, and stables can be kept clean and sweet with less than half the labor with plank floors.

We have this year built another barn of the following dimensions: 32 x 56, 9 ft. walls from bottom of foundations, with lighter walls 12 inches thick at ground line and 10 inches under the sills, which I consider strong enough for any ordinary barn. We used in this structure 50 barrels of your Queenston Cement; and I am satisfied that when your instructions are carried out, one will have perfect work every time.

Any further information yourselves or your customers may desire, I will write cheerfully any time.

Very truly yours,

E. B. BROWN.

Farmers and others who contemplate building next season, make your plans early; get your supply of gravel and field stone on the ground during the winter, thus saving both time and money, and making your next season's outlay very small indeed.

Send for our New Pamphlet of 1897, Containing Full Instructions, Free.

For prices of cement and other particulars apply

ISAAC USHER & SONS, THOROLD, ONT.

FARMERS

BINDER TWINE

By experience have learned that the undermentioned brands are the best and most economical to use.

Why are they the best ?

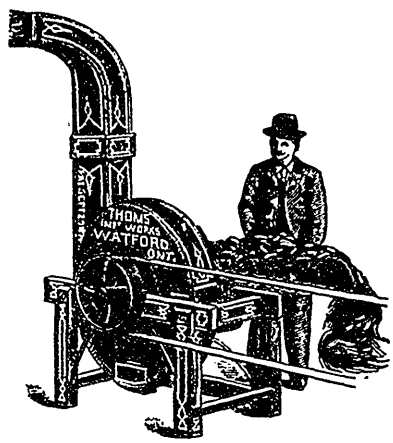
Because they are evenly spun, made on the most improved machinery and by skilled labor. Will run all day without stoppage, and is the only twine that will not stick in the knotter.

Blue Ribbon	**Red Cap**
Blue Crown	**Red Crown**
Standard	**White Sisal**

PURE MANILLA, 650 feet to lb.

See that this name is on the tag :

CONSUMERS' CORDAGE COMPANY (LIMITED)



OUR PATENT BLOWER ATTACHMENT as a Silo filler is all right. It has been thoroughly tested at 20, 25 and 30 feet, and will elevate green corn 40 feet if necessary. We are so satisfied that our Blower Elevator is the coming machine that we offer to forfeit the machine if we fail to elevate the desired height. In the language of one customer—"the Blower has come to stay."

WARNING! One of the best evidences of the value of this invention is the attempts at imitation that are being made. We warn everyone against purchasing, selling or using Blower attachments that infringe on our patents.

The advantages of this machine over chain and slat carriers are too apparent to require any explanation.

We manufacture a full line of Cutting Boxes with all the latest improvements—concave or convex knives; also the "Ripper" Feed Cutter, the stock-feeders favorite machine, and the latest improved Tread Powers for two or three horses.

THOM'S IMPLEMENT WORKS,

WATFORD, ONT.

Send for Testimonials **Established 1875.**

MICA ROOFING

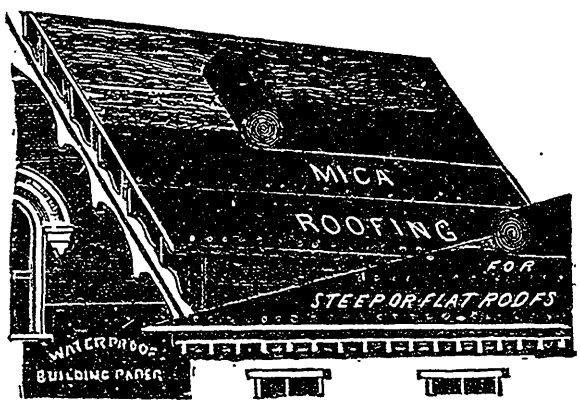
USE

Mica Roofing

On all your buildings.

It is cheaper than shingles.

Waterproof and Fireproof.



USE

Mica Paint

To Repair Leaky Roofs.

Shingle, Iron, or Tin Roofs painted with it will last twice as long.

RAPIDLY TAKING THE PLACE OF SHINGLES.

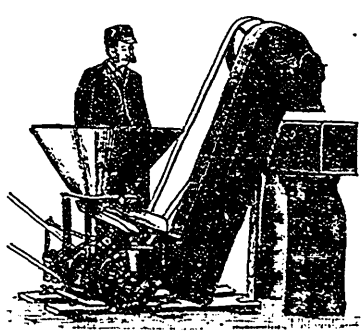
Is put up in rolls of one square each, 40 feet long by 32 inches wide, and costs only $2.25, including nails, thus affording a light, durable, and inexpensive roofing, suitable for buildings of every description—especially flat roofs—and can be laid by any person of ordinary intelligence.

HAMILTON MICA ROOFING COMPANY,

664 **Office—101 Rebecca Street, HAMILTON, ONT.**

THE VESSOT IMPROVED GRAIN GRINDER

PATENTED Awarded Gold Medal and Diploma World's Fair, Chicago, 1893.
First Prizes at Canadian Exhibitions.



SEE WHAT OUR CUSTOMERS SAY ABOUT IT

J. KRUPP, Metcalfe, Ont.
"I have recommended your grinder to several parties, because I conscientiously believe it to be the King of plate grinders having taken note of many other kinds."

ALBERT L. DAWES, Lachine, Que.
"Enclosed will find $40.00 for Little Champion grinder, which, now that I understand it, think it the finest machine I ever saw or worked."

W. A. BEGG, Queen Hill, Ont.
"I am pleased with the chopper, it is the only one of the kind in this county yet, but expect it will not be the last, as all who see it think it is the best they ever saw."

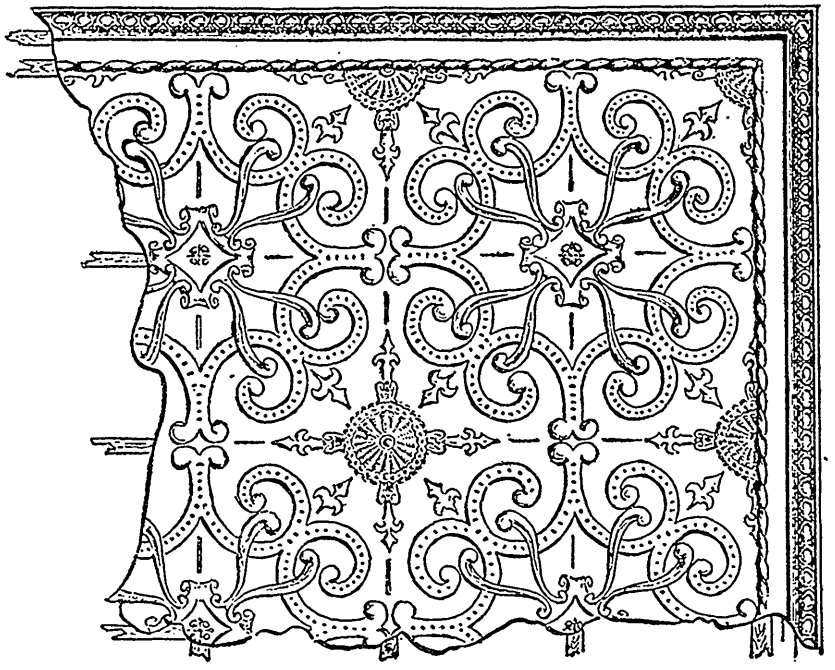
☞ Scores of other testimonials can be furnished on application.

We also furnish an improved **Corn and Cob Crusher.**

Send for circular. Information cheerfully given.

S. VESSOT & CO., Sole Manufacturers **JOLIETTE, P.Q., CANADA.**

EMBOSSED METALLIC CEILING



ONE OF OUR DESIGNS.

THESE ceilings are made from mild annealed steel plates in a great variety of designs suitable for every description of buildings, including Hospitals, Churches, Schools, Convents, Opera Houses, Asylums, Offices, Stores, Private Residences, etc.

The many advantages of their use as a modern substitute for wood and plaster lie in the fact that they are light in weight, will not crack nor drop off, consequently no danger of falling plaster, are unquestionably durable, have air-tight joints, are easily applied, are practically fire proof, are highly artistic, do not harbor vermin or the germs of disease, and possess splendid accoustic properties, in addition to many other points of excellence over any other form of interior decoration.

For further information write for catalogue.

Metallic Roofing Co., Ltd.,

= **Sole Manufacturers** =

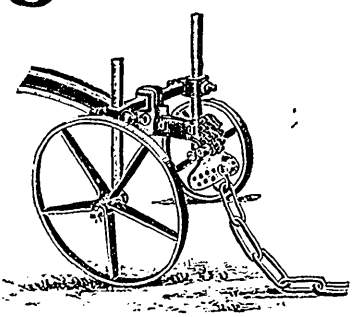
1194 King St. W., = TORONTO

THE WILKINSON PLOUGH CO. Ltd.

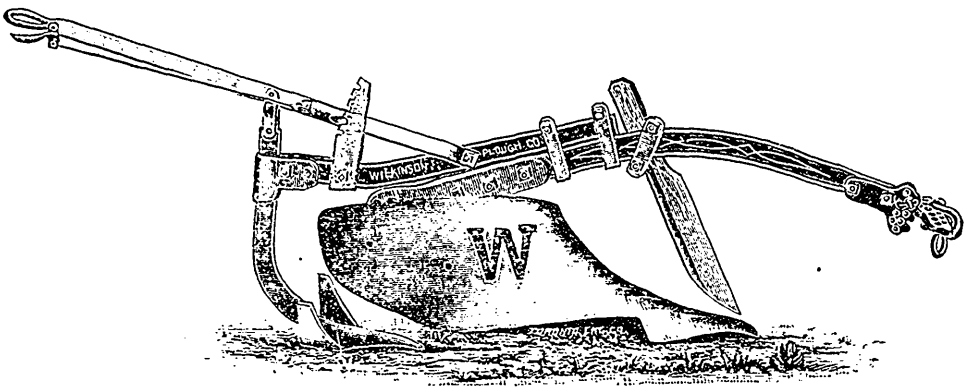
TORONTO

MANUFACTURE

Guage and Furrow Wheels



—Useful in Rough Ground.
—Helps the Boy.
—Fits all our Ploughs.
—Malleable Sand-Proof Caps.



SUBSOILER

Made to fit each of our Ploughs. One extra horse does the subsoiling. Highly spoken of by those who have used it.

"THEY LAST TWICE AS LONG."

Our Repairs are Made of a Special Mixture of Iron—

Object: Very hard and very tough.
Result: They last twice as long, and do not break.
Consequence: We have to put our full name and address on all heads, points, and soles, to protect the farmer, and to save unscrupulous dealers from the temptation to sell ill fitting, badly made repairs in place of ours.

Our Ploughs are by far the cheapest in the end.

The Mouldboard is always full thickness, and the very best United States crucible soft centre steel.

All parts are full weight and the best material.

The workmanship and finish is the best in the world.

Municipalities will Note

That our Scrapers, both Wheel and Drag, are the heaviest, and consequently last longest. We meet all competition.

Our Barrows, for all kinds of road work, are made especially strong and durable.

Our Rooter, Pick, and Grading Ploughs last a generation.

Road Rollers from two tons.

All Repairs shipped same day as ordered.

Do not order without first writing US.

MATTHEW MOODY & SONS, Terrebonne and Montreal,
General Agents for Quebec.

Write for Catalogue.
All information cheerfully furnished.